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Acknowledgement

Dear Guests…
Welcome to the 13th International Educational Technology Conference IETC-2013.
"The International Educational Technology Conference (IETC)" series is an international educational activity for academics, teachers and educators. This conference is now a well-known educational technology event and the number of paper submissions and attendees increase every year. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities, the conference proceeding book, and the Turkish Online Journal of Educational Technology (TOJET). Its focus is to create and disseminate knowledge about the use of instructional technology for learning and teaching in education. This year, IETC-2013 received almost 400 applications. The conference academic advisory board accepted 235 applications.

The first of "The International Educational Technology Symposium (IETS)" and the second of "The International Educational Technology Symposium (IETS)" were held at Sakarya University in Turkey in 2001 and 2002. The third one was at Eastern Mediterranean University in the Turkish Republic of Northern Cyprus in 2003, and the fourth one at Sakarya University in Turkey in 2004. The fifth International Educational Technology Conference (IETC) was organized at Sakarya University in Turkey in 2005.The Sixth International Educational Technology conference was held in Turkish Republic of Northern Cyprus. In 2007, the seventh conference was organized at Near East University in the Turkish Republic of Northern Cyprus. After then The 8th International Educational Technology Conference was held at Anadolu University in Turkey in 2008. The 9th International Educational Technology Conference was organized at Hacettepe University in Turkey in 2009. IETC-2010 was organized at Bogazici University in 2010 in Turkey. IETC-2011 was conference organized at Istanbul University in 2011 in Turkey. IETC-2012 conference was organized at National Central University in Taiwan in 2012.

The International Educational Technology Conference aims to diffuse the knowledge and researches among academicians and lead to development in educational technology and instructional technologies.

Without the authors and participants, IETC-2013 would, of course, have been impossible. We would like to sincerely thank all of you for coming, presenting, and joining in the academic activities. We would also like to thank all of those who contributed to the reviewing process of the "IETC - 2013" conference papers, which will be also published in TOJET. And finally, we would like to thank Sakarya University – University of Malaya organizing team and The Turkish Online Journal of Educational Technology (TOJET) for successfully organizing and hosting "IETC-2013" in Kuala Lumpur, Malaysia. Last thank is going to Prof. Dr. Saedah Siraj for her warm hosting and for her great effort. She always tried to do her best.

We have lots of participants from 30 different countries. Should you have any enquiries regarding IETC conference, please do not hesitate to contact with us for any additional information you may require.

Finally, we would like to wish you all a pleasant stay in Kuala Lumpur - Malaysia and safe return back home. We hope that IETC-2013 will be a meeting you will pleasantly remember.

We hope to meet you again in IETC 2014 which will be held in Chicago, United States between 03-05 September 2014.

Thank you....

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A Case Study of Secondary Pre-service Teachers' Technological Pedagogical and Content Knowledge Mastery Level

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Abstract

In recent years, researchers reported that effective ICT integration requires teachers to acquire knowledge of technology, content, pedagogy and the intersection of these, known as TPACK (Mishra & Koehler, 2006; Archambault, & Crippen, 2009). This study specifically sought to answer: 1) What are pre-service teachers' perceptions of their TPACK mastery level before and after field experience; and, 2) Is there a significant difference of TPACK after field experience in schools? The TPACK survey instrument was adapted from Schmidt et al. (2009) and Archambault and Crippen (2009) and administered before and after their field experience to 107 pre-service teachers in a research intensive university programme in New Zealand. In addition, three student teachers were interviewed before and after field experience. These pre-service teachers scored highest in Content Knowledge (CK) and lowest in Technology Knowledge (TK) domains within TPACK at both before and after field experience. Paired-sample t-tests showed significant increases in most TPACK domains, namely, TK, PK, PCK, TCK and TPACK. Interviews and observations of three students clarified complex changes in knowledge of TPACK that linked to their experience in schools. The study continues to support the need for field experience while also adding caution to the interpretation of TPACK survey evidence given the strength of the student teachers' perceived knowledge before field experience. Further research is underway with a comparative survey in a programme that prepares teachers for secondary schools in Malaysia.

Keywords: pre-service teachers, TPACK, ICT Integration

INTRODUCTION

The integration of information and communications technologies (ICT) in teaching and learning remain as key issue in most educational institutions (Jones, Harlow & Cowie, 2003; Choy, Wong & Gao, 2008). A study of ICT implementation across all schools in New Zealand showed that ICT is implemented across all school types with differences in implementation between the primary, middle and secondary school systems (Jones, Harlow & Cowie, 2003). Bolstad's (2011) more recent synthesis of the future focus in the New Zealand curriculum indicates the increasing challenges of integrating ICT.

Therefore the preparation of teachers for New Zealand schools and in many countries worldwide includes preparation to enhance learning and teaching with ICT (Davis, 2010). However, it is important to note that many student teachers have inaccurate perceptions of their competence to teach before they gain experience in schools and such beliefs must be challenged throughout their programme; field experience is a particularly relevant strategy (Howey & Zimpher 1996; Knowles & Cole, 1996). Most if not all pre-service teacher education programmes include field experience in schools to provide a hands-on opportunity for pre-service teachers to put what they have learned into classroom instructions (Darling-Hammond & Baratz-Snowden, 2007; Smith & Lev-Ari, 2005). Field experiences provide "the first formalized opportunity for pre-service teachers to verify, challenge, and modify their preconceptions" (Knowles & Cole, 1996, p. 654). Within such field experience student teachers in the 21st century are also likely to gain experience with ICT in classrooms that enhance their understanding of the complex

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interaction of digital technologies with content and pedagogical knowledge (Compton & Davis 2010). For this reason pre-service teachers' confidence to teach may drop in the process of becoming more competent. In other words, measures of pre-service teachers' perception of their competence to teach may drop as a result of all or part of their programme, particularly as they experience of the complexity of education during a field experience (Compton, Davis & Mackey 2009).

Effective ICT integration requires teachers to acquire knowledge of technology, content, pedagogy and the intersection of those (Neiss, 2005; Mishra & Koehler, 2006; Archambault, & Crippen, 2009). Therefore Technological Pedagogical and Content Knowledge (TPACK) model provides a useful theoretical framework for this study. The TPACK model was developed by Mishra and Koehler (2006), derived from Shulman's Pedagogical Content Knowledge (PCK) model. According to Shulman (1986) pedagogical content knowledge (PCK) is a "specific category of knowledge which goes beyond knowledge of subject matter per se to the dimension of subject matter knowledge for teaching". As for TPACK model, Technology Knowledge (TK) covers pre-service teachers' knowledge of technology tools to be used in teaching (Koehler et al., 2007). Pedagogy Knowledge (PK) is defined as knowledge in applying strategies to deliver the instruction which includes teaching approaches for assessing individual's learning needs, performance and strategies to present the content (Koehler et al., 2007). Content Knowledge (CK) is a subject matter knowledge in which teachers specialize. The intersection between three domains of knowledge produces Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK). The PCK domain refers to knowledge of integrating effective teaching strategies with the content knowledge (Mishra & Koehler, 2006). TPK involves pre-service teachers' understanding of using technology with suitable teaching strategies. The heart of the suggested model is Technological Pedagogical and Content Knowledge (TPACK), which is described as knowing how to integrate technology within the subject matter in pedagogically sound ways (Mishra & Koehler, 2006). The TPACK model lays out the core knowledge; TK, CK and PK, and their intersections; PCK, TCK, TPK and TPACK to enhance teaching with technology (Mishra & Koehler, 2006). Pre-service teachers' perceptions of TPACK may be used to ensure effective integration of ICT in classroom instructions (Mishra, & Koehler, 2006; Schmidt, Baran, Thompson, Mishra, Koehler & Shin, 2010; Lux, Bangert, & Whittier, 2011). Studies have been conducted to measure teachers' TPACK development (Koehler & Mishra, 2005; Graham, Burgoyne, Cantrell, Smith, St. Clair, & Harris, 2009; Jimoyiannis, 2010), in-service teachers' TPACK (Archambault, & Crippen, 2009; Lee & Tsai, 2010; Jang & Tsai, 2012) and pre-service teachers' TPACK (Schmidt, et al., 2010; Lux, Bangert, & Whittier, 2011; Yurdakul, Odabasi, Kilicer, Coklar, Birinci, & Kurt, 2012). However, the majority of the TPACK survey studies were administered with teachers in the USA (e.g. Schmidt, et al., 2010; Lux, Bangert, & Whittier, 2011) and very few studies have been conducted outside the country (e.g. Jimoyiannis, 2010; Yurdakul et. al., 2012) and now in New Zealand. Therefore, there is a need for measuring pre-service teachers' level of TPACK in New Zealand to effectively integrate ICT in teaching. A reliable measure of TPACK could benefit the field by enabling a better understanding of the ICT in pre-service teacher education. This is very relevant with the planned increased access to ICT introduced above.

PURPOSES

The study reported in this paper is part of an ongoing research project examining pre-service teachers' use of ICT during field experience and their development of Technological Pedagogical and Content Knowledge (TPACK) mastery before and after completing the field experience in New Zealand and in Malaysia. In this paper, we limit our findings to one programme in New Zealand and seek to answer: 1) What are pre-service teachers' perceptions of their TPACK mastery level; and, 2) Is there any significant difference in pre-service teachers' perceptions of their TPACK mastery level before and after field experience.

METHODOLOGY

Research Design

This study used a mixed methods design which combined both quantitative and qualitative approaches for data collection and data analysis (Creswell & Clark, 2011). Methods of gathering data included: survey of a large sample. In addition to the surveys, three student teachers were interviewed during their field experience in different secondary schools; two majored in ICT and one in Social Studies. These three students were interviewed before

starting field experience and after completing field experience and also observed during the field experience by the first author.

Instrumentation

In order to survey the students' perception of their mastery level of TPACK before and after field experience, TPACK instruments developed by Schmidt et al. (2009) and adapted by Archambault and Crippen (2009) were further adapted to the New Zealand context. The final version of the New Zealand TPACK survey consists of 36 items that measure pre-service teachers' perceptions of TPACK with a five-point Likert-type scale: (1) strongly disagree; (2) disagree; (3) neutral; (4) agree and (5) strongly agree. A pilot study was conducted with pre-service teachers (N = 33) in New Zealand to test the reliability of the TPACK instrument.

Participants

The participants in the New Zealand study were enrolled in a Graduate Diploma in Teaching and Learning (Secondary) from a research intensive New Zealand university. A total of 107 respondents participated both in the pre-survey and post-survey. As summarised in Table 1 the sample comprised 62 females and 45 males. In terms of age 53 were between 21-24 years, 26 were between 25-29 years, 13 were between 30-39 years, and 15 were above 40 years. As for the major subject taken by the pre-service teachers in the teacher education program, the majority of the respondents took English or another language as their major (n=29); 16 pre-service teachers majored in Social Studies, while pre-service teachers majored in Science Education (n=14), Physical Education (n=24), Arts Education (n=12), Mathematics Education (n=7), or Technology Education (n=5). The Technology Education group included the two pre-service teachers with ICT major who volunteered for closer study.

Table 1. Profile of respondents based on gender, age and major

Profile		Respondents (N=107)
Gender		
	Female	62
	Male	45
Age		
	21-24	53
	25-29	26
	30-39	13
	>40	15
Major		
	Technology	5
	Arts Education	12
	Science Education	14
	English or Other Language	29
	Physical Education	24
	Social Studies	16
	Mathematics Education	7

Procedure for Analysis

Each TPACK knowledge domain subscale was assessed for internal consistency using Cronbach's alpha reliability technique. The difference between pre- and post- survey scores was analyzed using a paired-samples t-test via SPSS version 19.0. For qualitative data, case study analysis (Yin, 2009) was employed to examine pre-service teachers' development of TPACK mastery level. To analyze the interview data, the first step was to become familiar with the data; this was achieved by reading and re-reading the interview transcripts. Before a list was made of what were felt to be significant phrases, these phrases were examined for inter-rater reliability to identify patterns or themes that emerged from the data. One researcher coded the data and devised a clearly described coding system, which was then given to the two independent researchers. After initial coding, all interviews were independently

examined by the principal researcher. The themes emerged were then reviewed and discrepancies were discussed and resolved. All data are reported anonymously where possible and the three pre-service teachers were given fictitious names of Vanessa, Paige and Melinda. Both data sets were analyzed and merged during data interpretation for data triangulation to provide more information (Creswell & Clark, 2011).

FINDINGS

Quantitative Findings

Findings from pre-survey analysis showed the reliability coefficients of the constructs range from α=.70 to α=.87, as shown in Table 2. Based on the results, the alpha values of all TPACK scales indicated good reliability of the instrument, α>.60, (Hair et al., 2010). Results also indicated that all mean scores ranged from 3.44 to 4.31 as illustrated in Table 2. From the pre-survey analysis, the highest mean (M) of TPACK for the respondents in this study was for content knowledge (M = 4.22, SD = .46), whereas the lowest was for technology knowledge (M = 3.44, SD = .70). Similarly, for post-survey findings, the highest mean scores of pre-service teachers' perceptions towards their TPACK mastery level was for content knowledge (M = 4.31, SD = .48), whereas the lowest mean score was for technological knowledge (M = 3.61, SD = .68). However, the mean scores for all TPACK domains indicated an overall positive response to the scales. In other words, generally, pre-service teachers agreed that their level of TPACK before and after were above average. Although the mean score for technology knowledge was the lowest mean score among the seven domains of perceptions of TPACK, it was observed that pre-service teachers perceived that they had the necessary technology knowledge, sufficient enough for them to be able to apply TK during field experience.

Table 2. Reliability, mean scores, standard deviations, t-value and effect size of TPACK domains (n = 107)

Domains Subscales	Reliability	Pre-survey		Post-survey		t	Effect Size (Cohen's d)
		Mean	SD	Mean	SD		
TK	.87	3.44	.70	3.61	.68	2.25*	0.25 (small
CK	.80	4.22	.46	4.31	.48		
PK	.76	3.82	.45	4.11	.60	4.97*	0.55 (medium)
PCK	.70	3.86	.41	4.02	.52	2.46*	0.34 (small)
TCK	.85	3.78	.59	3.97	.61	2.61*	0.32 (small
TPK	.75	3.80	.51	3.92	.63		
TPACK	.82	3.64	.53	4.00	.61	5.16*	0.63 (medium)

Note: *. t-value is significant at p < .05; Cohen's d values were presented for TPACK domains with the significant difference

There was a small improvement between pre and post mean scores on all seven TPACK constructs (Table 2). In order to measure the significant differences between the two times of data collection, a paired-samples t-test was conducted to evaluate the differences in the mean of the pre-service teachers' TPACK mastery level before and after field experience with a total of 107 respondents. There was a statistically significant increase in the mean scores between the pre- and post-survey for TK, $t(106) = 2.25$, $p < .05$, $d = 0.25$; PK, $t(106) = 4.97$, $p < .05$, $d = 0.55$; PCK, $t(106) = 2.46$, $p < .05$, $d = 0.34$; TCK, $t(106) = 2.61$, $p < .05$, $d = 0.32$ and TPACK, $t(106) = 5.16$, $p < .05$, $d = 0.63$. Cohen (1988) defines effect sizes as small, $d = .2$, medium, $d = .5$, and large, $d = .8$. Therefore, the findings reported that the Cohen's d for TK, PCK and TCK indicated a small effect size and a medium effect size for PK and TPACK.

Qualitative Findings

The three female students who volunteered to be interviewed and observed were given pseudonyms: Melinda and Vanessa were ICT majors, while Paige was social studies major. All three perceived themselves as having good mastery levels of TPACK both before and after field experience. Vanessa with a major in ICT and minor in Economics, had more advanced uses of ICT because of her advanced knowledge of ICT and her

participation as a volunteer in an ICT project led by New Zealand Association for Computing, Digital and Information Technology Teachers. During the period of field experience, Vanessa was assigned to three associate teachers: 1 Economic and 2 ICT. Vanessa rated agree in all TPACK domains. However, after field experience, whilst TK, PK, PCK, TPK and TPACK remained at the same level, she rated a negative change in her CK and a positive change of her TCK. The negative change of her CK in the survey was supported in the third interview session after field experience. "[M]y economics part was quite old, and when I was teaching my year 13 economics…I was learning two or three steps ahead of the students and it was coming back… but because I don't use economics every day its quite rusty" Thus Vanessa needed to revise the work before continuing her teaching. Furthermore, "my economics associate [teacher]… was never around". In contrast, her ICT subject, "all of the content is not a problem for me at all, but in saying that there is still so much more - especially in my area that needs to be maintained and upgraded and so on". Vanessa stated that this knowledge developed throughout her field experience. She noted that her understanding of TPACK concepts was "getting there" and that her "…PK is improving all the time"; she further added that "we can't chop one of them out as we need them all", (Vanessa, 3rd interview, 2011).

Melinda was majoring in ICT and taking a minor in Mathematics and she was guided by three associate teachers: two Mathematics and one ICT. Melinda rated 'agree' for all TPACK domains before and after field experience. She further described that there was not much teaching involved during her field experience as the students had a group discussion on the project they were working on. Thus, "ICT use was not really there" which suggested her TK remaining at the same level as rated in the pre-survey. However, in the third interview session after field experience, Melinda agreed that she had improved more of her CK when they discussed the students' projects and during their revision period. She added that she was not able to enhance her content knowledge during her studies perhaps because the "student teachers have already done a degree (in most cases) on the subject they taught, thus they knew a lot about the content of that subject and they may just pick up new bits and pieces during field experience" (Melinda, 3rd interview, 2012). Additionally, she stated that there was a significant increase in PCK as she was able to solve students' misunderstanding of the concepts taught previously.

In contrast, Paige, who was majoring in Social Studies with a minor in Geography, rated 'agree' in all TPACK domains before field experience and remained 'agree' in all domains except for TCK and TPK which were rated as 'strongly agree' in the post-survey. The reason for this was clarified when she said that "We won't be an effective teacher if we were lacking in one of those areas". Furthermore, those three domains of knowledge were important and "I don't think there is one more important than the other", (Paige, 3rd interview, 2011). Paige continued that "I guess you could teach without technology if you had the other two, but the lessons would be probably more boring". She further commented that "[A]ll the feedback from students that I've received says that using technology in class makes it much more interesting". Paige noted that "if you have learnt what they [TPACK] are, then, you can develop it during teaching practice". Though Paige found that most of the time during her field experience she was unfamiliar with the topic, she tried to find out what was taught in school in the different year levels in that subject and to make sure that she learnt the topic before she got to teach the class. She was then able to teach the topic. She stated in relation to TK that "I have been exposed to ICT tools, and then I need to just have some time actually working on them and learning them practically".

DISCUSSION

The mean level of each TPACK domain was similar to that of previous studies (Koh, Chai and Tsai, 2010; Schmidt, et al. 2009). Contrary to the findings of Graham, et al., (2009), but consistent with those of Archambault and Crippen (2009), participants in New Zealand showed lower levels of TK before and after field experience than other domains of knowledge. Although the mean score for technology knowledge was the lowest mean score among the seven domains of perceptions of TPACK mastery level, results still indicated that the pre-service teachers in New Zealand perceived that they do have a certain level of technology knowledge. For example, they can keep up with the important new technologies and they can learn to use new software easily, -- technology knowledge they thought would be adequate enough to enable them to use ICT during their field experience. In spite of this, participants in New Zealand showed significant differences in their TK mastery level which indicates that they have developed their TK mastery level after completing field experience.

The small effect size of significant differences in TK within the New Zealand context aligned with the findings of Koh, Chai and Tsai (2010), who found that the participants indicated that they have the confidence in

integrating technology into their lesson plans, however, when it comes to the actual implementation, they faced issues, such as a lack of time and difficulties in reserving technology for their class. While pre-service teachers perceived that their CK were good in comparison with other domains, they showed no significant improvement of CK after field experience. In support of this finding, the contexts of the students interviewed provided evidence of the lack of opportunity to develop content knowledge while in the field. For example, Melinda noted that "student teachers have already done a degree (in most cases) on the subject they taught, thus they knew a lot about the content of that subject and they may just pick up new bits and pieces during field experience" (Melinda, 3rd interview, 2012). Having rated their initial CK the highest among all domains, it became less likely that the trainees would show significant development of their CK during their field experience, as compared to the significant pre- and post- field experience differences observed in most of the other domains of TPACK. The significant increase in technology-related domains; TK, TCK and TPACK within New Zealand context provide support for the recommendation of Archambault and Crippen (2009) to integrate technology throughout content courses including field experiences where the use of technology can be contextualized.

Understanding of TPACK components was not an easy task, nor developing the knowledge bases among pre-service teachers. It requires a comprehensive understanding of the core knowledge and interaction of the knowledge within the teaching context (Mishra & Koehler, 2006; Niess, 2005). Although pre-service teachers were confident about the complementary knowledge bases before field experience, their use of ICT during field experience was limited. However, the requirement to complete two teaching practices during this teacher education program is likely to have contributed to the significant improvement in many of the TPACK domains, namely, TK, PK, PCK, TCK and TPACK.

CONCLUSION

In conclusion, pre-service teachers in New Zealand rated their CK as the highest and TK as the lowest mean score in both surveys, indicating little change in their knowledge. However, as noted in the introduction, pre-service teachers often have inaccurate preconceptions of their knowledge and skill of teaching and this can explain the puzzling findings on the TPACK survey of New Zealand pre-service teachers. There was medium effect size in PK and TPACK and small effect size in TK, PCK and TCK. The interviews and observations of three students enhanced our view of changes in the pre-service teachers' perceptions of TPACK mastery level. Although the TPACK provides a model to guide effective integration of ICT into teaching, the implementation of these intersecting knowledge bases is a complex process that includes challenging students' preconceptions. Therefore, the survey findings and the three students interviewed suggest further research of TPACK development during field experience to build up students' knowledge of the three components and their interactions. Further research is underway with a comparative sample of pre-service students in a Malaysian teacher education programme.

Acknowledgements

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A Case Study on the Effects of an L2Writing Instructional Model for Blended Learning in Higher Education

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Abstract

This case study explores EFL pre-service teachers' perceptions toward a prototype of the instructional model for second language (L2) writing in blended learning and the effects of the model on the development of L2 writing skills in higher education. This model is primarily founded on a process-oriented writing approach combined with various types of writing activities in both online and offline environments. It was observed that the participants of the study perceived the blended learning model to be useful and helpful for the improvement of their writing skills. In addition, it was found that the participants in the three focus groups received higher scores at the end of the study. Based on the main findings, modifications have been made to the model and further suggestions and implications are provided.

Keywords: Blended learning; L2 writing; L2 writing model; effectiveness; students' perceptions

Introduction

As second language (L2) writing is considered very complex for L2 learners, a need for systematic and comprehensive writing instruction is heightened. The teaching and study of L2 writing involves various factors: writing process, peer and teacher responses, writing activities, and writing instructions (Harmer, 2004; Raimes, 1983; Williams, 2005). Also, L2 learners are required to address content, organization, structure, and mechanics appropriately to convey meaning through writing at the same time (Brown, 2007; Tribble, 1996; Ramies, 1983). For L2 learners who do not have sufficient knowledge of the four writing components - content, organization, structure, and mechanics - L2 writing is very complicated and, consequently, they often encounter a number of difficulties. In order to resolve these problems, L2 learners are to be given a number of opportunities to write and a variety of writing activities and instructions in a systematic and organized manner. Although many L2 learners write and revise their drafts several times, they are still often unsatisfied with the writing process due to the limited number of class sessions and insufficient time in a conventional classroom. Thus, providing sufficient writing opportunities and environments for interaction and communication with peers and a teacher regardless of time or place, blended learning, which combines the positive attributes of online and face-to-face instruction, has been suggested (Grgurović, 2011; Nicolson, Murphy & Southgate, 2011; Yoon & Lee, 2010). In a blended learning environment, L2 learners are able to interact with peers and a teacher using a variety of computer-mediated communication (CMC) tools. Despite the promising features of blended learning, it is rarely employed in L2 writing class; furthermore, little research has been conducted on the teaching and learning of L2 writing or on the L2 writing process and instruction in a blended learning environment.

In order to implement a blended learning environment effectively and efficiently in L2 writing, a systematic and comprehensive instructional model is an integral element. In L2 writing pedagogy, it has been asserted that an integrated L2 writing approach combine the process approach and the genre approach with other aspects of writing and writing instruction (Min, 2011). Taking into account the current writing approaches and other aspects of L2 writing, as well as the attributes of online and offline environments, an instructional model for L2 writing in blended learning is urgently needed. Therefore, the purposes of the study are to examine the perceptions of L2 learners in higher education toward the prototype of the instructional model for L2 writing in blended learning

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and its effects on the development of L2 writing skills and to suggest a proper model of L2 writing in blended learning. The research questions for the above purposes are as follows: 1) What are the students' perceptions toward the model?; 2) What are the effects of the model on the development of writing skills?; and 3) What is the appropriate model for teaching and learning L2 writing in a blended learning environment?

Blended learning and second language (L2) writing

Blended learning in language teaching and learning

Since blended learning was introduced to both the academic and corporate fields, there have been various attempts to employ blended learning in the language teaching field (Behjat, Yamini & Bagheri, 2011; Grgurović, 2011; Miyazoe & Anderson, 2010; Neumeier, 2005; Yoon & Lee, 2010). Featuring the combination of instructional modalities or methods, blended learning is defined as a system that combines face-to-face instruction with computer-mediated instruction (Graham, 2006, p. 5). Through the blended learning system, instructors and learners are provided with the benefits of enhanced pedagogical richness, the active use of teaching and learning strategies, multiple platforms for interaction and communication, and an increased access to knowledge (Graham, 2006; Osguthorpe & Graham, 2003).

In the English Language Teaching (ELT) field, Yoon and Lee (2010) further narrowed the term blended learning in ELT and defined it as "bringing together the positive attributes of online and offline education, including instructional modalities, delivery methods, learning tools, etc., in relation to language teaching and learning approaches and methods in order to reinforce learning process, to bring about the optimal learner achievement, and to enhance the quality of teaching and learning (p. 180)." This definition not only includes core themes of blended learning, such as the combination of instructional modalities, delivery methods and learning tools, but also emphasizes the necessity of association with approaches and methods of language teaching and learning.

In English as a Foreign Language (EFL) contexts like Korea, where language input is provided in formal classroom settings with a limited number of sessions, blended learning has been recognized as an alternative learning environment due to the increased time for language input and extended learning setting both online and offline (Lee & Pyo, 2003; Yoon & Lee, 2010). Murphy and Southgate (2011) proposed that for the design of blended learning systems and materials in language teaching contexts a wide range of teaching modes, tools, and resources be integrated to meet learners' needs and to achieve academic goals and learning outcomes. As Garrison and Kanuka (2004) indicated that learning experiences in blended learning are to be integrated, not simply mixed together, in language teaching or learning, a variety of activities and tasks are to be organized systematically in relation to the modes, tools, and available resources considering the language teaching and learning approaches and methods, learner characteristics and contexts.

Second language writing

In order to effectively write in L2, learners need to possess a variety of skills. Raimes (1983) presented nine features that produce a piece of writing: content, the writer's process, audience, purpose, word choice, organization, mechanics, grammar, and syntax. Tribble (1996) also suggested four types of knowledge that writers need - content knowledge, context knowledge, language system knowledge, and writing process knowledge - a daunting task for any L2 writer.

For the teaching and learning of L2 writing, various approaches have been suggested such as the controlled-to-free approach, the free-writing approach, the paragraph-pattern approach, the communicative approach, the process approach and the genre approach (Hyland, 2002; Raimes, 1983; Tribble, 1996; Williams, 2005). Of these, the process approach has been a mainstay of L2 writing pedagogy. Ever since Raimes (1985) identified that the writing process is recursive, the process of writing has been targeted by researchers. Williams (2005) suggested four stages of the writing process: getting started, creating the first drafts, revising, and editing. Williams asserted that L2 learners need to spend more time on all stages of the writing process and receive more discussion and feedback than native speakers (L1 writers). Likewise to Williams, Harmer (2004) suggested four main elements in the writing process: planning, drafting, editing (reflecting and revising), and the final version. These were presented via the process wheel, showing the many directions that writers can take. Tribble (1999) also

suggested the writing process is composed of prewriting, composing (drafting), revising, and editing, indicating that the whole process is not a fixed sequence but rather a dynamic and unpredictable process.

Although the process writing approach has been adopted in L2 writing classrooms, some critiques have been made: an L1-oriented process writing approach might be inappropriate for L2 learners in different social and educational contexts from L1 contexts (Delpit, 1988; Holliday, 1994). From this argument, a post-process approach in the post-process movement has been suggested (Atkinson, 2003; Trimbur, 1994) putting an emphasis on the genre, other aspects of writing and writing instruction, and a final product as well as the writing process. Min (2011) suggested a principled eclectic approach for foreign language writing instruction, indicating the integral need to search for the most effective and efficient approach to enhance students' writing skills. The principled eclectic approach adapts imported mainstream instructional approaches to local needs and stresses creations of local practices.

There have been a few studies addressing blended learning in L2 writing (Behjat, Yamini & Bagheri, 2011; Miyazoe & Anderson, 2010; Yoon & Lee, 2010). These studies indicated that blended learning environments foster interaction among students and teachers and have a positive impact on the development of L2 writing skills. Yoon and Lee (2010), particularly, in a Korean university setting, proposed a model for blended learning in L2 writing (BLW) and found that the model was received positively by students and that there was an increase in high test results.

Methodology

Participants

The participants of the study consisted of 51 English pre-service teachers in two universities in Seoul, Korea: H University and K University. The participants were enrolled in courses entitled "Logical Thinking and Writing in English" for pre-service teachers. This was a required course for pre-service teachers and taught by a bilingual Korean instructor. The course in H University was open to graduate students and the course in K University was open to both undergraduate and graduate students. A total of 25 graduate students enrolled in the course in H University, and 18 graduate students and 8 undergraduate students enrolled in the course in K University. H University's course comprised of 3 males and 22 females, K University's of 2 males and 24 females: a total of 5 males and 46 females.

The participants of both courses were divided into groups of four or five for the response activity. As focus groups, three groups in K University were selected to examine the improvement of the participants' writing skills and to gather qualitative data. The groups were heterogeneous in terms of writing proficiency level: high-beginning, intermediate, and high-intermediate. Their writing proficiency was based on their results from a pre-testing stage. The participants of the three groups (A, B, and C) are as seen in Table 1. Pseudonyms have been used to protect identities.

Table 1. Participants of three groups

Group	Name	Writing proficiency	Status	Gender
A	Eunsung	High-intermediate	Undergraduate	Female
	Mihye	Intermediate	Undergraduate	Female
	Sungjin	Intermediate	Undergraduate	Female
	Semi	High-beginning	Undergraduate	Female
B	Jihyun	High-intermediate	Graduate	Female
	Hyeyoung	High-intermediate	Graduate	Female
	Kyunghee	Intermediate	Graduate	Female
	Insung	High-beginning	Graduate	Male
C	Garim	High-intermediate	Undergraduate	Female
	Junghyuk	Intermediate	Undergraduate	Male
	Jungmin	High-beginning	Graduate	Female
	Miyoung	High-beginning	Graduate	Female

Data collection instruments and procedures

In order to obtain data for this study, quantitative and qualitative data were gathered. Quantitative data sources included a questionnaire that used semantic differentials of six bipolar adjective scales (0-5) with six items

of usefulness, easiness, interest, motivation, helpfulness and satisfaction of the prototype of the instructional model. The questionnaire was designed to measure participants' perceptions and was administered in class on week 16; 51 questionnaires were completed and returned.

Qualitative data sources included online and offline classroom observations, reflective journal entries, post interviews with three focus groups, and the focus groups' writing drafts of the pre-test, midterm, and post-test. The classroom observations were undertaken every week throughout the entire semester as non-participant observation in order to gather information on the participants' behaviours and interaction. Field notes and reflective observation logs were taken and offline peer response sessions of three focus groups were voice recorded. The participants were required to write reflective journals after producing a final draft in each writing cycle in order to reflect the writing process, comments from peers and teacher, writing activities and instruction. They were allowed to write the reflective journals in Korean. Focus group interviews were conducted at the end of the course as semi-structured interviews in Korean. The interviews were all voice recorded and notes were taken during the interviews. The interviews consisted of experience and behaviour, opinion and values, feeling, and background questions regarding previous experiences of English writing in blended learning and the model. The pre-test, midterm, and post-tests were given in week 1, 8, and 16 of the semester. The tests were to write an argumentative essay on the effectiveness of homework, the need of peer assessment in language learning, and the necessity of supervised night self-study, respectively. The 40-minute tests were administered in class and the participants were required to handwrite.

Implementing a prototype of the instructional model for L2 writing in blended learning

This study was conducted over two semesters from March 2012 to December 2012 in classes entitled Logical Thinking and Writing in English. The course at H University ran from March 2012 to June 2012, the course at K University from September 2012 to December 2012. Over 16 weeks, H University's participants met for two hours each week, K University's for three hours. For these courses, a prototype of the instructional model for L2 writing in blended learning was implemented (See Fig. 2). The model combines an offline class, where students meet in a conventional classroom, with an online class where students interact with others using CMC tools, such as e-mail, bulletin board system (BBS), blogs and chatting programs taking into account the recursive process of writing and writing activities as well as instruction.

Based on the process-oriented writing approach, the model possesses five stages: getting ready to write, drafting, revising, producing the final draft, and reviewing. In the first stage, students met in an offline class and, on selected topics, performed pre-writing activities such as listing, outlining, clustering, brainstorming and mind-mapping individually, in groups and as a whole class, using varied-multimedia tools. In the drafting stage, the students were to produce first drafts and upload them to each group's BBS in a class BBS. The students were required to conduct an online peer response session in each group, using a tag-line function in BBS, e-mail asynchronously or using chatting programs. After the online peer response sessions they were asked to revise their first drafts, produce a second draft, and upload it to the class BBS. In the revising stage, the students conducted the offline peer response sessions, collaboratively working on second drafts. The teacher also responded to students' second drafts and provided feedback for the students. In the fourth stage, the students produced the final draft based on feedback from peers and the teacher in the online environment and uploaded it to the class BBS. The teacher responded to the students' final drafts and provided feedback. After producing the final draft, the students wrote a reflective journal to reflect the writing process and feedback and comments from response sessions. The journal entries were also uploaded to the class BBS and recommended that they be shared to extend the learning experiences.

Finally, in the reviewing stage, they evaluated their final drafts and conducted group discussions based on the reflective journals. This stage is distinguished from the pre-existing writing process, such as the writing process suggested by Williams (2005), Harmer (2004), and Tribble (1996). In order to reinforce learning and writing experiences throughout the one cycle, the students need to be provided explicit opportunities for evaluating and reviewing what they did in the one cycle with peers and the teacher.

Method of analysis

Quantitative data from the questionnaire was analyzed using SPSS for descriptive statistics in order to investigate the participants' perceptions toward the instructional model for L2 writing in blended learning. Field notes and reflective observation logs collected through classroom observation were categorized into either description or reflection. The field notes and observation logs were analyzed descriptively. The collected reflective journal entries from the focus groups were read through by the researchers to investigate emergent themes regarding the perceptions toward the model. The instances of accounts were categorized into the perceptions toward the stages of the model and translated into English. The focus group interviews were also transcribed and translated into English. The interview transcripts were read through and then analyzed and categorized. The drafts of pre-test, midterm, and post-tests were scored using the rubric for academic writing based on the scoring rubric for paragraph writing (Yoon & Lee, 2010). The rubric consists of four main components: content (30 points), organization (30 points), structure (20 points), and mechanics (20 points). The drafts were scored by two raters, and Pearson's *r* for all the drafts was over 0.8 in this study.

Results and Discussion

Perceptions toward the prototype of the instructional model for L2 writing in blended learning

The participants were found to have positive perceptions toward the prototype of the instructional model for blended learning in L2 writing as seen in Table 2. They considered it useful (4.2745), interesting (3.3922), motivating (3.6667), helpful (3.9020) and satisfying (3.7843).

Table 2. Perceptions toward the model

Feature	N	Mean	SD
Usefulness	51	4.2745	.82652
Easiness	51	2.6863	1.17457
Interest	51	3.3922	1.09688
Motivation	51	3.6667	1.12546
Helpfulness	51	3.9020	1.13587
Satisfaction	51	3.7843	1.06421

The ample opportunities for writing and response sessions in online and offline environments were seen as the major benefits provided by the model. More than half of the participants (31, 60.8%) had not experienced process-oriented writing, indicating the participants were previously not given sufficient opportunities to write. This model appeared to provide the opportunities for producing multiple drafts, revising the drafts, giving and receiving peer feedback, and receiving teacher feedback. The following are excerpts from the participants commenting on the model.

Eunsung: At first, it was difficult and even scary: English writing. However, as I practiced writing and conducted peer response sessions, following the steps in this course, I realized that English writing was not that difficult. [Reflective journal (RJ)6]

Jungmin: I am absolutely satisfied with this course. Although I was very despondent due to my lack of writing skills, I thought the process-oriented writing was very interesting. This helps me study English writing by myself. [RJ6]

Semi: I liked the peer response sessions provided in this course, utilizing the class BBS and the mobile messenger application, Kakao Talk. Through these sessions, I could recognize mistakes and errors which I had not known before and widen my knowledge of English writing.

However, easiness (2.6863) was received as less positive than others. It can be attributed to the fact that most of the participants (39, 76.5%) had not had any previous experience of blended learning. They also seemed to have difficulties dealing with the content provided at each stage and considered L2 writing a difficult and challenging skill as seen in the transcripts of the interviews.

Jihyun: It is, of course, not easy to write multiple drafts and upload them to the class BBS in time.

Miyoung: I liked the contents addressed in the classroom, but I felt rushed to finish the tasks and activities. It would be much better if we had enough time to address the content and conduct the tasks and writing activities.

In Table 3, the participants had positive perceptions toward pre-writing activities in the getting ready to write stage. The participants considered the pre-writing activities useful (4.3922), easy (3.000), interesting (3.5294), motivating (3.8627), helpful (3.9216) and satisfying (3.9216). The participants were observed thinking of ideas and deliberating the organization of content during individual work, and enjoying discussing and sharing the results of individual work during group work in a non-threatening environment. Also, they appeared to appreciate further information and comments provided by the teacher. The following are the excerpts from the participants' reflective journals commenting on pre-writing activities.

Sungjin: I could gather a lot of information through the pre-writing activity, listing. Pre-writing activities have the merits in terms of producing better drafts through a variety of collected information. [RJ1]

Jungmin: I had recognized that mindmaps are a very powerful technique in writing, but I had rarely used them. I think organizing ideas and expressing them are part of a quite meaningful process. Also, I really liked the websites, such as http://www.okmindmap.com or http://www.lextutor.ca/ because they are useful. [RJ5]

Table 3. Perceptions toward pre-writing activities

Feature	N	Mean	SD
Usefulness	51	4.3922	.80196
Easiness	51	3.0000	1.14891
Interest	51	3.5294	.98697
Motivation	51	3.8627	.84899
Helpfulness	51	3.9216	.93473
Satisfaction	51	3.9216	.91309

Table 4. Perceptions toward writing multiple drafts

Feature	N	Mean	SD
Usefulness	51	4.3922	.69508
Easiness	51	2.3725	1.29554
Interest	51	2.9020	1.06311
Motivation	51	3.7059	1.06384
Helpfulness	51	4.2549	.84482
Satisfaction	51	3.9412	.98817

As shown in Table 4, the participants considered writing multiple drafts, drafting, revising, and producing the final draft performed in the while-writing stage useful (4.3922), motivating (3.7059), helpful (4.2549), and satisfying (3.9412). In particular, they were found to think it very useful and helpful to improve writing skills because it provided sufficient opportunities for writing practice. Although the participants found it difficult to write multiple drafts, they appeared to recognize the benefits of the process-oriented writing approach as presented in reflective journal entries.

Jihyun: As I wrote the drafts several times throughout the semester, it became more helpful for the development of my writing skills. I think the writing assignments and the instruction are both very necessary, and I appreciate this course since it helped me a lot. [RJ3]

Mihye: The biggest improvement this made to my writing was related to time. I usually spent a long time drafting, but I decided to produce the drafts fast, focusing on the drafts, and I could complete the drafts in one hour. [RJ4]

The participants' perceptions toward writing reflective journals are somewhat less positive than the other elements of the instructional model for L2 writing in blended learning as presented in Table 5. Despite its usefulness (3.7647), the participants showed a low level of interest (2.6471) and motivation (3.0392).

Table 5. Perceptions toward writing reflective journal

Feature	N	Mean	SD
Usefulness	51	3.7647	1.47768
Easiness	51	3.0392	1.26429
Interest	51	2.6471	1.45360
Motivation	51	3.0392	1.42774
Helpfulness	51	3.0784	1.26243
Satisfaction	51	3.2745	1.23415

It can be attributed to the notion that there was a lack of interaction among the participants and the teacher. Since writing reflective journals was considered personal and cognitive work, it remained in individual areas. Some had difficulties writing about the given areas and were overwhelmed and stressed after finishing the entire process. It was also suggested that the reviewing stage needed to be intensified with more explicit consolidation by the teacher to reinforce and to foster further learning as seen in the transcripts of the interview.

Mihye: I was stressed out about writing the first draft and further revising. Also, it was easy not easy to write the reflective journals and upload them to the class BBS.

Jihyun: I think this course could be much more helpful if the teacher consolidated the entire writing process and contents at the end of the cycle. Because we did not address the final drafts in detail, there were somethings that I could not fully understand.

Effects of the prototype of the instructional model for L2 writing in blended learning

As shown in Figure 1, the members of group A showed an increase in scores from the pre-test to the midterm, and the post-test. Eunsung, who is a high-intermediate level student, got 81 points in the pre-test, 86 points in the midterm, and 90 points in the post-test. Although she was knowledgeable of English writing, she seemed to be concerned about content and organization. She was found to recognize the importance of content and organization through process writing, often interacting with group members in response sessions provided in the drafting and revising stages. Mihye, who scored 71 points in the pre-test, also showed an increase of 10 points from the pre-test to the post-test. Mihye was a very hardworking student and completed each task and activity in the stages diligently. Not only did she gain higher scores in the midterm and post-test, but she also gained confidence in English writing and was satisfied with the model as seen in the transcript from the interviews.

Mihye: This course is absolutely helpful for improving individuals' writing skills. I feel a big sense of accomplishment in my writing. At first, I felt some pressure writing the first draft, but as I wrote more and more, I could produce the first draft fast and learn certain strategies. Through this course, I was able to gain confidence in writing and now I even consider myself a good writer.

For all the members of Group B, there were increases of points from the pre-test to the post-tests as seen in Figure 1. Among the group members, Insung gained 59 points in the pre-test, showing a low level of writing proficiency. Insung seemed to have difficulties selecting appropriate words and organizing the content of drafts. However, as he produced drafts and revised them through received feedback from peers and the teacher with supportive explicit activities and instructions in the model, his writing skills improved, gaining six points overall from the pre-test to midterm, and eight points from the midterm to the post-test. The other group members, Jihyun, Hyeyoung, and Kyunghee, were all eager to respond to peers' drafts and participate in the writing activities as well as the writing process, and gained higher scores in the midterm and post-test.
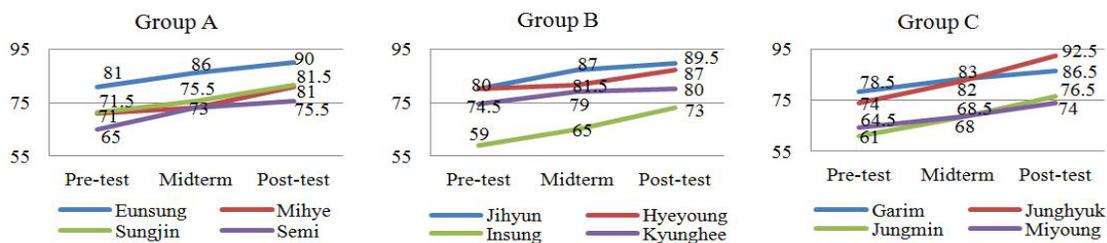
Fig. 1. Scores of three focus groups

Every member in Group C showed increases of points from the pre-test to the post-test as well. Among the group members, Junghyuk's performance was notable. Junghyuk was not able to complete his composition in the pre-test in 40 minutes. The number of produced words was 132, and the number of produced sentences 10. However, he completed his mid-term and post-test composition with 276 words and 15 sentences, and 296 words and 19 sentences respectively. With the increase in quantity of words and sentences, the quality of drafts improved from the pre-test (74) to the post-test (92.5) stage. This improvement can be attributed to Junghyuk performing tasks and activities provided in the model and following the writing process. Junghyuk was observed to interact with other group members in class BBS, respond to peers' comments and explain the reasons for his writing through the tag-line function. He seemed to be able to acknowledge his weaknesses and thus tried to make as many revisions to the first and second drafts as possible. He also recognized that he could write faster than before and could arrange his ideas in more logical ways as this excerpt from his reflective journal states:

Junghyuk: I think I become more confident and relaxed while I am writing. Now, I organize my ideas and then start to write from these thoughts for more logical drafts. [RJ3]

Modification of the prototype of the instructional model for L2 writing in blended learning

Based on the main findings, the prototype of the instructional model for L2 writing in blended learning was modified as presented in Figure 2. In order to reduce the burden that the participants bear during the writing process of the model and to provide sufficient time to reflect the feedback from online peer response sessions, the task of revising the first draft and producing the second draft was moved from the drafting stage to the revising stage. The participants were observed to have too heavy a workload in the drafting stage: writing the first draft, conducting online peer response sessions, revising the first draft and producing the second draft all within one week. They seemed to be in a hurry to conduct each task and to not have sufficient time to reflect on comments from peers or to make decisions as to whether the comments were to be incorporated for revisions or not. By revising the locations of the first draft and producing the second draft, the students' burdens can be eased and ample time allowed for students to reflect on feedback and deliberate the revision process more thoroughly.

To reinforce the writing process and foster further learning after producing the final draft, online peer response sessions in the producing the final draft stage are to be added. The participants in the study were found to rarely address the final draft despite its importance as a product. In order to engage students' attention to the final drafts and promote interaction among the students, the online peer response session is to be added; however, this online peer response session should only be conducted if the students find it necessary. In addition, the reviewing stage is to be intensified to reinforce teaching and learning writing skills. In the prototype of the model, reviewing was conducted based on the reflective journal entries with evaluation of the final draft by the teacher and students. However, it was found to be insufficient for addressing the tasks and activities provided in the model, so consolidating the writing process and feedback from the students and the teacher and setting goals for next writing are included. The consolidation provides students with opportunities to review what they have learned in the writing process and to address the important points made. Goal setting also connects problems acknowledged in the writing cycle to improvements that need to be made for further writing cycles.
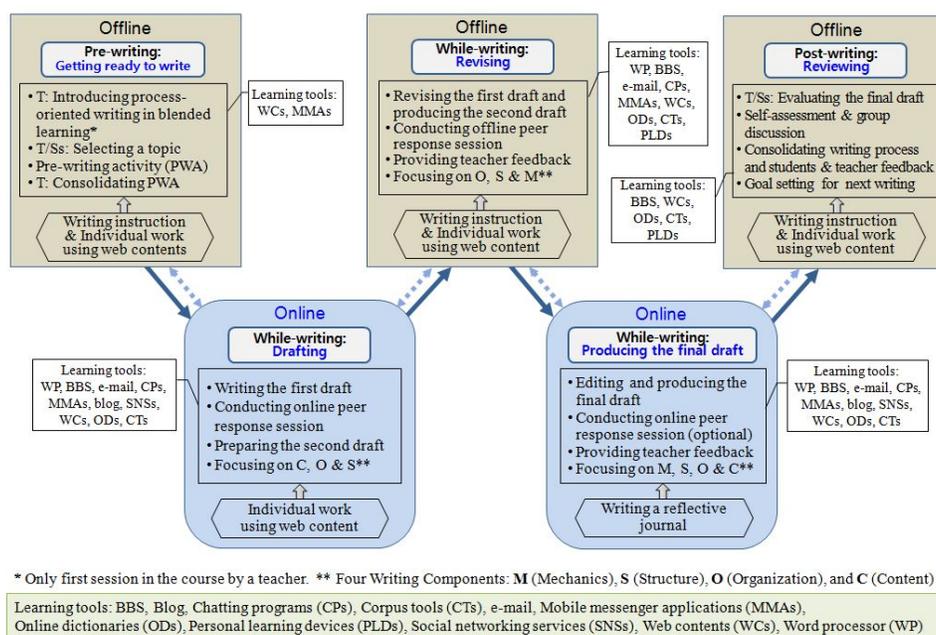
Fig. 2. The instructional model for L2 writing in blended learning

The participants in the study were observed to utilize varied functions of personal learning devices (PLDs) such as smartphones, iPads, or tablet PCs and mobile messenger applications (MMAs) for their response sessions as well as the drafting and revising stages. Using PLDs and MMAs did not require the participants to use computers, and consequently provided flexibility and mobility for communication and interaction regardless of time or place; thus, it is seen as essential to implement PLDs and MMAs as learning tools.

Conclusion

This case study was conducted to investigate EFL pre-service teachers' perceptions toward the prototype of the instructional model for L2 writing in blended learning and its effectiveness on the development of L2 writing skills and to develop a proper model of the instruction for L2 writing in blended learning. The main findings are as follows: First, the participants were found to receive the model positively. They considered it useful and helpful for the improvement of their writing skills; however, they found it somewhat difficult dealing with some of the tasks and activities provided in the model. Second, the model was found to be effective for the development of L2 writing skills. The model illustrates the writing process in five systematic stages and suggests a combination of writing activities based on the four writing components with varied learning materials and tools provided in online as well as offline environments. Due to the abundant opportunities to produce multiple drafts, the giving and receiving of feedback, and the explicit practicing of the four writing components, the participants were found to gain higher scores for the midterm and the post-test than the pre-test. Last, the prototype of the instructional model for L2 writing in blended learning was modified by reducing the students' burden, intensifying the reviewing stage to reinforce further learning, and adding the learning tools for the promotion of interaction and communication among the students and teacher.

For the effective and efficient implementation of this model for L2 writing classrooms, teachers or instructors need to carefully consider their students' learning environments and academic needs. According to learning environments and academic needs, this model could be implemented and modified. For example, the writing process can be shortened to a one week cycle for advanced students. The writing activities on structure can also be added for students who are not yet capable of producing accurate sentences. Teacher training needs to be conducted prior to the implementation of this model since it requires teachers to teach contents, respond to students' writings, interact with students through varied learning tools, facilitate interaction, monitor students' writing process, and manage time efficiently. Teachers, therefore, need to be prepared to effectively employ this model for their students in terms of utilizing learning tools as well as addressing contents.

Since this study was conducted as a case study, further research needs to be carried out with a large number of participants to provide a true experiment and investigation of its effectiveness. Furthermore, more studies need to be conducted with participants of other languages and varied proficiency levels to examine the impact of the model on the development of L2 writing skills.

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A content analysis in the studies of YouTube in selected journals

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Abstract

This paper provides a review of research trends and content analysis of studies in the field of YouTube that were published in seven major journals: *Turkish Online Journal of Educational Technology* (TOJET), *Educational Technology & Society* (ET&S), *Educational Technology Research & Development* (ET&D), *Computers & Education* (C&E), *Learning and* I*nstruction* (L&I), *Australasian Journal of Educational Technology* (AJET) and *British Journal of Educational Technology* (BJET). These articles were cross analyzed by published years. Content analysis was implemented for further analysis based on their research topics, issues category, research settings and sampling, research design, research method and data analysis. The results of the analysis also provide insights for educators and researchers into research trends and issues related to YouTube.

Keywords: YouTube; trends; content analysis.

Introduction

YouTube is the world's most popular online video site, with users watching 4 billion hours' worth of video each month, and uploading 72 hours' worth of video every minute (YouTube, 2013). YouTube began in February 2005 and was founded by Chad Hurley, Steve Chen, and Jawed Karim who named it "YouTube.com". Through the YouTube platform, people started to create a video-sharing website on which users could upload, share, and view videos.

Since then, YouTube has gained an audience of billions of users including educators and scholars. While the academic literature provides some evidence that YouTube has been studied and written about, little is known about priorities for YouTube research. This study employed trend analysis and content analysis method to obtain data on research topics, issues category, research settings and sampling, research design, research method and data analysis on articles published regarding YouTube in selected journals (Cheung & Hew, 2009).

Having started in 2005, YouTube has developed into a prominent online video-sharing destination. The millions of video clips on YouTube represent a broad spectrum of user interests including those of educators, scholars and researchers. YouTube EDU (http://www.youtube.com/edu) illustrates a portion of the growing academic presence on YouTube as colleges and universities establish institutional channels through which they share videotaped lectures and campus events. YouTube has become a topic of discussion and inquiry within the scholarly literature as educators and researchers grapple with questions about the possibilities and problems associated with social media (Chenail, 2008; Snelson, 2009, 2010).

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1.1 Research Objectives

This paper is aimed at evaluating and identifying the trend and content analysis of studies in the field of YouTube that were published in seven major journals: Turkey Online Journal of Educational Technology (TOJET), Educational Technology & Society (ET&S), Educational Technology Research & Development (ETR&D), Computers & Education (C&E), Learning and Instruction (L&I), Australasian Journal of Educational Technology (AJET) and British Journal of Educational Technology (BJET). These articles were cross analyzed by published years. Content analysis was implemented for further analysis based on their research topics, issues category, research settings and sampling, research design, research method and data analysis.

The objectives to be achieved through this study are as follows:
1. What are research topics, research settings and samplings related to YouTube have been published in seven journals over the last 6 years?
2. What are the main issues categories and sources of articles related to studies on YouTube in the seven journals between 2007 and 2012?
3. What types of research design, research method and data analysis have been applied in the related article of YouTube?

1.2 Review on Studies of YouTube

In their research paper Mullen and Wedwick (2008) say that modern technology should be implemented into classroom instruction in order for students to develop the skills needed in our new digital society. Technology is considered as a major part of every aspect of our lives; it is no wonder that it is being seen more and more in schools. Educators have a responsibility to prepare students for the future and technology is a very real component of that future. The phenomenon of technology and preparing students for the future is at the forefront of education. It has become such an important topic that the New York State Department of Education has developed standards for educational technology. Over the past decade, these standards have been developed not only to implement technology into the classroom, but to ensure that by the end of eighth grade all students are computer literate ("Education technology" n.d.).

Incorporating technology into the classroom is not only for the benefit of the students, but for the benefit of the teachers as well. Technology can be used to help teachers be more interactive, effective, and engaging (Yu & Smith, 2008). According to the New York State Department of Education, educational technology is defined as "using multimedia technologies or audiovisual aids as a tool to enhance the teaching and learning process" ("Definitions and terminology" n.d.). Additionally, technology allows teachers to reach out to different types of learners (Gorder, 2008). Not all students learn the same way; with technology use teachers can adapt their lessons to a multitude of student needs. With such a mutually beneficial relationship, teachers should be willing to integrate technology into classroom activities. According to Juhasz (2008) YouTube is providing "access to what exactly? Democratization of what really?" The claims of Web 2.0 are only relevant if you happen to have a computer with broadband connection, and the majority of people in the world have no such luxury (Steven, 2003).

Although Web 2.0 holds some exciting possibilities for all areas of community media, and the sector is best placed to harness its full potential, new technologies can simply put a new face on an old problem (Juhasz, 2008). At the moment, rather than video tapes on the shelves of production companies gathering dust, the new trend is to upload the video onto YouTube for all the world to see, and let it sit there online, gathering "cyberdust".

Mullen and Wedwick (2008) wrote that anything from a music video to a political speech to an amateur movie can be found on YouTube. With such a wide range of applications, teachers are just beginning to unravel the potential benefits of using YouTube during a lesson. Anyone who accesses YouTube can search the large database of videos for his particular need, or a user can set up an account and save selected videos to that account (Mullen & Wedwick, 2008). If teachers search for videos in preparation for their lesson, they can save the video to the created account, thus eliminating time spent in class to search and select the correct video.

Methodology

This study examines related research relevant to YouTube in education in seven selected journals from 2007 to 2012. The seven selected journals were: *Turkish Online Journal of Educational Technology* (TOJET), *Educational Technology & Society* (ET&S), *Educational Technology Research & Development* (ETR&D), *Computers & Education* (C&E), *Learning and Instruction* (L&I), *Australasian Journal of Educational Technology* (AJET) and *British Journal of Educational Technology* (BJET). The journals chosen are widely accessed and have high impact factor based on the 2011 Institute for Scientific Information (ISI) Journal Citation Reports and based on its impact factor as released by Thomson Scientific 2011 Journal Citation Reports. There were a total of 4,319 document items from 2007 to 2012 published by these seven journals. Only papers identified as being of the type "articles" in the seven journals were analyzed. Publications such as "book reviews", "letters", and "editorial materials" were all excluded from this study. Finally, two research based articles related to YouTube were found from these journals. As a study on preparation of basic knowledge in the field of YouTube based learning which is still new in the context of education in Malaysia, this study was implemented in a limited scope. Two approaches to analysis were used in this study, namely trend analysis and content analysis.

The different databases were chosen due to the availability of certain journals and accessibility of the abstract and full text for the selected articles. The databases were; EBSCOhost, ProQuest Education Journals, Science Direct, Springer Link, Web of Science and Wiley Online Library. One search engine was also used for the purpose above. The search engine used was Google Scholar.

The first procedure in conducting this research is setting three items to search for the related articles in all databases above. They are: (1) Selected Journal Name for Journal Name, Publication Title or Journal/Book Title column, (2) YouTube for Topic or Title column and (3) 2007-2012 for Timespan, Year or Coverage column. This step is important to ensure standardization in order to search the related articles in spite of the different interface between all databases.

In total, 66 articles were identified from the first procedure. The next procedure consists of further comprehensive review which needs the researchers to examine the 66 articles carefully to determine the articles actually related to YouTube. Finally, a total of two articles were selected for the analysis.

2.1 Trend Analysis

Trend analysis of an article can show the periodic discussion taking place in a knowledge discipline (Erford et al., 2010). In the analysis of trend and frequency, justification for article selection is found in the seven journals. Descriptive statistics are used to analyze the articles related to YouTube published in the seven journals over a 6 year period from 2007 until 2012.

2.2 Content Analysis

Based on content analysis or the process of summarizing and reporting of written data (Cohen et al., in Cowan, 2011), the research topics in the articles selected for analysis were categorized according to key words in the given abstracts, issues discussed as well as research scope. Throughout the data analysis carried out, each category identified was further clarified using thematic analysis. At the end of the analysis, the categories of the articles are as follows:

1. Research topics
2. Issues category
3. Research settings and samplings
4. Research designs
5. Research Method
6. Data Analysis

3. Findings

3.1 Frequency and Trend Analysis

Based on frequency analysis, there were two articles listed in the shortlist related to the topic of YouTube. These two articles were in the *British Journal of Educational Technology* (BJET) and *Computers & Education* (C&E) for the period 2007 until 2012. Analysis of number of articles based on yearly periods is given in Table 1.

Table 1: Number of Articles Related to Studies on YouTube According to Selected Journals

Journal	Frequency	References
BJET	1	Chareen Snelson, Kerry Rice & Constance Wyzard, 2012
C&E	1	Karsten Krauskopf, Carmen Zahn & Friedrich W. Hesse, 2012

Analysis of the findings shows that frequency of articles related to YouTube are started to be researched in *British Journal of Educational Technology* (BJET) and *Computers & Education* (C&E). *Turkish Online Journal of Educational Technology* (TOJET), *Educational Technology Research & Development* (ETR&D), *Learning and Instruction* (L&I) and *Educational Technology & Society* (ET&S) and *Australasian Journal of Educational Technology* (AJET) have no research articles related to YouTube published within the period 2007 to 2012.

3.1 Content Analysis of Current Articles on Studies Related to YouTube

For the latest trend related to YouTube, this study also consider issues in the published articles in the seven journals, but only *Computers & Education* (C&E) and *British Journal of Educational Technology* (BJET) for the years from 2007 until 2012. Given the limitation of the date of publication, three articles related to YouTube were found. The selected articles were types of research based articles.

Research based articles are content analyzed based on several constructs such as title, source, sample, research design, instrumentation and type of data analysis used. Table 2 shows the result of content analysis of two selected articles related to YouTube according to research based articles.

Table 2: Content Analysis and Current Focus of Articles Based on Studies Related to YouTube

Article title	Research Topic	Issues Category	Research Setting and Samplings	Research design	Re-search Method	Data Analysis
1. Research priorities for YouTube and video-sharing technologies: A Delphi study	Areas in need of research	Obtain consensus from experts about areas that are most in need of research in video-sharing technology (Particularly YouTube).	17 experts Questionnaire in online	Quantitative Survey	Delphi Method	**Descrip-tive Statistics**
2. Leveraging the affordance of YouTube: The role of pedagogical knowledge and mental models of technology functions for lesson planning with technology	Potentials of digital video technology in school-based education	To integrate teacher knowledge of a technology with their professional knowledge about teaching. This paper described mental models of YouTube, lesson planning for using YouTube, barriers to using YouTube in the "ideal" way and mental models as mediators of pedagogical knowledge	This study was administered online and participants were recruited via a German online forum for pre-service teachers. Sixty (60) pre-service teacher users of the forum answered the questionnaire	Quantitative Survey		**Descrip-tive Statistics**

3.3 Content Analysis of Source of Articles Based on Studies Related to YouTube

The first article, "Research priorities for YouTube and video-sharing technologies: A Delphi study" is written by Chareen Snelson, Kerry Rice and Constance Wyzard and was published in the *British Journal of Educational Technology* in 2012. The second article, "Leveraging the affordance of YouTube: The role of pedagogical knowledge and mental models of technology functions for lesson planning with technology" was written also in 2012 by Karsten Krauskopf, Carmen Zahn, and Friedrich W. Hesse in the journal *Computers & Education* .

Table 3: Content Analysis of Source of Articles Based on Studies Related to YouTube

Article title	Source : (author, year, journal, page numbers)
1. Research priorities for YouTube and video-sharing technologies: A Delphi study	Snelson, Chareen, Rice, Kerry, & Wyzard, Constance. (2012). *British Journal of Educational Technology*, vol 43 No 1, 119-129.
2. Leveraging the affordance of YouTube: The role of pedagogical knowledge and mental models of technology functions for lesson planning with technology	Krauskopf, K., Zahn, Carmen, & Hesse, F. W. (2012). *Computers & Education, 58,* 1194-1206.

4. Discussion

In this section, the authors summarize and discuss the major findings and the results are:

1. Two research topics covered about areas are most in need of research in YouTube and potentials of digital video technology (YouTube) in school-based education. The first article determined seven priority categories in YouTube over the next five years. Seven categories were identified and ranked in order of priority: 1) users, groups and communities 2) teaching and learning 3) social/political impact 4) video creation/production 5) legal/ethical 6) media management 7) commercial interest. The second article found that participating pre-service teachers focused on YouTube as an audio-visual medium and as a searchable database with additional Web 2.0 features.

2. The research setting and sampling of the article title Research priorities for YouTube and video-sharing technologies: A Delphi study, are find 35 experts which had conducted empirical research studied and had multiple publications about YouTube. The 35 researchers were invited to participate in a Delphi study to determine YouTube research priorities. Then, 17 researchers are agreeing to take part in the study. The sample was involved in a three round Delphi process involving two cycles of online questionnaires and feedback reports. The optimal number of Delphi participants to include on an expert panel with suggestions from 10 to 30 (Anderson & Kanuka, 2003). The setting and sampling of the second article was administered online too and participants were recruited via a German online forum for pre service teachers. Sixty (60) pre-service teachers who were forum users answered the questionnaire.

3. The main issues categories and related to studies on YouTube in the seven journals between 2007 and 2012 are about to obtain a consensus from experts about areas most in need of research in video-sharing technology (particularly YouTube). The second article describes mental models of YouTube, lesson planning for using YouTube, barriers to using YouTube in the "ideal" way and mental models as mediators of pedagogical knowledge.

4. The research design for both articles is survey design. Research design of these articles are quantitative survey undertaken through online questionnaire.

5. Research method for first article is Delphi Technique which is to obtain consensus of experts in a three round Delphi process. The research method for the second article is survey technique using web based questionnaires (online) which consisted of three parts. The participants were recruited via a German online forum for pre-service teachers (http: //www.lehramtforum.de). Sixty pre-service teacher users of this forum completed the questionnaire. All participants will become educators at the secondary level. The three part questionnaire contain demographic questions (age, gender, high school grades), two scales measuring their general pedagogical beliefs and open questions.

6. Data analysis of these two articles involved descriptive statistics. Descriptive statistics refer to measures of central tendency or location (median, mean, mode, percentiles, etc) and measure of variation or spread (range, variance, standard deviation etc), graphs and charts are also useful tools to understand the characteristics of each variable (Rasimah, Puziwati, & Norizam, 2000).

5. Conclusion

In conclusion, this study reviewed seven selected journals published within six years between 2007 and 2012. These YouTube articles related only started to be studied of late, by 2012. This study could be affected by the setting of the studies based on their research topics, issues category, research settings and sampling, research design, research method and data analysis. Furthermore, there will never be a fit finding on the same issues researched and further studies always be needed to fill in the gaps between the last and the current studies. Frequency studying of YouTube increases in the current issues (2013). Study of YouTube can attract other researchers and will give more results besides affecting our educational system.

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A Content Analysis of Italian NSSI Web-Sites

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ABSTRACT

Non-Suicidal Self-Injury (NSSI) is a complex behavior. Many Web-sites devoted to NSSI are available and in this manuscript we have performed a content analysis, analyzing how NSSI is portrayed. From a clinical point of view, as suggested by Lewis and collaborators, the clinician while interviewing the patient should inquire about his/her online activities. More quantitative-based research is needed to shed light on this topic.

Key words: Internet; Non-Suicidal Self-Injury (NSSI); YouTube.

INTRODUCTION

Non-Suicidal Self-Injury (NSSI) is a deliberate, direct, reiterate and socially deprecable behavior resulting in destruction of one's own body tissue with no intention of committing suicide, even though it is associated with a high risk of considered or attempted suicide [1].

Even if there is a lack of an ambiguous and consistent terminology and NSSI remains an "umbrella term" rather than a precise self-defined nosological entity [2], despite many efforts of providing a systematic and comprehensive consensus (it is noteworthy mentioning the "Classification of Self-Injurious thoughts and behaviors") [3], interest in exploring NSSI is increasing in the scientific community, a growing body of evidence is accumulating and proposals for including NSSI in the forthcoming Diagnostic Statistic Manual (DSM) V version have been put forward [4-8].

Currently, according to the DSM-IV TR and ICD-10, a description of NSSI-like behaviors constitutes one of the items of Borderline Personality Disorder (BPD). However, NSSI has peculiar characteristics that enables to distinguish it from other mental disorders. From an epidemiological point of view, subjects affected by NSSI are usually in the 12/14-24 years range and the most common ways of self-injuring are self-cutting (generally on the inside part of the arms), head banging/punching and hitting walls, pinching, skin picking, scratching, and hair pulling [9]. The precise aetiology of NSSI is unknown, but a genetic background and biological impairments, such as alterations of brain morphology, of lipid plasma levels, of neurotransmitters (in particular, serotoninergic, dopaminergic and opioid systems) [10-12], as well as a story of child trauma and sexual abuse have been reported.

Experimental studies have shown how people suffering from NSSI are likely to use more online sites as a preferential platform for conveying their feelings and emotions, and moreover, the onset age of NSSI coincides with the peak of the Internet use and accessing [13]. Therefore, it is of vital clinical importance and relevance that the psychiatrists become aware of the NSSI-related online material, check their reliability [14-16], in order to be able to react to it and to discuss it with their patients. The new media can have a dangerous epidemic and "viral",

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contagious effect on vulnerable subjects [17-23], and some scholars talk about a so-called "Werther effect", a "cybersuicide phenomenon" or a "virtual cutting edge".

Undoubtedly, NSSI 2.0 is a complex reality where web-sites can have a negative effect of reinforcement, or on the contrary can be used for healthier purposes, such as health education, self-managing and coping strategy.

In this preliminary report, we introduce the concept of "NSSI 2.0", that is to say the study of the Internet usage by subjects with NSSI, and its related representations. We have transcribed the YouTube videos related to NSSI and used content-analysis in order to analyze them and extract pertinent information. YouTube is having an emerging and clinically relevant role in the field of suicidology. *Ad hoc* web portals and surveys could be designed at the light of the reported results, for helping people with NSSI, while monitoring the extant online sites and videos.

MATERIALS AND METHODS

YouTube is an online platform that enables users to freely download, share videos and even to upload their own created videos. YouTube videos related to "autolesionismo" (Italian for NSSI) were mined, downloaded, transcribed, after removing duplicates or non-pertinent material. Content-analysis or textual analysis was performed using T-LAB® software. Content analysis is a scholarly methodology widely used in the social sciences for studying the content of communication – articles from journals and magazine, books, or videos, websites, etc. – from a qualitative point of view.

RESULTS

Most videos showed crude and dramatic images (Figure 1). The conceptual map showed that NSSI is strictly related to suffering, having problems, having ambivalent emotions (a sense of hate and of self-destruction), being alone, a strong need to talk with others, to share one's own feelings and being understood (Figure 2). Figures 3-5 show how these concepts related to NSSI cluster together (Figure 3 Sammon's stress technique, Figure 4 co-occurence graph, Figure 5 map of the main themes and semantic categories).

DISCUSSION

Being anonymous, NSSI subjects accept to use the Internet (forum, blogs, chat), easily speaking about their difficulties and problems, without experiencing stigma, marginalization. and however, according to a research carried out by Lewis and collaborators, even though promising and apparently helpful, these sites should be carefully monitored and validated by physicians and practitioners [24]. These sites are usually run by peers who, in some cases, have not succeeded to stop self-injuring. Moreover, the quality of the information about NSSI and the content itself are not always of high quality or corresponding to the truth: some videos of YouTube that we analyzed tried to deny that NSSI is disease and there is a need of a proper treatment, by normalizing it. This is clinically relevant since the spreading of not reliable, misleading and even dangerous information could lead the users to imitate this kind of behaviors.

CONCLUSION

Despite its limitations, this preliminary exploration showed that monitoring and checking the Web-based material concerning NSSI is of crucial importance. NSSI is an increasing phenomenon, probably due also to the reinforcement provided by the same digital technologies. From a clinical point of view, as suggested by Lewis and collaborators, the clinician while interviewing the patient should inquire about his/her online activities. More quantitative-based research is needed to shed light on this topic.

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FIGURES CAPTIONS.

Figure 1: some of the images present in the videos uploaded on YouTube and concerning NSSI. Most of them are crude and dramatic.

Figure 2: conceptual map of terms and words strictly related to NSSI.

Figure 3: Sammon's stress graph, showing how NSSI-related concepts and representations cluster together.

Figure 4: co-occurrence graph of the most important terms and words related to NSSI.

Figure 5: map of the main themes and categories related to NSSI, as shown from the content analysis.

Figure 1.
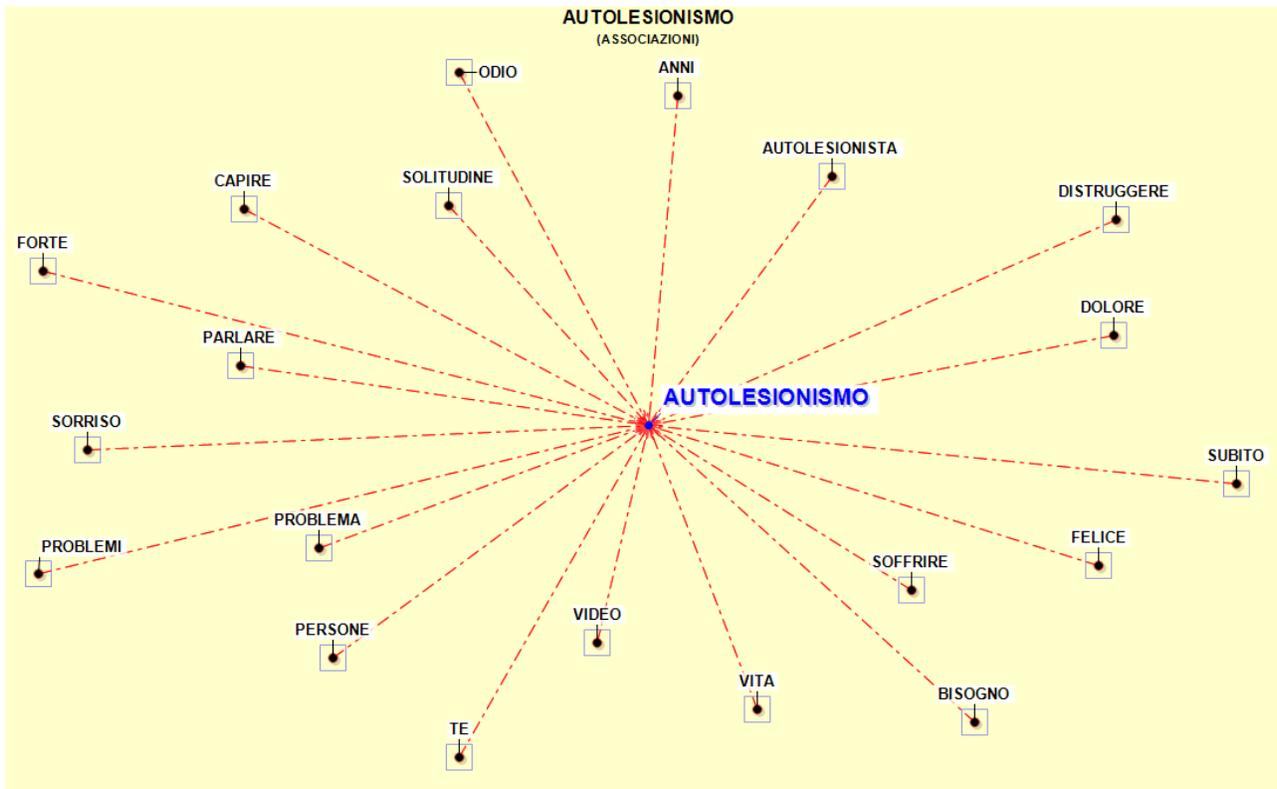
Figure 2.
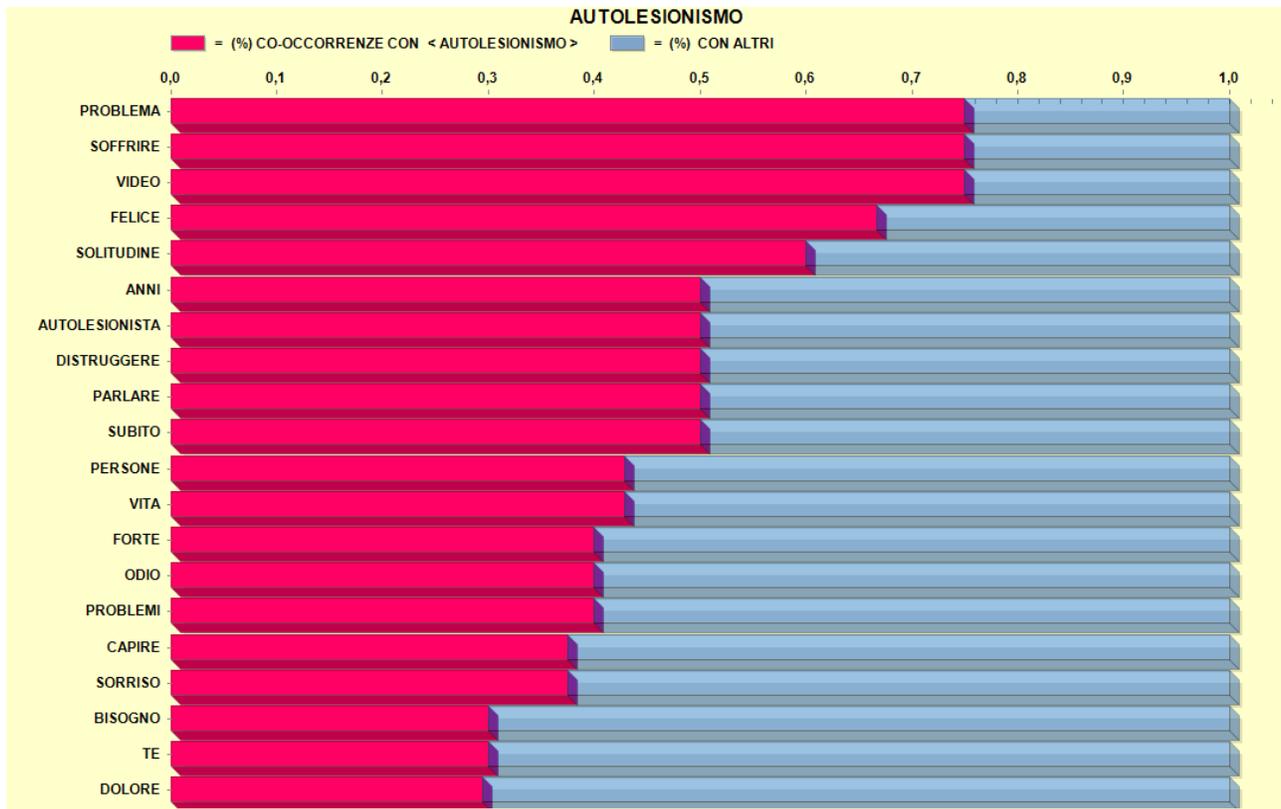
Figure 3.
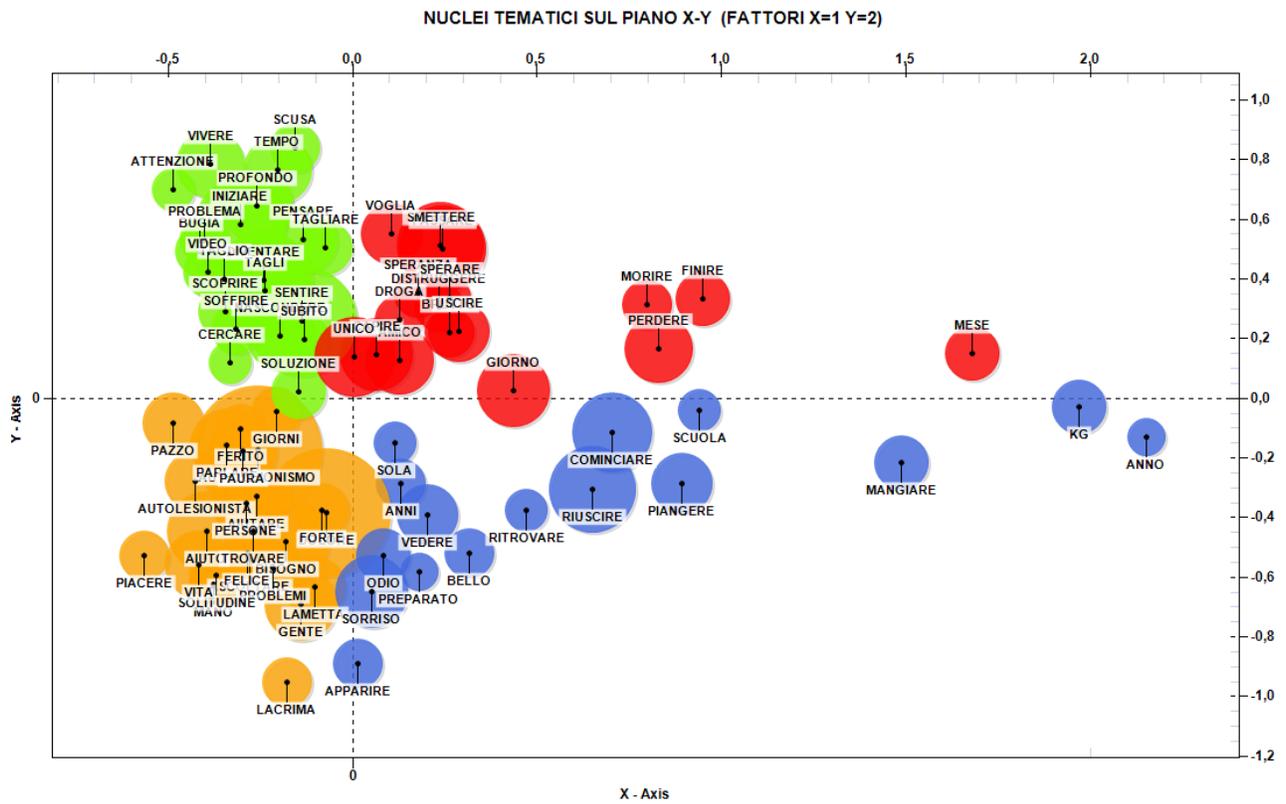
Figure 4.

Figure 5.

13th International Educational Technology Conference

A content analysis of wikis in selected journals from 2007 to 2012

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Abstract

This paper provides content analysis of studies in the field of Wikis that were published in six major journals: TOJET, Educational Technology & Society, Educational Technology Research &Development, Computers & Education, Australasian Journal of Educational Technology and British Journal of Educational Technology. These articles were cross analyzed by published years. Content analysis was implemented for further analysis based on their research topics, issues category, research settings and samplings, research designs, research method and data analysis. The results of the analysis also provide insights for educators and researchers into research trends and patterns related to wikis.

Keywords: Wiki; content analysis; trends; patterns

Introduction

This study focuses on wikis, a social media tool for collaborative problem-solving. The feature of social media is that social interaction and dialogue between peers, as well as experts, is enabled. Scaffolding and modelling of learning behaviours for engaging the learners is provided (Andrews & Haythornthwaite, 2009).

A wiki is a collection of easily editable webpages, interlinked through hypertext systems for storing and modifying information (Guo & Stevens, 2011). Wiki, which means "quick" in Hawaiian, can be used for collaborative writing and problem-solving tasks. By providing a collaborative learning environment, learners can collectively contribute to the content while building the website and adding new pages. At the same time the content on the webpage can be edited by other users. As learners collaborate in publishing their work, they gather information, represent it in new ways, and generate novel ideas (Bonk, Lee, Kim, & Lin, 2009).

Wikis are a relatively new tool for teaching and learning. The first wiki was developed by Ward Cunningham in 1995 and was initially a form of database of information (Cunningham, 2012). Recently, wikis have been used as a social media tools for interaction and collaborative processes. The use of wikis has gained the interest among academicians who see the potential of the use of wikis for learning (Guo & Stevens, 2011).

There also seems to be an increase in the number of articles on the use of wiki for education in recent years with the interest in social media tools in recent years. Hence, the purpose of this paper is to determine the type of research and trends in the use of wikis in education. The investigation would answer the following research questions.

- What is the trend in the number of articles published on wikis from 2007 – 2012 in the selected journals in the field of educational technology?
- What are the focus areas of the studies in the selected journals related to in the field of educational technology?
- What are the research designs used in the research related to wikis in the selected journals in the field of educational technology?

The scope of this study would be limited to research related to wikis in the articles published in the selected educational technology journals from 2007 to 2012. The findings are relevant to researchers investigating the integration of technology, namely wiki in instruction, and for teachers who wish to explore effective and engaging methods of instruction using collaboration and social media tools.

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Wikis for collaboration

Wikis have been used for collaboration for the construction of knowledge. Information can be shared with an audience in an online portal (Bonk, Lee, Kim, & Lin, 2009). This asynchronous communication tool is not merely used for knowledge transmission in learning through sharing of information, but transforms knowledge as the learners involved generate, share and reshape knowledge on the wiki (Bonk et al., 2009).

Learners gradually become experts as they participate in the active learning process while contributing to knowledge-building on the wiki (Bonk et al., 2009; Pifarré & Li, 2012; Zhang et al., 2007). As learners gather and evaluate the information and knowledge, they then manage the assimilation and application of the knowledge in finding solutions to problems (Biasutti & El-Deghaidy, 2012). At the same time their peers and instructors help scaffold the learner in this process to achieve expert status (Pifarré & Li, 2012; Whipp & Lorentz, 2009; Zhang et al., 2007). Hence, the culture of participatory learning in a collaborative environment for social interactions is afforded by wikis (Bonk et al., 2009; Pifarré & Li, 2012).

Mindtools

Computer applications can be used to promote meaningful learning and critical thinking. When computers and the applications are used in meaningful ways to organize and represent personal knowledge, they are considered as tools for assisting thinking, or mindtools. "Mindtools" are computer-based tools and learning environments that have been adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher order thinking (Jonassen, 2000; p.9)"

However, Jonassen's (2000) mindtools includes use in live conversation environments and computer conferences. Social media tools can be used to develop meaningful learning and critical thinking skills. These are called social mindtools (Nuutinen, Sutinen, Botha & Kommers, 2010).

Methodology

Sampling

Six journals were used for this research namely as Turkish Online Journal on Educational Technology (TOJET), Educational Technology & Society (ETS), Educational Technology Research & Development (ETRD), Computers & Education (CE), Australasian Journal of Educational Technology (AJET) and British Journal of Educational Technology (BJET). All of these journals were ISI-ranked journals and prominent academic journals in the field of 'Educational Technology'.

Procedure

Content analysis is a multi-purpose research method for analysing text data in a naturalistic setting (Hsieh and Shannon, 2005). The cognitive schemes, the values and intentions of the authors can be inferred from the data which may reveal underlying themes and associations (Duriau, Reger and Pfarrer, 2007). In addition, the multilevel analysis involved, makes it a rigorous and yet flexible enough methodology to employ (Duriau, Reger and Pfarrer, 2007; Hsieh and Shannon, 2005).

A content analysis of the selected journals was done using a deductive approach (Hsieh and Shannon, 2005; Mayring, 2000; Potter and Levine Donnerstien, 1999). The key concepts and variables for the initial coding categories was identified (Hsieh and Shannon, 2005; Potter and Levine-Donnerstien, 1999): impact, collaborative, learning, effectiveness, teaching, development, contributing factors, assessment and application. However, the disadvantage of using pre-specified categories in directed content analysis is that it is more likely that the participants are influenced to concur with the researchers' theories, opinions and expectations (Hsieh and Shannon, 2005).

Firstly, the operational definitions for each category were determined based on theory. Then, text in the journal articles is read to determine the categories of research areas and methods. Articles which cannot be categorised in the existing codes are given new codes (Hsieh and Shannon, 2005). The order and frequency of codes can be ranked.

Findings and Discussion

Analysis Frequency and Trends

The analysis of the trends in the selected journals in educational technology showed that only 49 articles related to wikis were published from the total of 4119 articles (Table 1).

Table 1. Frequency of articles published on wikis as a percentage of the total articles published from 2007-2012.

Journal Name	Total articles published from 2007-2012	Frequency of articles on wikis from 2007-2012	Percentage (%)
TOJET	438	5	1.14
ETS	587	13	2.21
ETRD	270	6	2.22
CE	1324	6	0.45
AJET	370	14	1.08
BJET	1130	5	0.44
Total	4119	49	

The highest number of articles related to wikis were published in AJET (14), followed by ETS (13), while the lowest was in TOJET and BJET (5 each). The total percentage of articles published on wikis from 2007-2012 in the selected journals was only 1.2%. This indicates that research on wikis is a new area and is yet to be explored in the field. However, the trend shows that there is an increase in the number of articles published on wikis over this period of time is data (Figure 1).
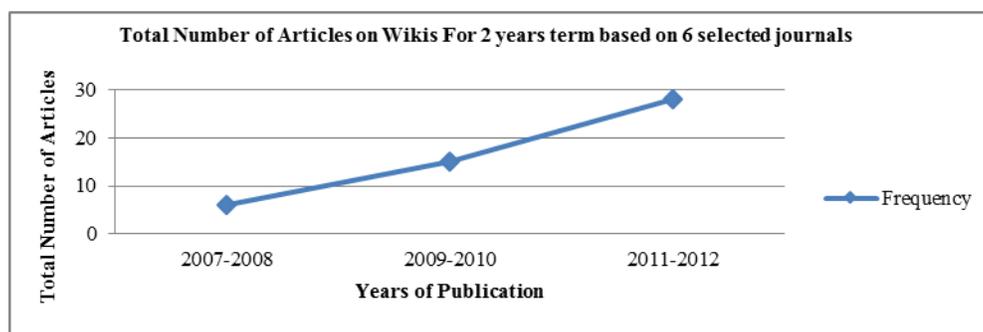
Fig. 1. Number of Articles on Wikis From 2007-2012

Table 2. Frequency of papers according to categorized according to issues

Issues	Frequency	References based on selected journals
Impact	4	CE: Barry (2012); Biasutti & Heba El-Deghaidy (2012) ETS: Yoo & Huang (2011); Hoda Baytiyeh & Pfaffman (2010)
Collaborative Learning	13	CE: Moskaliuk, Kimmerle & Cress (2012) AJET: Li, Chu, Ki & Woo (2012); Suleiman & Picard (2011); Judd, Kennedy & Cropper (2010); Weaver, Viper, Latter & McIntosh (2010); Robertson (2008) BJET: Nuutinen, Sutinen, Botha & Kommers (2010) TOJET: Pinheiro & Simoes (2012); Yasemin Allsop (2011) ETRD: Ertmer et. all (2011); ETS: Eyal (2012); Woo, Chu, Ho & Li (2011); Dron (2007)
Learning	9	CE: Cho, Lee & Jonassen (2011); Cole (2009) AJET: Ruth & Houghton (2009) TOJET: Gwo, Liang & Chin (2012) ETRD: Mayer (2012); Zdravkova, Ivanovic & Putnik (2012); Reynolds & Caperton (2011) ETS: Kimmerle, Moskaliuk & Cress (2011); Wong, Chin, Tan & Liu (2010)
Effectiveness	4	AJET: Neumann & Hood (2009); Elgort, Smith & Tolland (2008); Choy & Ng (2007) BJET: Wheeler, Yeomans & Wheeler (2008)
Teaching	4	AJET: Snodgrass (2011); Baltzersen (2010) BJET: Armellini & Aiyegbayo (2011); Polly (2011)
Development	2	CE: Shih, Tseng & Yang (2008) ETS: Li, Dong & Huang (2011)
Factors	2	AJET: Guo & Stevens (2011); Zorko (2009)
Assessment	2	AJET: Davies, Pantzopoulos & Gray (2011) ETS: Imran A. Zualkernan, Anjana Raza & Asad Karim (2012)
Application	9	BJET: Chuy & Chun (2011) TOJET: Fatime Balkan Kiyici (2012); Fatime Balkan Kiyici (2010) ETRD: Zhao & Bishop (2011); Cifuentes, Sharp, Bulu, Benze & Stough (2010) ETS: Avci & Askar (2012); Tambouris et. all (2012); Lo (2009); Nauman Saeed, Yang & Sinnappan (2009)
Total	49	-

The main focus of research seems to be on the role of the wiki in collaborative learning (Table 2). Among others, the impact and effectiveness of wikis in teaching and learning, as well the applications of wikis in teaching were related areas of concern.

Most of the research used quantitative research designs, which employed surveys and experimental designs. There were fewer articles with qualitative designs (16 articles), and less using mixed methods (11 articles). There were 15 methodologies identified in the study (Table 3). Most of the researchers preferred survey methods, followed by experimental studies, and observation. Other methods used are cognitive mapping, casual comparative research model, phenomenology, review, content analysis and Delphi study.

Table 3. Categories of articles according to research method

Research Method	Frequency	References based on selected journals
Survey	10	*CE*: Barry (2012) *AJET:* Guo & Stevens (2011); Snodgrass (2011); Elgort, Smith & Toland (2008); Robertson (2008) *TOJET:* Pinheiro & Simoes (2012); Fatime Balkan Kiyici (2012) *ETRD:* Reynolds & Caperton (2011) *ETS:* Yoo & Huang (2011); Hoda Baytiyeh & Pfaffman (2010)
Experimental	6	*CE*: Biasutti & Heba El-Deghaidy (2012); Moskaliuk, Kimmerle & Cress (2012); Cho, Lee & Jonassen (2011); Shih, Tseng & Yang (2008) *AJET:* Neumann & Hood (2009) *ETS*: Kimmerle, Moskaliuk & Cress (2011)
Action Research	2	*CE:* Cole (2009) *ETS*: Nauman Saeed, Yang & Sinnappan (2009)
Case Study	3	*AJET*: Suleiman & Picard (2011); Davies, Pantzopoulos & Gray (2011) *BJET*: Nuutinen, Sutinen, Botha & Kommers (2010)
Observation	5	*AJET:* Judd, Kennedy & Cropper (2010); Baltzersen (2010); Weaver, Viper, Latter & McIntosh (2010); Ruth & Houghton (2009) *BJET:* Wheeler, Yeomans & Wheeler (2008)
Triangulation	3	*AJET*: Li, Chu, Ki & Woo (2012) *ETS*: Woo, Chu, Ho & Li (2011); Lo (2009)
Exploration	2	*AJET*: Zorko (2009) *ETS*: Imran A. Zualkernan, Anjana Raza & Asad Karim (2012)
Interview	3	*AJET:* Choy & Ng (2007) *BJET:* Polly (2011); Chung & Chun (2011)
Cognitive Mapping	1	*BJET:* Armellini & Aiyegbayo (2011)
Casual Comparative Research Model	1	*ETS*: Avci & Askar (2012)
Phenomenology	1	*TOJET:* Fatime Balkan Kiyici (2010)
Design-based research	2	*ETRD:* Cifuentes, Sharp, Bulu, Benz & Stough (2010) *ETS*: Wong, Chin, Tan & Liu (2010)
Reviews	1	*ETRD*: Zdravkova, Ivanovic & Putnik (2012)
Content Analysis	1	*ETRD*: Mayer (2011)
Delphi Study	1	*ETRD:* Zhao & Bishop (2011)
≥ 2methods	4	*TOJET:* Yasemin Allsop (2011); Guo, Liang & Chin (2012) *ETRD:* Ertmer et. all (2011) *ETS:* Li, Dong & Huang (2011)
Total	46	-

Studies which used more than two methods employed was done by Yasemin Allsop (2011) using video recording, content analysis, survey and case study, while Guo, Liang & Chin (2012) chose survey, case study and interviews as their method for acquiring data. Meanwhile, Ertmer et. al (2011) used survey and interview, while Li, Dong & Huang (2011) did a survey and an experiment for their research.

Table 4. Categories of articles according to data analysis procedures

Data Analysis	Frequency	References based on selected journals
Descriptive	12	CE: Cole (2009) AJET: Davies, Pantzapoulos & Gray (2011); Judd, Kennedy & Cropper (2010); Elgort, Smith & Toland (2008); Robertson (2008); Wheeler, Yeomans & Wheeler (2008) TOJET: Pinheiro & Simoes (2012); Gwo, Liang & Chin (2012) ETRD: Mayer (2011); Zhao & Bishop (2011); Cifuentes, Sharp, Bulu, Benz & Stough (2010) ETS: Lo (2009)
Inferencial	5	CE: Moskaliuk, Kimmerle & Cress (2012); Cho, Lee & Jonassen (2011); Shih, Tseng & Yang (2008) AJET: Guo & Stevens (2011) ETS: Imran A. Zualkernan, Anjana Raza & Asad Karim (2012)
Descriptive + Inferencial	10	CE: Barry (2012); Biasutti & Heba El-Deghaidy (2012) AJET: Neumann & Hood (2009) TOJET: Fatime Balkan Kiyici (2012) ETS: Avci & Askar (2012); Kimmerle, Moskaliuk & Cress (2011); Li, Dong & Huang (2011); Yoo & Huang (2011); Hoda Baytiyeh & Pfaffman; Nauman Saeed, Yang & Sinnappan (2009)
Thematic	9	AJET: Baltzersen (2010); Weaver, Viper, Latter & McIntosh (2010); Choy & Ng (2007) BJET: Armellini & Aiyegbayo (2011); Chung & Chun (2011); Nuutinen, Sutinen, Botha & Kommers (2010) TOJET: Fatime Balkin Kiyici (2010) ETRD: Zdravkova, Ivanovic & Putnic (2012) ETS: Wong, Chin, Tan & Liu (2010)
Inductive qualitative	1	BJET: Polly (2011)
Mix of quantitative & qualitative	9	AJET: Li, Chu, Ki & Woo (2012); Suleman & Picard (2011); Snodgrass (2011); Zorko (2009); Ruth & Houghton (2009) TOJET: Yasemin Allsop (2011) ETRD: Ertmer et. all (2011); Reynolds & Caperton (2011) ETS: Woo, Chu, Ho & Li (2011)
Total	46	-

Descriptive data analysis seemed to be the favoured method (12 articles). This might be because there is a tendency for researchers to conduct qualitative research in the form of case studies, through observation, exploration and using triangulation of data (Table 4). The second highest frequency of choice of the study is descriptive data analysis and inferential form (10 articles) which uses surveys.

Thematic data analysis using research interviews and Delphi technique (9 articles) were as popular as a mix of quantitative and qualitative methods (9 articles). Among the studies were those with inferential data (5) and qualitative inductive methods (1 articles).

Implications

The use of wikis in learning has been shown to have a significant impact on learners. Wikis have been used to engage learners (Barry, 2012; Yoo & Huang, 2011) as learning is active (Biasutti & El-Deghaidy, 2012), and students are motivated in learning (Barry, 2012; Biasutti & El-Deghaidy, 2012) There is more effective feedback (Barry, 2012) and higher level thinking skills (Barry, 2012; Biasutti & El-Deghaidy, 2012) and creativity is developed (Baytiyeh & Pfaffman, 2010). Students are satisfied in using wikis for learning (Biasutti & El-Deghaidy, 2012).

One of the affordances of wikis is that it enables collaborative learning (Weaver, Viper, Latter & McIntosh, 2010). Collaborative learning occurs during social interaction through learners' unplanned responses and interactions within the community (Johnson & Johnson, 2004; Jonassen, Lee, Yang & Laffey, 2005). As learners share information and collaborate to achieve the learning goals, they assimilate the knowledge into their own personal knowledge structures (Kaye, 1992; Pallof, & Pratt, 1999).

Wikis have been used for collaborative writing (Moskaliuk, Kimmerle & Cress, 2012; Sukaimen & Picard, 2011; Woo, Chu, Ho, & Li, 2011). During collaboration, new knowledge is integrated into learners' prior knowledge, building new knowledge structures (Moskaliuk, 2012; Nuutinen, Sutinen, Botha & Kommers, 2010). Higher level thinking and reasoning skills are developed during collaborative problem-solving (Woo, Chu, Ho & Li, 2011; Snodgrass, 2011). Jonnassen's (2000) mindtools are used for enabling critical thinking. Hence, social media

applications, such as wikis, which are used for developing critical thinking skills are social mindtools (Nuutinen, Sutinen, Botha & Kommers, 2010).

Wikis have been shown to be effective for learning. Student performance has been shown to improve (Neumann & Hood, 2009). In addition, the use of wikis in instruction engages the learner (Neumann & Hood, 2009). Learners also perceive that wikis are useful for learning (Avci & Askar, 2011; Guo & Stevens, 2011). The research also shows that the factors which affect this positive perception is dependent on teachers attitudes towards technology use, the ease of acess to the wiki, and students' attitude towards the tool and the intention to use the tool (Guo & Stevens, 2011).

Research methodologies vary according to the research questions, and a variety of research methods and data analysis have been used. Design and developmental research approaches have been used in developing learning environments for collaborative problem-solving (Li, Dong & Huang, 2011; Shih, Tseng & Yang, 2008; Stough, 2010). The results of such research have given rise to s set of guidelines which can be used for developing learning environments (Stough, 2010).

Conclusions

There has been an increase in the number of articles written on the use of wiki for collaborative learning. The articles were mainly on research but employed a variety of research designs. The articles written from 2007 to 2012 covered several themes: learner engagement, collaborative learning, effectiveness, assessment and instructional design. This implies that this tool and its role in education is becoming more important and is being realised by the researchers in this field.

Cross-cultural studies need to be done to investigate the perceptions among students of different cultures in using wikis. Future research is needed to determine the impact of different cultures on the patterns of online interaction on the wikis. For example, in some research, learners are reluctant to delete what another has written (Yoo & Huang, 2011), In addition, building, managing and supporting communities of practice among users of wikis is another area to focus future research (Zhao & Bishop, 2011).The role of the learner, and of the pedagogical role of the instructor is important and needs to be clarified.

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13th International Educational Technology Conference

A Literary Aspect in Micro Teaching Subject in French Education Department Yogyakarta State University

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Abstract

Micro teaching subject is the training in the formation of teaching competence through actualizing teaching basic competencies. Micro teaching subject is an integral part of the course Practical Field Experience educational programs for students of UNY S1 which are performed on campus peer teaching model. Subject Teaching Materials for Micro Teaching have also been prepared from interesting sources shared that peer teaching job is not boring. Learning resources can be printed and electronic sources, as well as the physical, natural, social, and cultural. Thus, literary works in the form of poetry can be a potential source of learning to explore.

Keywords: micro teaching subject; peer teaching model; literary works

About Micro Teaching Subject

Micro Teaching subject is about training at an early stage in the formation of actualizing teaching competence through teaching basic competencies. Basically, micro teaching is a learning method based on the performance of the technique which is done by train components to teach basic competency in the learning process, so that prospective teachers are really able to master each component one by one or a few components are integrated in a simplified learning situations. Micro Teaching subjects are an integral part of the course Practical Field Experience S1 educational programs for students of Yogyakarta State University. Micro Teaching subject is performed on campus by peer teaching model (*Tim Penyusun Panduan Pengajaran Mikro*. 2013).

In practice, micro teaching activities include orientation, observation of teaching in schools or in institutions that will be used for practical field experience, as well as teaching practice with peer teaching models. Implementation of peer teaching models is considered the most flexible implemented before students do real teaching practice in the form of field experiences in schools. In Micro Teaching, students can practice to show basic competence which is limited and integrated teaching. Material, learners, as well as presentation time are limited. Micro teaching practice is also a means to appear bravely to face class, controlling emotions, set the rhythm of speech, and others. Micro teaching practice is carried out until the student competencies adequately mastered as a prerequisite to follow the practice of field experience in schools / educational institutions.

The important benefits of Micro Teaching Subject are (1) students are more sensitive to the phenomena occurring in the learning process when they become collaborators, (2) students are better prepared to undertake teaching practice at the school or educational institution, (3) students can do self-reflection on their competence in teaching, (4) students become more aware of teachers or educational staff profile so she can look as teachers or educator. To achieve these benefits, students are trained to (1) make the Lesson Plan, (2) master the basic competencies of teaching in a limited time, (3) master the basic competencies taught in an integrated manner, and (4) control of personality and social competence.

Micro Teaching Practice for students is trying to condition that he has a profile and appearance that reflect mastery of the four competencies are: pedagogic, personable, professional, and social. The number of exercises for each student is at least eight times with respect to the level of quality-controlled student competency achievement. In connection with these exercises, Micro Teaching is limited in the following aspects: (1) the number of students per group is 8-12 students led by two teachers, (2) subject matter, (3) a presentation of 15-20 minutes, and (4) competencies (knowledge, skills, and attitudes) were trained.

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Prior to teaching practice in Micro Teaching Subject, students must make arrangements to teach the so-called Learning Implementation Plan. Learning Implementation Plan is a plan of action in the form of teacher learning step by step scenario of the activities to be conducted with student teachers. Scenario is related to the material the students will learn to achieve basic competency specified. Form and Learning Implementation Plan components may vary according to the characteristics of the field of study based on competency.

In relation to learning materials, students should understand that these materials are used to achieve the learning objectives and developed with reference to the subject matter contained in the syllabus. Learning materials is also closely linked to the learning resources. The selection of learning resources refers to the formulation in the syllabus developed by the education unit. Learning resources include a referral source, environment, media, speakers, tools, and materials. Learning resources is everything necessary in the learning activities, which may include textbooks, print media, electronic media, resource, natural environment, and so on.

Appropriate learning resources will be beneficial to the learning process. Obtaining the benefits that can be reached partly by way of selecting learning resources and learning materials as well as more interesting and delivered with the methods and techniques of teaching are more varied. One material that is interesting and important in learning French language is a matter of learning to use simple literary texts in French. Literary texts also have the potential to develop a more vibrant learning. Simple literary texts that can be used in Micro Teaching Subject, among others, is a poem and a mini-theatre (*notrepoésie.canalblog.com*).

Poem and Mini-Theatre in Micro Teaching Subject

Learning French is basically aims to develop the four language skills, namely *Compréhension Orale* (Listening), *Expression Orale* (Speaking), *Compréhension Écrite* (Reading Comprehension), and *Expression Écrite* (Writing). The four skills can be developed through teaching materials in the form of literature. Teaching materials in the form of a mini-theatre and a poem in French can be selected for supporting the activities of discussion, express opinions; identify all aspects of the language and its use, as well as the cultural context of the language user. Cultural context in this case is also useful to introduce "something new and unfamiliar" for peer students.

Teaching materials are first analyzed whether the text is appropriate or useful in terms of language and content. The text contains too much new vocabulary and grammatical structures are complicated to be assessed "scary" by the students. Therefore, the selected text as an example here is a simple text, with a vocabulary appropriate to the syllabus of high school French class (where students are subject Micro Teaching participants will do teaching practice), and uplifting to learn the French language further.

Broadly speaking, the process of learning French is done in the Micro Teaching subjects may be four steps: (1) preparation phase, (2) the presentation and discussion phase, (3) interpretation phases, and (4) training and application phases. The fourth phase was delivered within 15 minutes and, in particular, adapted to the language skills that are taught. In the preparation phase, students have to interact with literary texts to be read. This phase serves to activate their prior knowledge, recalling vocabulary that has been studied, and at the same time arouse their interest.

In the next phase or the second phase, the phase of the presentation and processing of text, students are guided to recognize the text contents. At that time recommended no interruptions during the process of reading progress. The aim is that the students are reading the text can begin to establish a preliminary understanding of the text as a whole. At this stage, the teacher can provide assistance through the instructions and complete the vocabulary exercises. The third phase is the phase or phases of interpretation used to reconstruct the meaning contained in the text. In this phase is also expected that the spontaneous reactions of the students, especially about the content of a new culture that emerged during the study.

In the training phase, students are trained to conclude in more detail the form and language elements that make up the work, for example in the form of exercises for vocabulary building. In addition, at the application stage guided students to creatively reproduce text into other forms of discourse, such as writing a new story by presenting different characters, arrange interviews with imaginary figures that he got from the text and write a short letter to the figures in the text.

Examples of the use of poem in Micro Teaching Subject can be seen from the following explanation. Poem used is the poem entitled *Hésitation* (Indecision) that contains vocabulary that has been understood by high school students and is a representation of everyday language, a prominent literary aspect of this poem is the rhyme used.

Hésitation

Poème de Richard Jalbert

Quatre ans trop tôt,
quatre ans trop tard,
c'qu'il faut rester de niveau
pour ne pas faire le grand écart,
déjà qu'à chaque sursaut
je me retrouve en encart
dans le grand livre des maux
et qu'à chaque chapitre, je crie "encore!"

Micro Teaching class in the French language competency training is teaching four linguistic competences, *Expression Orale* (Speaking), *Compréhension Orale* (Listening), *Compréhension Écrite* (Reading Comprehension), and *Expression Écrite* (Writing). Therefore, the following will be discussed how to teach the four competencies by using poetry as the taught material.

Compréhension orale competence

Students can practice the following steps: (1) read a poem with proper pronunciation, pauses and intonation according to the meaning of the poem (2) read the poem to the class, and (c) understand the general meaning of the poem. For the evaluation, the student practitioner can provide test form fields on hiatus sentence, e.g. by exercising vocabulary that learners vocabulary increases. Looking for options can be given in the evaluation synonym for Compréhension Orale, for example *niveau - classe, faire - passer, grand - épais, chapitre - partie*.

In addition, students can make inquiries experimentalist can measure the level of student understanding, for example: (1) *D'après vous, où est-ce que la situation se passe?*, (2) *Pourquoi est-ce que le narrateur crie "encore"?* Students practitioner can explain that any adjectives, adverbs, and some specific verbs useful to give a special character is also a person, an object, and place (Peyroutet, 1994: 8)

Expression orale competence

Competence in teaching, the student practitioner who acts as the teacher reads the rhythm slowly and peer students look at each word and sentence by taking into account the meaning of every sentence. Teachers ask questions orally and at the end of the teaching-learning process of peer students to explain the meaning of the whole poem orally. For evaluation, students can read this poem to the expression and appreciation of the support of the meaning of the poem. Expression of skill, live, pronouncing each word with the correct pronunciation competence of a student, can be assessed. Students should look at the reading process experimentalist and if there are pronunciation errors, they should correct it.

Compréhension écrite competence

In teaching competence, peer students look at each word and sentence by taking into account the meaning of every sentence. At the end of the teaching-learning process of students is to explain the meaning of the whole poem and write it in the form of a resume. For evaluation, student peer practitioner invites students to get together to discuss the poem or create a discussion group consisting of three or four students. Guided discussion was provoked by the core questions were distributed to each group.

 Expression écrite competence

Competence in teaching, prospective teachers facilitates peer students to write a short letter or short narrative writing as a form of reproduction. Peer students are given exercises as well as examples of how to paraphrase to share experiences and feelings during her school by taking the main idea of the poem *Hésitation*. Making paraphrase be simple or use a simple sentence patterns and conjunction are easy to find, for example, *et* (and) and *mais* (but).

Furthermore, with the same steps, students can use a mini-theater experimentalist its simplest form, the *jeu de rôle* or role playing to practice teaching in the Micro Teaching Subject. It should be emphasized is that both the poem and the mini- theater is very useful to foster a sense of courage, confidence, and cohesiveness in the classroom. Beauty aspects of language learning at the same time can be extracted from the two forms of literature that, through practitioner student's *jeu de rôle* also in the habit of sharpening social skills that will be taught in high school. There are many social skills that young people need to learn to achieve personal success. "*Merci beaucoup"* and *"s'il vous plaît*" may rightfully be viewed as part and parcel of the moral virtue of respect for others but they are also which social skills help one succeed in life (Kirschenbaum, 1995: 19).

Conclusion

Literary works in the form of a short poem or a mini-theater can be used in Micro Teaching Subject after adjusting for comprehension, especially vocabulary, and the existing syllabus. Mastery of the material will be more comprehensive, the material will be more attractive and thus more memorable lessons. Micro Teaching Subject in French Education Department in Yogyakarta State University is prerequisite courses that must be taken before the student went to the field for practice teaching. So, it is not exaggerating when this subject is enjoyable in accordance with the nature of literary works that are useful and fun. To achieve a sense of enjoy it actually practicing students should better prepare. However, preparations are more mature in the classroom Micro Teaching Subjects surely guarantee success practitioner students in the field. For students in the Micro Teaching Class, good job and get pleasure from your practice.

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A Mobile Game-based Insect Learning System for improving the learning achievements

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Abstract

1. This paper aimed to investigate how gamified learning approach influence science learning achievement through a context-aware mobile learning environment and to explain effects on student learning outcome. A mobile learning environment has been developed based on MILS (Mobile Insect Learning System) gamified learning activity. A series of gamified learning activities based on MILS was developed and implemented in an elementary school science curriculum to improve student learning achievement and help students to actively engage in learning activities. A quasi-experimental design was used to investigate the effectiveness of gamification approach by combining game elements with the use of MILS in a real-world scenario. The response to questionnaire indicates that students valued the outdoor learning activities made possible by use of the smartphone and its functions. Pre- and post-test results demonstrated that incorporating mobile and gamification technologies into botanical learning process could achieve a better learning achievement than using non-gamified mobile learning and traditional instruction. In managerial implications, the results could provide parents, teachers, educational organizations to make related educational decision.

Keywords: Gamification, Elementary education, Teaching strategies, Mobile learning

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INTRODUCTION

In the last decade, the development of mobile phone industry, associated with the parallel development in Mobile Internet has been explosively swift: from the earliest voice phone to the current 3G smart phone which can serve as a mini-computer, telephone, or camera, and transfer data as well as audio and video files. The interaction with this ubiquitous devices and their use for learning purposes extend the traditional learning paradigm into a new phenomenon so-called mobile learning (m-learning). Preliminary research suggests that mobile devices can create more active learning experiences that improve student engagement, learning, and course retention (Joosten, 2010), and the use of new technologies can enhance motivation, which is a vital aspect of learning, deliver information when needed, and encourage to solve problems and satisfy curiosity (Sharples et al., 2002). Furthermore, much research has shown that the mobile device as a mobile guide can help student to increase their science and geographical knowledge as well as their motivation to engage in learning activities (Huang et al., 2009; Hwang et al., 2010; Zhang et al., 2010). Many educators have emphasized the importance and necessity of "authentic learning activities" in which students are able to work with problems from the real world (Hwang et al., 2010). Students participating in an m-learning environment can enhance their learning performance and improve their creativity (Cavusa & Uzunboylu, 2009). Furthermore, researchers have also indicated the difficulty of supporting and guiding learners in such environments that combine real-world and digital-world learning resources (Chu et al., 2010). Therefore, it has become an important issue to develop effective and easy-to-follow learning guidance models for context-aware mobile learning system.

Literature review

To set a cornerstone for a common understanding before constructing the research model, some related theoretical perspectives based on literature analysis results are briefly described in this section to serve as a common ground.

Context-aware mobile learning environment

Mobile devices have become more and more popular, which can facilitate data collection, process and analysis, and the high interactivity enabled by beaming makes collaboration and communication among students handy. A learning environment is so-called mobile learning (m-learning). Mobile technologies can meet higher order learning needs and realizing a more creative and learner-centered educational process (Joo & Kim, 2009).

Several studies have demonstrated successful experiments that support knowledge production and transmission among learners and educators through the use of mobile devices in the learning activities of various courses, such as natural science (Hwang et al., 2010a), social science (Chiou et al., 2010) and language courses (Ogata et al., 2009; Sandberg et al., 2011). For example, Chen et al. (2003) proposed a mobile learning system for scaffolding bird watching learning activity that enables students to take photos of birds with handheld devices and to communicate with teachers and other students in an outdoor wireless environment. Chu et al. (2008) conducted several outdoor learning activities in a butterfly ecology garden by integrating mobile learning environments with electronic library facilities to assist elementary students to observe and distinguish butterfly features in a science course. Lai et al. (2007) note the affordances that mobile technologies provide for experiential learning by allowing rapid "note taking" through photos, audio and video recording, and by supporting students through in field provision of learning materials and prompts to assist their development of abstract concepts. Also, Huang et al. (2010) developed a mobile plant learning system to facilitate student learning in an elementary-school-level botany course. Furthermore, recent findings in this research literature show that digital learning resources, alongside the real-world learning contexts, improve students' learning interest, motivation (Chen et al., 2003; Chen et al., 2009, among many others) and their learning achievement (Chu et al., 2010; Hwang & Chang, 2011, among many others).

Therefore, this study aimed to develop a low cost location-aware m-learning environment with appropriate learning activities that incorporate game elements, which should promote the development of problem-solving skills and to engage learning interest and increase learning achievement through adopting a game-informed approach to support learners' authentic learning experience.

Gamification

Mobile technologies can be used as powerful cognitive tools within constructivist approach to solve complex problems and to engage students in authentic and meaningful activities (Jonassen & Reeves, 1996). Educational gamification proposes the use of game-like rule systems, player experiences and cultural roles to shape learners' behavior. In the previous research study, Sandberg et al. (2011) found that many children used a trial-and-error strategy on play the games. For this reason, gamifying a course would be a great help to primary students by take advantage of the motivational power of games and apply it to the motivational problems in education so successful learning can take place (Prensky, 2001).

Methodology

This study tries to enlarge the scope of game-play in learning situation by adopting gamified learning strategy and combining game elements with well-designed mobile learning activities. The goal is to determine whether mobile technologies can support gamified learning approach, and learning strategies influenced achievement in the natural science course. The implementation of our solution proposal, called Mobile Insect Learning System (MILS). A series of learning activities geared toward integrating the game elements into course design was developed for the outdoor learning environment.

Research concept

This section introduces the research design concept of our study, which applies the mobile insect learning system with game elements to facilitate the mobile learning activity in an outdoor educational environment. According to the use perspective, we designed an experiment in which students carry out the well designed gamified learning activity in a mobile learning environment. This study was based on a quasi-experimental. We divided students into three groups an experimental group and two different control groups that were formed from three classes. To evaluate the effectiveness of this approach, a mobile learning activity was implemented in the elementary school natural science courses in Kaohsiung Taiwan. Quantitative data analysis was also used to evaluate the students' Learning achievement. The study proposes a research framework relative to the effectiveness of learning achievement by adoption of different learning approach in a mobile learning environment as shown in Fig.1.
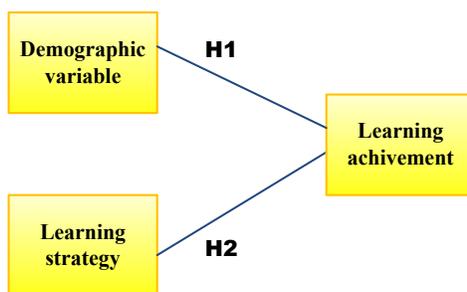
Fig.1 Research Framework

Tow major hypotheses are described as follows according to the research purpose and research questions:

H1: The demographic variables will affect the learning achievement positively.

H2: The students who receive different interventions show significant difference in individual learning achievement in an outdoor learning environment positively.

Design and Implementation

With MILS, teachers can create any number of teams for students, and create any number of specific, relevant goals and missions for that team to pursue. These include visiting learning area, observing learning target, and generally being social.

Fig.2 illustrates the framework of the MILS application, which is based on a standard server-client model and is composed of two modules. The client side and server side are connected through a conventional 3G or Wi-Fi network. The screenshot of system functions are shown in Fig.3. After login to the mobile learning application, students can browse the learning games nearby them and select one to participate, as shown in Fig.3(a). The system then sends students a new Quest reminder with instructions on how to start with the learning task, as shown in Fig.3(b). The learning contents were represented on the screen after students scanned the QR code of specific learning target, as shown in Fig.3(c). Students can view the learning objects, the NPCs (No Player Character), and the notes created by others according to their location in the learning area, as shown in Fig.3(d). All of the NPCs are essential to the main storyline and will guide students to the next steps in chatty, as shown in Fig.3(e). Students can create personal knowledge gained through firsthand observation and personal experience, as shown in Fig.3(f).
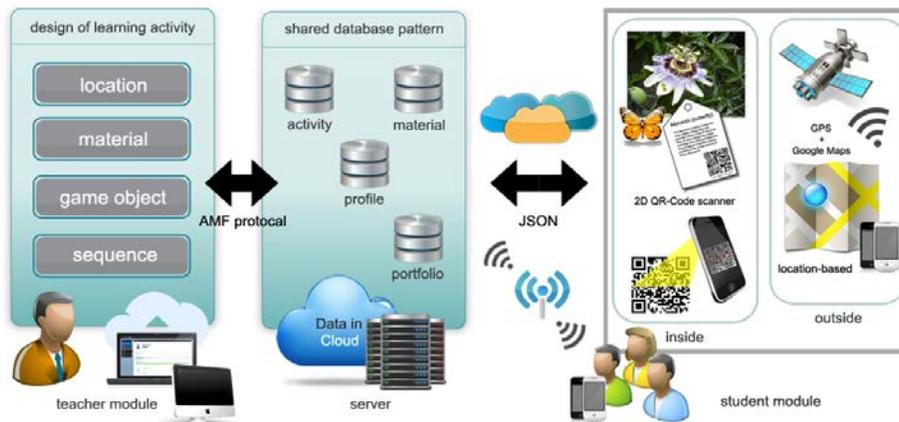
Fig.2 The framework of the MILS application

Fig.3 The screenshot of system functions for MILS application

Participants

The participants of this study were three classes of fourth grade students taught by same teacher in an elementary school in Taiwan, the teacher had been teaching in the school for more than three years. The age range of the students was 10-11. After studying the fundamental knowledge of insects in a natural science course, these participants were randomly assigned to three groups to participate separately in three different teaching methods with some learning objects and tasks. The participants of the experimental group used MILS application incorporate game-informed learning approach in an outdoor education environment. Before analyzing the research hypotheses, we examined the level of knowledge about insects in each of the three groups by using one-way ANCOVA (Analysis of Covariance), and we found it to be equivalent among the groups. The results of the pre-test showed that the experimental group (M = 71.059, SD = 8.352), the first control group (M = 72.235, SD = 10.036) and the second control group (M = 73.176, SD = 9.846) had no significant differences between them (F = .429, p = .652 > .05).

Research instrument

In order to evaluate the students' learning achievements and attitudes while participating in the different learning conditions, various data sources and methods were utilized, including pre-test/post-test design, questionnaires, and interviews with the teacher and students. The Cronbach's alpha value for internal consistency reliability of the pretest and posttest was .89. An acceptable alpha value was .7 or higher (Nunnaly, 1978) indicating a good reliability of the tests used in this study.

Data analysis and results

In this study, student toward natural science learning was measured and the effect of different teaching strategies on learning achievement in a natural science course was analyzed. There are totally 102 students participating in this study, of which 54 are male and 48 female, with the average age of 10-11 years.

Results of hypothesis test

For testing hypothesis H1, Table 1 shows the analysis comparison for the impact of demographic variables on the student's learning achievement. The result shows the experienced students were more enjoyment in the learning activities, and more satisfied with their learning achievement in the 'Understanding of Insects' learning activity than the non-experienced students. The students with different gender lead to differences in post-examination achievement (P=.044). The male students did have a higher learning performance than the female students in the experimental group. The students' subject interest also indicated a significant difference for post-examination achievement (P=.000), which means the students who are interested in insects lead to higher learning achievement than the students who are not interested in insects. Moreover, the prior experience with smartphones also leads to significant difference in post-examination achievement (P=.010). Based on the results of Table 1, the hypothesis 1 is significance.

For testing hypothesis 2, this study analyzed the differences between pre-examination, post-examination and learning strategies using one-way ANCOVA in order to eliminate the influence of the pre-examination. First, normality plots revealed that the normality assumptions were valid, and there was an interaction of minor degree between pre-examination achievement and the learning strategies (F=0.429,P=0.101), which indicated that the regression slopes of the three learning strategies were homogeneous, so the assumption of equality of variance was not violated. Since the homogeneity requirement was met, we were able to carry on with the ANCOVA analysis, as depicted in Table 2. The results show that using mobile learning with gamification approach can promote student's botanical knowledge and lead to differences in learning performance, after removing the influence of the pre-examination. The post-hoc analysis for the research model showed that achievement in using mobile learning with

gamification approach was higher than the achievement of conventional mobile learning and traditional instruction alone. The result shows that hypothesis H2 is significance.

Table 1 The t-test and ANOVA results for the impact of demographic variables on the student's learning achievement

Hypothesis	Constructs	Gender	Subject interest	Prior experience	Working off-campus	Games frequency	Time to play
H1	Learning achievement	t(-2.112)*	t(-4.535)*	t(-2.640)*	F(2.846)	F(2.365)	F(1.449)
	Comparison	M>F	Y>N	Y>N	—	—	—

* $P \leqq 0.05$ ** $P \leqq 0.01$ *** $P \leqq 0.001$ M=male, F=female ,Y=Yes N=No

Table 2 The t-test and ANCOVA for learning achievement on learning strategies

Hypothesis	Learning Achievement	Group	N	Mean	SD	t-test for Equality of Means		Scheffe Comparison
						F Value	Sig. (2-tailed)	
H2	Pre-test	EG	34	71.06	8.352	0.429 (.652)	.789	—
		CG1	34	72.24	10.036			
		CG2	34	73.18	9.846			
	Post-test	EG	34	82.94	10.009	25.287 (.000)	.062	EG > CG1* EG > CG2*
		CG1	34	75.59	9.595			
		CG2	34	74.71	8.956			

EG= Experimental Group,CG1= Control Group 1,CG2= Control Group 2)* $P \leqq 0.05$ ** $P \leqq 0.01$ *** $P \leqq 0.001$

Conclusions & Findings

This study has investigated how different learning conditions affect student's learning achievement for botanical knowledge in an outdoor educational environment. Three interesting findings were summarized in the following:

(1) Learner characteristics affect learning achievement:

The results of questionnaire indicate that among the six demographic variables and learning achievement, subject interest were indicated as the important factor followed by gender ,subjects interests and prior experience. (See Table 1). This study supports the argument that male students have higher learning performances than females; experienced students have higher learning performances than those non-experienced students. Compared to male students, female students considered some instructional factors and learning activities more valuable than other learning factors. It can be naturally interpreted that female students and the students who are not interested in insects.

(2) The advantages of MILS:

The students in the experimental group satisfied the learner controlled pace of the learning process, and they thought the gaming mechanics in the structure of game play were organized and useful for assisting them to learn.

(3) The comparison of learning achievement with different learning strategies. Experimental group's students who use MILS have better learning achievement than other control groups in post-test.

Through gamification we can not only create a mindset that encourages students to try new things, to not be afraid of failing (Lee & Hammer, 2011), but also can enable students to engage in enjoyable experiences for the purpose of learning. In addition, gamification is an innovative approach to learning, and because new technologies and new applications are continuously emerging, it is still developing. Future studies must continue to examine the new mechanics and new applications associated with emerging gamification technologies.

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13th International Educational Technology Conference

A new dimension to teaching mathematics using iPads

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Abstract

Tablet PCs in its different forms such as Apple's iPad and Samsung's Galaxy which usually have a touchscreen or pen-enabled interface will with no doubt have a substantial effect on the future of education. They signal the opportunity for a transformation in how technology is used in schools, colleges and universities. The objective of the study is to identify the implication of using iPads in teaching introductory math courses and leverage their popularity toward an improved learning experience. The study was implemented in a first year Mathematics course at the American University of Sharjah (AUS). The main effectiveness of the approach was tested through a pilot class followed by a survey of undergraduate students taught by using the iPad in a completely paperless environment. The results from the pilot study are crucial for the implementation of a proposed study to be conducted during the 2013-2014 academic year. While the study explored the use of iPads in teaching mathematics at AUS, the lessons learned are relevant to any institution considering the use of similar technologies in the teaching of mathematics in the Middle East.

Keywords: Mathematics education, iPads, interactive tablets, technology for teaching.

1. Introduction

Studies have long shown that teaching mathematics is becoming more and more difficult. The challenge is to catch student's attention and interest in the subject. Obviously, there is a crucial need to incorporate new tools into the classroom to preserve the relevance of the educational institution (Pai, et al, 2012, Jelemenská, et al, 2011). Recently, there has been a growing interest in the use of tablets and more specifically iPads as a tool of promoting learning and teaching of mathematics. In fact, iPad creates an environment that facilitates students' learning processes (Banister, 2010, Enriquez, 2010). It also provides an interactive classroom with real-time feedback.

As the use of iPads in the classroom grows, there is a growing need to understand its impact on students' performance. Therefore, to date, the potential of iPads-based classroom is still vague and is being explored by many institutions. A number of recent reports have indicated that the use of iPads in the classroom is more effective than the traditional format of instructor-centered lecture and has a positive effect on the development of students' mathematical capacities. In this paper, the authors describe a pilot study conducted at the American University of Sharjah on undergraduate engineering students attending an introductory math course. Then we propose to address the questions:

- Can iPads facilitate and enhance students' learning of mathematics?
- How can the iPad open room for engagement and creativity?

2. Literature review

While the use of iPads in teaching is relatively new, many colleges and universities have been trialing its efficacy in the classroom. For example at Abilene Christian University (ACU) in Texas USA, iPads were used to deliver several courses. In fall 2010, Dr. Ian Shepherd and Dr. Brent Reeves designed Econ 261 class incorporating a digital textbook from McGraw-Hill. They studied the ACU's first all-digital class (Nilsson, et al, 2010). The program showed that iPads increase students' engagement and had a positive impact in academic environment. In Oklahoma State University, an iPad pilot program was conducted in five sections of two courses across two colleges to study

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how iPads affect student learning (Oklahoma, 2012). The collected data are uniformly positive and indicate that the iPad pilot was a very successful experience to a point that the university is considering the development of iPads for all students. Also in 2011 Kanda University of International Studies in Chiba, Japan conducted a case study investigated the integration of iPads into an existing English language curriculum. The findings indicate that the iPads are appropriate mainly in collaborative situations. Nonetheless, the institution's technological infrastructure, particularly the Wi-Fi network is a key factor for the iPads' effectiveness. Not only in the western countries, but also in the UAE, some universities are integrating these new technologies such as Zayed University, UAE University and Higher Colleges of Technology (HCT).

Although tablets are increasingly popular in education, there are still obstacles and barriers that may limit the use of them in the educational landscape and more specifically in teaching undergraduate mathematics. In fact, many colleges and universities adopted the iPads as an educational tool and as a standardized mobile device to integrate into curriculums without certitude that these tools are helping students in their learning process. Can we claim that iPads can make significant changes in the teaching of mathematics at AUS? Does this new e-tool provide opportunities to improve the engagement and motivation of students in math classes in the Middle East? To the best of our knowledge, there are no studies investigating the effect of iPads in teaching mathematics in Middle East. With this in mind, there is an emerging need to study the effectiveness of the iPads approach on teaching mathematics to undergraduate students in the region.

3. **Case study**

At the American University of Sharjah (AUS), during the fall semester of 2012, a research study was conducted to analyze the benefits of using iPads in teaching introductory mathematics course for engineering students. The teaching environment was completely paperless. The instructor had to ensure that a set of applications were installed on students' iPads prior to the starting of the class. These applications would aid in delivering the course content, conducting in class quizzes, referring to book materials and real time communication with students. The following apple applications were used:

- Nearpod: enables teachers to use their iPads to manage content on students' iPads synchronously. It combines presentation, collaboration, and real-time assessment tools into one integrated solution. Students receive content and submit their responses on the Nearpod application; the teacher monitors the classroom activities, and receives the result of each student.
- AirSketch: allows PDF documents or images to be annotated live and projected to the entire class. It can be used as an interactive whiteboard.
- Blackboard: allows the instructor to upload documents in any format, post announcements, upload media, course roaster, and possibly students' grades. The students can save these files on their iPads, and view them even if there is no internet.
- An iPad Application: allows the students full access to the E-text version of the book for bookmarking and other related notes.
- QuickOffice: allows the students to edit any word file, excel sheet, or power point presentations. These files were provided remotely by the instructor through Blackboard.
- Dropbox: allows the student to put all their files, documents, photos in multiple remote computers simultaneously after class hours for home editing.

In a class of 17 students, where the classroom has a wireless network, the instructor delivered the course content using iPads only. The material taught was about trigonometry: trigonometric identities and solving trigonometric equations. Students simply logged in the Nearpod session using their usernames and pins. This pin was provided by the instructor and once all students are logged in, the instructor has complete visibility of all the students participating in the class delivery. An implicit advantage of using iPads was a fast way to take attendance and monitor students' active participation in the class discussions when needed. The instructor prepared the power point presentation before class which was saved in a PDF form and then uploaded on Nearpod. During the class delivery, the instructor inserted some slides to represent some quiz questions to monitor student progress and learning outcomes. The students were given 5 minutes to answer every quiz question during the class delivery. The quiz questions were designed perfectly to match the learning outcome of every subpart of the lecture. At the end of the

lecture, the instructor saved the responseware data, and added it on the excel file for student performance monitoring. Although this was not utilized during the research experiment, one more advantage of this class delivery was that absent students can still join the class even if they were absent. All what they needed was a wireless connection on their iPads allowing them to see the class lecture notes and also take the quizzes that the instructor conducted in class. The instructor also used Air Sketch as a white board to do further calculations and explanations away from the PowerPoint lecture notes.

4. Preliminary results

In this study, we wanted to test whether using iPads would lead to better understanding of the class content and more interaction between the instructor and the students. A survey was conducted to all the students in the classroom. The study included a number of questions highlighting the students' feedback from the iPad experience.
One of the main advantages of the iPad classroom is the fact that the whole course delivery was not predetermined as the instructor adapts the lecture to the progress and the needs of to the students. Thus the lecture became dynamic and changed in real time. The quick feedback from the students using Nearpod was one of the major advantages of using iPads and boosted the content delivery. Overall most of the students found the iPad class engaging and agreed that the iPad class presents the class content in a better way.

5. Conclusion

The preliminary results presented in this paper, demonstrate that integrating tablet PCs specifically iPads in teaching introductory math courses for engineering students has a positive impact on average students. In fact, the use of the iPads, increases the interaction between the instructor and the students rending the class more dynamic and tailored in real time to the students' needs. In addition, it has been demonstrated that students are more engaged in the iPad class and keep concentrating till the end of the class. This initial result will be followed by a more in depth evaluation of the use of the interactive tablets conducted over a course length to confirm that this positive result will not fade once the initial excitement dissipates.

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A Proposed Model of Photovoltaic Module in Matlab/Simulink™ for Distance Education

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Abstract

This paper define a circuit-based simulation model for a PV cell in order to allow estimate the electrical behavior of the cell with respect changes on environmental parameter of temperature and irradiance. An accurate PV module electrical model is presented based on the mathematical equations. The general model was implemented on MATLAB/Simulink environment, and accepts irradiance as variable parameters and outputs the I-V characteristic. A particular typical solar panel was used for model evaluation, and results was compare with points taken directly from the manufacturer's published curves and show excellent correspondence to the model. With this proposed module different types of PV modules could be developed and students could be investigate and learn the P-V or V-I characteristics easily. Furthermore, a by-pass diode is added to the PV cell design with this addition, in different insulation combinations will be able to investigate likewise partial shade.

Keywords: Type your keywords here, separated by semicolons ;

INTRODUCTION

Recent developments in computer hard-ware and software now make it possible to provide students with interactive programs that can be considered as midway between regular labs and lecturers and that allow us to display multiple-view representations of given dynamic system, and some of its attributes, on the computer screen (Rosal, 2005) Virtual laboratories are recognized as an attractive complement to traditional engineering laboratories. Among other advantages, they do not require expensive and dedicated equipment, reduces the required time for instruction, and promote student involvement and learning (Muñoz & Díaz, 2010) MathWorks tools for technical computing and simulations widely used across various engineering and science disciplines. MATLAB Programming language and interactive environment well suited for computing, algorithms, data processing and visualization. Moreover, Simulink Environment is a practical tool for graphical and model-based simulation of dynamic systems (Eker & Cervin, 1999) (Nchez, Esquembre, Marti, Dormido, & Canto, 2005)(Swamy, Kuljaca, & Lewis, 2002)(Valera, Díez, Vallés, & Albertos, 2005).

The sun's heat and light provide an abundant source of energy that can be harnessed in many ways. Photovoltaic power systems convert sunlight into electricity directly. Research and development efforts are under way to improve efficiency and reduce cost of photovoltaic power systems in applications ranging from roof-top residential to large industrial or electric utility sites (Petreuş, Fărcaş, & Ciocan, 2008).Photovoltaic systems have become globally accepted as a practical and feasible tool for power generation. Researchers' efforts for facilitating PV systems utilization and their integration to currently available systems have been always inspired by the national goal of having renewable and clean energy sources. These efforts successfully solved many of the problems that are attached to PV systems (Mohamed, 2012) Therefore, for a student it is important to learn the characteristics and details about the PV systems before graduation. However, for colleges it is expensive to build a real PV system laboratory.

This paper define a circuit-based simulation model for a PV cell in order to allow estimate the electrical behavior of the cell with respect changes on environmental parameter of temperature and irradiance. An accurate PV module

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electrical model is presented based on the mathematical equations. The general model was implemented on MATLAB/Simulink environment, and accepts irradiance as variable parameters and outputs the I-V characteristic. A particular typical solar panel was used for model evaluation, and results was compare with points taken directly from the manufacturer's published curves and show excellent correspondence to the model. With this proposed module different types of PV modules could be developed and students could be investigate and learn the P-V or V-I characteristics easily. Furthermore, a by-pass diode is added to the PV cell design with this addition, in different insulation combinations will be able to investigate likewise partial shade.

MATHEMATICAL MODEL OF THE PV CELL

Nomenclature

I &V	Cell output current and voltage
I_{ph}	Photon or light generated current
Io	PV junction saturation current
R_s	Series Resistance
R_{sH}	Shunt Resistance
T	Operating temperature
I_{SC}	Short circuit current at 25º C and under 1sun
G	Solar Insulation in W/m^2
G_{ref}	1000 W/m^2
K_I	Short ckt. Current temperature coefficient at I_{SCR}
T_{ref}	Nominal Temperature
N_p	Number of parallel connected cells
Ns	Number of series connected cells

The simplest model of a PV cell consists of a current source in parallel connection with a diode as shown in figure 1. Photo current I_{ph} is directly proportional to solar radiation G. Temperature T and photo current I_{ph} have a linear relationship according to equation (1), where $I_{ph(ref)}$ is photo current which corresponds to reference temperature I_{ref}. Equation (2) gives photo current at reference temperature. is a constant given by (3). In equation (2) and (3) I_{ref} is the nominal radiation given by PV's constructor and I_{SC} is the short circuit current. All symbols are presented on figure 1 and used in equations refer to a single PV cell (Nema, Nema, & Agnihotri, 2009).
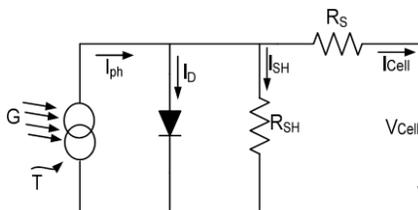
Fig 1. PV Cell equivalent circuit

The Mathematical Equations for PV Cell

$$I_{ph} = I_{ph(T_{ref})} \cdot (1 + K_0 \cdot (T - T_{ref})) \tag{1}$$

$$I_{ph(T_{ref})} = \frac{G}{G_{ref}} \cdot I_{SC(Tref)} \tag{2}$$

$$K_0 = \frac{I_{SC(T)} - I_{SC(Tref)}}{T - T_{ref}} \tag{3}$$

Diode's current is given by (4), where V_{Cell} and I_{Cell} are output voltage and current for a single PV cell respectively, I_o Io is diode's saturation current, V_T thermal voltage of it and R_S is in series resistance.

$$I_D = I_o \cdot \left[\exp\left(\frac{V_{Cell} + I_{Cell} \cdot R_S}{V_T} \right) - 1 \right] \tag{4}$$

Current I_{SH} through shunt resistance R_{SH} according to Ohm's law is equal to:

$$I_{SH} = \frac{V_{Cell} + I_{Cell} \cdot R_S}{R_{SH}} \tag{5}$$

Taking into account equations (1) – (5) and applying Kirchhoff's current law, I –V characteristic equation (6) is resulted for PV cell:

$$I_{Cell} = I_{ph} - I_o \cdot \left[\exp\left(\frac{V_{Cell} + I_{Cell} \cdot R_S}{V_T} \right) - 1 \right] - \frac{V_{Cell} + I_{Cell} \cdot R_S}{R_{SH}} \tag{6}$$

Substituting in (6) equations (7) and (8) which gives output voltage V and current I respectively for Ns in series and N_p in parallel PV cells and ignoring current through shunt resistance, equation (9) gives the general I – V characteristic for PVs. Equation (10) gives the output power of a PV module consisted of (N_s x N_p) cells.

$$V = N_S \cdot V_{Cell} \tag{7}$$

$$I = N_P \cdot I_{Cell} \tag{8}$$

$$I = N_P - I_{ph} - N_P \cdot I_o \left[\exp\left(\frac{V + I\left(\dfrac{N_S}{p}\right) \cdot R_S}{N_S \cdot V_T} \right) - 1 \right] \tag{9}$$

$$P = (N_S \cdot N_P) \cdot V_{Cell} \cdot I_{Cell} \qquad\qquad (10)$$

Equation (10) is able to be extended for a single PV array which consists of a number of PV modules and for a PV farm with many arrays.

Modeling The PV Cell and Different Input PV Modules

A. *PV Cell and PV Module Model*

Due to the formulations in section 2 the interface model of PV Modules has been developed in MATLAB/Simulink environment. A parameter login screen is designed for different type PV modules which is shown in Fig. 2 (b). To prevent the hot spot and short circuit problems a by-pass diode is added as shown in Fig. 2 (b). In addition to the PV cell model also PV module is designed. A practical method is used while developing the PV module with a gain (N$_s$) block which can be seen in the right part of the Fig. 2 (a).
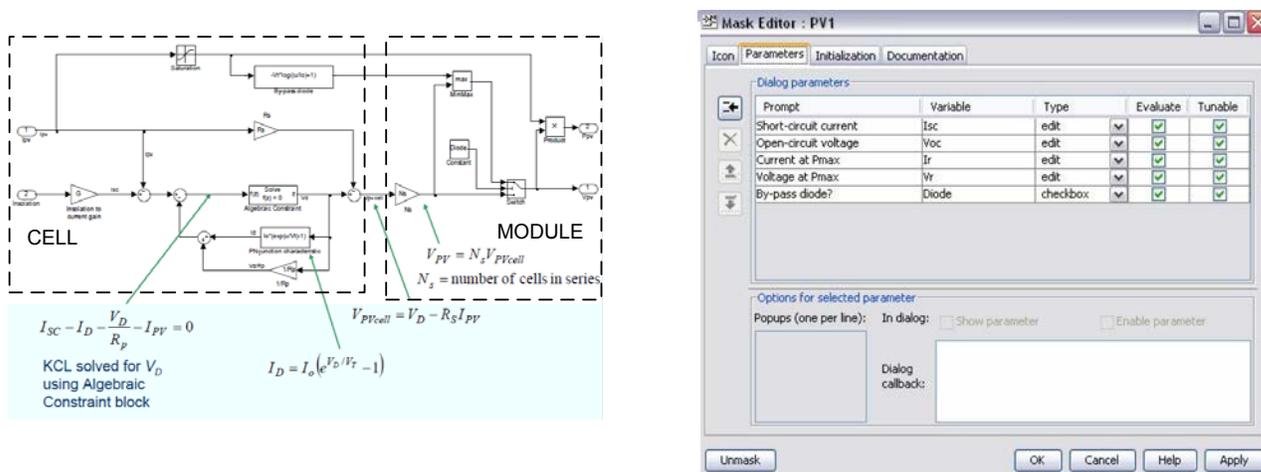
Fig 2. (a) PV Cell and PV Module design in MATLAB/Simulink (b) PV Module parameter login screen

B. *A Current-Input and Voltage-Input PV Module*

In Maximum power point trackers researcher has to be develop an algorithm and this algorithm could be different outputs like maximum current or maximum voltage, therefore designer or student could need different input PV modules for simulations. For this purpose, two types of PV Modules are designed for the user. With the current input and voltage-input PV modules provides a flexible environment to the user.
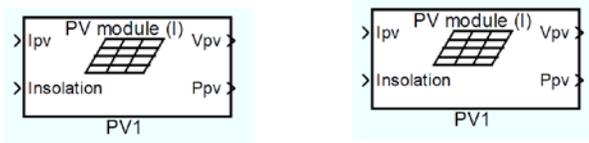
Fig 3. (a) Current-input PV Module   (b) A Voltage-input PV Module

Determination of V-I and P-V Characteristics

Student can easily determine the PV characteristic with proposed PV modules with connecting them in series. For a realistic PV system simulation, it is better to connect series the PV modules. Fig. 4 shows the simulation between six series connected PV modules. In this fashion, the output power of the PV system is about 510 W. The output P-V and I-V characteristics in Fig. 5 are obtained from that simulation.
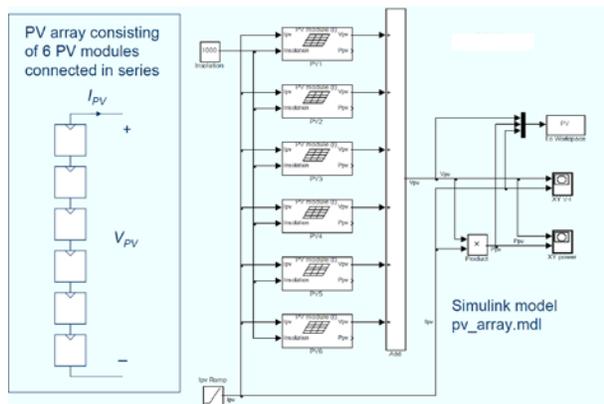
ed the characteristic curves

P-V and I-V characteristics are key points for understanding the PV systems. The need for the Maximum Power Point Tracker (MPPT) is acquired from these characteristics. It can be clearly seen from Fig. 5(a) that there are only one maximum power point in each power curve and the purpose of the MPPT's are operate the PV systems at these maximum power points in different insolation levels. In Fig. 5. (a) different power curves are occurs due to different insolation conditions. When the insolation level is raised the output power is raised continually until the insulation is reached its maximum level.
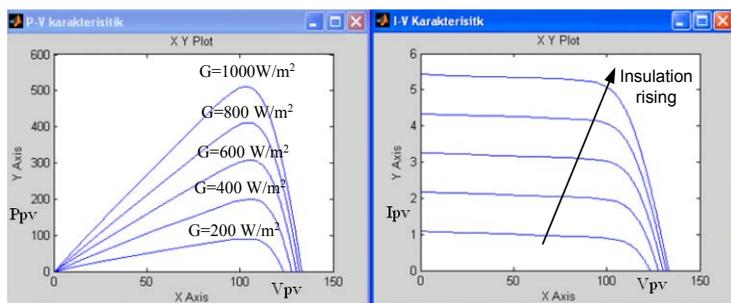
Reliability test of the model

The reliability of the system is tested with using real PV module parameters and the simulation results are compared with the data sheet values. The real data which is obtained from data sheet is login as shown in Fig. 6 (a) and the real parameters from data sheet are shown in Fig. 6 (b). Although, in the PV modules data sheets has plenty of parameters, with proposed model a few of them enough to develop a realistic PV module. To the login screen the short circuit current, open voltage, voltage and current values at the maximum power point values are entered as shown in Fig. 6 (a) and the real values from data sheet is given in Fig 6 (b).
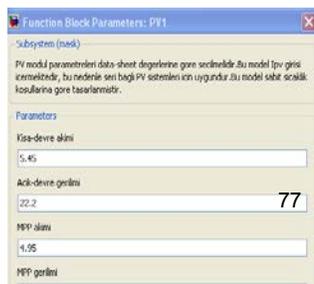
PowerMax™ Ultra		80-P	85-P
Rated power [W]	P$_r$	80	85
Peak power* [W]	P$_{mpp}$*	80	85
Module efficiency [%]	η	12.7	13.4
Peak power voltage [V]	V$_{mpp}$	16.9	17.2
Peak power current [A]	I$_{mpp}$	4.76	4.95
Open circuit voltage [V]	V$_{oc}$	21.8	22.2
Short circuit current [A]	I$_{sc}$	5.35	5.45
Series fuse rating [A]	I$_{fuse}$	20	20

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Fig. 6 (a) Parameter login screen with real data sheet values   (b) data sheet parameters

The maximum power for one module is 85 W and 6 module is connected in series which makes the total output power 510 W and voltage value is equal to 103.2 V. The comparison tables of the real data and the simulation results are given in Table 1 and 2 respectively.

Table 1. The real data results   Table 2. The Simulation results

Insulation	MPP Power (W)	MPP Voltage(V)	MPP current (A)	Insulation	MPP Power (W)	MPP Voltage (V)	MPP current (A)
1000 W/m²	510 (85*6)	103.2 (17.2*6)	4.95	1000 W/m²	510.8243	103.4057	4.9400

2. Partial Shade Condition Simulations

If a PV array is partially shaded by a building, a tree, and/or clouds as shown in Fig 7 (a), it becomes insufficient for conventional MPPT schemes to extract maximum power. If modules with different optimal currents, caused by uneven insolation, are connected in series-parallel, MPPs often appear in the power versus voltage characteristic.

In our interface model it is also possible to make a shade condition simulation. In Fig. 7 (b) the sixth panel is exposed to a shade condition. The student only changes the insulation rate to see the effect of the partial shade condition to the PV system.
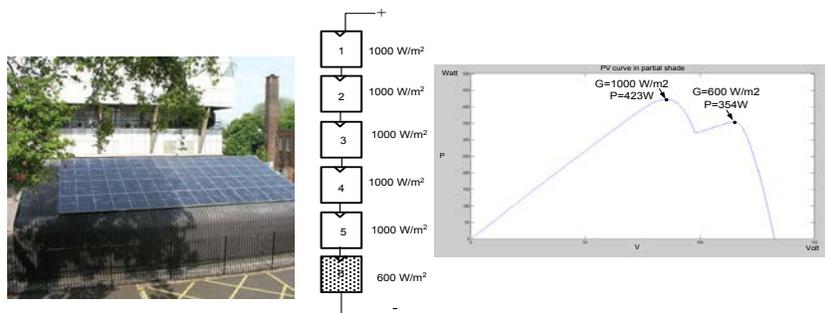
Fig 7. (a) Partial shade occurs because of a tree   (b) partial shade simulation results

Conclusion

An accurate PV module electrical model is presented and demonstrated in MATLAB/Simulink for a typical 60W solar panel. Given solar insolation and temperature, the model calculates the current for a given voltage. The results from the MATLAB™ model show excellent correspondence to manufacturer's published curves. Finally the model development was used to show the effect of: insolation, temperature, ideality factor and series resistances .This paper is the first step to develop a complete solar photovoltaic power electronic conversion system in simulation. The final objective is develops a general model to simulate the electrical behavior of the PV systems in a grid connected application. With this study students will be able to simulate the PV system without a laboratory.

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13th International Educational Technology Conference

A STUDY OF NETWORK LEARNING RESOURCE CENTER FOR ELEMENTARY SCHOOLS OF BANGKOK METROPOLITAN

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Abstract

This research is aimed to study factors effecting network learning resource center for the elementary schools of Bangkok Metropolitan. Those factors studied must have influenced the provision of effective learning center in academic institutions and must have facilitated the contribution of learning experiences among the community people while the learning media are always developed and the communication are made through the learning network which link the local academic institutions and urban areas. The population used in this study is 96 people of administrators, instructors and school personnel from 24 primary schools of Bangkok Metropolitan. The data has been analyzed by descriptive statistic methods which are percentage, mean and standard deviation in order to describe the results derived from behaviors forecasting using the data multivariate analysis regression. The results found are that:- 1) The first factor studied is emphasized on instruments which should be provided in the network learning resource center for primary schools of Bangkok Metropolitan are actually served to the students entering the center for self-learning with the most value 3.97 of mean (S.D. = 0.71) and the least mean is derived from provision of computer units in the center for students to search information themselves and for the coordination among schools with its average value 3.40 of mean (S.D. = 0.78). 2) The second factor is emphasized on application of languages used in information technology and educational communication for the learning administration in network learning resource center. It is found that there has been searching information from websites for teaching and learning preparation and there has also been usage of applied software programs for teaching methods which effect to the highest 3.93 of the mean (S.D. = 0.76) and the least is derived from using of information technology and education communication for producing learning media with average value of 3.58 of mean (S.D. = 0.99). 3) The third factor is emphasized on media and instrument used in the network learning resource center. It is found that there has been adequate personal computers provided by the academic institutions and those computers are applicable and up-to-date and there has also been sufficient compact and applied programs that effect the highest value 3.93 of mean (S.D. = 0.76) and the least value was found on the audio-visual media which have been supplied adequately at the average value of 3.30 of mean (S.D. = 068). 4)The fourth factor is about the supportive actions derived from network learning resource center towards the information technology and educational communication through academic activities and skills for teachers in schools or school groups of Bangkok Metropolitan. It is found that learning activities prepared by school instructors result the highest value 3.95 of mean (S.D. =0.76) and the inferior value is deprived from listening the instructors' comments and encouraging them for applying knowledge and skills in using media learnt from the network learning resource center to apply for further factual preparation of learning and teaching with its average value 3.93 of mean (S.D. = 0.76). From the study, it is clearly notified that the trend of network learning resource center for schools of Bangkok Metropolitan will be applicable under this convention:- Policy and Strategy Administration highly possible mean 3.93 (S.D. = 0.76) Building and Location Administration fairly possible mean 3.40 (S.D. = 0.78)Management and Finance Administration highly possible mean 3.79 (S.D. = 0.68) Personnel Administration highly possible mean 3.73 (S.D. = 0.69) Statistic and Reports Administration highly possible mean 3.97 (S.D. = 0.71) Public Relation Administration highly possible mean 3.58 (S.D. = 0.99)

Keywords: Network Learning ; Resource center

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Introduction

The required qualifications defined in item 3 of the purposes of Basic Education Standards issued in 2554 B.E.　are hereto:-

"Learners need to be educated as well as international education levels are provided and they are required to realize all steps of global alternatives and technology development. It is very important for learners to be trained with skills, management capability, communication methods and usage of modern technology.　Learners need to know how to revise their attitude and apply their working methods for appropriate areas and related parts of learning network resources of which the following basic procedures have been managed for related academic agencies:-

There has been provision or management of effective learning resources in academic institutions and community for being searching resources where experiences can be exchanged among academic institutions and with other communities.

The researcher has realized those problems occurring in those communities and has aimed to study factors affecting the format of network learning resources for elementary schools of Bangkok Metropolitan. Hopefully, this study will be advantageous and can be an approach for further developing network learning resources for　　　　　　elementary schools of Bangkok Metropolitan.

Objective

To study factors which influence the format of network learning resources for elementary schools of Bangkok Metropolitan.

Expected Outcomes

From this study, the factors influencing the format of net work learning resources for elementary schools of Bangkok Metropolitan will be recognized and its outcome will be used as developing approach by management levels for supporting the network learning resources.

Study Concept

These following independent and dependent variables have been defined for the study concept:-
There are 3 types of inputs in independent variables:

Inputs which are
- Inputs 1 include necessary information should be provided for network learning resources for elementary schools of Bangkok Metropolitan.
- Inputs 2 are the application of Information technology and educational media for being learning services within network learning center.

Contributing factors are readiness of media materials and equipment in the learning center.

Supplementary factors are learning centers which provide information technology and educational communication through activities provided for increasing skills for teachers in elementary schools of Bangkok Metropolitan.

Dependent variables are the format of network learning resources provided in elementary schools of Bangkok Metropolitan.

To study those factors, related documents and research articles related have been studied including the National Education Act of 2542 B.E., computer network systems, library network process, organization management,

personnel administration, physical services in learning center for network resources and other related foreign articles.

Study Methods
These following methods have been used in this study:-
Population used in this study is 96 people of 24 elementary schools of Bangkok Metropolitan including administration levels, teachers, academic personnel who have related responsibilities in learning services of each school where its format of the learning resource management is unclear.
Tools used in this study are questionnaire consisting of 6 parts:-
Part 1 – General information for the questionnaire respondents
Part 2 – Inputs
Part 3 – Contributing factors
Part 4 – Supplementary factors
Part 5 – Possible variables
Part 6 – Suggestions from the questionnaire respondents concerning possible formats for the network learning resources for elementary schools of Bangkok Metropolitan
To produce tools used in this study, these following processes were managed hereto:-
1. Studying document and research articles concerning the format of network learning resources for elementary schools of Bangkok Metropolitan
2. Designing questionnaire following to the study concept and the objectives of the study
3. Proposing of the designed questionnaire to the advisor for her comments which will be used for revising the appropriate contents, statements and language used in the questionnaire of which its consistency was reviewed by the specialist
4. Trying out the designed questionnaire to search for reliability of the questionnaire
5. Reliabilities of all questions set in the questionnaire was 0.812
6. Revising and editing before the complete set of questionnaire was printed out

Data Information Collection Method
The researcher herself propagates the approved questionnaire to collect data information. The duration for between propagating and collecting the questionnaire is 3 weeks and the researcher herself collect the number of questionnaire as set following to the number of population.

Statistics used for data analysis
Descriptive statistics which are percentage , mean and standard deviation was used for analyzing the data characteristics. After that the regression was used to analyze the data information and to forecast behaviors herewith:-
1. Independent variables of inputs influence the format of network learning resources for elementary schools of Bangkok Metropolitan showing the relationship between behavior forecast and information perception behavior with its statistic at .05.
2. Independent variables of contributing factors influence the format of network learning resources for elementary schools of Bangkok Metropolitan showing the relationship between behavior forecast and information perception behavior with its statistic at .05.
3. Independent variables of supplementary factors influence the format of network learning resources for elementary schools of Bangkok Metropolitan showing the relationship between behavior forecast and information perception behavior with its statistic at .05.

4. Dependent variables of possible format: the relationship between format of network learning resources for elementary schools of Bangkok Metropolitan and information perception behavior showing its statistic at .05.

Comments and suggestions
Comments for this study

1. There has been limitation in the number of population used for this study. In addition, duration for collecting data needs to be expanded also.
2. Some parts of population used in this study lack knowledge of the study information because the schools used for the study are pilot schools which lack learning resource centers and some data information collected is only imagery and it is not collected from actual practice.

   Suggestion for further studies

   Connection between each type of learning media used in the network learning resources and satisfactory of users need to be further studied for further appropriation.

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13th **International Educational Technology Conference**

A Study on student and teacher views on technology use

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Abstract

In our day, technology plays a major role in almost all walks of life. Individuals of all ages make use of it in their daily lives. Researchers have also studied this phenomenon (Wyk & Louw, 2008:246; Akpınar, 2005:39; Alkan, 2005:28; Deniz, 2000:150). The views of individuals on technology use offer clues about the tools they consume. These views may vary. Used in all aspects of our daily lives, technology has also become part of the instructional process at schools. Student and teacher opinions are crucial in the effective and efficient use of technology.
The aim of this study is to determine the views of elementary school pupils (grades 1-4) and teachers on technology use. The study group consists of pupils from grades 1 through 4 and their teachers.
This is a descriptive study based on the survey model and quantitative research method (Karasar, 2005:25). Data will be collected by using a 3-point Likert type questionnaire prepared by the researchers. Frequencies and percentages were used in the analyses.

Keywords: Elementary school student, elementary teacher, technology use;

Introduction

In our day, technology plays an important role in almost all walks of life. Individuals of all ages make use of technology in their daily lives. This swift increase in technology use has also affected educational systems and technology entered our schools for different reasons. Technological gadgets are the easiest way of reaching information and they have taken their place among the most commonly used educational materials in schools. Where we once used overhead projectors, videos, TV sets, and radios in the education sector, these have undoubtedly been replaced by computers, projectors and smart boards. Smart boards are defined as an educational tool that allows teachers and students to use their knowledge with skills, repeat, interact with knowledge and respond to instruction. The components of a smart board system are a computer, a projector and a panel with active surface that acts like a blackboard. Connected to a computer, the smart board and projector are used in conjunction with a smart board software. This software allows the use of many ready-made drawings, formulas, images, maps and shapes during class (Dill, 2008).

Smart boards offer many facilities such as presentations, viewing videos and graphics, as well as the opportunity to retrieve what was on the board at a later time (Smith et al., 2005). As stated by Levy (2002), smart boards have the advantages of presenting learning resources and knowledge, explaining concepts and ideas, and facilitating interaction and activities in the instructional process. They thus support the instructional process, draw students' attention and increase their motivation.

According to the British Educational Communications and Technology Agency (BECTA) report (2007), smart boards are a beneficial tool of presentation that can be used to replace traditional and modern classroom resources (such as the blackboard, flipchart, OHP, maps, images, graphs, books, calculators and players); and that give one-click access to teachers to a bank of resources that would otherwise take years to collect and much space to store. Lewin, Somekh and Steadman (2008) state that smart boards make classes more visual and lively with their touch-screen characteristics, the ability of students and teachers to interfere, change and record things and their other features such as sound, video and animations, colors, images, and zooming in or out. SMART Technologies (2006) report also states that smart boards increase active student involvement in the learning process and their interaction with the course, encourage them to learn and support different learning styles

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Kennewell and Beauchamp (2007) argue that smart boards ensure more eye contact between students and teachers and thus ease classroom management, make learning fun, enhance involvement and enrich the environment. Cogill (2001) emphasizes that training is necessary if smart boards are to be used effectively in education, and that overuse can put students off learning. Adıgüzel et al. (2011) contend that if teachers use smart boards in the right way, students can develop more interaction with the course.

Looking at research results on smart boards, some state that, when used properly, they keep students happy to learn with them, make class time more efficient, help teachers maintain student interest and motivation, and ensure more effective instruction along with a cooperative learning environment (Sünkür, Arabacı and Şanlı, 2012; Ateş, 2010; Painter, Whiting and Wolters, 2005). However, there are other studies that discuss the problems that arise during the use of smart boards. Some of these are "lack of training on how to use smart boards for teachers, lack of support for teachers, lack of materials for use with smart boards, technical problems before and during smart board use, and the resulting fall in student motivation (Türel, 2011; Türel, 2010; Hutchinson, 2007; Hall and Higgins, 2005).

Smart boards have become very popular in the field of education recently, particularly in countries such as the UK, USA and Australia, attracting huge allocations in their education budgets. While 90% of classrooms in Japan and the USA are adorned with smart boards, 70% of EU classrooms have them. The Italian Ministry of Education started a project called "Digital Schools" (www.digiscuola.it) in 2010, with which they are making a great effort to increase the number of smart boards across the country and ensure their effective use with teacher training (Lai, 2010; Türel, 2010; Torff and Tirotta, 2010 and Holmes, 2009). These countries mostly use tools that resemble a traditional board but has a touch screen to interact with the user, and are connected to a computer. In Turkey, smart boards have recently become a popular tool of learning and teaching especially in elementary schools, and their use is on the rise both in public and private schools. The Fatih project initiated in 2010 intending to bring a new vision to the Turkish education system defines its overall goal as bringing computer technology (CT) tools to classrooms by the end of 2013 (MEB, 2012). The components of the Fatih project include the following five headings: hardware-software, e-content, use of information technologies and in-service teacher training. The project embodies the transition from "a computer for each school to a computer for each classroom" (Adıgüzel et al. 2011).

1.1. Significance of the Study

As mentioned before, smart boards have become popular in Turkish education agenda and are being used in many institutions. However, every technological tool comes with both advantages and disadvantages. This study examines teacher and student views on smart boards that have a big cost for the country by referring to other studies in the literature and the Fatih project. Examining the success of previous practices and teacher and student views is crucial. The study was conducted with 5th, 6th and 7th graders from a school that has been using smart boards for the past three years, and the teachers of these children. The concept of technology in the study is limited to smart boards.

The study sought answers to the following questions:

Problem Statement

What are student and teacher views about smart boards used in their classes?

Sub Problems

   a.   What are student views about smart boards used in their classes?
   b.   What are teacher views about smart boards used in their classes?

Method

Study Group

The study group comprises 5th, 6th, and 7th graders from a school that was using smart boards during the 2012-2013 school year, as well as the teachers of these students. The distribution of the students by gender and grade level is shown below in Table 1.

3.   Table 1. Distribution of students by gender and grade level

Gender	n	%	Grade Level	n	%
			5	69	37,7
Girl	105	57,4	6	65	35,5
Boy	78	42,6	7	49	26,8
Total	183	100,0	Total	183	100,0

Of the students in the study group, 57,4 % were girls and 42,6% were boys. Of these , 37,7% were 5th graders, 35,5% were 6th graders and the remaining 26,8% were 7th graders.

The distribution of the teachers by gender and subject area is presented below in Table 2.

4. Table 2. Distribution of teachers by gender and subject area

Gender	n	%	Subject Areas	n	%
Female	20	55,6	Turkish	6	16,7
Male	16	44,9	Science and Technology	7	19,4
			Social Science	6	16,7
			Mathematics	9	25,0
			Foreign Language	8	22,2

Of the teachers in the study group, 55,6% were female and 44,9% were male. Of these, 16,7% were Turkish teachers, 19,4% were Science and Technology, 16,7% were Social Studies, 25% were Mathematics and 22,2% were Foreign Language teachers.

The distribution of teachers regarding their smart board experience and use is given in Table 3.

Table 3: Distribution of teachers regarding their smart board experience and use

Smart Board Experience	n	%
3 years	18	50,0
2 years	12	33,3
1 year	6	16,7
Smart Board Use (Daily)	n	%
7 hours	7	19,4
5 hours	16	44,4
4 hours	13	36,1

Fifty percent of the teachers had been using smart boards for 3 years, while 33,3% had been using them for 2 years, and 16,7% for 1 year. On the other hand, 44,4% used it for 5 hours daily, 36,1% for 4 hours daily, and 19,4% for 7 hours daily.

Data Collection Tools

Student data were obtained by using the tool developed by Beeland (2002). This is a 4-point Likert type scale with 20 items with the following: 1: Completely Disagree, 2: Disagree, 3: Agree and 4: Completely Agree. Test reliability was ensured by a Cronbach Alpha coefficient of .71. Also, the researchers added the following questions at the end of the scale: "When a smart board is used, what are your favorite aspects of class?", "Is there anything

you don't like about smart boards? What?" and "Do you think you learn better when a smart board is used in class? Why?" and obtained the views of 18 (10%) randomly selected students from each class.

Data from teachers, on the other hand, were collated by the researchers by using a survey based on Beeland's (2002) measurement tool, which was a 5-point Likert type scale with 20 items. The points were as follows: 1: Completely Disagree, 2: Disagree, 3: Undecided, 4: Agree and 5: Completely Agree. Test reliability was ensured by a Cronbach Alpha coefficient of .69. The survey included questions such as: "How many years have you used smart boards?", "How many hours daily do you use smart boards?", "What difficulties do you face when using smart boards?" and "What are the advantages of using smart boards?".

Findings

The findings were considered and interpreted in the same order as the questions used in the study.
a)   *What are student views about smart boards used in their classes?*
Student views about smart board use were examined and the results are offered in Table 4.

Table 4: Student views about smart boards used in their classes

	$\overline{X}$	sd
I enjoy learning with smart boards		
I don't like being taught through smart boards*	3,21	,467
Using technology well helps finding a good job	3,79	,588
When smart boards are used during education, I focus better	3,81	,599
If my teacher used smart boards more often, I would study more	3,46	,557
I know that learning how to use technology gives me the opportunity to learn many new things	3,49	,663
I can learn many things when my teacher uses a smart board	3,75	,611
I enjoy courses taught through smart boards	3,89	,755
I believe that the more teachers use smart boards, the more I enjoy school	3,56	,550
I believe that it is important for me to learn how to use a smart board	3,87	,676
I feel comfortable using a smart board	3,78	,487
I enjoy using a smart board	3,87	,539
I don't think that learning will take longer when my teacher uses a smart board *	3,68	,599
I'm no longer apprehensive of using a smart board	3,91	,296
Using a smart board makes me nervous*	1,87	,536
Using a smart board is not nerve-wrecking	3,38	,616
By using technology, I can study as little as possible*	3,57	,622
It is difficult to use a smart board *	1,87	,911
I can learn more from books than I can from smart boards *	2,82	,627
I panic when I think about using a smart board *	1,86	,474
Total	3,36	,591

* Items 2, 13, 15, 17, 18, 19 and 20 are negative and inversely coded

It can be understood that students generally embrace the use of smart boards as they have mostly chosen the alternative *"Completely Agree ($\overline{X}$ = 3,36, sd=0,591)"*. The items for which the students chose "Agree" and "Completely Agree" were: "I enjoy learning with smart boards", "Using technology well helps finding a good job", "When smart boards are used during education, I focus better", "If my teacher used smart boards more often, I would study more", and "I enjoy courses taught through smart boards."

Students chose "Agree" for smart boards encouraging participation, making classes fun and interesting, and using time efficiently. Overall, they seem to think that technology use facilitates learning and is influential in finding a good job.

These results suggest that students are satisfied with learning through smart boards. This finding is in line with those of previous studies about using smart boards in the instructional process (Beeland, 2002 and Lewin et al., 2008).

The responses of students to the open-ended questions were as follows:

When a smart board is used, what are your favorite aspects of class?

Most students stated that they enjoyed the interactive feature of smart boards and the option of being able to write on them by using a marker or their fingers, and that they did not get bored during smart board use. They also said that learning through videos and other visuals is beneficial, and that smart boards enable them to use the Internet when there is a new concept they want to learn about.

"We learn by seeing and listening." A.K

"We learn without being overloaded with information, we can use the net when we want to". K. D

"We can copy what we do and share them with other classes or view them again ourselves" A. F

Is there anything you don't like about smart boards? What?

Students replied that visibility was compromised due to glare in sunny weather, they were not able to read materials written on A4 paper, they sometimes changes the screen upon touching the board accidentally, videos sometimes did not load and wasted their time, and teachers sometimes went over things too quickly.

"Videos shut down, which leads to time waste. When I'm writing on them my other fingers touch the board and cause problems" A.K

"Print sometimes moves, restarting the board after a power cut can take time, and using a marker can be difficult." K.D

"It can give us eye strain. Glare during early hours makes it hard to see the board. Our teachers sometimes teach too quickly, which tires us and makes it difficult to follow class." A. F.

Some teachers going over materials too quickly, the headache and eye strain that some students mentioned, and possible technological problems are similar to the difficulties mentioned in previous studies (Wall et al., 2005; Hennes, 2007).

Do you think you learn better when a smart board is used in class? Why?

Most students stated that smart boards are audio-visually rich and lead to better learning, and that their teachers come to class better prepared which leads to more interesting classes where they can learn better.

"The smart class facilitates our teacher's work and makes drawings clearer. I learn better with the smart board. Its Internet connection also supports our learning." A.K.

"I learn better with the smart board than with books. I understand things more quickly and find learning fun" K. D.

"Our teachers prepare for class, and we use the internet to reach videos and images and thus learn better." A. F.

In sum, students stated that they understood subjects more easily with a smart board owing to its print and drawing features, audiovisual opportunities and the internet connection. Considering student interest in visual, aural and tactile course materials, these findings are not surprising.

However, one student said during the interview that he was not able to learn with a smart board and that using it was a loss of time and led to some problems.

"I think it's a time waste to use a smart board, it gets noisy at times and stops me from learning. Instead of writing things down, we just view them on the board. Those with eye problems suffer. Also, I don't like it that my work or assignments are shared with the whole class on the smart board." C. B.

b.   What are teacher views about smart boards in their classes?

Teacher views on the topic were also examined and the results are given below in Table 5.

Table 5: Teacher views on their smart board practices

Smart boards...	$\overline{X}$	ss
help me use time efficiently	3,78	,663
interest and motivate students	4,21	,629
make my classes more interesting	3,98	,576
help me have more time for my students	3,43	,654
visualize the learning environment and bring concrete learning	4,50	,586
help me use computers and projectors more effectively than before	4,01	,473
encourage my students to participate more in my lessons	3,78	,417
help my students learn better	3,97	,473
have helped me change my instructional method	3,67	,668
are time consuming*	3,51	,554
help me enjoy my classes more	4,13	,581

are not appropriate for every subject*	4,28	,583
waste time when there are technical problems*	4,04	,630
help students understand topics better by using audiovisual materials	4,15	,595
are not significantly different from regular boards*	2,63	,710
make my classes more planned and organized	4,63	,531
are difficult to use*	2,50	,505
make classroom management more difficult*	2,65	,481
require too much time and effort for materials development*	3,71	,455
reduce student interest when overused*	3,65	,481
Total	3,76	,654

* Items 10, 12, 13, 17, 18, 19 and 20 are negative and inversely coded

It can be seen that teachers generally chose between *"undecided"* and *"agree" ($\overline{X}$ = 3,76, ss=0,654)"*. Those items that were marked as "Agree" and "Completely Agree" were: "interest and motivate students", "visualize the learning environment and bring concrete learning", "make students understand better with audiovisual materials", and "make my classes better planned and organized". However, teachers also stated that smart boards were not appropriate for every course and that they led to time loss when technical problems arose.

The responses of teachers to the open-ended questions are summarized below.

All teachers in the study group said that they made use of smart boards.

What are some difficulties you face when you use smart boards?

Similar to any technological system, problems may also arise when smart board systems are used. Teachers listed these problems as technical problems, the time needed to prepare materials, and their mismatch with some subject areas.

"They frequently require calibration, and their overuse may cause headaches or restlessness in students. It can sometimes take time to technically solve problems, which leads to a hubbub in class and waste of time, as well." A. K.

"I don't think they are very effective in courses such as Social Studies. They can, however, draw student interest with visual materials such as maps." D. N.

"It takes time to prepare course materials, I need to revise and correct them a lot." S. T.

"They cause loss of time when there's a technical problem (such as power cuts or calibration), and because we prepare to teach via the smart board, it takes time to shift to another mode" A. F.

What are the advantages of using smart boards?

The teachers listed increased student motivation and participation, efficient use of time, and effective learning owing to being visual as the advantages of smart boards.

"They attract student attention. They are particularly good with that in geometry" A.K.

"Because you prepare for class beforehand, you can use time very efficiently." D. N.

"They increase student interest and motivation; particularly when students are allowed to also use the board." S. T.

Conclusion

Technology is becoming ever more present in the instructional process. Different technological tools are in use in different countries and schools. Smart boards, which combine computers, projectors, smart screens and the internet are an example of these technologies and are becoming more and more popular.

Aiming to promote the use of smart boards in education and to examine student and teacher views on smart boards, this study found that students embraced smart boards, and "agreed" that these boards increased their involvement in classes, made their courses more fun and helped efficient use of time.

Teachers, on the other hand, "completely agreed" that smart boards interest and motivate students", "visualize the learning environment and bring concrete learning", "make students understand better with audiovisual materials", and "make classes better planned and organized".

Most students stated that they enjoyed an interactive board and being able to write with a marker or their fingers, learning with a smart board by watching videos and seeing, and being able to use the internet to check out new information. Teachers, on the other hand, mentioned enhanced student motivation and participation, better use of class time owing to prior preparation, and more effective learning with visual materials as the advantages of smart boards.

Students stated that smart boards have glare problems, they were not able to read materials written on A4 paper, they sometimes changed the screen by touching it inadvertently, videos sometimes do not load and cause time loss, and teachers sometimes rush through materials. Teachers mentioned technical problems (such as power cuts or

calibration), the time-consuming nature of materials preparation, and smart boards not lending themselves to use in every subject area.

As can be seen, despite technical problems and the time needed to prepare materials, smart boards are a viable educational solution to get students motivated and interested, to make lessons more efficient, and to support teachers.

Other studies are needed to make smart boards more commonplace in the country and reveal their advantages and benefits comprehensively.

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A Survey on Teachers' Awareness and Attitudes on Computer-Corpus Data: An Assisted Technology-based EFL Vocabulary Selection and Instruction Source

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Abstract

The present research paper focuses on the area of vocabulary teaching in the foreign language classroom. It attempts to highlight the way computer corpus data ease the difficulties involved in EFL (English Foreign Language) vocabulary teaching and learning. The paper aims at exploring the extent of awareness of EFL teachers to the concept of computer corpus-data, raising awareness on the efficacy of computer-corpus data in the area of EFL vocabulary selection and instruction and analyzing teachers' attitudes on the application of those data as a language source in selecting EFL vocabulary teaching materials.

Keywords: vocabulary; computer-corpus data; EFL teachers; awareness; attitudes

Introduction and statement of the problem

Learning a foreign language involves the development of different skills, namely, reading, writing, listening and speaking. Although specific skills may be focused on separately for pedagogical reasons, two elements are crucial to the process of acquiring and using a language: vocabulary and grammar (Celce-Murcia, 2001). However, the importance of grammar has been widely recognized in English Language Teaching (ELT) methodologies than vocabulary (Celce-Murcia, 2001; Nunan, 2001; Swan, 2002). This is because the latter was incidental to the main purpose of the target language teaching. In this respect, DeCarrico (2001:285) writes: *"vocabulary has not always been recognized as a priority in language teaching"*. In addition, Richards and Renandya (2002) affirm that vocabulary teaching and learning has been left to a position of secondary importance if compared with other fields of research in language teaching and learning. However, from the mid 1980s onwards, vocabulary becomes the area of interest of many investigators (Laufer, 1986; Carter, 1987, 1988; Sinclair & Renouf, 1988; Nation, 1990; Willis, 1990; Descamps, 1992; Nattinger & DeCarrico, 1992; Lewis, 1993, 1997; Read, 2000 etc.).

The growth of interest in vocabulary learning pushes many researchers to investigate its effectiveness on successful Second Language (SL) learning. For example, Laufer (1986) and Nation (1990) realize that many of SL learners' receptive skills (listening and reading) and productive skills (speaking and writing) difficulties result from an inadequate vocabulary. They also assert that even when learners are at higher levels of language competence and performance, they are still in need to vocabulary learning for this latter is a lifelong process. On their part, Richards J.C. and Renandya (2002: 252) find out that: *"Vocabulary is a core component of language proficiency and provides much of the basis for how well learners listen, speak, read and write. Without an extensive vocabulary… learners often achieve less than their potential and may be discouraged from making use of language"*. In the same context, Beglar and Hunt (2005: 7) confess that "*Vocabulary acquisition is a crucial, and in some senses, the central component in successful foreign language acquisition*". Accordingly, it could be argued that vocabulary is the keystone of successful Second Language and Foreign Language (FL) learning and its acquisition is the basic foundation of the target language proficiency since its knowledge pervades all four language skill areas and helps learners in both language comprehension and production. Therefore, words are perhaps the greatest tools teachers can give to their learners to do well, not only in their target language learning but more generally in life since words play an important role in expressing one's feelings, emotions, and ideas to others during the act of communication in

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today's complex social and economic world (Allen, 1983). It follows that language teachers in general and S/FL teachers in particular should attribute great importance to teaching vocabulary in their classes.

The present paper goes beyond that and sees FL vocabulary teaching more than presenting new words. For sure, this may have its position but careful consideration should be given to other issues. For example, EFL students see lots of words in a language class, some of them are taught at an early stage and other are taught later and some are used often while others are not. At this level, one should ask why should instructors teach some words and not teach others? On which aspects should they base their EFL vocabulary selection decisions? Is there any way or source on which teachers may rely to encourage students to learn a given word rather than another? Why some students are successful at vocabulary learning and others are not? These questions are more or less difficult and challenging to foreign language syllabus or textbook designers, teachers and learners to answer for the large amount of the English vocabulary itself and the foreign language little exposure in the learning environment. Given the challenge involved in EFL vocabulary selection and instruction, the present paper strives to solve and answer some of the above queries by highlighting the way computer-corpus data can ease the difficulties involved in EFL vocabulary selection and instruction which is the scope of this paper, but prior to this the researcher tries to answer some questions, like: what is meant by computer-corpus data? And what can computer-corpus data tell EFL textbook designers or teachers about vocabulary?

Computer-corpus data

A computer-corpus is basically a collection of written or spoken texts which are stored in a computer. Written texts (newspapers and magazines) can be entered into a computer from a scanner, a CD, or the Internet. Spoken texts as conversations are recorded and then transcribed so as to feed them into the computer database. Eventually, it becomes possible to analyse the language with corpus software tools to see how people really speak or write (O' Keeffee, McCarthy & Carter, 2007). According to many corpus-linguists (Sinclair J., 1991; Hunston S., 2002; McCarthy M. J., 2004; O'Keeffe, A., M. J. McCarthy, & R. A. Carter, 2007) computer corpus data can tell us about:

Frequency

It means which words and expressions are most frequent and which are rare. The frequency of words is shown and ordered in a frequency list. This latter, tells us what word and phrases are used most often i.e. high frequency words; and which are less used i.e. low frequency words. As far as teachers are concerned, frequency lists will be useful for us to make choices about what vocabulary to teach and in what order to present it to our pupils. For example, when one makes a look at some corpora like Brown Corpus or Cambridge International Corpus he may notice that idioms use is rare. Thus, as a teacher, he will teach idioms later in the language programme. On the other hand, he can notice which items in a large vocabulary set, people talk most about in order to give them priority in teaching. These may include names of colours, pets, clothing and health problems. Based on a sample of 4.5 million words of spoken data from Cambridge International Corpus it has been noted that *The* is the first word in the rank frequency list for the whole corpus; the five most common verbs (apart from parts of the verbs be, have and do) are *said, know, see, get*, and *made*; the most common nouns are *time, people, way, years, work, government, man, day, work,* and *life*; the most common adverb is *so*. One can also see which words are more frequent than other similar or related words: *Yeah* is more frequent than *yes*; also *is* more frequent than *too*.

Frequency lists can also provide very useful statistics to help textbook writers present grammar items in the best way. If we take example of the verb *must* and consider the hundreds of uses of must in the Cambridge International Corpus (Spoken Corpus), the results reveal that, on average, only 5 % of all its uses are connected with *obligation* (e.g., you must have a visa to enter the United States). Another 5 % are in expressions, such as *I must admit* and *I must say*. Yet, the crushing majority of uses of *must* are to express *prediction*, such as: that *must have been nice*; *you must be hungry*, etc.

Differences in speaking and writing

As we saw in the previous section, corpus tools can give teachers information about how frequent a word is in different corpora, therefore, they can compare the frequency of vocabulary in newspapers, academic texts and conversations. For instance, the word *probably* is about five times more frequent in conversation than in newspapers and ten times more frequent in conversations than in academic texts. On the other side, *however* is eight

times more frequent in newspapers than in conversation and over twenty times more frequent in academic texts than in conversation. Awareness of such differences helps teachers a great deal to decide on whether to insert and present vocabulary units in a written or spoken context.

Contexts of use

The corpus tells us about the situations in which people use certain vocabulary. Owing to this language source, it becomes possible to know whether an item of vocabulary is used by anyone and in whatever situation or particularly in more polite situations and relationships. Large corpora enable the possibility of presenting and using vocabulary appropriately for teachers and learners respectively. Examples are: formal and informal usage of expressions like *goodbye* and *see you*.

Collocations

The term *collocation* means a combination of two or more words often used together more frequently than would happen by chance. Collocation software enables us to find out all the words which are often combined with others (see figure 1). Computer-corpus data is very helpful for searching for collocations of verbs like: *have, get, make,* and *do* i.e. *delexical verbs*. As their name implies these verbs do not have a lexical meaning of their own. They rather take their meaning from the words that they collocate or are used with. Providing collocational knowledge to our students, by means of those data, will not only lessen their word-choice, but make them sound more native-like, too.

Make: sure, difference, sense, decision, mistakes, decisions, money, mistake, reservations, copies and effort.
Do: anything, something, things, job, well, nothing, work, whatever, aerobics, gardening, homework and laundry.

(Adapted from McCarthy: 2004)

Fig. 1. Collocations of the words make and do

Strategic use of vocabulary

Strategic vocabulary means the words and expressions that are used to organize and manage discourse. Written texts are easily found in newspapers, books, on the Internet, etc. and then used by teachers as models for teaching words and expressions that writers use strategically to organize their texts. These include conjunctions like *along with* and *however,* which organize ideas within and across sentences and adverbs as *first, secondly,* etc., which list ideas within a paragraph or text. Yet, it is not easy to find words and expressions that speakers use to manage their different talks. So how can we find them? Corpus software can answer this need since it analyses different conversations and orders frequency lists of the strategic vocabulary speakers use to manage their speech. These include expressions which linguists call '*vague language'* as: *or something, and that kind of thing* and *and stuff* that speakers use often informally instead of specific words to refer to things, activities, or situations. Other examples of strategic vocabulary of conversations are discourse markers like 'anyway' which speakers use with words like *so* and *well* to come back to the main point after an interruption. These strategies are not just extras or a plus in foreign language learning, but they are a must in creating "proper" dialogues and in creating "fine" relationships between speakers (Carter & McCarthy: 2006). Computer-corpus data, indeed, proves to have much to offer to EFL teachers and textbook writers especially while designing English vocabulary teaching materials that recently much attention is paid to as they pervade all four skill areas of listening, speaking, reading and writing.

Objectives of the research

From this research one aims to:

- Explore the extent of awareness of EFL teachers to the concept of computer corpus-data.
- Raise awareness on the effectiveness of computer-corpus data in the area of EFL vocabulary selection and instruction.
- Analyze the EFL teachers' attitudes on the application of computer-corpus analyses as a language source for EFL vocabulary selection and instruction.

Research questions

In fact, this research paper intends to answer problem area of this research by tackling the following questions:

- What language sources do EFL teachers usually rely on to teach about English vocabulary?
- How do EFL teachers qualify the existing EFL vocabulary selection sources and teaching materials?
- Are EFL teachers knowledgeable about computer-corpus data?
- What are teachers' perspectives regarding the application of computer- corpus data in EFL vocabulary selection and instruction?

Research methodology

Method

The choice of the method is mainly based on the problem of the investigation. In fact, the nature of the problem, the population and the looked-for data made the researcher decide on two methods. One chooses the descriptive and analytic methods because the work is mainly based on some definitions, mainly computer corpus-data and the description and the analysis of EFL teachers' attitudes on those data. That is, in order to report EFL teachers' perceptions on the impact that computer corpus-data has on English vocabulary selection and instruction, the researcher opts for the use of the aforesaid methods. Indeed, those methods enable one to adequately describe and analyze the collected data about the subject matter.

Sample population

To gather data about the EFL vocabulary teaching situation in general and teachers' attitudes on the application of computer corpus-data on English vocabulary selection and instruction; one needs a sample population of EFL teachers for the administering of a semi-structured interview. The population of teachers for this study is of 10 full-time teachers (6/10 are females and 4/10 males), who are charged with teaching English as a Foreign Language in the Department of Foreign Languages – Section of English – at the University of Tlemcen (Algeria). The research subjects were chosen at random because in random sampling, according to Brown (2001:72) *"each individual in the populations must have an equal chance of being selected"*, which reduces the effect of bias and enhances objectivity.

Research instrument

Following the requirements of the present research, one makes use of the *semi-structured interview* to answer the aforementioned research questions and to supply the research subjects with the needed information about computer corpus-data if teachers show unfamiliarity about those data. Yet, in introducing the semi-structured interview, the investigator and the interviewees discussed some inevitable points about EFL vocabulary teaching; like EFL vocabulary teaching goals and importance to foreign language teaching and learning milieu. All teachers confess the importance of vocabulary teaching in the foreign language classroom. Some explained that vocabulary knowledge makes EFL learning more effective as words are used in both language perception and production and relate its inadequacy to the students' low level of English proficiency. Accordingly, Beglar and Hunt (2005:7) write *"vocabulary acquisition is a crucial, and in some senses, the central component in successful foreign language acquisition"*. Others admitted that vocabulary is inevitable in teaching and that it should be presented, taught and recycled very often in and outside the classroom for vocabulary knowledge can ever be fully mastered.

To manage this interview, the researcher takes an interview schedule which lists the topics to be discussed out of beforehand determined questions. Yet, at the same time the investigator allows an elaboration in the questions and answers whenever needed. In collecting information, one writes down quick and abbreviated notes on the interviewees' answers as they code switch while speaking. Later on, the researcher summarizes the data gathered from each interviewee in order to organize and analyze the results in graphs.

Results and discussion

Results and discussion of the first research question

To see what language sources do EFL teachers use in order to teach about vocabulary, the following question was asked: Which language sources do you use to teach about the English vocabulary?

The results show that all teachers rely on the Oxford Advanced Learner' Dictionary and some vocabulary teaching books like, English Vocabulary in Use, as far as word knowledge and vocabulary activities are concerned. Yet, this query brought a hot debate between the interviewees so that two points of controversies rose up among the research informants. Some teachers (4/10) admitted that they hardly refer to vocabulary teaching books for the reason that their learners are adults enough to undertake their own vocabulary learning process. Other teachers (6/10), however, confessed on a planned vocabulary teaching is needed and added that vocabulary is inevitable in

teaching and that it should be presented, taught and recycled very often in and outside the classroom for vocabulary knowledge can ever be fully mastered.

Results and discussion of the second research question

Subsequently, the informants were asked to answer the question: "How do you qualify the existing EFL vocabulary selection sources and teaching materials, if any?" to know whether or not they are satisfied with the EFL vocabulary sources and teaching materials they are currently using. The findings, in the graph below, show that the majority of teachers (6/10) are not satisfied by the English vocabulary teaching sources and materials they are currently using, unlike one teacher.   The rest of the respondents show a neutral attitude as they choose to say 'Average'. What is more is that this query sheds light on some EFL instructors' vocabulary teaching difficulties. Actually, those teachers who were not satisfied with the existing EFL vocabulary selection sources and teaching materials do relate their dissatisfaction to the problem of the outdated books in the library of the department and other times to the lack of vocabulary teaching books, to finally admit that they find the refuge in the Internet rather than the library to better their English teaching in general and that of vocabulary in particular.
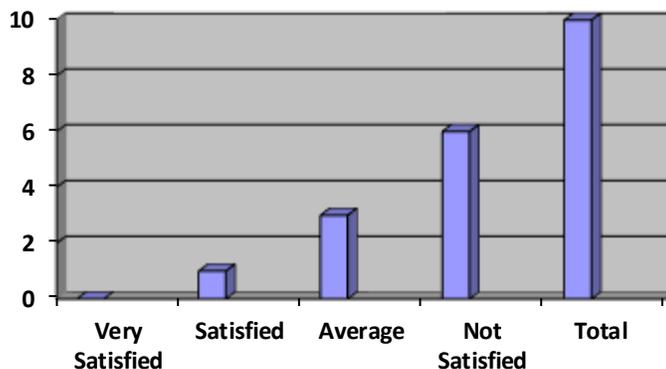
Fig. 2. Teachers' satisfactory level on EFL vocabulary teaching sources and materials

Results and discussion of the third research question

The third research question that the investigator endeavours to answer reads the following: Are EFL teachers knowledgeable about computer-corpus data? One aims from this question to introduce the notion of computer corpus-data to the research informants and to see whether or not teachers have prior knowledge about those data. In fact, once the researcher mentioned the idea of computer corpus-data and its investments in language analyses in general and vocabulary selection and teaching in particular, almost all research informants (9/10) reveal their unfamiliarity about those data (See Figure 3). Consequently, one has provided the sample of teachers with the relevant information about computer corpus-data in order to familiarize them and raise their awareness on the notion of those data. Furthermore, the supply of EFL teachers with the relevant information vis-à-vis computer corpus-data is fundamental since this made the collection of their attitudes on the application of those data as a source for EFL vocabulary selection and teaching possible.
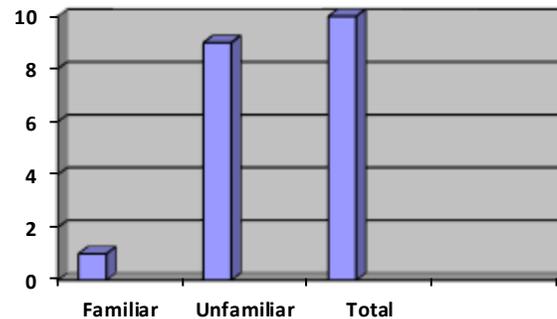
Fig. 3. EFL Teachers' Familiarity or Unfamiliarity with Computer Corpus-Data

Results and discussion of the forth research question

In an attempt to answer and gather data about the forth research question which enquires on EFL teachers' attitudes a propos the application of computer- corpus data in EFL vocabulary selection and instruction, the researcher had asked the research subjects to rank their perceptions on the statements below using the five Likert-type scale.

- Statement 1: Computer corpus-data is the 'richest' language source that syllabus designers and textbook writers may relay on for presenting both current and authentic language content and teaching materials as far as EFL learners are concerned.
- Statement 2: EFL vocabulary is best analysed, selected, presented and taught with the aid of computer corpus-data analyses.
- Statement 3: Raising awareness about computer corpus-data language analyses and recommending its application in EFL vocabulary teaching and learning situations may not only enhance EFL teachers and learners' interest in vocabulary teaching and learning but do also improve their proficiency level as a whole.

The findings show that the highest scores ranged between "Agree", "Strongly Agree", and "Agree" without leaving a single score to "Disagree" or "Strongly Disagree" as regards statements 1, 2, and 3 respectively. This means that the research informants do very often show agreement on the above statements as illustrated in the graph below:
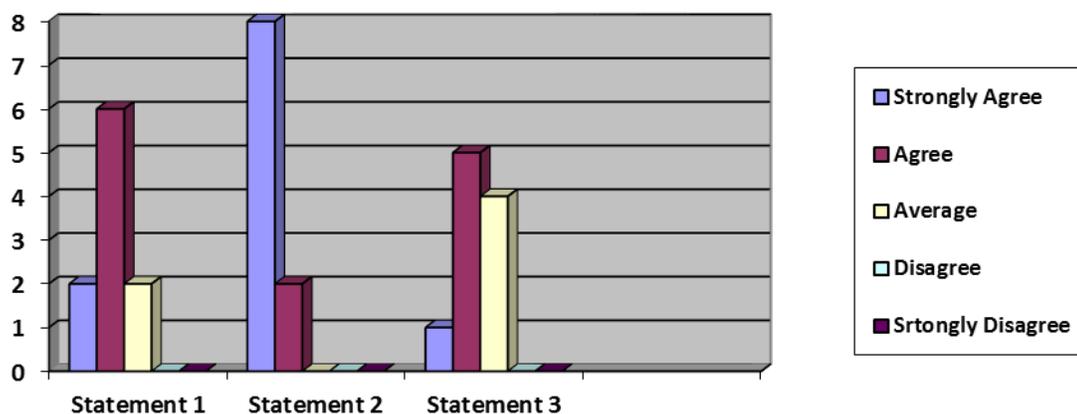
Fig. 4. EFL teachers' levels of Agreement and disagreement on statements 1, 2 and 3

While discussing the above statements, the research informants were conferring positive attitudes towards the application of computer corpus-data as a source for EFL vocabulary selection in particular and English teaching in general. They added that its use would bring *"new and light breath"* to EFL teachers and learners alike. What is more, the interviewees admitted that their learners would *"enjoy"* the EFL class more than ever for they will deal with a more authentic language that they expect to meet in the international mass media or receive while visiting English-speaking countries or while chatting in text or speech with English native speakers and non-native English speakers by means of social networks (Facebook, MSN, Skype and the like). In due course, the research subjects confess on the effectiveness of computer corpus-data and make recommendations on its application in EFL vocabulary selection and instruction.

Conclusions and Implications

There is no doubt that learning a foreign language is strongly based on the learning of its vocabulary because a widely productive vocabulary is essential in enhancing the learner's four language skills (listening, speaking, reading and writing). It follows that teachers are advised to plan their English vocabulary teaching and enforce its recycling and testing as word knowledge encompasses EFL learners' receptive and productive skills and to emphasize the importance of word knowledge and vocabulary teaching in general in their EFL classrooms by explaining its efficiency to foreign language learning.

Now it is clear that the corpus massive collection of texts and conversations, that were previously unavailable, have given language researchers, syllabus designers and instructors access to a wealth of information for both spoken and written English in order to determine the words and phrases needed to fulfil the EFL learners' vocabulary needs for conducting conversations and writing passages more effectively. From this, it is highly advocated for syllabus designers and teachers to apply computer corpus-data as a source for EFL vocabulary selection and instruction in particular and why not EFL teaching and learning in general.

From this research, however, it has been discovered that though EFL teachers confess the significance of vocabulary teaching in foreign language learning they do not have the tendency to implicitly teach about vocabulary on their classrooms and to update their language teaching sources and teaching materials in general and that of vocabulary in particular since many of the research informants were unfamiliar with computer corpus data. And therefore, it is kindly requested for EFL teachers to update their teaching resources and materials for a better English teaching and learning.

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13th International Educational Technology Conference

Ad-hoc ağlar için araştırma ve eğitim amaçlı yeni bir benzetim aracı

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Abstract

Modeling and simulation are acting a critical role in modern life because of development and evaluation of new systems and products, effective design, understanding how the new systems work and education of new technologies. Ad Hoc networks are composed of mobile nodes where a central authority doesnt exist or regular services in traditional networks are not provided. Topology and mobility is very important in performance of the network due to complexity and increasing size of the ad hoc network systems. In this study, a simulation tool has been developed for education and research on effects of complexity, scalability and mobility of the ad hoc networks. Simulation experiments have been carried out by using developed topology and traffic models. Besides, education of topic has been facilitated with graphical interfaces.

Keywords: Ad hoc, modeling, simülation, topology, mobility

Giriş

Mobil sistemler altyapı gereksinimlerinin düşük olması ve gezgin iletişim desteği nedeniyle geleneksel kablolu iletişime göre avantajlıdır. Cep telefonlarının iletişimdeki başarısından etkilenen araştırmacılar sabit altyapı olmadan haberleşme üzerine odaklanmışlardır. Bu yaklaşımın altında "gezgin Ad Hoc ağlar" (Mobile Ad Hoc Network - MANET) oluşturulması fikri yatmaktadır. Nihai hedef tamamen altyapısız gezgin ağlar kurmaktır [1]. Gelecekte MANET'lerin 4G mimarisinin önemli bir parçası olması beklenmektedir [2].

Hareketlilik özelliğine sahip kablosuz ağlar iki farklı yapıya sahiptir: İlk yapıda baz istasyonu olarak adlandırılan bir tür köprü bulunmakta ve gezgin düğüm baz istasyonu çevresinde bağlantı / iletişim kurmaktadır. İkinci yapı ise, genel olarak 'Ad Hoc' ağlar olarak bilinen altyapısız, gezgin, sabit bir yönlendiricisi olmayan ağlardır [2]. Ad hoc ağların ağ topolojisinin sabit olmaması, enerjinin değerli olması, düğümlerin biri birine kablosuz bağlantılarla bağlanması gibi bazı karakteristikleri vardır [3].

Ad Hoc ağlar gibi dağıtık sistemler, çeşitli teknolojiler kullanarak birbirleriyle iletişim yapan birimlerden oluşur. İletişim içerisinde bulunan sistemin uyarlanabilirlik, ölçeklenebilirlik, güvenilirlik gibi bir takım niteliklere sahip olması gerekmektedir. Artan karmaşıklık ve boyut nedeniyle ortaya çıkan sorunların üstesinden gelmek amacıyla geliştirilen çeşitli yöntemler bilgisayar ağlarının ihtiyaçlarına göre kullanılmaktadır. Bu yöntemlerin tasarım ve geliştirilmesinde modelleme ve benzetim araçlarının yeri büyüktür.

Yapılan çalışmada Ad Hoc ağların yukarıda belirtilen sorunların incelenmesi, tasarım alternatiflerinin araştırılması, farklı çözüm yaklaşımları üzerinde çalışılabilmesi ve eğtim amaçlı kulalnılabilmesi için Ad Hoc ağlarda topoloji ve hareketliliği gözlemlemek amaçlı bir benzetici geliştirildi.

Ad Hoc Ağ yapısı

MANET'ler "düğüm" olarak adlandırılan keyfi ve rastgele hareket edebilen platformlardan oluşur. Veri, kablolu ağlardan farklı olarak düğümden düğüme yönlendirilerek iletilir [2][4]. Düğümler rastgele ve keyfi olarak kendilerini organize ederek hareket etmekte serbesttir. Bu yüzden ağın topolojisi hızlı ve öngörülemeyen bir şekilde değişebilir [2].

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*E-mail address:*stuncel@sakarya.edu.tr
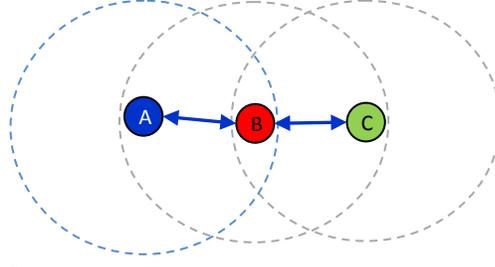
Şekil 1. Basit bir Ad Hoc ağ görünümü

Şekil 1'de basit bir Ad Hoc ağı görülmektedir. Şekilde A, B ve C ağdaki düğümleri, kesikli çizgilerle oluşturulmuş daireler düğümlerin radyo kapsama alanlarını, ok işaretleri ise bağlanabilirliği temsil etmektedir. Burada A düğümü ile B düğümü ve B düğümü hem A hem C düğümü ile, C düğümü B düğümü ile iletişim halindedir. A ve C düğümler birbiriyle iletişim kurmak istediklerinde bunu ancak B üzerinden gerçekleştirebileceklerdir.

Hareketlilik

Kullanıcılar için MANET'lerin en önemli avantajı hareketliliktir. Diğer taraftan güvenilir yüksek başarımlı iletişim sağlamak amacı ile üstesinden gelinmesi gereken bir sorundur [1]. MANET ağlar gezgin ve sabit düğümlerin karışımına sahip olabilir. Düğümlerin hareketliliği üç kategoride incelenebilir [5].

- Rastgele hareketlilik: Düğümlerin analitik uygunluk için keyfi olarak rastgele şablonlarda hareket ettiği (düzenli "Brown devinimi" olarak modellenen) kabul edilmektedir.

- Tahmin edilebilir hareketlilik (Predictable Mobility): Hareketli düğümlerin hareket kümeleri bilindiği varsayılabilir ve bu bilgi rota verisi için kullanılabilir. Hareketli düğümler veri transfer etmek amacıyla hareket etmezler ve bu yüzden yolları yönlendirme gereksinimleri ile çatışmaz.

- Kontrollü hareketlilik: Düğümlerin hareket örneği tamamen ağın kontrolü altındadır. Bu altyapı ağa mantıksal destek vermek gibi amaçlar için kullanılabilir.

BENZETİM ORTAMININ GELİŞTİRİLMESİ

Çalışma DEVS [6][7] modelleme ve benzetim yaklaşımı kullanılarak, gelişmiş kullanıcı dostu arabirimine sahip, tasarım, modelleme, benzetim ve eğitim amaçlı kullanılabilen DEVS-Suite ortamı [8] üzerinde geliştirildi. DEVS-Suite modelleme ve benzetim ortamı paralel DEVS formalizmine dayanır ve modüler, hiyerarşik, ayrık olaylı sistem ortamı, nesneye dayalı Java programlama dili kullanılarak gerçeklenir [9][10]. Java programlama dili, basitlik, %100 nesneye yönelim, hız, dağıtık çalışabilme, taşınabilirlik, vb. pek çok faydadan dolayı modelleyiciler tarafından tercih edilmektedir[11].

Topografya atomik modeli

Düğümlerin hareket kabiliyetine sahip olması birbiri ile olan bağlanabilirliğinin sürekli değişmesine sebep olmaktadır ve düğümler arasında mesaj trafiği için kullanılan bağlantıların dinamik olmasını zorunlu kılmaktadır. Bu dinamizmin kontrolünü her bir düğüme bırakmak gereksiz kod yüküne sebep olacağından dolayı MANET ağ ortamında bağlantıların kurulması ve kaldırılması işlemi Topografya adı verilen atomik modeli tarafından kontrol edilmektedir (Şekil 2).
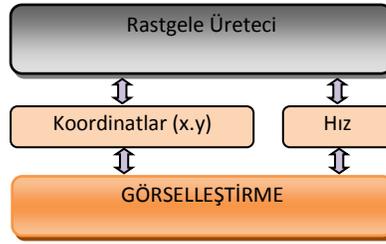
- Şekil 2. Topografya atomik modelinin kavramsal modeli

Oluşturulan atomik modelin belirlenen aralıkta periyodik olarak yerine getirdiği / yaptığı görevler aşağıdaki şekilde özetlenebilir;

- Düğümleri belirlenmiş hız ve yön bilgisine göre yeni koordinatlarına konumlandırır.
- Konumu değişen düğümün diğer düğümler ile kapsama alanı içinde olup / olmadığını kontrol ederek bağlantılarını tekrar kurar / kaldırır.
- Düğümlerin hareketleri ve bağlantıları görsel olarak ekranda güncellenir

Topolojideki değişimlerin modellenmesi

Hareketli düğümler kablosuz oldukları için bir başka düğümle iletişimi antenleri vasıtasıyla coğrafik olarak birbirlerinin kapsama alanı içinde ise kurabilir. Şekil 3'de A, B ve C düğümlerinden A düğümü sadece B düğümü ile iletişim kurabilirken, B düğümü A ve C düğümü ile iletişim kurabilmektedir.

Geliştirilen ortamında bir düğüm ile başka bir düğüm arasındaki iletişime iki düğüm arasındaki uzaklığın (d) hesaplanması ile karar verilir. Düğümler için belirlenen kapsama alanı hesaplanan uzaklıktan büyük ise düğümler arasında iletişim var kabul edilir ve bağlantı kurulur. Düğümler arası iletişimi etkileyen solma (fading), fiziksel ortamın şartları göz ardı edilmiştir.

r: kapsama yarı çapı   d: düğümler arası uzaklık   ⌐·⌐: düğümün kapsama alanı
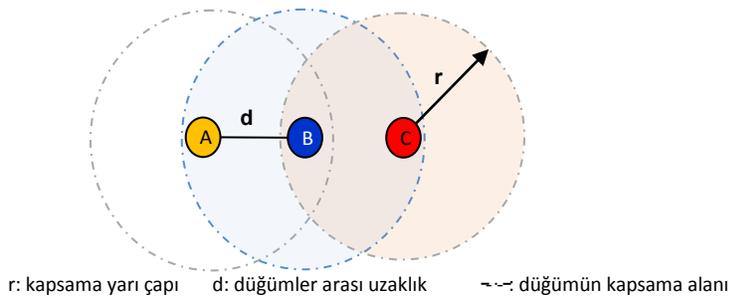
- Şekil 3. Hareketli düğümlerde bağlantı kurulumu

Tasarlanan benzeticinin mobil ağlar için olması sürekli konumu değişen düğümlerin birbiri ile olan bağlantılarının da dinamik olmasını gerektirmektedir. Zamanın belirli bir anında iletişim halinde olan düğümler bir başka zaman diliminde farklı koordinatlarda oldukları için aralarındaki bağlantıyı kaybedebilmektedirler. Buda ağın topolojisinin devamlı değişmesine sebep olmaktadır. Değişken topoloji altında düğümlerin arasındaki bağlantıların kurulup kaldırılması DEVS-Suite ortamının sahip olduğu dinamik yapı (variable structure) sayesinde mümkün olmaktadır [12] [13].

Hareketlilik modeli

Normalde gerçek hayattaki hareketliliğin yazılım ortamına aktarılmasındaki güçlükten dolayı yapay hareketlilik modellerini kullanmak kaçınılmazdır. Ad Hoc ağlar için birçok hareketlilik modeli vardır (Random Walk Mobility Model, Random Waypoint Mobility Model, Random Direction Mobility, A Probabilistic Version of the Random Walk Mobility, vb.). Yapılan çalışmada, hareketlilik modellerinden Brownian devinimi prensibine göre çalışan "Rastgele Yürüyen Hareketlilik Modeli" (Random Walk Mobility Model) kullanılmıştır [14].

Geliştirilen ortamda 'topografya' adlı atomik modeli tarafından düğümlerin sınırları belirlenmiş 2 boyutlu düzlem üzerinde hareket etmeleri sağlanmaktadır. Düğümlerin hareketlerini rastgele bir koordinattan yine rastgele seçilmiş başka bir koordinata doğru rastgele bir hızla yapmaları koordine edilir. Hedefe ulaşan düğüm rastgele belirlenmiş değerlerle, yeni bir hedefe doğru hareketlerine devam etmektedirler.

Topoloji Üreteci

Ağ topoloji üreteçleri gerçeğe yakın benzetim çalışmaları ve ağın başarım karakteristiklerinin incelenmesi için araştırmacılar tarafından sıklıkla kullanılmaktadır. Ağ topoloji yapısının iyi modellenmesi iletişim tekniklerinin analizi ve geliştirilmesi için esas teşkil etmektedir. Ağın başarımı önemli ölçüde topolojiye dayanır [15]. Bu nedenle topoloji üreteçlerinim karakteristik özellikleri üzerine çalışmalar yapılmıştır [16].

Yapılan çalışma birçok önemli topoloji modelini destekleyen, C++ , Java ile kodlanmış sürümlerinin bulunan ve açık kaynak kodlu olan BRITE (The Boston University Represetative Internet Topology Generator) topoloji üreteci ile entegre hale getirilmiştir.

Görsel Takip

Bir ağı oluşturan düğümlerin ağ üzerindeki konumu, kapsama alanları, hareket yönü ve hareketlerinin görsel takibini yapmak amacıyla "MANET Görüntüleyici" adı verilen bir modül tasarlanmıştır. Hazırlanan görüntüleyici bu hizmeti verebilmek için benzetimin çalıştırıldığı kaynakları kullanmaktadır (RAM vb.). Bu nedenle geniş ölçekli ağların benzetiminde ihtiyaç duyulan kaynakların verimli kullanılabilmesi için bu ara yüzün çalıştırılıp çalıştırılmaması BRITE topoloji üretecine entegre dilen bir buton ile kullanıcıya seçenek olarak sunulmuştur

MANET-Görüntüleyici ekranında 1m=1 piksel olarak kabul edilmiştir. Şekil 4'de 500 X 500 bir alanda 10 düğümden oluşan bir topolojinin ekran görüntüsü verilmiş ve bu ekran görüntüsü üzerindeki şekillerin ifade ettikleri manalar açıklama baloncuklarında belirtilmiştir
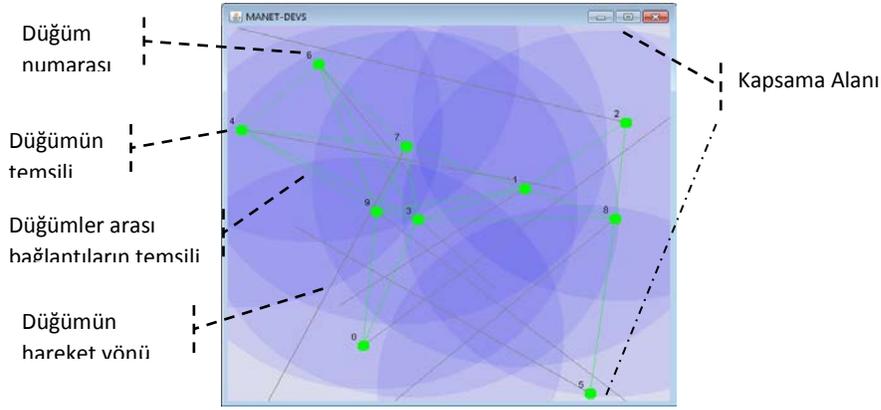
- Şekil 4. MANET-Görüntüleyicide 500 X 500 lük bir alanda topoloji dağılımı

7 düğümden oluşan hareketli bir ağın 3 farklı zaman dilimindeki konumlarını gösteren ekran görüntüsü Şekil 5'de görülmektedir.
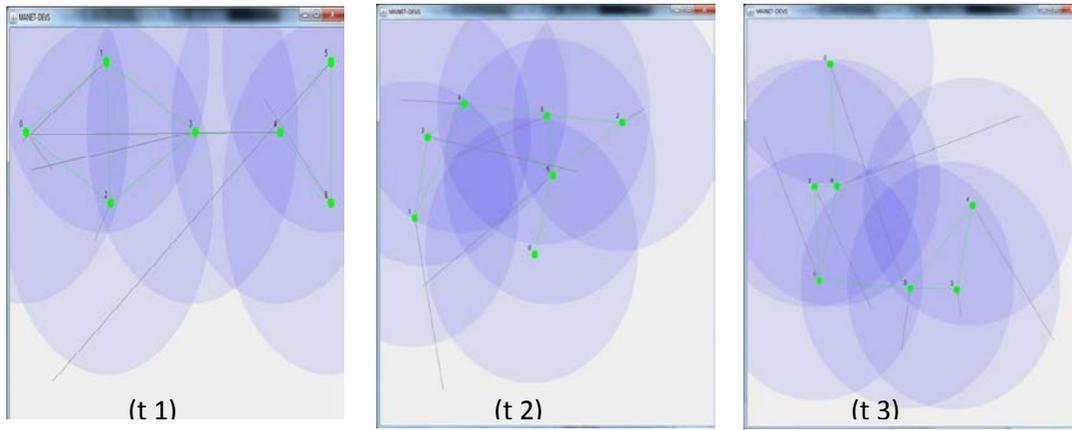
- Şekil 5. düğümlü bir ağın takibi için tasarlanan ekran çıktısı

Sonuçlar ve Değerlendirme

Bu çalışmada Java programlama dili kullanılarak, MANET sistemlerin karakteristikleri üzerine, ölçeklenebilir, adaptif, farklı topolojilere sahip, benzetim ve eğitim çalışmaları yapılmasına yardımcı olan bir benzetici geliştirilmiştir. Bu çalışma sahip olduğu nesneye yönelik yapısı ile yeniden kullanılabilir bileşenlere sahip modeller geliştirilmesine ve platformdan bağımsız olarak kullanılmasına imkân sağlamaktadır. "java webstart" teknolojisi ile İnternet üzerinden yayınlanabilmesini / kullanılmasını sağlamakta ve İnternet kullanılarak uygulamaların paylaşılmasını, uzaktan eğitim gibi günümüzün ileri teknolojileri için elverişli bir altyapı oluşturmaktadır. Benzetim biliminin uygulamalı olarak kavranmasına ve öğrenilmesine katkı sağlamıştır. Sağlanan görsellikle düğümlerin, daha iyi izlenmesini / analizini mümkün kılarak iyi bir eğitim aracı olmasını sağlamaktadır. Ortamına entegre edilen, BRITE topoloji üreteci ile kod yazmaksızın büyük ölçekli topolojiler üretilebilmektedir.

Tartışma ve Öneriler

Geliştirilen benzeticide bir MANET'in hareketliliği modellenmiş, diğer bazı özellikleri basit kabullenmeler ve soyutlamalara tabii tutulmuştur. Bu soyutlamaların gerçeğe uygun bir şekilde modellenmesi ile MANET'in tüm yönlerini değerlendiren eksiksiz bir MANET benzeticisi geliştirilebilir.

Geliştirilen ortam web ortamına taşınarak popüler tarayıcılar üzerinden modelleme ve benzetim çalışmalarına imkan sağlanabilir. Web tabanlı ve uzaktan eğitim çalışmalarında faydalanılabilir.

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Adjective identification in television advertisements

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ABSTRACT

Learning the Malay language has been a challenging task for foreign language learners. Learners have to learn Malay grammar structure rules in order to write simple sentences. The word choice is important in constructing a sentence. Therefore, the study focuses on the use of adjectives in television advertisements among Korean learners at Hankuk University of Foreign Studies, Korea. The objectives of the study were to identify and discuss adjectives incorporated into the advertisements. The students involved in the study were ten male and female subjects from a Malay language class. The subjects had to choose one television advertisement and view it several times. They were given three weeks to identify and discuss the adjectives in the advertisements. The subjects were interviewed on their views about the adjectives in the advertisements. The interviews were video recorded and analyzed for the purpose of the study. The results of the study revealed that each subject managed to identify five adjectives per advertisement. They also managed to offer their views on the adjectives, which were not directly uttered by the models in the advertisements. It is hoped that a future study will focus on the use of adjectives via other means of media technology.

INTRODUCTION

Learning a foreign language is a challenging task for learners. Besides having to learn the language, they have to make sure that the foreign language that they learn is not influenced by their own language. Malay language is one of the many languages in the world and it has been introduced and taught at many universities around the world. Malay was taught to students willing to take the languages seriously, where the students will have to use the language in the working environment. Therefore, the choice of choosing Malay as a major or a minor at universities will prove that the students are willing to work in the Malay world either as an interpreter or translator. In addition, students could also work in countries, such as Malaysia, Singapore, Brunei and Indonesia. The Malay language is similar to other languages where it consists of linguistics features. The language is a study in terms of not only proficiency skills but also for sociolinguistic, pragmatics, semantics, psycholinguistics, linguistics and other skills. Therefore, the first major step for a student to learn Malay will be learning the basic knowledge of Malay language proficiency including listening, speaking, reading and writing as well as focusing on the grammatical rules of the Malay language. Moreover, learning Malay or any other languages will be interesting with the help of materials and task designs, which will arouse student interest in learning the language. Subsequently, with the boom of technology, educators will never fail to include the use of technology within the teaching and learning environments. Therefore, this study will focus on the use of technology as in television advertisements in identifying and discussing the adjectives identified.

LEARNING AND TECHNOLOGY

Learning the Malay language will also concentrate on the correct use of verbs, adjectives, determiners, adverbs, prepositions, conjunctions and others. With the knowledge of these words, a student will be able to understand the meaning of each sentence constructed (Nik Safiah Karim, Farid M. Onn, Hashim Haji Musa & Abdul Hamid Mahmood, 2008). According to Normaliza Abd Rahim (2012b), a sentence structure focuses on the basic knowledge

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of a simple sentence in the Malay language, such as Noun (N) + Verb (V); i.e., *Saya makan* (I eat). Since the translation from Malay to English seemed to show that it will not make a good and simple English sentence, the students therefore were advised not to think in other languages but in the Malay language. Hence, a simple sentence in Malay will show the understanding of the sentence by the students. For instance, *Dia lari laju* (He runs fast)means that the person is running fast and the word *laju* (fast) means that the person is *lari* (running) really fast. On the other hand, Malay compared to English consists of the same expression of adjectives. Therefore, students were often seen trying to translate the word into English in order to find the true definition. Jennifer Yamin-Ali (2011) postulates that the influence of other languages learnt besides the mother tongue language will have a big impact toward the automatic translation in the brain. Therefore, while learning a specific language, a person should not think in other languages for the sake of avoiding confusion in the word choice of a sentence structure (Ellis, 1997:95). As for the Malay language, a simple sentence to describe a Malay adjective can be instantly described by students. The sentence follows the rule of a simple sentence as in Noun (N) + Adjective (Adj). For instance, *Perempuan itu cantik* (The woman is beautiful) implies that the specific woman shown to the person is beautiful. Therefore, the correct use of the adjectives will also be stated in the sentence. Zaharani Ahmad & Nor Hashimah Jalalludin (2012) described the use of correct Malay grammatical rules. The study has given impact toward educators and students learning the Malay language. The study also disclosed evidences of Malay grammar structure rules, including the use of determiners, verbs, adjectives, adverbs, etc. The structure rules were discussed and proven to ensure that there would be no mistakes from future learners. The studies (Zaharani Ahmad & Nor Hashimah Jalalludin, 2012; Jennifer Yamin-Ali, 2011; Nik Safiah Karim et al, 2008) above showed that the use of simple sentence and Malay grammatical rules and the influence of other languages would give great impact towards learning a language. This study has taken into consideration on the perspective of learning a language using the correct use of words for Malay language learning among Korean learners. Here, it can be seen that this study concentrates on the word choice that involved adjectives using the technology in learning the Malay language.

Studies on the use of verbs, adjectives, adverbs, determiners, conjunctions and others were widely researched by Malaysian researchers. The researches were focused not only on native Malay speakers but also on other races in Malaysia as well as on foreign students. Brown (2000:35) postulates the principles of language learning and teaching that should be followed by both teachers and learners. The principles show the effectiveness of teaching any language and to make sure that the learning process is a success; students will be able to communicate in the target language and therefore understand the context. Yong Chyn Chye & Vijayaletchumy's (2012) research on foreign students studying the Malay language revealed that foreign students had made several lexical errors in the aspect of phonology. The research focused on the writing process for eight weeks and discovered that there were 182 spelling mistakes; in terms of phonology, the errors were found in terms of changing the different alphabets. This study revealed that foreign learners have difficulty in understanding the concept of a simple sentence in the Malay language. Malay grammar rules were not understood and therefore, errors (Corder, 1974:97) were made due to the influence of other languages. Goh Sang Seong (2011) has researched on the translation of Chinese and Malay languages. The study involved six translators in translating a Malay anthology, *Cerpen Pilihan Sastera Mahua III: Dalam Hujan Renyai*. The results of the study revealed that 10 Chinese verbs had 126 different meanings in the Malay language. The study concluded that the use of verbs in the Malay language has helped to identify meanings in the Chinese language. The studies on the use of foreign languages (Yong Chyn Chy & Vijayaletchumy, 2012; Goh Sang Seong, 2011) in language learning have showed that the involvement of foreign students and foreign language in learning the Malay language have given great impact towards foreign learners. The learners involved found that the errors can be overcome by learning the basic Malay sentence structure. This study has taken into consideration the involvement of the foreign students in learning the Malay language and also, considered the errors involved when dealing with the language barriers from their native language i.e Korean language.

Auzar (2012) stated that the use of technology has helped learners with their reading. The software that was created consisted of design, content and technical assistance to be used for the reading process. The subjects involved in the study consisted of 86 students from a school in *Pekanbaru*, Indonesia. The results revealed that the computer has helped in the process of reading and showed a significant difference compared to the conventional way of teaching. Jhy Wee Sew (2012) agreed with Auzar (2012) and stated that the use of technology allows the lesson to be more interesting. Jhy Wee Sew (2012) has researched the learning of Malay by utilizing the weblog, which has proven that learners were able to write in the Malay language. The use of simple Malay sentences was occasionally found. This way, the subjects were able to avoid making mistakes while writing in the Malay language. Other researchers also have concentrated on the use of technology in learning (Normaliza Abd Rahim, Arbaie Sujud, Nik Rafidah Nik Affendi & Siti Nur Aliaa Roslan, 2012; Normaliza Abd Rahim, Kamaruzaman Jusoff & Siti Nur Aliaa Roslan,

2011; Normaliza Abd Rahim & Nik Ismail Harun, 2011) in order to ensure that learning will arise the interest of students in their learning. The studies that involved the use of technology (Auzar, 2012; Jhy Wee Sew, 2012; Normaliza Abd Rahim et al, 2012; Normaliza Abd Rahim et al, 2011; Normaliza Abd Rahim & Nik Ismail Harun, 2011) above has given great impact toward this study that involved the use of technology in learning the Malay language. The Korean learners involved in this study will be able to use the technology to learn the new language. Therefore, the studies as stated above have helped in the process of choosing the appropriate materials in learning.

A number of studies conducted among Korean learners learning the Malay language were carried out by Normaliza Abd Rahim (2012a; 2012b; 2012c). The studies were carried out at Hankuk University of Foreign Studies, Korea. The samples involved male and female subjects from a few Malay language classes. Different types of materials and task design were used to ensure that learning the Malay language was effective. The materials were involved with the technology as well as the conventional way of teaching. The study on using simple sentences with verbs and adjectives were found in the study, which incorporated watching a Malay cartoon, *Upin* and *Ipin* (Normaliza Abd Rahim, 2012a). The study focused on identifying verbs and adjectives in the cartoon; the subjects were then involved in a discussion about the characters and storylines of the cartoon. Another study involved the use of antonyms in Malay sentences (Normaliza Abd Rahim, 2012b), which revealed that subjects used adjectives in the sentences. Although the subjects focused on the use of antonyms, they also used adjectives in their description (for example, tall: short), which proved that the subjects were able to identify not only the antonyms but also the use of correct adjectives. Moreover, another study on blog writing among Korean learners learning Malay (Normaliza Abd Rahim, 2012c) had showed that writings of subjects in the blog consisted of adjectives words. The words such as 'happy', 'beautiful', 'smooth', 'sad', 'fat', 'thin', 'tall', 'short' and others were evidence from the blogs. This result revealed that the subjects understood the use of adjectives in the blog in order to describe and express things around them. The studies involved Korean learners learning the Malay language by using technology (Normaliza Abd Rahim, 2012a; 2012b; 2012c) as stated above showed that Korean learners were motivated in learning the language. The technology involved in the learning process has given the subjects the chance in understanding and enjoy learning the Malay language. Therefore, this study has taken into consideration the results of the studies (Normaliza Abd Rahim, 2012a; 2012b; 2012c) and used the other means of technology via television advertisements to learn the Malay language.

Although the studies based on learning the Malay language had proven that they were steps to be taken in order to ensure the learning of the target language, it seemed that foreign learners tend to become confused in using the words in sentences. Here, the questions of the study were listed, 'What are adjectives related to the advertisements suggested by the subjects? What are the subjects' views on the adjectives related to the advertisements? Therefore, the objectives of this study were to identify and discuss the adjectives in advertisements.

METHODOLOGY
This study focuses on the use of television advertisement in identifying the Malay adjectives. This study also discusses the subjects' views and opinions about the adjectives stated. The study involved 10 subjects from a Malay language class at Hankuk University of Foreign Studies, Korea. The subjects were exposed with the Malay language course from the previous semester. The subjects were given a task to view one television advertisement for three weeks. They have to select and identify the appropriate advertisement for the purpose of the study. The subjects' were to identify and discuss the adjectives within these advertisements. They also had to discuss and give their views on the adjectives that were not directly stated in the advertisements. The subjects were interviewed and their views and discussion were video recorded. The views and discussion were analyzed for the purpose of the study. The discussion was analyzed by using the discourse analysis method (Brown & Yule, 1983). Brown & Yule (1983) have five features of discourse analysis. The features of discourse analyses that were related to this study were the method of language usage among the community, the understanding of the language in written or spoken, the understanding of speech, the understanding of functional language and lastly the understanding of the intentional written or spoken language. Therefore, this study will analyze the results by using all the features suggested by Brown & Yule (1983).

RESULTS AND DISCUSSION

Subject	Types of Advertisement	Adjective 1	Adjective 2	Adjective 3	Adjective 4	Adjective 5
S1	Cosmetics -Missha	Smooth (licin)	Fragrance (wangi)	Soft (lembut)	Fair (cerah)	Confident (yakin)
S2	Drinks -Coca cola	Sweet (manis)	Delicious (sedap)	Active (aktif)	Happy (gembira)	Gas (gas)
S3	Drinks -Kanu coffee	Sweet (manis)	Delicious (sedap)	Bitter (kelat)	Happy (gembira)	Relax (tenang)
S4	Cosmetics -Faceshop	Smooth (licin)	Fragrance (wangi)	Soft (lembut)	Fair (cerah)	Shiny (kilat)
S5	Fridge -Samsung	Beautiful (cantik)	Big (besar)	Cute (comel)	Cold (sejuk)	Fresh (segar)
S6	Mobile phone -Samsung	Thin (nipis)	Light (ringan)	Beautiful (cantik)	Easy (mudah)	Savings (jimat)
S7	Laptop -Samsung	Thin (nipis)	Light (ringan)	Beautiful (cantik)	Big (besar)	Confident (yakin)
S8	Fragrance –Glade	Fragrance (wangi)	Soft (lembut)	Clean (bersih)	Small (kecil)	Cheap (murah)
S9	Cosmetics -SKII	Smooth (licin)	Fragrance (wangi)	Soft (lembut)	Beautiful (cantik)	Fair (cerah)
S10	Detergent -Downy	Soft (lembut)	Fragrance (wangi)	Easy (mudah)	Liquid (cecair)	Clean (bersih)

Table 1: Choice of adjectives in advertisements.

Table 1 above showed the choice of adjectives in advertisement for each subject. Three female subjects (S1, S4 and S9) chose cosmetics advertisement from *Missha*, *Faceshop* and *SKII*. It seemed that all of the three subjects were wearing make-up to class and they admitted that they used the products every day. S1, S4 and S9 had the same adjectives pertaining to the products. They stated that the advertisement showed the adjectives 'smooth', 'fragrance', 'soft' and 'fair'. They added that the adjectives were clearly shown in the advertisement. All of the three subjects mentioned that the adjectives 'smooth' and 'fragrance' were explicitly shown by the model in the advertisement. The model had smooth facial skin with the index finger sliding down the cheek; the model also made it clear she had smooth face. The subjects also stated that the adjective 'fragrance' was clearly stated when there were another male model who had his eyes closed but opened them when he smelled the perfume around him. This showed that the subjects understood the meaning of the adjective 'fragrance' from the advertisement.

Hence, all subjects stated the adjectives 'soft' and 'fair' were mentioned in the advertisement. The subjects uttered that the two words were mentioned by the model in the advertisement. S1 stated that the advertisement portrayed the adjective 'soft' by having the model touch her cheek as well as with a piece of silk flying on her face, implying the softness. S4 stated that the advertisement showed the face of the model before and after applying the cosmetic, illustrating the softness after applying the cosmetic. The model also mentioned the word 'soft' in the advertisement. S9 uttered that the word 'soft' was mentioned by the model in the advertisement twice while touching both her cheeks. This was clearly understood as model's attempt to show the 'softness' of her skin.

On the other hand, all three subjects stated that the cosmetic advertisements had implications of the following adjectives: 'confident' (S1), 'shiny' (S4) and 'beautiful' (S9). S1 stated that the model in the cosmetic advertisement showed confidence after applying the product. The model was also seen smiling and walking confidently with her beautiful face. Hence, S4 stated the face of the model in the advertisement had clearly shown than it was 'shiny'. The 'shiny' face was clearly shown on the cheeks when the model was moving from side to side as well as when she smiled. In addition, subject 9 stated that the adjective 'beautiful' was dedicated to the beautiful model in the advertisement. The subjects mentioned that the model was really beautiful after using the product and the dress that she wore had made it clear that she was really beautiful.

On the other hand, two subjects (S2 and S3) selected an advertisement based on drinks. S2 chose a soft drink 'Coca cola' while S3 chose a coffee brand 'Kanu' as the advertisement. According to the adjectives from S2 and S3, both subjects stated the same adjectives 'sweet', 'delicious' and 'happy'. S2 stated that the adjectives 'sweet' and 'delicious' were clearly shown in the advertisement; further, it was obvious that the 'Coca cola' drink is sweet. Hence, the subjects also mentioned that the model had acted as if the drink was delicious when he was smiling happily after drinking from the bottle. S2 also mentioned that the advertisement gave her feelings of being 'happy'. This might be due to the fact that the model for the advertisement was from her favorite boy band and every time she viewed the advertisement, she would fell 'happy'. S3, who is a big fan of coffee, stated that the adjectives 'sweet' and 'delicious' were in the advertisement. He stated that the model in the advertisement had shown the 'sweet' and 'delicious' tastes of the coffee. He admitted that he tasted the coffee before and the adjectives were right. On the other hand, S3 also stated that the adjective 'happy' was clearly shown by the model in the advertisement. The model was seen smiling happily after every sip from the cup.

S2 uttered that the advertisement consisted of the adjectives 'active' and 'gas'. The subjects stated that the models in the advertisement showed a group of males who were dancing and moving actively after drinking the product. The subject also stated that the adjective 'gas' was clearly showed when bubbles formed after the drink was poured into a glass. Therefore, it was understood by the subjects. On the other hand, S3 said that the adjectives 'bitter' and 'relax' were in the advertisement as well. The subject admitted that he had tasted the drink and found it to be a bit 'bitter'. Since he liked it and with his knowledge of the drink, he stated that the adjective 'bitter' was suitable. S3 also stated that the adjective 'relax' was shown in the advertisement when the model was sitting on a chair while sipping the coffee. The model was seen as 'relaxing' and enjoying his moment with the drink.

Three subjects (S5, S6 and S7) selected an advertisement based on electrical products. S5 chose a refrigerator from Samsung, S6 a mobile phone from Samsung and S7 a laptop from Samsung. All three subjects chose Samsung products since Samsung produces a majority of electrical products and are also famous all over the world. S5, S6 and S7 stated that the advertisements portrayed the adjective 'beautiful'. They stated that the fridge, mobile phone and laptop were beautiful in the advertisements. They agreed that each of the products had its own beauty; the fridge was beautiful among other fridges, the mobile phone was beautiful among other mobile phones and the laptop was beautiful among other laptops. They mentioned that they had viewed similar products from different companies; however, they preferred the ones that they had chosen. This showed that the adjective 'beautiful' was reflected in the products. On the other hand, S5 also stated that the fridge from Samsung had adjectives such as 'big', 'cute', 'cold' and 'fresh'. He said that the adjectives were his perception when viewing the advertisement for several times. He mentioned that the adjectives were uttered by the model advertising the product. S5 also commented that the fridge was 'beautiful' and 'cute' as an interior object. He also said that when the model opened the fridge door, he could feel the 'cold' and 'freshness', particularly when the compartments were opened to show the 'fresh' vegetables.

S6 gave his views on the mobile phone from Samsung. He stated that the adjectives from the advertisement displayed the following words: 'thin', 'light', 'easy' and 'savings'. The advertisement presented graphics of different colors of mobile phones; the 'thinness' and 'lightness' of the phones were clearly shown. The side elevation in the mobile phones was seen in the advertisement, revealing the 'thinness' of the mobile phones. The subject also mentioned that he observed the adjective 'easy' when viewing the mobile phone advertisement. The applications of the mobile phone were portrayed as 'easy' to use and user friendly. S6 also stated that the use of the mobile phone proved 'savings' in terms of money where due to cheap calling costs. This provided implications that the mobile phone was affordable among university students.

Furthermore, S7 stated that the adjectives in the laptop advertisement were 'thin', 'light', 'big' and 'confident'. She stated that the advertisement had made her want to buy the product. The advertisement clearly showed the 'thinness' and 'lightness' of the laptop. The side view of the laptop had given her the assumption that the laptop was really 'thin'. When the model holding the laptop with one hand was shown in the advertisement, it directly showed that the laptop was 'light'. Moreover, the advertisement also portrayed the size of the laptop, which was big enough and suitable for people of all ages. Thus, the look on the model's face when using the laptop showed that he was confident with using the laptop. Also, the applications in the laptop had also made the subject feel confident.

S8 and S10 selected an advertisement related to a domestic product, such as a fragrance for the toilet and detergent for clothes. Both subjects stated that the products had the same adjective 'fragrance'. Both products consisted of a nice scent. The advertisements for both showed that there were flowers coming out from the products and these

flowers represented the nice scent of flowers. Furthermore, the subjects uttered that the models in the advertisements mentioned the word 'fragrance'. Both subjects also stated that the products resemble 'cleanliness'. S8 stated that the adjective 'clean' implies that if the smell is nice, the room would look 'clean' too. Hence, S10 uttered that the when the detergent was used on clothes, the clothes would also feel 'clean'. On the other hand, S8 stated that the adjectives in the fragrance advertisement were 'soft', 'small' and 'cheap'. She uttered that Glade fragrances consist of a 'soft' scent. She gave an example of a lemon scent, which was considered as being 'soft'. Moreover, she added that the fragrance was 'small' and can be placed anywhere in the bathroom. According to the subject, the fragrance was put on a shelf near the sink in the advertisement. Since the fragrance was 'small', the subject stated that the product would be 'cheap' and affordable for everyone. The subject was making a true assumption due to the evidence from the advertisement stating that the money paid for the fragrance is worth it.

As for S10, the other adjectives stated in the advertisement were 'soft', 'easy' and 'liquid'. The subject stated that the adjective 'soft' was shown in the advertisement when the model hugged the other model and felt the 'softness' of the clothes that used the detergent while closing his eyes. This showed the 'softness' of clothes after using the detergent. Furthermore, S10 uttered that the adjective 'easy' was in the advertisement. The subject stated that the feeling of 'easiness' was felt when the two models hugged each other. Also, the use of the detergent was seen as 'easy' to use when the model used only one cup of detergent for one load of washing. The subject stated that the combination of the detergent and softener had made the process of washing easier. S10 also mentioned that the product in the advertisement was in the form of 'liquid'. The subject stated that the advertisement clearly showed the detergent was poured out from the bottle in the form of 'liquid' and this had made the subject clearly identify the adjective. Moreover, the subject stated that the adjective 'liquid' had made viewers compare the product with other powder detergents.

To sum up, the study revealed that the subjects were able to identify several adjectives in the advertisements chosen. The study also revealed that the subjects managed to discuss the adjectives in the advertisement and offer their comments toward the related adjectives. The subjects seemed to be able to identify the adjectives that were not explicitly stated in the advertisements; however, they managed to give their assumptions based on their multiple viewings. It can be seen that the adjectives given by the subjects were suitable and relevant to the advertisement. It was clearly seen that the subjects understood the use of adjectives in advertisement; the success of an advertisement is based on the right perception of the viewers. The process of learning Malay adjectives was successful when the subjects managed to identify and discuss the adjectives in the advertisements. Therefore, learning processes with viable activities must be fully considered in order to have a successful lesson. The involvement of students with the help of technology will therefore create an active environment where the subjects are able to provide their views and opinions toward the task given to them.

CONCLUSION
The study implicates educators in considering television advertisements when teaching Malay adjectives. Educators will be able to provide other forms of advertisements in order to make the lesson more interesting and learner autonomy. Moreover, the study also implicates foreign students in learning the Malay language. Students might find it difficult to understand the language and with the task given to them in identifying the adjectives, the difficulty would be increased. Therefore, learning Malay adjectives would be more interesting when students are given the opportunity to identify the adjectives on their own. With this, students will better understand Malay adjectives. It is hoped that a future study will focus on the study on Malay adjectives with the use of other means of media and technology.

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Alternative energy biogas from chocolate rind

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Abstract
The development of alternative energy fuel technology at present many are produced from biological resources, eg the manufacture of biodiesel and biodiesel as a fuel substitute for gasoline. This study aims to obtain biogas from chocolate rind that can be used as an alternative energy and find operating conditions that produce appropriate levels of CH4 in the standard Indonesian. The first stage is done by preparing 1 liter of raw materials chocolate rind and water are then mixed with a starter (cow dung) 10% of the volume of raw materials and the addition of yeast and grass after it is mixed until blended. Then put into containers/bottles that have been fitted hose, water manometer, and the gas holder. The research was done in stages with the conditions that you run. Variables that run is a comparison of raw material (1:1; 1:1.5; 1:2; 1.5:1; 2:1), observation time (5 days, 10 days, 15 days, 20 days, 25 days , 30 days), and the variable addition of grass (50 gr, 100 gr, 150 gr, 200 gr). From the results of this reasearch found the greatest level of 74.22% in comparison 1 (water): 1.5 (chocolate rind) with the addition of 150 g of grass while low levels of 60.04% in comparison 2 (water): 1 (chocolate rind) with the addition of 200 g of grass.

Keywords: Biogas, grass, yeast

INTRODUCTION

Biogas can be produced from a variety of decomposed organic materials, eg wastes from: household and industry which is parsed by the methanogenic bacteria that will produce biogas, which is mostly methane. Utilization of chocolate's rind is currently being cultivated as animal feed and organic fertilizer. As an alternative use of chocolate's rind, there have been several experimentals from several researchers, among others : the manufacture of oxalic acid chocolates rind (Rachmat, Alif, Yeni. 2005), which explains that the best yield of oxalic acid occurs at heating temperature 210 °C, research of pectin extraction from chocolates rind (Mariana, Tri. 2005), which explains that pectin derived from chocolate fruit have high levels of metoxil. Utilization of organic waste as raw material for other biogas, namely organic waste (Hudha, Istnaeny, 2007), that bacteria play a very important role in producing biogas from organic waste but requires the addition of grass as addition of carbohydrates. Research by Billah et al (2009) about producing a biogas from cow that have levels up to 74%.

Biogas (methane) can occur from the decomposition of organic waste that contains proteins, fats, and carbohydrates. Parsing is done by anaerobic bacteria in the fermentation process; therefore the vessel that is used to ferment this waste should be closed so that the air (O_2) does not enter into the biodigester which resulted in decrease of methane production.

This study aims to obtain biogas from chocolate rind that can be used as an alternative energy.

METHODS

Material Used: chocolate rinds purchased from Chocolate Garden in Wonosalam, Jombang. Distilled water as a solution for chocolate rind mixture that will be enumerated on thrasher (blender). Cow dung used as a starter, and the addition of other ingredients are yeast and grass.

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Tools used: Consists of a digester tank (digester) equipped with a manometer, and a gas and water drainage system. Digester tank serves as the site of an overhaul of industrial wastes by bacteria through anaerobic fermentation process that produce a methane gas and compost.

Conditions set: one liter volume of materials (water and chocolate rind), giving starter as many as 10% of raw materials, add 25 ml of yeast

Variables were executed: Comparison of chocolate rind and water: 1:1, 1:1.5, 1:2, 1.5:1, 2:1.

Fermentation time: 5, 10, 15, 20, 25, and 30 days, the addition of grass: 50, 100, 150, and 200 grams.

Procedure: The raw materials which is a chocolate grind chopped in order to be uniform in size. After the chopping procedure, it continued with a dilution using blender and add water according to predetermined ratio. Stir until it mixed then add starter from a cow dung, yeast, and grasses according to the executed variable, then stir until mix evenly. The mixture of raw materials is then inserted into a bottle. Stir down after inserted into the bottle and after that observe the biogas product produced from anaerobic fermentation process in the time specified by means of gas produced using burnt matchsticks and blue color observed in the biogas produced.

RESULTS AND DISCUSSION

Concentrations obtained from this study can be said in accordance with Indonesia's National Standard namely between 50-70%, but the volume obtained is still a lot less because influenced by environmental conditions such as ambient temperature, pH, C / N ratio, total solids and mixing materials and how the placement of the bottle which is should not be positioned standing, it would be better positioned if the bottle tilted as it will have a larger surface area. The more surface area in the bottle, the greater the gas methane (CH_4) is produced.

The highest concentrations of 74.22% was obtained at comparison of water and chocolate rind 1:1.5 with the addition of 150 g grass, while the value of the lowest concentrations of 60.04% obtained with the addition of 200 g grass. In ratio 1:1.5; 1.5:1; 1:2, and 2:1, the highest average concentrations found in 1:1.5 ratio and the lowest average concentrations are on 2:1 ratio. These results when compared with the research (Billah, 2009), the highest concentrations of methane (CH_4) obtained is 74% and the average value of the highest concentrations is in ratio of 1:1. This is caused by the difference in the ratio of C / N, and carbohydrate content between cow dung and chocolate rind. The difference in pH and starter or microbial that have the ability to decipher the ingredients to form CH4 and CO_2 from cow manure is better than the chocolate rind.
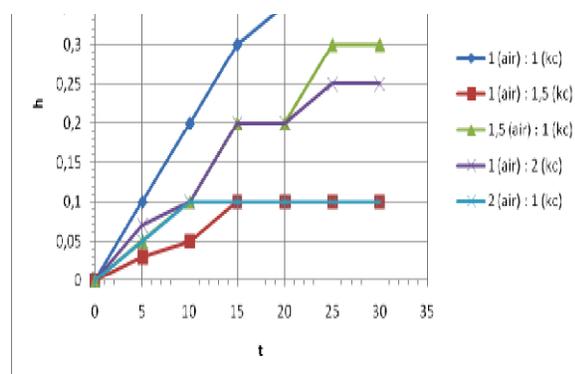
Figure 1. Fermentation time vs manometer height with variable of 50 g grass

Addition of 50 g grass, the highest volume obtained in 30th day with manometer height 0.4 cm, ratio of 1:1, while the lowest volume in 30th day with height of 0.1 cm found in ratio of 1:1.5 and 2:1 in both comparisons in 15th day and 30th day does not occur an increase in volume due to the mixing process is not perfect because the material is too thick. This viscous material has a high pectin content so it is necessary to do a process of breaking down pectin in advance to ease the process of fermentation. In previous studies (Billah, 2009) the highest biogas volume at 12th day with a value of 12.5 cm, due to the ratio of the number of microbial (starter) were used. Other factors that affect the volume of the temperature, because the temperature of 30-40 ºC bacteria can breed well. According to

(Hudha, 2007), the role of bacterial is greatly affects fermentation process in production of biogas from organic material.
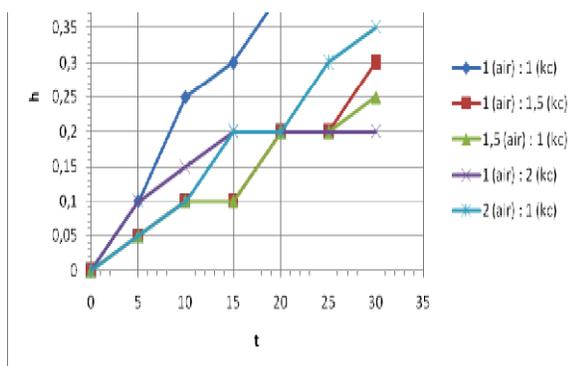
Figure 2. Fermentation Time vs Height Manometer with variable of 100 g grass

At addition of 100 g grass the highest volume occurred on 30th day with 0.45 cm height at ratio of 1:1, while the lowest volume at 30th day by 0.2 inches tall at 1:2 ratio, in both comparisons in 15th day and 30th day does not occur an increase in volume. In previous studies (Billah, 2009) the highest biogas volume occurred at 12th day with a value of 12.5 cm, due to the ratio of the number of microbial (starter) were used.
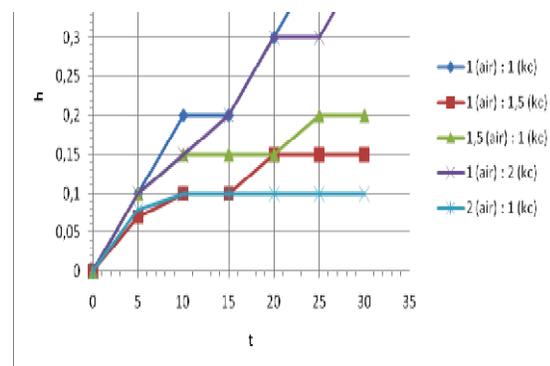
Figure 3. Fermentation Time vs Height Manometer with variable grass 150 grams.

At addition of 150 g grass the highest volume occurred on 30th day with 0.4 cm height at ratio of 1:1 and 1:2, whereas the lowest volume that occurred at 30th day with 0.1 cm height have a ratio 2:1 and at this ratio there was no increase in volume on 10th day until 30th day. In previous studies (Billah, 2009) the highest biogas volume at 12th day with a value of 12.5 cm height, due to the ratio of the number of microbial (starter) is used, the bacterial content of the cow manure is higher than chocolate rind.

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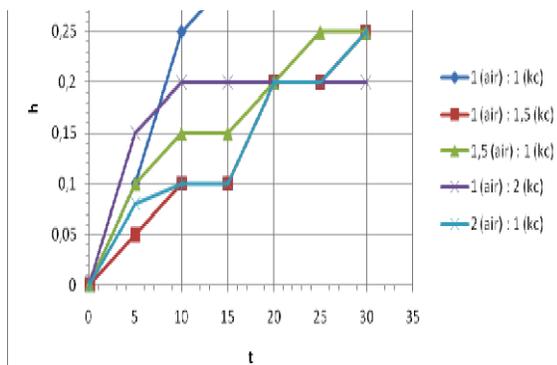
Figure 4. Fermentation Time vs. High Manometer with variable grass 200 grams.

Addition 200 g grass give highest volume on 30th day with 0.3 cm height in 1:1 ratio and at this ratio there was no increase in volume on 15th day until 30th day. While the lowest volume at 30th day have 0.2 cm tall, 1:2 ratio and at this ratio there was also no increase in volume on 10th day until 30th day. In previous studies (Billah, 2009) the highest biogas volume at day 12 with a value of 12.5 cm is happened due to the ratio of the number of microbial (starter) were used. Other factors that affect volume was the temperature due to the bacteria can proliferate when the temperature was 30-40 °C, with that temperatures the biogas production process will run in accordance with the time, but it's different when the value of the temperature is too low (cold), then the time needed to become biogas will be longer than before.

Addition of 50, 100, 150 and 200 g grass have in common which is the highest volume occurred on 30th day at 1:1 ratio, while the lowest volume at 30th day have 0.2 inches tall at 1:2 ratio, and at this ratio there was no increase in volum on 15th day and 30th day.

CONCLUSION

In this study, the levels obtained are in accordance with the National Standard of Indonesia which is between 50-70% but the volume obtained was least when compared with previous studies (Mu'tasimBillah, 2009). The highest level of 74.22% was obtained on a 1:1.5 comparison of water and chocolate rind with the addition of 150 g grass.

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An Adaptation of Circuit Analysis Course to Distance Education With Content Development

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Abstract

In parallel with the recent developments, education has also begun to use internet media. Internet usage has enhanced the quality of the education. This teaching systems have widened up to primary education. In our country, works and applications in this area have also increased and universities have included distance education into their systems. In this study, the contents of the circuit analysis course were developed according to distance education. Multimedia Technologies were exploited heavily in this work.

Key Words: Circuit Analysis, Distance Education, Multimedia;

Giriş

The use of internet technology has rapidly improved due to the use of computer increases. Internet is almost used in every field today.

Internet technology is realized that it can use in training system at the present time and it largely understood to be the facilitator in training system. Outside students of the group being trained in internet-based education is observed to benefit. This also has flexibility in terms of course.

Standardization efforts have started due to the spread of Internet-based teaching model in the whole world. As a result of these studies. For Learning Management Systems and all of components have been created standard. This studies are still continuing.

The aim of this study, after the technologies used for Internet-based training courses are to be prepared, examining the concepts and materials Electronics and Computer Education content development criteria, taking into account the contents of the distance education courses for Circuit Analysis.

Distance Education

Distance Education is economic and interactive education form regardless of time and place using information technology. Depending on the situation, it is realized as synchronous (simultaneous) and asynchronous (time-independent / asynchronous) in two ways.

In synchronous presentation, Users and servers are inside the application interactively through a live connection (Internet, satellite, etc.) in classroom environment simultaneously. Users can ask questions, discuss with each other or solve test.

Asynchronous presentations are Web-based educations. The user may participate at any time at any place the courses on the web, take the test and participate in activities. Courses may be repeated as requested. (Isman, 2008).

Some definitions related to distance education are as follows:

Distance education program is the name given to the study performs stand-alone training courses to help you prepare in a certain order of educational institutions and students (Isman, 2008).

Distance education provides access to education with satellite, video, audio, graphics, computer, multimedia technology with the help of electronic devices. USDLA, the teacher and the student are geographically remote from each other and said, this training program, the use of electronic means or written material and underline the need of

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the printed materials. Distance education consists of two main parts including teachers and students in the field of teaching education. It provides access to education to other persons.

Distance education is to establish direct connection with the students. The distance learning program can be a method that replaces the forefront of the field of education, a program that can be interpreted as reinforcing the other methods (Isman, 2008).

Different time (asynchronous) teaching model

Participants will receive courses from anywhere at any time. In this case, all the activities from sign-examination of the course participants, course content be processed by the participants, subject to final examinations in the notes to be stored or subject teacher can able to make assignments, forums, whiteboard, chat rooms, electronic mail, providing a platform for communication between the participants and the teachers allowing a management program is necessary. This management program is called Learning Management System (ÖYS) and ÖYS program is a must of distance learning.

In this model, the publication of content delivery over the network forms other activities. Learning Management System (ÖYS) is a program that can be purchased in general as well as some institutions have developed their own applications. Today, largest shortcoming in this regard in Turkey and world is matching international standards in a wide range of different issues is the lack of quality content. Development of content fits these definitions are carried out by a team of crowded instructional designers, educators, writers, subject matter experts, audio, graphics, and computer experts. Quality and permanent education is interested with quality of developed content (Al & Orçun, 2004).

Simultaneous (synchronous) teaching model

In this method, in consequence of a teacher's course participants to tell and different places for targeted monitoring and participation in the course, the teacher told the course pursued by the participants in the course, the necessary equipment should be installed. While a teacher expresses courses in a class or in a studio, videos that broadcast live are delivered over the Internet with the appropriate software and hardware to the participants. Similarly, participants that watch courses in places have sufficient software and hardware and they can ask questions to teacher and can take answers. As you can see, in this method software and hardware infrastructure in monitored environments and presented courses compose main element. Here, the most important factor affecting learning content is described by the teacher in the classroom may not show much change the content of face-to-face training. Of course, plenty visual material of content will be more permanent (Al & Orçun, 2004).

Blended teaching model

In blending teaching, classroom education that will be used at a face-to-face education need to add with both methods above mentioned (Nicholson, 2002).

Different time teaching model from these teaching models form the basis of the study that we have done. The aim of this study, as well as this teaching model, student performs the learning process using Internet technologies.

Content Development Used Technologies and Concepts

Multimedia in the broadest sense, a computer-based application, the normal text, audio, images, graphics, animation, video, and supported the use of visual aids is the face of a user interface (Bourne, Harris, & Harris, 2005).

Traditional education in recent years, overhead projector, video, and etc. tools were used. One of the most striking developments is WWW in information technology today; normal text, graphics, images and sound are transmitted over the Internet is a network of multi-media. Web is capable of integrating from the materials in different formats in variety of environments. İt allows trainers to prepare an effective and efficient course (Bourne, Harris, & Harris, 2005).

Html

Hypertext Markup Language (HTML) documents how to connect to each other and determines how settle the text and images in the document and determines how settle the text and images in the document ve a system consisting of pieces of code called tag.

<BODY> .... </BODY> information between the post / commands (HTML code / source program) is created.

<CENTER>, <FONT>, <B> Sample HTML tokens / commands. HTML code is of no significance in the gaps left. The main thing, the formatting of HTML markers and environments.

Php

PHP is a scripting language and it is saved as PHP, PHP3 file extension after code is written in PHP editör. files written in PHP don't compile. A PHP interpreteris is only in Web Server to interpret scripts written in this language programs are available. This interpreter convert PHP scripts a format understood by the Web Server and sends.

```
1    <html>

2      <head> <title> This is my first Php Page </title></head>
3      <body>
4      <?php
5      echo ("Hi Evren");
6      ?>
7      </body>
8      </html>
```

5.

6.

7. Figure. 1. Php writing codes

Dreamweaver web design software

For programming languages such as HTML, Visual (visual) programming using the property editor programs which have been developed and ready-made objects. These programs are further simplified by using the HTML language, ready-made objects instead of program code used as images. Dreamweaver is one of the best of these programs. This program is a large, complex and interactive web pages, can be prepared. Dreamweaver is a professional web design package that is designed for web designers.
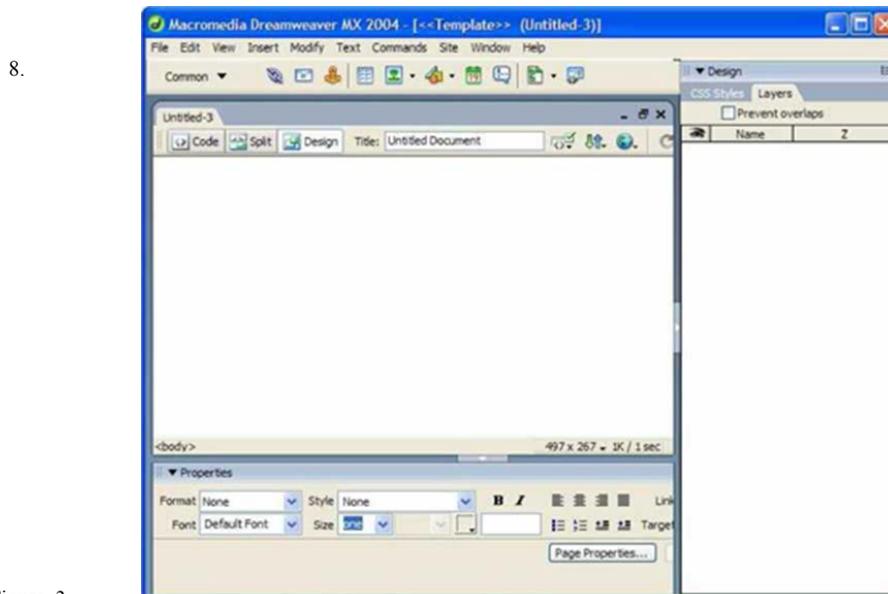
8.

9. Figure. 3.   Dreamweaver user interface

10.

An Adaptation of Circuit Analysis Course to Distance Education

Using the above-mentioned instruments, circuit analysis course notes that contain textual expressions is made more fun and intuitive for distance education students. Therefore animations are created and this animations will be able to watch again topics which do not understand gradually advanced.

Adapting sinusoidal function

11.

12.

    13.

    14.

    15.

    16.

$$f(t) = \begin{cases} A\sin(wt + \theta) & t \geq 0 \\ 0 & t < 0 \end{cases}$$
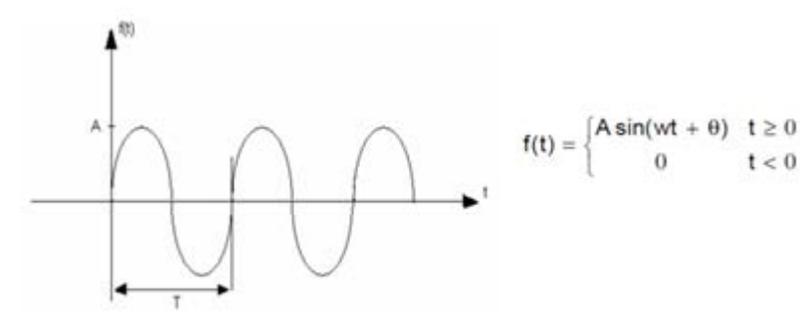
Figure. 4. Sinusoidal function graph

The following definitions are made for the sinusoidal function: $f(t)=f(t+nT)$, n is about to be a constant, so sinusoidal function is periodic. T sinusoidal function's period, in contrast to the period is called the frequency. (A., Ferikoğlu, 2003).

$$T = \frac{1}{F} = \frac{2\pi}{w}$$

W is the angular frequency and the relation between with the frequency w=2□f. □□s called the phase angle of a sinusoidal function. A which is a constant shows the amplitude of the function. T's unit is second (s), f's unit is Hertz (Hz), w's unit is radian/second (rad/s), θ's unit is radian(rad) (A., Ferikoğlu, 2003).

The following periodic functions are also commonly used, as well as sinusoidal function (A., Ferikoğlu, 2003).
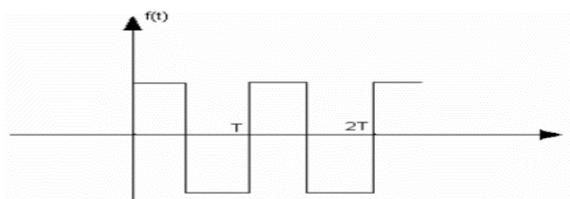
Figure. 5. Square wave

In study, distance education students select average and effective values. Sinusoidal and square waves is shown after textboxes are entered the required values.
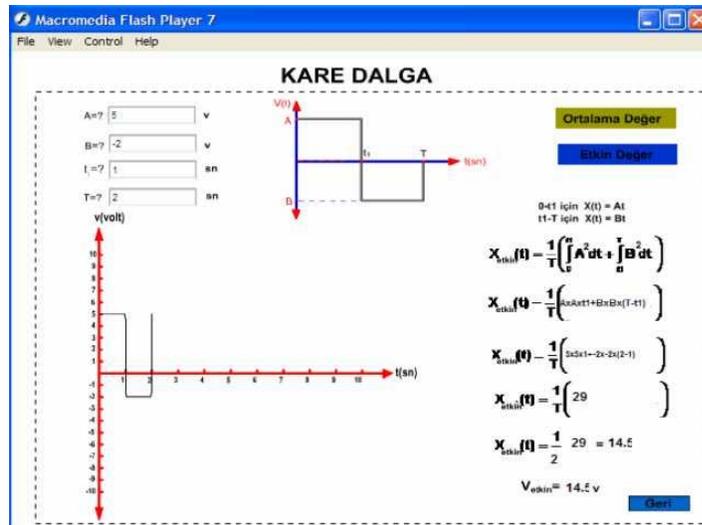
Figure. 6. Square wave is plotted
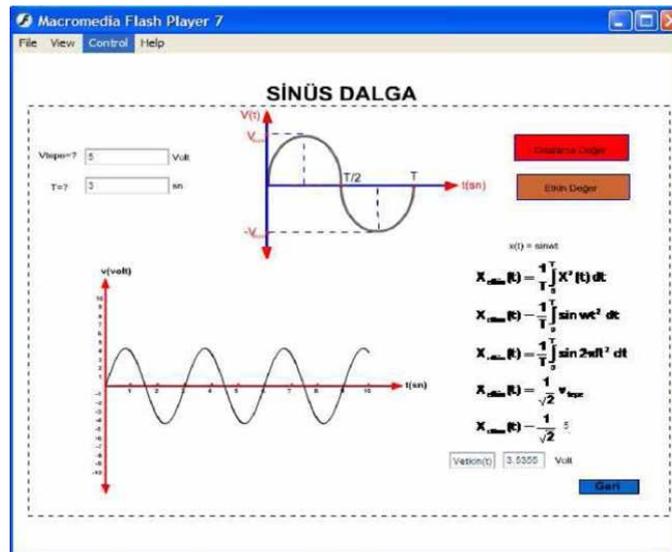
Figure. 7. The sinusoidal wave plotted after values have been entered

Animation is used to observe sinusoidal steady-state analysis's phase movement and angularly combined movement.
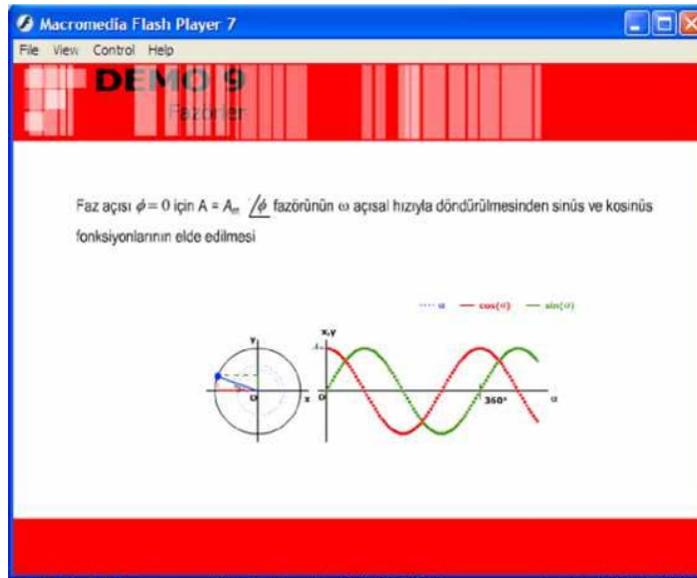
Figure. 8. Phase motion animation

Adapted to the application in the Internet environment

Our lessons were prepared to publish on the Internet. The application is a web page and can be used.
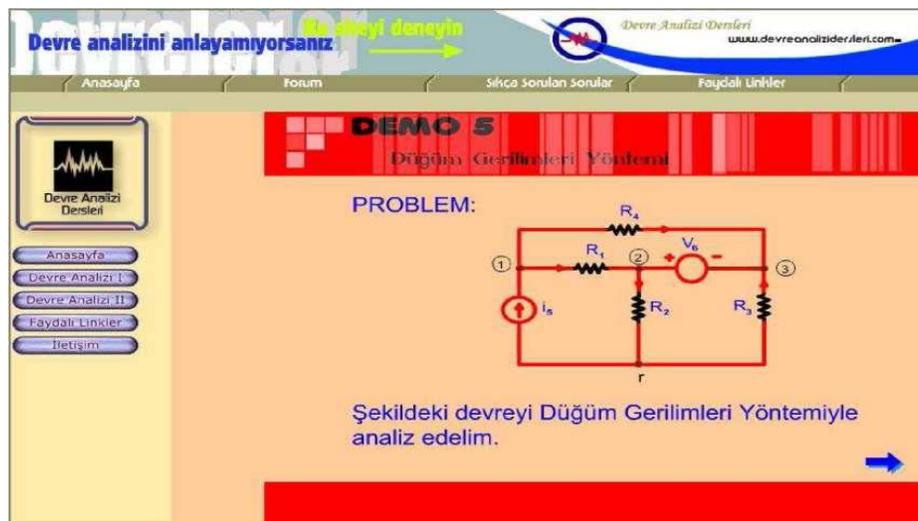
Figure. 9. Circuit Analysis course web page

Conclusions and Recommendations

In this study, A website that is easy usage, flexible and funny are designed to teach circuit analysis course over internet. this application also can be advanced by other methods. An example of this as ASP, PHP programs can be given. In the future, if ASP ,PHP etc. are used, it can be more interesting.

Aim of this study is to enjoy students and teach as interactive. Frame was used so that the user easily to reach the information. The right side section opens when the user clicks on the button on the left side. In addition, Student can return to the homepage from everywhere wherefore each page have homepaga button. In this way, leaving the user

to navigate the main topics on the page provided. design is given important in order to keep the user within the website. Forum is crated in order to discuss some of the issues among users. Subsequently users to be able to write their ideas on the web site put a guestbook. These are provided through the website to be more interesting.

Consequently, Circuit Analysis course at the beginning of the computer easy to understand and enjoyable for anyone who wants to learn how to Circuit Analysis Dersi'nin presentation via the web application has reached the desired goals and the application is fully reached the stage of completion. The imagination of the person who designed the site using the Web site way he wants can make it more fun by adding visuals. This entirely depends on the horizon of the person who designed the site.

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An Overview Of The Technologies Used For Anatomy Education In Terms Of Medical History

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Abstract

17. The term anatomy is coming from Greek Ana 'on, upon' and Temno 'I cut'. Today, the basis of anatomy education is the work performed on cadavers. However, due to difficulties in modern and alternative approaches to participate in the educational process, an essential element of today's educational process. In recent years for both time and training costs advantages and in order to ensure a healthy laboratory conditions, such methods, computer-assisted learning, simulation-based training, using true-to plastic anatomical models, plastination started to be used.

Keywords: Anatomy, Education, Technology, Cadaver, Plastination

1. INTRODUCTION

The human anatomy, one of the basic medical sciences, is one of the initial branches of medicine that studies the normal shape, structure and the organs of the human body as well as the structural and functional relations between these organs. Within an etymological frame, the term anatomy is formed by the combination of two ancient Greek words, Ana (remove) and Tomy (cut). It is expressed in the form of separation by cutting and removing. The term anatomy is 'Dissection' for Latin. Recently 'Dissection' is a term being used as a method for the examination of cadavers.

2. THE HISTORICAL PROCESS OF ANATOMY

Physicians need to know how the combination of all subsystems of the body works in harmony, in order to understand if there is a pathology in any part of the body or not. This is why anatomy is important for the medical education. When we look at the historical process of the anatomic studies, during the first period, we see the drawings of scientists that the internal organs of animals, as well as external images on the walls.

The first written records of Anatomy is said to have begun with Alcmeon from Craton 500 years before (Gürbüz, Karlıkaya & Mesut, 2004). The scientific and experimental style of today's medicine began at 3. Century BC. with the dissection experiments allowed by Ptolemy (Ronan, 2003). During this period, Herophilus, in particular on the work of the human anatomy, and Erasistratus exploration in dissection and physiology came into prominence (Lyons & Petrucelli, 1997; Garrison, 1921). To investigate the structure and the working system of the human body. Herophilus and Erasistratus make dissection on human cadaver in an objective manner firstly (Atabek & Görkey, 1998). After Erasistratus and Herophilus such scientists as Aristotle, Galleons, Avicenna, Leonardo Da Vinci, Andreas Vesalius, Claud Bernard have worked on the anatomy.

Knowledge of anatomy, from Hippocrates until Vesalius was obtained by the superficial structures of the human body and animal dissection. Along with Andreas Vesalius (1514-1564) dissecting desks have been introduced by physicians and medical students. Studies on cadavers formed the basis of anatomical education. Knowledge has increased rapidly as a result of these studies with human cadaver (Gürbüz, Karlıkaya & Mesut, 2004). In line with

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the recent technologic developments, today it has been started to be found difficult to study with the cadavers by the people and consequently the final developments led to the shift in the direction of the technology.

The method of "Parafinizasyon" has been developed by Deegener and Brendt in 1914, Hochstetter and Schmeidel in 1924. Since the structure of the samples are dry in this method, the natural image of them are shown as to be resistant to external forces. However, they are heat-sensitive and are not protected against flammability (Buyruk, Groen, Kempermann & Altuniçn, 1990). In 1977, Gunther von Hagens developed plastination, which has been more useful and increasingly used method at present. He organized an exhibition of plastination in Japan in 1995 for the first time. A similar exhibition was held in Istanbul, Turkey in 2010, and in 2012 another one followed it in Ankara.

3. DEVELOPMENTS IN TURKEY

Study of anatomy in Ottoman Empire began to show itself with 17th Century. The number of works written on this subject are quite rare, especially the ones containing pictures. One of them is Şemseddîn-i Îtakî's illustrated anatomy book, named 'Kitâb-ı Teşrîh-i Ebdân (Kâhya, 1996).

There was no significant attempt until the beginning of 19th century. From the beginning of the 19th century, The Head Physician Mustafa Behçet Efendi, prevail upon Sultan III.Selim to dissection which is part of the anatomy education. However, these attempts have not been very successful due to the prevailing circumstances. For the second time, during Mustafa Behçet's chief physician period, although the importance of anatomy was emphasized in medical education, the dissection could not be conducted because of the deep-rooted beliefs (Gürbüz, Karlıkaya & Mesut, 2004).

After 1839 anatomy has been included in the curriculum of education. Dr. Bernard from Austria has pioneered the start of training in anatomy. Initially, during the period of 'Tıphane and Cerrahhane-i Amire', it couldn't have been succeeded to work with cadavers for various reasons. However, with the establishment of 'Tıbbiye-i Adliye-i Şahane', Dr. Bernard wanted to carry out training activities on a cadaver in 1841. Only after having the permission of Sultan Abdulmecit, and the students had the capability to make a cadaver dissection (Erimoğlu, 1988, p.27).

Hristo Stambolski, who has been appointed to medical school in 1868 issued an atlas of anatomy in the same year and by translating from A. Jamin Mazhar Pasha published a book of Topographical Anatomy for the first time in Turkey as some of the frontier contributions to Turkish medical education (Erimoğlu, 1988, p.27).

In 1908, the method of "cadavers' cold storage preservation" by injecting formaldehyde was applied by Dr. Nurettin Ali Berkol (Erimoğlu, 1988, p.28). After the University Reform of 1933, the anatomy dissection education of medical students was continued by Prof. Nurettin Ali Berkol on the one hand and, on the other hand, Assoc.Prof. Hamza Vahit Göğen, Assoc.Prof. Mehmet Ali Oya and Assoc.Prof. Zeki Zeren prepared and presented a textbook of anatomy for the benefit of the students (Erimoğlu, 1988, p.28). After 1951, Dr. Zeki Zeren, worked for localizing the anatomy terms, and significantly contributed to the education system (Erimoğlu, 1988, p.29).

The apparent difficulty in the supply of cadavers since 1960, has reduced the number of cadaveric for education (Erimoğlu, 1988, p.30). Classical methods are applied in many medical schools in our country. The interactive methods, integrated into the education system and computer-based training systems increasing with time.

4. ANATOMY EDUCATION TODAY

The main purpose of the anatomy education for the student is to gain the required information by the practical way and use it properly. To reach this purpose, there are several methods of training.

Using the technology contributes learning even teaching. Using technology also increases motivation of the student. Thereby learning becomes more permanent (Mandıracıoğlu, Hassoy & Karababa, 2011, p.18). Moreover, using model, plastic model and computer assisted simulator technologies instead of traditional methods is preferred as a part of respect to privacy in medical ethics (Balcombe,2001).

4.1. Training with Cadaver:

Currently the practical studies on cadaver are forming the basis of anatomy training. The student can learn the macroscopic structures of anatomic formations, the relationships between them and their vicinity by touching and seeing in the studies on cadaver. However, the difficulties of finding cadaver for medical faculties, loss of form and degeneration of tissue in the post mortem term, diversifications in the structure, colour and smell as a result of the chemical usage for detection make the studies on cadaver unsuitable.

It is known that formaldehyde, the chemical material used on cadaver, causes irritation of respiratory tracts and eyes of people and determines several health problems. (Ohmichi, K., Komiyama, M., Matsuna, Y., Takanashi, Y., Miyamoto, H., & Kadota, T., et.al., (2006); Arts, Rennen & de Heer, 2006).

4.2. Training Based on Simulation:

4.2.1.   Simulation:
Simulation is described as comparing to real, imitating the attitudes those exists in reality (Patrik, 2002). Properties of simulators are valued depending on not only the similarity to the truth, but also the respond to the applications. It can be said that especially the more respond is sensitive, the more qualification is high-level (Mıdık & Kartal, 2010; Patrik, 2002; Maran & Galvin, 2003).

4.2.2.   Usage of Simulation in Medicals:
First important usage of simulation was Resusci-Anni created by technology and anaesthetists in 20th century (Mıdık & Kartal, 2010; Bradley, 2006; Ziv, Wolpe & Small, 2003). Later in sixties Abrahamson and Denson made a human simulator called "Sim Man". In this simulator it could be carried out: Heart beat, carotis pulse, imitation of human acts, mouth moves, winking, respond to intravenous applications and blood pressure measurement etc. However, it couldn't be produced serial because of those time conditions (Mıdık & Kartal, 2010; Bradley, 2006; Good, 2003). The third development was occurred by utilization of simulators by medical students and it was accepted globally after nineties. To follow on, these praxis were used in post graduated terms further in the clinical skills laboratories (Mıdık & Kartal, 2010; Bradley, 2006).

4.2.3 Benefits of Simulation:
Simulation supports one of the basic principles of bioethics "first do no harm" by providing students to notice their mistakes in different scenarios. Provides equal opportunities for each student (Patrik, 2002). In terms of the patients, it minimizes the risks of damage by the educational processes which would be held on them (Ziv, Small & Wolpe, 2000; Ziv, Wolpe & Small, 2003).

4.2.4. Weaknesses of the Simulation:
The most important weakness is not to replace clinical education, but only supports (Mıdık & Kartal, 2010).

4.2.5. Simulation Tools:
The simulations can be divided into two main groups: Low-tech simulations and High-tech simulations (Mıdık & Kartal, 2010).

4.2.5.1. Simulations Does Not Contain Advanced Technology ;
<u>Three-Dimensional Organ Models;</u> Like skeletal anatomy, lung, heart, larynx models, used in laboratories.

<u>Basic Plastic Mannequins;</u> These Models are used in the basic and advanced life support training and also can be used at physical examination, interventional training and wide range.

<u>Animal Models;</u> These models are used during the training of physiology.

4.2.5.2. Simulations Including High Technology;
<u>Screen-Based Simulations;</u> It is a kind of computer-assisted education (Rasmussen, Mason, Millman, Evenhouse & Sandin, 1998). It is known that different studies were carried out about these subjects. For example, Mary Rasmussen and her friends presented the three-dimensioned structure of the temporal bone virtually. In this way, the difficult and complex structure of this bone became easier and comprehensible by the virtual media (Langrana, Burdea, Ladeji & Dinsmore, 1997). Another study was carried out by Noshir Langrana and his friends. Here, a

simulator was generated which enabled the cancered tissues to be inspected. Today, it is possible to examine a variety of cancer types by the use of this simulator (Mıdık & Kartal, 2010).

Realistic, High-Fidelity Procedural Simulators; These are the simulators which imitate the parts of human body and focus on certain responsibilities (Bradley, 2006; Maran & Glavin, 2003; Mıdık & Kartal, 2010).

Realistic High-Tech Interactive Human Simulator; These are composed of models quitely resembling human and computer assistant. A realistic medium is maintained by computer assistant and they give the opportunity of managing these complex clinical situations to the students (Mıdık & Kartal, 2010; Good, 2003).

Virtual Reality and Haptic Systems; Technologic education requiring high-level computer assist which is used especially in surgery education (Maran & Glavin, 2003; Mıdık & Kartal, 2010).

4.3. Education by using cast models and plastination:
People gain knowledge by using visual, auditory and touch senses at most. It can be claimed that the usage of three-dimensioned plastic models in anatomy education raises the learning performance. On the other hand, although the complex structure of cadaver prepared by formaldehyde includes different variations, it may hide the details wanted to be given to the student. However, the subjects introduced by plastic models are easier to be learnt and comprehended by the student (Gültiken, 2012). The use of virtual materials in education, makes the concepts concrete, easy to understand and facilitate the chance of observation and re-using (Mandıracıoğlu, Hassoy & Karababa, 2011).

At the beginning of 20th century, anatomy lessons were taught by plastic models of organs. For example, German students have used these models since 1930's. Anatomist Dr. Gunther von Hagens, who is a researcher in Heidelberg University in Germany, worked for 10 years on development of plastination method in stead of plastic models since the middles of 1970's (Britta, 2012).

Plastination is a method which is formed by banishing oil and water from the subscribed body tissues and replacing them by polimerized materials and hardening the samples by shaping them out (Buyruk, Groen, Kemperman & Altuniçn, 1990). This operation should be carried out in about two and ten days after the death for resembling a living body (Britta, 2012). Highly substantial cadavers which are unwatered, scentless and real-like can be obtained by the use of polimers like resin, silycon and polyester in this method (Sugand, Abrahams & Khurana, 2010). The type of polimere used in the method determines the properties of the plastinized sample, like optic (transparent or opac) and mechanic (flexible or stable). Being unwatered, scentless and substantial, the plastinized samples preserve even their structural properties at the histologic level (Von Hagens, Tiedemann & Kriz, 1987).

Past studies indicate that students are more sensitive to models which are prepared by plastination. At the same time, it is concluded that the material prepared by plastination increases the learning ability (Latorre, Garcia-Sanz, Moreno, Hernandez, Gil, Lopez et.al., 2007). Another determined fact is that the plastinats are less damaged than plastic models. (Sugand, Abrahams & Khurana, 2010). Plastination method was also tried in Turkey, by using cheaper polimers like alkid resin in order to decrease the cost (Gültiken, 2012).

CONCLUSION

We are in an era of educational technologies being used today. Therefore, to engage the modern and alternative approaches into the educational process is an essential element of today's education sector. Teaching anatomy traditionally on cadavers in faculties of medicine is essential because they provide the opportunity of knowing three-dimensional structure and diversity of the body. But in recent years, the bodies as training equipment are being simulated by images, using computer-aided teaching methods; some plastic lifelike anatomical models or other recent methods such as the use of plastination are being used. The use of all these recent and technologically developed methods allows us to decrease both the required time for training and the cost of education. In addition to these contributions, ensuring the hygienic and healthy conditions in the laboratory environment is becoming a matter of preference as well.

The health problems, which the staff working in education may face because of the conventional cadavers' appearance and unpleasant odors caused by formaldehyde, allows working after removal from the pool wetness, are

of great importance considering the model and plastinates. However, all of these models, as it is known, may not create a suitable environment to monitor the anatomic variations of the human body and possible pathological structures. Consequently, although it seems to have some negative aspects dealt with, it is still considered to be appropriate, continuing the use of cadavers in education.

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An Overview to Ethical Problems in Telemedicine Technology

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Abstract

Transfer of information from one point to another by using electronic signals to provide medical services is defined as telemedicine. Today, many people and intuition who want to get health care service through telemedicine consults the internet. Technically it would be possible to reach the database from the outside that contains the information so the protection of personal information and maintaining the confidentiality seems to be so difficult. Ethical problems usually emerge in the phase of protection of privacy. Therefore, on the one hand the use of technological means as scheduled, on the other hand the risks that may arise should be evaluated in terms of ethics.

Keywords: Health, Ethics, Technology, Telemedicine, Internet

1. INTRODUCTION

Increasingly, the Internet has become a part of our daily lives, the number of internet users in the world is nearly two and a half billion as of June 2012 and it is approximately close to 36.5 million people in Turkey (http://www.internetworldstats.com/stats.htm.). As internet usage is growing rapidly over the years, the internet brings a rapid increase in crimes and ethical violations with it. However, despite this, one of the leading uses of it is in health during daily life.

2. TELEMEDICINE

2.1. Description:
Telemedicine has been described in the form of 'use of information and communication technologies to transfer information the correct diagnosis, treatment, disease and injury prevention, continuing education of health professionals, individuals, or in any case affect the development of community health' by the World Health Organization (Feroze, 1996).
Also telemedicine is described by 'United State Institute of Medicine' in 1996 as 'Where the distance is a problem, the use of electronic information and communication technologies (two-way video, e-mail, smart phone, cordless tools and other telecommunication technologies) to provide and support healthcare (Milli Eğitim Bakanlığı, 2008).

According to Ministry of Health of the Republic of Turkey, telemedicine is 'With the widest range of definition to present the remote health services. Telemedicine includes providing services in the fields of radiology, pathology, and ultrasonography in information and communication technologies in health service delivery through the distance between the secondary and tertiary health care institutions. (http://www.saglik.gov.tr/ SBSGM/belge/1-15487/tele-tip.html).

2.2. Development:
Over time and with the development and getting cheaper of information and communication technologies, telemedicine has steadily expanded the range of applications. As a result of this expansion the boundary between the disciplines has obscured partly (http://halilaktas0.tripod.com/odev/ teletipnedir. htm). Looking across application areas in medicine today, cardiology, ophthalmology, radiology, pediatrics, dermatology, psychiatry, pathology, pulmonology, neurology, gastrohepatology, surgery stands out as the branches (Ertek, S., 2011).

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Nowadays medical informatics which is almost become an essential concept at the past it was a concept if there would be better (DeShazo, J.P., LaVallie, D.L. & Wolf, F.M., 2009). Telemedicine applications not new in the world also have an increased importance in our country recent years. In applications of telemedicine especially Radiology plays an important role such rate of 57% . This applications provide an easy and fast access to information for health professionals (Erdoğmuş, P. & Erdoğmuş, B., 2003). It is reported that approximately 70% of all radiology practices in the United States is made in the form of teleradiology (Binkhuysen, F.H.B. & Ranschaert E.R., 2011).

The first application to telemedicine in the medical literature was created in the form of teleradiology system in 1950, by Canadian radiologists from Montreal Jean-Talon Hospital (Field, M.J., 1996, pp.36). In this regard, Ruggiero who conducted the world's first application said that, inspection results sent by the Jutra using coaxial cable In Montreal in 1959 (Ruggiero, C., 1998). Then, at the end of 1960 between The Logan International Airport Medical Center and Massachusetts General Hospital in East Boston Information communicated by establishing a microwave transmission line (Murphy, R.L.H. & Bird, K.T., 1974). The first application in Turkey was realized between Günmar MR Center, Gaziantep and Medart Medical Center, Ankara in 1997 (Erdoğmuş, P. & Erdoğmuş, B., 2003).

2.3. Application Areas:
Telemedicine, not only is used with the aim of remote monitoring and examination of patients in clinical practice, but also of medical education, management, and is also used in scientific research. When we look at the world for the intended use, diagnosis, education, management, scientific research, medical monitoring and treatment protocols, natural disasters, mobile applications, public health and preventive medicine such areas see used in application (Milli Eğitim Bakanlığı, 2008).

2.4. Purpose:
Ministry of Health of Republic of Turkey described the objectives of telemedicine listed as follows;
  a. Collection of all images and information about a patient in a common electronic field.
  b. The creation of a safe and fast way to share the information by relevant physician.
  c. To Digitize hospital processes.
  d. Use of information and communication technologies in the remote delivery of health care services.
  e. The creation of a digital hospital concept.
  f. Alleviating the shortage of experts in the field of medical imaging.
  g. Complicated cases, made a quick consultation.
  h. The provision of information and experience sharing among physicians.
  i. The creation of tools that help diagnose accurately and quickly.
  j. Ensuring the quality and precision of the evaluation of patients.
  k. Reducing hospital costs and increase productivity (http://www.e-saglik.gov.tr/ ERadyoloji. aspx)

2.5. Benefits:
Health care will be taken to the patients that away from medical centers; Remotely assess the condition of patients with the latest technology equipment and systems; Reduction in hospital costs and achieve savings in terms of time; Obtain information from the environment of the patients, and provide 24-hour service (Işık, A.H. & Güler, İ., 2010; http://www.teletip.com.tr/hak.asp); Bed due to shortening cycle more efficient use of the number of beds; Elimination of waiting periods will result in death; Specialist physicians able to reach a broader patient population and satisfied more patient; Provide expert support for health care personnel working in remote areas; Health-related statistical information can be obtained in a very short period of time (Milli Eğitim Bakanlığı, 2008).

3. ETHICAL PROBLEMS

The main ethical problem areas   are: Insufficient clinical information transfer to the opposite side, broken communication between doctor and patient, inaccurate and unclear reporting, security of personal health information maintained in electronic form, the reliability and risk of housing, How much the responsibility of the physician during the consultation with the patient will be, What will happen in the event of consultant physician disagree with the patient's physician, How to be and how to inform the patient informed consent (Gülhan, Y., 2006, p.138), the decrease in the control might be caused a defect in informing patients, using growing technology plays difficulties in autonomy, in own specific cases these technological developments might reasoning errors, decreases the concept of trust between doctor and patient (Doğan, H., 2006, p.103), During surgery applications who belong to the legal responsibility (Gülhan, Y., 2006, p.138).

Today, with telemedicine, many people and corporate who want to get health care consults internet site. As well as many health agency and health personnel which provides health services, share data and professional knowledge over the Internet offer. Technically, it may be possible to gain externally access to the database where the information is evaluated maintaining the confidentiality of the provided information and the protection of personal information seems to be difficult. Also the ethical problem arises in the stage of protection of privacy which stored on personal information. Capturing patient records by unauthorized persons may jeopardize the principle of the protection of private information of patients and may be able to misuse.

For one of the most important problem areas, to keep stored personal data that prepared electronically, the protection of health data and protection of private life have been various national and international regulations. According to this, The 12. Article of Universal Declaration of Human Rights declares that 'No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honor and reputation' (Resmi Gazete, 1949) and Article 8 of the Declaration of Lisbon on the Rights of Patients Published in 1981 and revised in 2005, declares that " Patient's has a right to expect from physician, to respect the confidentiality of all medical information about his private life' '(WMA Declaration of Lisbon on the Rights of the Patient, 2005). In the 4. Article of Declaration on the Promotion of Patients' Rights in Europe, Amsterdam 1994, "Protection of personal information, even after death, protect the patient's identity, the protection of patients' records from third parties" subheadings are listed (WHO A Declaration on the Promotion of Patients' Rights in Europe, 1994). Article 1 of the; Section 1 of the Convention on Biomedicine; it is specified that Protection of human dignity and the identity is given the responsibility of states and the rights must be secured (Resmi Gazete, 2003).

When we look at the national survey prepared for the protection of personal data we encounter the followings; Article 23 of the Patients' Rights Regulations entitled "disclosure of information" in 1998 (Resmi Gazete, 1998), Article 9 of Code of Professional Ethics in Medicine entitled "Confidentiality Obligation" and Article 31 entitled "Giving the patient on the patient and the use of information" in 1999 (Hekimlik Meslek Etiği Kuralları, 1998), Article 4 of Rules of Medical Ethics "Medical and dental surgeon, can not disclose the learned the secrets of the patients unless legal obligation" in 1960 (Resmi Gazete, 1960), 20th Article of The 1981 Constitution of Turkish Republic, entitled "Privacy and the Protection of Private Life" (Resmi Gazete, 1982).

With more cases in the forefront of technological opportunities, physician-patient communication and relationship between them was adversely affected. Because of this, physicians use of their own ability has decreased. This is manifested not only in the form less conversation with the patient, but also as a simple physical examination and diagnosis deprivation or to patients who may be treated to favor a more complicated treatment (Oğuz, Y., 2006, p.295). For example, today one of the most widely used methods for teleradiology patient and the physician are not talking a direct relationship with the clinical data disruption and feedback during the writing of this report and to be more sensitive to the physicians. Physicians are not faced with the patient and could not know the full details of patient's narrative, and even the need to stay away from relatively precise diagnosis and may wish to additional investigations. Thus, unnecessary labor, time and material loss arises (Gürkan, M., 2009).

Nevertheless the time spent and the cost is getting decreasing through telemedicine, also by leaving the classic methods in the physician-patient relationship decreses morale and confidence. By decreasing confidence the healing process negatively affected. This leads us to the technological methods can not be replaced, a well-established patient-physician relationship (Gürkan, M., 2009).

Another example is, in the classical system making it relatively difficult to falsify on radiographs and it can be perceived easy. However, the data generated in computer still can be changed via the computer, can be much easier than the conventional method. In addition, the presence of electronic data networks such as the internet or data during transmission over long distances where the security gaps that may occur in the form of unauthorized access so these information that should be kept confidential patient data seize by third parties or even offer of making changes on this data not only legal problems but also ethical problems (Gürkan, M., 2009).

In terms of medical ethics secrets of the patients can be contributed and we find a violation of the principle of "Confidentiality" (Gürkan, M., 2009). We can clarify this situation a few examples from real life. According to Gürkan; A health worker who may have access to medical information gave the information about four thousand HIV (+) patients to two newspapers. Elements of a company, the financial information of the patients were sold to another company that

distributes data. In June 2008, a bone marrow donor bank which has about thirty thousand identity information has stolen by copying files from the computer. In August 2000, 858 patient records confidentiality has been violated by the improper appointment (Gürkan, M., 2009).

4. CONCLUSION

The personal health data, have attempted to ensure with a variety of national and international regulations. Thus, on the one hand envisaged the use of technological opportunities as possible, on the other hand the risks that may arise should be evaluated in terms of ethics (Gürkan, M., 2009).

Remote reporting or evaluation of patient information is a fast-growing and inevitable phenomenon, which includes a variety of advantages and disadvantages. It is considered to be a high potential of additives for the use in accordance. However related to the field of technical, medical, legal and ethical regulations is considered to be needed (Gürkan, M., 2009).

Because of all this these problems those may arise during the implementation of telemedicine there are no regulations about who neglect or who will be responsible for damages. This is another problem area. Therefore, to overcome these deficiencies constitute legal regulations and ethical basis for these analyzes shall be performed (Gürkan, M., 2009).

In the circular "Data Security" which was published by the Ministry of Health of Turkey, stated that; security policy within the scope of personal health records; about data security, confidentiality, integrity and accessibility that the three basic principles to be taken into consideration and in the context of "System Security" traceability, identity testing, reliability, and not to be denied the four basic principles should be carried out (Sağlık Bakanlığı, 2005).

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Analysing the success of level determination exam according to the school type and lesson type that is represented by questions in the exam

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Abstract

The purpose of this study is to determine if there is any relation between level determination exam (LDE) point and the type of school and the points that student got from those lessons which are represented by questions in the exam. Randomly selected data belongs to 8th degree primary school students among whole Turkey are used as the sample data. To investigate the significance level of relationship between two variables independent of each other, first of all the correlation values between two variables has been examined and then some statistical tests has been applied.

As a result, it has been observed that there is a strong, meaningful and positive relation between the achievement of students on the lessons which are represented by questions in the exam and the LDE points. Furthermore, it has been observed that the type of school that students attend is also effective to the success and it has been seen that the students who attend private schools are more successful than the students in public schools.

Keywords: Student achievement, LDE,school type

Introduction

Education system is exam-oriented in Turkey. Understanding the factors that lead to success (or failure) of students at secondary education is an interesting and difficult problem. Therefore, determining the variables that are related to academic achievement of students have always been aroused the curiosity of the researchers. Often centralized placement tests and future academic achievements are considered as related concepts that are derivative of each other. The purpose of this study is to determine the importance level of variables that is considered to have an impact on student achievement and guide students' accordance with the objectives of education.

Many researches have been done in the country and abroad in order to determine the items that affect students' success in the exams. Understanding the factors (i.e., the predictor variables) that affect students' academic achievement is a critical input to understanding and improving the educational landscape. Many of the previous studies analysed this phenomenon one variable at a time. They tried to collect data, mostly from survey type instruments, to understand the relationship between a single factor and its impact on academic achievement. For instance, some researchers studied the correlation between academic achievements and parenting styles (Attaway & Bry, 2004; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994), others focused on socio-economic status (Goddard, Sweetland, & Hoy, 2000). Some others investigated the impact of teacher aid to academic achievement (Gerber & Fin, 2001) while others looked at the significance of different schools types (Carpenter, 1985). On the behavioural side, some researchers looked into the perception of personal control (Stipek, 1981), others looked into the efficiency of principals (Gentilucci, 2007), gender (Kelly, 1993), and locus of control (Bain, Boersma, & Chapman, 1983). Some of these studies found statistically strong relationships between the individual factors and academic achievement based on the limited data that they have based their studies on. Some researchers looked into a pseudo representation of academic achievement, namely the level of success in centralized placement test. Some claimed to have found strong relationship between test scores and family income. Their results pointed out that the level of income has a positive effect on test scores and further academic achievements (Carneiro, 2008; Yenilmez &

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Duman, 2008).On the other hand, some other researchers have stated that income does not directly affect academic achievement, but affects the beliefs and attitudes of the family, which in turn affects the ultimate outcome (Davis-Kean, 2005). For instance, the families on a high income can afford to send their children to private schools, and provide them with additional private tutoring, which, at the end, may translate to higher academic achievement (in general, but not always).

According to the study of Morrison and McLntyre (1971), father's and mother's level of education and profession influence the children's educational achievements and plans positively and the size of family affects adversely. According to the survey of Balu and Duncan (1976), there is a high relation between the education level of male students and profession and education of their fathers. Especially the success in profession and social status of male students closely related with their father's profession and education. Another approach is to assert that qualitative and quantitative characteristics of the school do not have significant effect on student's educational achievements and student's achievement is determined by familial and other social factors out of the school (Coleman et all, 1966, Jencks et all 1972, Bowles ve Gintis 1976).

Purpose of the study

The purpose of this study is to determine if there is any relation between level determination exam (LDE) point and the type of school and the points that student got from those lessons which are represented by questions in the exam. For this reason, it has been investigated the relations between LDE points and the type of school and the points that student got from those lessons which are represented by questions in the exam

Methodology

In this section, the research group, data collection instruments and analysis is explained. The universe of the study is composed of students studying at 9th degree in 2010-2011 academic years. Randomly selected data of 5000 students in Turkey has been taken as sample. This data belonged to students has been gathered from e-school system of Group Head of Information Technology of Ministry of Education. By comparing LDE points, school types and scores that have been taken from lessons which are represented by questions in LDE of concerned students, it has been investigated whether there is a significant relationship between LDE and those compared variables. In order to reveal the relationship, statistical analysis such as frequency, percentage, correlation, standard deviation and arithmetic mean have been applied on obtained data.

Findings

For evaluation of the study, first of all the frequency distribution has been examined and the frequency distribution of students by school type is as in Table 4.1. As seen in Table 4.1, the percentages of students who attend public schools are more than the ones who attend private schools.

18. Table 4.1. The frequencies and percentages of the students according to the school types.

School Type	Frequency	Percentage
Public	3379	67,6
Private	1621	32,4
Total	**5000**	**100**

For evaluation of the study, mean, standard deviation, minimum and maximum values belonging to lessons which are represented by questions in LDE has been given in Table 4.2.

19. Table 4.2. The statistics of lessons which are represented by questions in the LDE.

Lesson Name	School Type	N	Minimum	Maximum	Mean	Standard Deviation
	Public	3379	16,8700	99,6000	64,0527	15,1487
Turkish	Private	1621	37,6300	100,0000	82,5508	11,7762
	Total	5000	16,8700	100,0000	70,0497	16,5830
	Public	3379	15,9433	99,3367	57,8722	17,7392
Mathematics	Private	1621	21,3733	100,0000	79,5701	15,3342
	Total	5000	15,9433	100,0000	64,9067	19,7993
	Public	3379	16,0567	98,9600	62,1648	15,7082
Science and Technology	Private	1621	28,7400	100,0000	81,4873	13,0453
	Total	5000	16,0567	100,0000	68,4224	17,4295
	Public	3379	15,7733	99,5000	62,4088	16,4952
Foreign Language	Private	1621	21,4967	100,0000	80,6188	14,0845
	Total	5000	15,7733	100,0000	68,3125	17,9113
	Public	3379	25,8933	100,0000	75,7803	12,8054
Religion and Ethics	Private	1621	31,2133	100,0000	90,7567	7,6589
	Total	5000	25,8933	100,0000	80,6235	13,3786
	Public	3379	22,1467	98,2467	65,1941	15,0773
Social Studies	Private	1621	42,3567	100,0000	83,2976	11,8446
	Total	5000	22,1467	100,0000	71,0633	16,4589

The distribution of LDE points according to the school type has been given in Table 4.3. The analysis of mean scores of LDE has showed that the students who attend private schools are more successful than the ones who attend public schools.

20. Table 4.3. The distribution of LDE scores by school type.

School Type	N	Minimum	Maximum	Mean	Standard Deviation
Public	3379	114,9200	488,8350	308,1991	72,9352
Private	1621	162,1490	497,8810	410,7904	62,8001
Total	**5000**	**114,9200**	**497,8810**	**341,4592**	**84,7295**

The results of correlation analysis between LDE points and the scores of lessons that are represented by questions in LDE have been given in Table 4.4. Findings have showed that correlation factors are close to each other. It has been observed that there is a quite high, significant and positive relation between LDE points and lessons that are represented by questions in the LDE by 0,01. According to the correlation factors, the highest level of relationship is between Science and Technology lesson and LDE point.

21. Table 4.4. The results of correlation analysis.

Variable	Turkish	Mathematics	Sci. and Tech.	For. Lang.	Religion	Social	**LDE Score**
Turkish							
Pearson Cor.	1	,895	,918	,901	,877	,913	**,908**
p	,000	,000	,000	,000	,000	,000	**,000**
Mathematics							
Pearson Cor.	,895	1	,936	,880	,822	,891	**,907**
p	,000	,000	,000	,000	,000	,000	**,000**
Sci. and Tech.							
Pearson Cor.	,918	,936	1	,892	,852	,921	**,920**
p	,000	,000	,000	,000	,000	,000	**,000**
Foreign Lang.							
Pearson Cor.	,901	,880	,892	1	,831	,876	**,863**
p	,000	,000	,000	,000	,000	,000	**,000**
Rel. and Eth.							
Pearson Cor.	,877	,822	,852	,831	1	,865	**,845**
p	,000	,000	,000	,000	,000	,000	**,000**
Social Studies							
Pearson Cor.	,913	,891	,921	,876	,865	1	**,906**
p	,000	,000	,000	,000	,000	,000	**,000**
LDE Score							
Pearson Cor.	**,908**	**,907**	**,920**	**,863**	**,845**	**906**	**1**
p	**,000**	**,000**	**,000**	**,000**	**,000**	**,000**	**,000**

Discussion and Conclusion

The findings of the study show that the scores of lessons that are represented by questions in LDE taken by the students who attend private schools are higher than the students in public schools. The second result obtained from findings shows in parallel with the previous result that the students who attend private schools are more successful on LDE than the students in public schools.

Another significant result of the study is that here is a quite high, significant and positive relation between LDE points and achievements of the students on the lessons that are represented by questions in the LDE. In other words, the students who have high scores on these lessons are more successful in LDE.

Our previous study for predicting secondary education placement test result is revealed that previous test experience, whether a student has a scholarship, student's number of siblings, previous years' grade point averages are among the most important predictors of the placement test scores (Şen, Uçar & Delen, 2012).

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Analysis of Research in Programming Teaching Tools: An Initial Review

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Abstract

This paper describes preliminary results of research related to programming teaching tools. This study focuses on the key issues being highlighted in this research. Among the research questions of the study are: What are the important issues in programming teaching and learning research? What are the methods of the research? What kind of tools involved in programming teaching and learning? What is the level of programming involved? The study applies systematic review approach to 45 research papers derived from the ACM digital database, published between 2005 and 2011. The study found six issues related to programming teaching tools, and most of the issues concern on the techniques and methods used in teaching, learning and assessment. Regarding the level of programming involved, majority of the research focuses on introductory stage.

Keywords: Teaching tools; Programming; systematic review

Introduction

Various tools have been introduced in education process to enhance teaching and learning activities. These tools play important role for enriching students' learning experience on the learned subject. In programming teaching and learning, various electronic tools are available. These electronic tools are essential since programming software and environment are closely related to and require computer as a platform to implement and test the syntax of programming.

Programming process involves a combination of activities i.e. planning, designing, testing and debugging. To learn on how to develop a program, students need to understand the syntax of programming language. The complexity of programming and difficulty to comprehend program logic often lead to frustration and lack of motivation to learn programming (Caitlin Kelleher, 2005). According to Garner (2007), learning separation between theory and practical sessions complicate the learning process in this course. Eventually, these factors contribute to the high rate of dropouts in programming courses at most universities and colleges.

These problems have stimulated researchers to find ways to help students in learning programming. Among the top three topics in programming teaching and learning are issues related to programming tools (Sheard et al. , 2009). Available programming tools and environment such as Alice, BlueJ, Jeliot, Scratch and Greenfoot intend to facilitate teaching and learning in programming and to reduce the burden of instructor. Various learning strategies such as story telling, games in learning approaches, simulation and visualization techniques as well as pair-programming approaches are implemented to enhance student engagement and to develop creative thinking as one of the preparation strategy for students to become future producers, not just consumers of technology (Denner et all., 2012). Researchers in programming teaching and learning areas also give their attention to related issues for example students' attitudes toward programming and assessment activities in the process.

Although programming teaching and learning research has rapidly increased, there is little study to evaluate and synthesize the results of relevant research in this area, specifically within the context of programming tools. The objective of this paper is to identify the direction of recent research in programming tools usage in teaching and learning from 2005 to 2011. Four research questions were raised in this study: what are the current issues related to

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tools in programming teaching and learning?, what are the adopted method in the research?, what kind of tools that were developed or used in programming teaching and learning?, and what are the level of programming involved?

Programming Tools

Programming consists of three main components: program, programming tools and programming language. As one of the key element in programming, programming tools play an important role in programming development and implementation. Programming tools provide the software or environment that allows programmers to give instructions, test them and implement the program. Ability and skills to use programming tools are considered as important and equivalent to skills in syntax and logic. In teaching and learning of programming, programming tools is one of the main topics that discuss issues related to pedagogy, curriculum and programming languages (Janet C. et al, 2011; Anorld, 2007; Judy, 2009).

Programming tools are supposed to assist novice programmers, students and instructors in developing programming skills. Though many of programming tools are available in market and most of them can be downloaded from the Internet and supported by most platforms, only a small number of them are suitable to be adopted in programming teaching and learning (Valentine, 2004). As a consequent, skills in using programming tools could be gained only through informal learning, trial and error process, using either Internet sources, help functions, or from insertion notes supplied by the software.

Program software developers are generally designed to meet the needs of professional and advance programmers. Usually, the software are equipped with complete set of concepts and complex functions. Due to limited experience and knowledge among novice programmers, it is very difficult for them to understand and use the functions. As a result, this complex functions are perceived as problem rather than solution that help them in producing program. Furthermore, complexity in software interface, difficulty to understand error messages display and warning messages are among the reasons why most programming tools are not suitable for the programming learning environment (Arnold et al, 2007). These hurdles distract and fade away the initial interest possessed by novice programmers or students.

This problem calls for innovative programming tools and environment suitable for teaching and learning purposes. Better learning can be achieved by using a tool that combines communications technology, active learning and visualization display. Jeliot3 is among programming tool architecture and features that support device from cell phones to interactive code that allow mobile users to contribute code and predict its performance (Andrés et al, 2004).

Research in programming teaching and learning has produced a variety of special tools to help students develop their program. Among the tools that are used in software programming including Alice and Jeroo, JPie, Alice, Karel Universe, Raptor, Iconic Programmer and Visual Logic (Power et al, 2006). In addition to focusing on the needs of students, educational programming tools are also designed with unlimited teaching methods to reduce the need for tutors and increase aid through the use of technology. Each innovation considers the features of the latest gadgets that have gained importance in the computer science education community.

Method in Systematic Review

The present study is performed using systematic review. Systematic review is a process for identifying, evaluating and interpreting research materials to answer a number of research questions (Kitchenham and Charters, 2007). The purpose of systematic review is to summarize the research by performing synthesis on research resources. In this study, the review was carried out in several activities. The activities involve:

- Identify research needs and devise a protocol study
- Build research questions
- Identify relevant literature by performing search on database based on teaching and learning programming research domain
- Select materials based on inclusive and exclusive criteria
- Extract data and evaluate the quality
- Synthesize evidence
- Interpret results and write reports

Database search on programming tools research papers was made using ACM digital library. ACM digital data base is selected as a source of information domain because the programming education are widely covered and published by ACM, including the publication of conferences i.e. ICER, SIGCSE, ITiCSE, ACE, SIGGRAPH and Koli Calling. Two keywords were used in the search process that refer to the study domain i.e. "Teaching and Learning Tool" and "Programming".

The research questions raised in the study and selection criteria that will be discussed shortly after this guide the researcher in performing systematic review.

Research questions

The study focus is to understand the practice of the researchers in programming teaching and learning using teaching equipment. This literature survey aims to obtain answers to the following four research questions:

Research question 1: What are the important issues in programming teaching and learning research?
Research question 2: What are the methods used in programming teaching research?
Research question 3: What kind of tools used in programming teaching and learning?
Research question 4 : What are the level of programming involved?

Inclusive and exclusive criteria

All selected research papers in this survey must meet inclusive and exclusive criteria. The following list is the inclusive criteria:

- Research papers published in conference or journal;

- Research papers published between the years 2005 - 2011;

- Research paper that discusses the topic of education tools in the field of programming.
While the rejection of a research papers are those that meet this criteria:

- Research papers published other than English;

- Research papers outside the domain of education tools in programming;

- Research papers that display only the abstract, without full access to the entire discussion;

- Double issue by the same author, describing the same topic, only the most recent publication will be taken into account in this study.

Results and Discussions of Systematic Review

This section describes the results of the analysis in the review. The obtained data will be the input of the synthesis process. Synthesis includes formulating the finding that will answer the research questions set out in Section 3.1. Search strategy used in the ACM database lists 52 publications related to programming tools (Table 1). However, after evaluating the research paper title and abstract, and after removing previous copies of multiple studies, only 45 papers were accepted for analysis. 88% of the initial research papers were included after paper screening based on titles and abstract. Seven research papers were rejected, which title falls outside programming education domain.

"Tool" or "instrument" keywords in most of the research papers refer to software, applications and programming environments. However, researchers may refer this string using different terms such as technology, management methods, research tools, and teaching approach.

22. Table 1. Paper review

Paper	Number
Total fulfill inclusive criteria	52
Total fulfill exclusive criteria	7
Total valid	45

Research question 1: Issues in educational programming research

Research in programming consists of a number of issues. Classification of papers within similar issue is conducted using a method proposed by Simon (2007). Simon (2007) classifies computing publications on four aspects of discussion: context, theme, scope and characteristics. Since the research questions for this study focus on the detail of research discussion, the classification is made based on the research theme. Simon (2007) suggests 16 dimensions of research issue under theme heading. As a result, six issues were identified in this study (see Table 2). Five important issues will be discussed separately here.

Table 2. Identified issues

Issue	Number
Techniques of teaching / learning / assessment	18
Teaching / learning / assessment tools	13
Ability / aptitude / understanding	7
Model and theory of teaching/learning	3
Research direction	3
Gender issue	1
Total	45

Techniques of teaching, learning, assessment

Regarding educational programming techniques of teaching, learning and assessment, the focus of relevant papers is to report the experience and describe teaching and learning methods. The various features and aspects of information technology (IT) are also reviewed to relate the best and pedagogical techniques that produce programming skills and confidence to students, including fragmentation of the programming process using small parts (Simon et al, 2007), visualization (Orni et al, 2010, Robin et al,2010, N. Baloian, et al, 2005), constructive (Naomi et al, 2008) and think-aloud approach (Naveed Arshad, 2009).

Among the formulations in this dimension are to construct clear programming teaching strategy to increase student learning outcomes (Carsten Schulte & Maria Knobelsdorf, 2007, Michael E. Caspersen & Jens Bennedsen. 2007, Jorge A. et al,2009). The design and testing of programming learning model are considered as important process to identify and understand how students experience certain learning method. This helps to explain the learning process and improve existing methods (Michael E. Caspersen & Jens Bennedsen, 2007, Eckerdal et al,2007). The implementation of active learning should not focus only on language syntax and programming logic (Carsten Schulte & Jens Bennedsen, 2006) in educational programming. Among the suggested activities are trouble shooting and breaking solution into phases (Simon Grayet al, 2007, and Quintin Cuttset et al, 2011) .

Teaching, learning and assessment tools

Under this issue, 13 papers fall into this research issue that discuss the process of teaching and learning, as well as assessment in programming course. These tools might be developed by the researchers themselves. A large number of studies measure the effectiveness of these tools in helping students to write the program and perform the solution (N. Baloian et al, 2005 and Susan H. Rodger et al, 2009) Similarly, many studies assess the impact and relationship between programming tool usage and performance (Juha Helminen and Lauri Malmi,2010 and Paul Denny et al, 2011).

The results show that the use of various software tools help student to program. Based on good performance positive response from student, there is evidence that the tools are accepted in the learning process (Orni et al, 2010, Reginamary et al, 2009, Fatima AlShamsi and Ashraf Elnagar, 2009, Ana Paula et al, 2010, Georgios Fesakis & Kiriaki Serafeim, 2009). Besides, tool support from technology and peer-learning are important in helping students to understand programming concept (Davor Čubranić et al, 2006).

Programming tools using visualization approach were found to be preferred by students (N. Baloian et al, 2005 and Susan H. Rodger et al, 2009). Meanwhile, game element makes learning programming more interesting to follow (Martinha Piteira & Samir R. Haddad, 2011 and Mary Flanagan et al, 2005). Programming animation and online application were among innovative element in the research (Jungsoon et al,2006).

Ability / aptitude / understanding

Programming complexity and ambiguity are among the reasons for lack of motivation among programming students (Päivi Kinnunen & Lauri Malmi,2008 and Paivi Kinnunen & Lauri Malmi, 2006). Among the concerns in handling laboratory sessions for this course is the effort to identify and rectify errors that might frustrate and discourage students. In the long run, students' attitude towards programming are at stake and consequently give a negative impact on exam scores (Emily S. at al, 2011) which in turn contributes to drop out in programming subjects.

In programming teaching and learning, students require clear and precise instruction and need peer support (Michael E. et al, 2007 and Naomi et al, 2008). Students' understanding in programming can be improved by paying attention to clear instruction activities and peer learning forum(Naomi et al, 2008), as well as applying concepts and knowledge through games (Martinha Piteira and Samir R. Haddad, 2011).

Research direction

Under this issue, this study identifies what researcher perceives as their future research in educational programming, including new issue and proposal (Petri et al, 2010). Research in this domain should not be limited to programming introduction level, and more research is required to synthesize the current study in educational programming and to explore educational technology such as distributed line environment and mobile learning (Judy et al, 2009).

Research question 2: Method used in research

There are nine identified methods used in the research paper, as in Table 3. Survey appears to be the most widely method that measures feedback and responses from instructors and students regarding the effectiveness of programming tools. Several methods were used in evaluating programming tools effectiveness and efficiency. This result implies that instructors are required to be more flexible, to use combination of traditional teaching approach with other techniques in classroom and laboratory to make the session more interesting (Carsten et al, 2010 and Carsten Schulte, 2008).

Table 3. Research method

Item	Number
Survey	14
Software design and development	9
Experience report	6
Comparison study	4

Meta Analysis/ Literature review	4
Program evaluation	2
Empirical study	2
Model and framework development	2
Case study	2
Total	45

Research question 3: Types of programming tools

The equipments used by instructors to help students in programming include visualization, simulation, and physical or online tools. Table 4 present the result. The analysis suggests visualization as the most widely used approach to clarify abstraction in programming (Juha Helminen and Lauri Malmi,2010, Aniket et al,2010, Quintin et al. 2011). Most studies concern on evaluation of programming tools rather than development of the tools.

In addition to programming tool, the use of management or support tool is also important, especially to assess students' work on programming, to record programming activities, and to communicate programming activities (S. Tabanao et al, 2011, Bronius Skupas and Valentina Dagiene, 2010, Davor et al, 2006). A large number of research papers (23papers) do not directly involve in using the tools. These papers discuss computing issues related to students' behavior and attitudes, dropout and failure factors, theory of programming tools, and modeling and analysis of programming teaching and learning .

Table 4. Programming tools type

Item	Number
Visualisation/ simulation	12
Support and management	6
Online tool	2
Physical tool	2
No tools involved	23
Total	45

Research question 4: Programming Level

All of the papers are related to education domain, in the context of programming teaching and learning (refer Table 5). They cover the basic concepts of programming or introductory programming including programming algorithms, selection, repetition structures, with two exceptions. These two papers discuss programming data structure. This result shows most of the reviewed paper concentrate on the basic level of programming in which novice programmers struggle to develop their understanding and skills.

Table 5. Programming level

Item	Number
Introductory programming	43
Data structure	2
Total	45

Conclusion

This study focuses on programming teaching tool and uses review analysis to determine important issues raised by recent research conducted on this topic. The findings are based on four research questions. They indicate prominent issues addressed by researchers such as the techniques and methods of programming teaching, learning

and assessment. These findings are useful for researchers to continue research in programming teaching tools in regard to this aspect.

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Analysis of tajweed errors in quranic recitation

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Abstract

The aim of this study is to identify the various types of tajweed errors made by students during Quran recitation. This study was carried out on 20 students who took the Tilawah Al-Quran (Quran Recitation) level 2 course as part of their first degree programme at the IIUM. Analysis of the errors was carried out on recordings of the respondents' recitation using a comprehensive set of instruments to identify the type and category of errors comitted. Only errors that occurred at least 1% percent of the time are taken into consideration in this analysis. As a result, a total of six elementary errors have been found. It is hoped that this study will pave the way for a more effective method of teaching the subject of Quranic Recitation which continues to focus on the practical aspects of tajweed knowledge.

Keywords: Error Analysis; Tajweed; Al-Quran; Quranic Recitation;

BACKGROUND

The Tilawah Division is a division under the supervision of the *Centre for Languages and Pre University Academic Development* (CELPAD), International Islamic University Malaysia (IIUM), responsible for the Quranic Recitation programme for IIUM students. This Quranic Recitation course offered by the Tilawah Division is a compulsory pass course to be taken by every IIUM student in order to graduate. There are three courses being offerred by the Tilawah Division as follows: -

1. Basic Level (TQ 1000)
2. Intermediate Level (TQ 2000)
3. First Degree Level (TQ 3000, TQ 3010, TQ 3020)

In this study the writer will focus on the Quranic recitation of level TQ 2000 students only. This course is compulsory for students not majoring in Islamic studies or Arabic.

2. PROBLEM STATEMENT

The problem of poor Quran recitation skills is often discussed by teachers and researchers in the field of Islamic education. Saidi Mohd (2007) states that students weakness in Quran reading has already become an issue in the field of Islamic education for some time, and is still unresolved. Despite various efforts and innovative methods proposed by educators and researchers, this problem has yet to be overcome completely and it is considered to be the root cause of for overall student weakness in the Islamic Education subject in schools. The answer to this problem could conceivably be found through knowing the various errors and mistakes made by students in Quran reading. In fact, many matters would be resolved after the various mistakes made by students have been identified and classified.

This researcher has decided to conduct a pilot study on this particular problem on level TQ 2000 students at IIUM. Through this study, the various errors and mistakes in Quranic recitation can be described in a more systematic manner, thus paving the way towards overcoming the problem of poor Quran recitation skills.

3. OBJECTIVES

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The objectives of the study are as follows: -

1. To devise a system to evaluate accurately the level of ability of Quranic recitation, especially among IIUM students.
2. To classify the mistakes made by the students, which are the most common mistakes, and which are the infrequent ones.
3. To develop a Quranic tajweed teaching guide going directly to the practical aspects of recitation, without burdening students with the theoretical elements of tajweed.

4. CONCEPTUAL FRAMEWORK

In order to obtain knowledge of the means to identify mistakes in Quranic recitation, a theory has been formulated based on the following source literature:-

Figure 1: Conceptual Framework
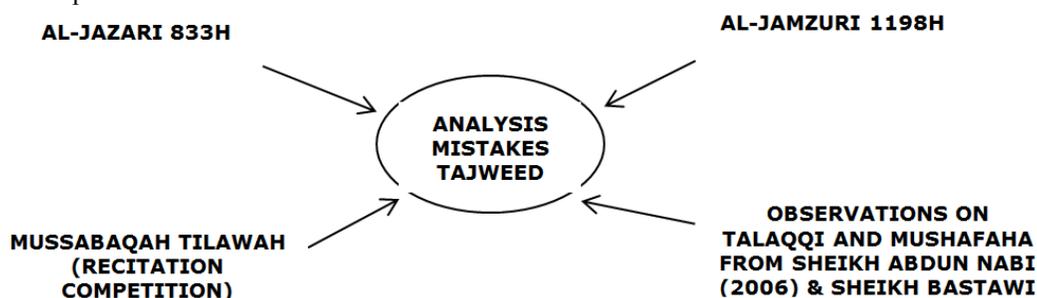
5. LITERATURE REVIEW

The writer has referred to the studies and writings of leading reciters throughout the ages. Among the writer's main sources are the writings of Al-Jazari (833H) and Al-Jamzuri (1198H) and other sources.

5.1. RULES OF TAJWEED ACCORDING TO AL-JAZARI (833H)

Al-Jazari (833H), through his verses, has clarified the Rules of Tajweed in the following areas: -
* Manner of correctly pronouncing the makhraj (articulation point) of a letter.
* Manner of corrcetly pronouncing the sifat (characteristic) of a letter.
* Errors in the implementation of al-Tarqeeq (thinning) and al-Tafkheem (thickening).
* Errors in the pronunciation of the letters ض and ظ during recitation.
* The Mutamathilan (Analogous Pair), Mutaqariban (Proximate Pair) and Mutajanisan (Homogeneous Pair)
* Pronunciation of al-Ghunnah (nasalization) and al-Izhar (without nasalization)
* Degrees of Lengthening - Mad (long) or Qasr (short).
* Manner of stopping (Waqaf) and restarting (Ibtida')
* Readings involving certain peculiarities of al-Rasm al-Uthmani, and
* Words which should be read in the manner of al-Raum or al-Ishmam.

5.2. RULES OF TAJWEED ACCORDING TO AL-JAMZURI (1198H)

Al-Jamzuri (1198H), through his verses, clarified the Rules of Tajweed in the following areas: -
* Rules of Nun Sakinah & Tanwin,
* Rules of the Doubled Nun & Mim,
* Rules of Mim Sakinah,
* Rules of Qamariyyah and Shamsiyyah,
* Mutamathilan, Mutaqariban, Mutajanisan,

- Rules of Mad Asli. (Natural Lengthening)
- Rules of Mad Fari'e (Secondary Lengthening) caused by hamzah
- Rules of Mad Al-Lazim (Compulsory Lengthening).
- Rules of Lengthening of Isolated Letters at the beginning of certain Suras.

5.3. SURVEY OF THE BOOK OF REGULATIONS OF THE (MALAYSIA ANNUAL) QURAN READING COMPETITION (1996-2006)

Among the sources which can be referred to for guidance for this study is the scoring guidelines for the jury at the annual national and international level Quran Reading Competitions. The Regulations, Terms and Scoring Guidelines for the National and International Level Quran Reading Competition cover the following categories: -

5.3.1. Matters which are considered in the Tajweed section (40 marks)

- the rules of nun and mim sakinah and tanwin
- the articulation point and characteristics of the letter
- the rule of doubled nun and mim
- the rules of ra and lam
- the rules of saktah (breathless pause), imalah and ibdal
- other rules of tajweed
- recitation according to the riwayah of Hafs by the way of al-Shatibi
- the rules of the mad asli (natural lengthening) and mad far'i (secondary lengthening)
- ability to render the riwayah perfectly
- ability to make uniform the length of madd
- ability to render the characteristic of ghunnah (nasalization) accurately
- accurate rendering of *wajh aula*
- perfect pronunciation of letters according to their characteristics

5.3.2. Matters which are considered in the Fasohah section (20 marks)

- lack of care in recitation
- lack of fluency in the articulation of letters, words and phrases
- lack of attention to vowel signs and doubling of letters
- error in *waqaf* (pausing) and *ibtida'* (starting)
- not paying due attention to the arrangement of verses
- lack of control of breathing during recitation
- reciting according to the Arabic *lahjah (accent)*
- careful and mindful (with *tadabbur.*) recitation
- recitation in keeping with the meaning of the verse.
- correct choice of *waqaf jibril* and *waqaf rumus*
- ability to recite a long verse in one breath

5.4. RESULT OF OBSERVATION SURVEY

The writer himself has endeavoured to learn Quranic recitation by way of *Talaqqi wa Musyafahah* with a direct line of transmission or *sanad* from *Al-Sheikh Muhammad Abdun Nabiy*, a lecturer in Qiraat science from Shubra, Egypt in 2004 and *Al-Sheikh Rif'at al-Bastayisiy* an expert in Qiraat from Tanta, Egypt in 2008, when both men were respectively resident in Malaysia.

6. RESEARCH DESIGN

The study was done quantitatively, involving 20 Level 2 students of the Tilawah al-Quran (Quranic Recitation) Course at the IIUM. The design of the study is as follows: -
A.   To construct an instrument to evaluate errors in Quranic recitation.
B.   To obtain samples of students' recitation.
C.   To analyse and evaluate the students' recitation.
D.   To make a summary of the types of errors in recitation.

7. DATA COLLECTION PROCEDURE

7.1. Selection of Verses for Recitation

The writer had to pick the most suitable verses for recitation - verses that would cover all the rules of tajweed for the purpose of evaluating the student's ability in tajweed. The total length of the verses chosen is equal to 2½ pages of *al-Quran Mushaf 'Uthmani* and the normal length of recitation of these verses is between 8 to 10 minutes. The verses chosen are: -

- Surah Maryam verses 1 to 7
- Surah al-An'am verses 73 to 81
- Surah al-Fiil verses 1 to 6
- Surah al-Kafirun verses 1 to 6
- Surah al-Lahab verses 1 to 5
- Surah al-Ikhlas verses 1 to 4
- Surah al-'Alaq verses 1 to 6

7.2. Recording the Recitation

The writer made video recordings of the recitations of 20 students from the course mentioned earlier. The recordings were made at the CELPAD Language Centre, IIUM, studio using their devices. The recordings were later copied into a VCD in order to facilitate the work of checking for mistakes in recitation.

7.3. Preparation of the Checklist Instrument

The writer had to prepare a list of all the rules of Quranic recitation and reproduce it in the form of a long checklist. As a result, a trial checklist set was created, as follows: -

1.	(Harf) Letter and (Shakl) Vowel Sign	4 items
2.	Waqf (Stopping) and Ibtida' (Starting)	6 items
3.	Makhraj (Articulation Point) and Sifat (Characteristic)	20 items
4.	Tarqiq (Thinness)/ Tafkhim (Thickness)	8 items
5.	Ghunnat (Nasalization)	21 items
6.	Mudood (Lengthening)	18 items
		Total **77 items**

7.4. Processing the Data

The writer had to give full attention to review one by one the errors detected when the recording of the student's recitation is played. The writer took on the average one hour to review every recording lasting approximately 8 minutes. Each recording has to be played several times in order to take note of every type of error heard.The data obtained are then reviewed and it was found that the instrument used had to be revised in order that the types of mistakes not found in the instrument could be categorized in a more systematic manner. The resultant refined data were then processed using Microsoft Excel 2003. The writer found that several types of errors occurred very infrequently, less than 1 percent (%) of the time, and decided that these categrories would be ignored in the process of analysis.

8. RESULTS OF THE RESEARCH

From the number of errors compiled, the following is the result of the analysis of the data from the study, arranged according to the number of errors found. Please look at the table below:-

Table 1: Category of Errors According to Percentage of Occurrence

Category of Errors	Errors	Percentage
1. Makhraj (Point of Articulation) and Sifat (Characteristic)	484	29%
2. Tafkhim (Thick) and Tarqiq (Thin)	379	23%
3. Ma'al Ghunnal (With Nasalization) and Bi La Ghunnah (Without Nasalization)	379	23%
4. Madd (Long) and Qasr (Short)	235	14%
5. Harf (Letter) and Shakl (Vowelling)	139	8%
6. Waqf (Stopping) and Ibtida' (Starting)	46	3%
Total	1662	100%

The detail review of tajweed errors analisis in the recitation of al-Quran is as follows:-

8.1. ERRORS OF PRONUNCIATION OF ARTICULATION POINTS AND CHARACTERISTICS OF LETTERS (29%)

Table 2: Category of pronunciation error relating to Articulation Point and Letter Characteristic

Types of Errors	Number of errors	%
Error in the pronunciation of the letters غ خ ع ح هـ ء	55	11
Error in the pronunciation of the letters ج ش ي /ض	49	10
Error in the pronunciation of the letters ص ز س	5	1
Error in the pronunciation of the letters ت د ط	99	20
Error in the pronunciation of the letters ث ذ ظ	22	5
Error in the pronunciation of the letters ل ر ن	6	1
Error in pronouncing Hams or Jahr	48	10
Error in pronouncing Syiddah, Tawassut, Rakhawah	17	4
Error in pronouncing Itbaq or Infitah	21	4
Error in pronouncing Qalqolah	105	22
Error in pronouncing Sofir	3	1
Error in pronouncing Istitolah	25	5
Error in pronouncing Inhiraf	4	1
Error in pronouncing Lin	18	4
Error in pronouncing Ghunnah	4	1
Error in pronouncing Khafa'	3	1
Total	484	

Among the examples of Articulation Point and Letter Characteristic errors found: -

Sample Verse	Explanation of Error
وَهَنَ ٱلْعَظْمُ	Error because the tongue was not extruded in pronouncing the letter ظ.
إِذْ نَادَىٰ	Error on the letter ذ because the tongue was not extruded and error on the letter د because the tongue was not pressed to the base of the upper teeth.
فِى تَضْلِيلٍ	Two mistakes on the letter ض viz: error in not reproducing the characteristic of Istitolah and in not reproducing the characteristic of Shiddah.
وَتَبَّ	Error in not rendering Qalqolah Kubra when stopping on the doubled (*mushaddah*) letter ب.

8.2. ANALYSIS OF ERRORS OF THICKNESS AND THINNESS (23%)

Table 2: Errors in the pronunciation of Thick and Thin Letters (*Tarqiq / Tafkhim*)

Types of Errors	Number of errors	%
Thickening a letter of istifal	228	60
Thinning a letter of Isti'la'	45	12
Thickening the pronunciation of thin Ra	21	6
Thinning the pronunciation of thick Ra	83	22
Thinning the pronunciation of Lam Jalalah	2	1
Total	379	

Among the example of errors of pronouncing thick and thin letters found:

Sample Verse	Explanation of Error
رَءَا ٱلْقَمَرَ	Error in thickening the letter م which should be thin. This is due to the influence of adjacent letters ق and ر which are thick.
مَآ أَغْنَىٰ	Error in thinning the letter غ which should be thick.
وَأَرْسَلَ	Error in thinning the letter ر when it should be thick.
وَمِن شَرِّ	Error in thickeing the letter ر when it should be thin.

8.3. ANALYSIS OF ERRORS INVOLVING NASALIZATION (23%)

Table 3: Category of Errors in the pronunciation of Nasalization (*Ghunnat*)

Types of Errors	Number of errors	%
Failure to conceal the Nun in Ikhfa' Haqiqi	73	19
Failure to pronounce doubled Nun with nasalization the length of 2 vowels.	51	13
Failure to pronounce Ikhfa' Haqiqi with nasalization the length of 2 vowels.	45	12
Not consistent in executing the rules of nasalization	33	9
Failure to pronounce doubled Mim with nasalization the length of 2 vowels.	32	8
Error of thinning the nasalization when Nun meets an Isti'la' (thick) letter	32	8
Error of pronouncing with nasalization where there should not be nasalization.	25	7
Failure to conceal Mim in Ikhfa' Shafawi	22	6
Failure to nasalise Idgham ma'al Ghunnah the length of 2 vowels.	17	4
Failure to nasalise Ikhfa' Shafawi the length of 2 vowels.	12	3
Failure to assimilate the letters on Idgham ma'al Ghunnah	10	3
Error of thickening the nasalization when Nun meets a letter of Istifal.	9	2
Failure to conceal (ikhfa') Mim on Iqlab (Ikhfa' Majazi)	7	2
Failure to nasalise Iqlab the length of 2 vowels.	6	2
Error of pronouncing nasalization longer than 2 vowel lengths.	3	1
Failure to assimilate the letters on Idgham bi la Ghunnah	2	1
Total	379	

Among the errors found related to nasalization (or its absence) are:

Sample Verse	Explanation of Error
فَلَمَّا جَنَّ	Error of not making nasalization for doubled (mushaddah) نّ and مّ which must be nasalized for the duration of 2 vowel lengths.
إِن كُنتُمْ	Error of not concealing (ikhfa') نْ nun sakinah which must be pronounced concealed, and with a thin nasal sound for the length of two vowels.
أَشْرَكْتُمْ بِٱللَّه	Error of not concealing (ikhfa') مْ mim sakinah which must be pronounced concealed by keeping the lips slightly apart.
لَمْ نَجْعَل	Error of nasalizing مْ mim sakinah when it is inappropriate to do so, when the rule is *Izhar Shafawi*.

8.4. ANALYSIS OF ERRORS IN LENGTHENING (*MUDUD*) (14%)

Table 4: Category of Errors in Lengthening (*Mudud*)

Types of Errors	Number of errors	%
Lengthening more than the proper length.	49	21
Lengthening letters which should not be lengthened.	45	19
Mad Lazim Kalimi Musaqqal not lengthened to 6 vowel lengths	29	12
The duration of various *madd* sounds not regular or well-proportioned	25	11
Mad Munfasil not lengthened to 4 or 5 vowel lengths	23	10
Mad Muttasil not lengthened to 4 or 5 vowel lengths	16	7
Shortening letters which should be lengthened	14	6
Mad Lazim Harfi Mukhaffaf not lengthened to 6 vowel lengths	13	6
Mad Asli not lengthened to 2 vowel lengths	5	2
Mad Silah Kubra not lengthened to 4 or 5 vowel lengths	5	2
Mad Asli Harfi not lengthened to 2 vowel lengths	4	2
Mad Lazim Harfi Musaqqal not lengthened to 6 vowel lengths	4	2
Mad Badal not lengthened to 2 vowel lengths	3	1
Total	235	

Among the examples of errors in lengthening found:

Sample Verse	Explanation of Error
أَتُحَٰجُّوٓنِّي	Error in not lengthening حَا and جُو which must be lengthened to 6 vowel lengths.
ٱلسَّمَٰوَٰتِ	Error in lengthening مَا and وَ more than 2 vowel lengths.
ٱلْأَوَّلِينَ	Error in not lengthening ءَ which must be lengthened 2 vowel lengths. This rule is also known as *Mad Badal*.
كٓهيعٓصٓ	Error in not regularizing the length of madd on 5 letters found in this word ك ، ع ، ص which must be 6 vowel lengths and هـ ، ي must be 2 vowel lengths.

8.5. ANALYSIS OF ERRORS OF PRONOUNCING LETTERS AND VOWEL SIGNS (8%)

Table 5: Category of Errors of Pronouncing Letters and Vowel Signs

Types of Errors	Number of errors	%
Errors in rendering fathah, kasrah, dhommah, sukun and shaddah.	43	31
Error of leaving out letters	42	30
Error of adding letters	34	24
Error of changing letters	20	14
Total	139	

Among the examples of errors found in this category:

Sample Verse	Explanation of Error
بِغُلَٰمٍ أَسْـمُهُ	Error in connecting two sakinah letters with the correct vowel sound, such as in this way: بِغُلَامٍ اسْمُهُ.
بَازِغًا	Error of changing the letter غا to عا.

8.6. ANALYSIS OF ERRORS OF STOPPING (*WAQF*) AND RESTARTING (*IBTIDA'*) (3%)

Table 6: Category of Errors of Stopping and Restarting the Recitation (*Waqf / Ibtida'*)

Types of Errors	Number of errors	%
Stopping / Repeating by drawing in breath	16	35
Restarting on a word which results in violation of the grammar of the language	10	22
Stopping on a word which results in violation of the grammar of the language	6	13
Stopping on a word which alters the intended meaning.	5	11
Stopping while pronouncing the vowel sound on the last letter	5	11
Starting on a word which alters the intended meaning	4	9
Total	46	

Among the errors of stopping and restarting found are:

Sample Verse	Explanation of Error
وَكَانَتِ ٱمْرَأَتِيٓ عَاقِرًا	Stopping on the word: ٱمْرَأَتِي. Then restarting from the word عَاقِرًا without repeating the word before it.
وَلَمْ أَكُنْ بِدُعَآئِكَ	Stopping by cutting of the breath in the middle of a word: بِدُعَآ-ئِكَ. and to restart without repeating the word in full.

9. CONCLUSION OF THE STUDY

From the analysis of the errors in recitation, it can be concluded that students' ability to implement the rules of tajweed is generally very low. Although they are able to read, they commit a lot of mistakes in recitation The total number of mistakes from the 20 respondents is high, numbering 1662 mistakes in all. This means that on average each student makes 83 mistakes during their recitation. A total of 29% of those mistakes constitute failure to pronounce letters correctly (according to their respective points of articulation and characteristics). Another 23% are mistakes in implementing the rule of *tarqiq wa tafkhim* (thick and thin) and 23% as well in implementing the rules of *Ghunnat* (nasalization or without nasalization). Errors in lengthening account for 14% of the errors of recitation. Errors in pronouncing letters and vowel signs correctly make up 8% of the total number of errors, and *waqf wa ibtida'* errors of stopping and restarting the recitation represent 3% of the tajweed mistakes in recitation.

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13th International Educational Technology Conference

Are English language teachers in Saudi Arabia ready to integrate technology?

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Abstract

Saudi government is striving to integrate technology at all school levels. In many schools English language is being taught through modern digital technology. Intel program has been launched to integrate technology in teaching and learning in Saudi Arabia. Qualitative research study was used to investigate English language teachers' readiness to integrate technology in Sabt Al-Alaia, Aseer region in Saudi Arabia. 12 in-service English language teachers participated in this study. Data were collected through structured and semi structured interviews. We found five main themes, (a) Understanding of technology, (b) Use of technology for learning and motivation, (c) Types of technology, (d) Teachers' main concerns, and (e) Teachers' unawareness of Intel program. Participants complained about lack of funding, scarcity of technology in schools and paucity of proper training to use technology. Sabt Al-Alaia regional schools do not have access to technology as their counter parts in other regions of Saudi Arabia. However, all the participants were willing to use technology to teach English as a foreign language. The paper includes implications of evaluation findings, recommendations for policy and directions for further research.

Keywords: language, integration, technology, readiness, Intel program

Introduction

Education in the Kingdom of Saudi Arabia (KSA) commenced in 1932. There are three different school levels e.g. elementary school level (grade1 to grade 6), intermediate school level (grade 7 to grade 9) and secondary school level (grade 10 to grade 12). The education is compulsory for all males and females at the age of seven. Nowadays, according to the educational statistics, there are 330,500 schools around the Kingdom for both genders. Based on the culture and religion of Saudi Arabia, the educational system follows gender-based schools (Al-Hariri, 1987). However, there are two kinds of school systems, the private school system and the public school system. In the private schools students have to pay tuition fee while in the public schools education is free.

Since 2007, education in the Kingdom of Saudi Arabia has made significant achievements focused on providing educational opportunities for all individuals, despite the geographical scale of the Kingdom and the increasing population. Today, education in the Kingdom of Saudi Arabia is entering into a new phase, which focuses on quality of education, ensuring that students in the Kingdom's public education system are being prepared to deal with future challenges such as cultural diversity, economic changes, and globalization. They will be able to accomplish this by acquiring twenty-first century skills while maintaining the values and principles of Saudi society.

In keeping with the wish of King Abdullah bin Abdul Aziz to achieve development in the Kingdom of Saudi Arabia, a project to develop public education has been launched to act as a major support to the efforts of the Ministry of Education. This will carry out King Abdullah's vision that education is the foundation for building a knowledge-based economy and contribute to Saudi Arabia's move into the ranks of developed countries. It will also facilitate future participation for young people in building a progressive society across all fields (Ministry of Education).

English language is considered one of the most important foreign languages in Saudi Arabia. Students start learning English in public schools at grade 6. Some private schools, very few, have English curriculum from grade 1 and onward. The Ministry of Education is taking special measures to integrate technology in teaching and learning. This vision has developed since 2007 up to now to include Intel (to teach to learn) for future program, which focuses

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on the integration of all sorts of technologies in teaching and learning. Modern technology is being provided at all levels from elementary school to university level.

Sabt Al-Alaia is a governorate in the Kingdom of Saudi Arabia, which is located in the south of the Kingdom. Geographically, it is considered a part of Aseer region. The population of Sabt Al-Alaia governorate is approximately 300,000. There is an office for Education related to the directorate of Education in Bisha governorate, which is a leader governorate in that area, to direct the educational system in Sabt Al-Alaia. There are total 190 schools included 100 elementary school, 59 intermediate schools, and 31 secondary schools for males and females. In addition, there are 12 schools for disabled and 2 evening schools for those who can not attend schools in the day. There are 2181 teachers and 140, 00 students in the region. In our research we have focused on male teachers to avoid being in some ethical issues related to Saudi culture and religion (Al-Hariri, 1987).

Intel Program

The Intel Program is a worldwide project presented by the Intel Corporation with support from Microsoft Corporation. The main purpose for Intel Program is to integrate technology into education. Therefore, students and teachers will involve into the process of teaching and learning. Also, they will gain a high benefit from Intel Program to improve their skills either in teaching for the teachers or learning for the students. Moreover, students use available technology to present their ideas and research to their class. As far As the researcher mentioned that Intel Program is to integrate technology into education; therefore, the researcher should high light on the contents of this program. It includes eight units: the first one is teaching through projects, which focuses on Projects-based learning and the design of the unit. The second unite is planning unit; the main purpose of this unit is Curriculum-Framing Questions and ongoing evaluation process that is based on the student. The third one is to create methods for communication; this unit focuses on the Internet to support teaching and learning. The fourth unite is creating educational models, the focal point of this unit is to shed light on the results of the project from the perspective of the student. The unit number five is an assessment of student projects; this unit concentrates on the comprehensive and formative assessment. The sixth unit is planning for student success, which, focuses on supporting student self-direction. Unit number seven is to support technology; the key point of this unit is to focus on the role of the teacher in supporting the educational process. Finally, showing portfolios unity this unit focuses on participation in learning. To build these units; all teachers and students should work together to build them (Saudi Intel Web).

The objective of Intel Program Project in Saudi Arabia is to update various aspects of the educational process and its components to global standards, develop an integrated system to evaluate education and measure educational quality, and develop the various elements of the educational process. To achieve these goals the project will include comprehensive curriculum development using technology for foreign language teaching at secondary school level designed to respond to scientific developments and modern technology, meet the knowledge, professional, psychological, physical, mental, and living needs of students. It will also facilitate the professional development of teachers, preparing them to perform their educational duties so as to achieve the developed curriculum objectives, while preparing the educational environment to integrate technology, including Internet technologies and digital models into the curriculum. These factors combine to make the classroom environment more effective in achieving the objectives of learning (Minister of Education).

Teachers are an integral part of any educational systems (Bill, 1997). It is significant to know their concerns and issues through their perspectives. This research study is unique in its nature. Most of the research studies have been conducted in Saudi Arabia about main cities such as Riyadh, Jeddah, Makkah and Madina. Little is known about teachers' perceptions in small regions. The purpose of this study is to seek English teachers' beliefs about using technology for language teaching. The results of this study will be helpful for policy makers, English teachers in small areas and for the Ministry of Education, KSA. The study will investigate what are English teachers' concerns about using technology and how do they perceive technology.

Literature Review

Computer technology has changed every sphere of life (Hill & Hannafin, 2001). It is useful not only for learners but also for teachers (Saglam & Sert, 2012). Recently, the use of technology for teaching is an integral part of successful teaching (Almekhlafi & Almeqdadi, 2010). New technologies are influencing students' learning skills especially reading and writing (Barrel, 1999). Teachers' perceptions about integration of technology in teaching have not got enough attention of researchers (Bruce, 1997). Teachers' beliefs about using technology affect their attitude to use technology for teaching and learning (Almekhlafi, 1999). In Saudi Arabia English language teachers play very important role in teaching and learning (Khan, 2011). In his quantitative and qualitative research study

with Syrian high school English teachers Albirini (2006) found that teachers were worried about the devastating effect of technology in the form of internet and western cultural influence on Syrian culture. So, all the participants felt the need of locally created soft wares and computer programs to teach English as a foreign language.

Many educational leaders and policy makers claim that computers and related internet technologies represent important educational innovations (Howley & Wood, 2011). Recent studies have shown that the successful implementation of educational technologies depends largely on the attitudes of educators, who eventually determine how they are used in the classroom (Albirini, 2006).

Teaching and learning a foreign language through technology has become a new trend in foreign language education all over the world (Liu, 2009). Most foreign language teachers know very little about the effective use of technology in education. (Olphen, 2007). In their study of the attitudes of teachers in three middle schools, Atkins and Vasu (2000) found that teachers' concerns have a significant influence on the use of computers in the classroom. A recent study conducted by (Gilakjani, 2012) to identify the factors affecting teachers' use of technology concluded that teachers should be introduced to the types of computer technology and to aim at the usefulness and benefits of these resources in improving teaching and learning. In a related study, Buabeng-Andoh (2012) examined some of the factors that affect the adoption and integration of Information Communication and Technologies (ICT) into teaching, the author concluded that teachers' feelings, knowledge and attitudes among other factors influence their use technology within their classrooms.

Ewa (2005) found that teachers' beliefs were based on dilemmas' and concerns. However, the teachers were willing to use technology in order to benefit from it and to help their students. In a recent study, Saglam and Sert (2012) found that despite the lack of proper training English language teachers were willing to use technology for teaching. Some of them used some sort of technology to improve students' linguistic skills.
Odabasi (2000) found that teachers were familiar with technology. The participants described technology helpful to increase students' motivation and to improve students' learning. In their quantitative study with 100 Arab teachers, Almekhlafi and Almeqdadi (2010) found that teachers were integrating technology in their class activities. They used a variety of technology to promote learning among students. The only difference was the method of using technology among male and female teachers.

Research Design

Creswell (2009) defined qualitative research as "a means for exploring and understanding the meaning individuals and groups ascribe to social or human problems." Researchers using qualitative research often study issues in their natural settings, intending to interpret phenomena in terms of the meaning that respondents give to researchers (Kvale, 2009). Some scholars, such as Phillips and Burbules (2000), mention that researchers cannot claim absolute truths when studying the behaviours and actions of humans. Therefore, qualitative research is an approach that seeks to explore hidden issues and give meaning to them, chiefly by asking questions about phenomena and gaining a better understanding about them through the responses given (Maxwell, 1996). For this research study we relied on qualitative research approach for in depth understanding of English teachers' interests and concerns. This research study conducted in a bounded system. Sabt Al-Alaia region was chosen to carry out this research study. Therefore, we depended on case study design for the purpose of our enquiry.

Participants

The researchers have chosen fifteen male Saudi English language teachers purposefully because we cannot involve female teachers in the study for cultural and religion customs and traditions. Therefore, male researchers cannot interview women in KSA because it is against their culture and their beliefs. Fifteen male Saudi English language teachers were contacted from Sabt Al-Alaia region for this research study. Three of them refused to participate in the research study due to their personal reasons. Twelve in-service teachers participated in this research. All of them have teaching qualification from recognised Saudi universities. They teach at intermediate and secondary schools.

Data Collection and Analysis

Canadian Institutes of Health research (2010) stated that there are some ethical issues associated with educational research and obviously state the principles of ethics that should be followed by researchers including: Minimizing the risk of harm, getting informed consent, maximizing and protecting anonymity and confidentiality, and providing the right to withdraw. Kavale (2009) explained that ethics and interview had a strong relationship.

Hence, researchers need to focus on ethical issues while interviewing participants and ethical issues should be undertaken from the start to the conclusion. Therefore, one of the researchers contacted all the participants and took informed consent. The researcher also told the participants in details about his own role as a researcher and about the purpose of the research. The participants were informed that they could stop participating in the study at any time. Two of the participants refused to participate in the beginning. Remaining thirteen participants were willing and were very enthusiastic to express their views. They were well aware of digital technology. They were also informed that their names would not be used in the research study.

We use semi structured and structured interviews for data collection. Face to face interviews were conducted between Jun, July and August 2012. All the interviews were recorded and saved. Two teachers requested the questionnaire in advance. We send the questionnaire and they replied through e-mails. Their responses were also saved and printed on a paper. We coded the data and then wrote themes. To improve the accuracy we used the member check technique (Krefting, 1991). After identifying the themes we e-mailed the reports to the participants and they affirmed them within a week.

Findings and Discussion

Understanding of Technology

One of our main interests in this study was to know the participants' understanding of technology. It was clear from their responses that all the participants were acquainted with modern technology. Whenever they talked about technology they meant digital technology. One of the participants said,
"Technology means computer, projector, CDs and projectors".
Similarly another said,
"T.V, VCR, data show and laptops are all types of technology".

Use of Technology for Learning and Motivation

We were keen to know about their use of technology in the classroom. All were agreed that technology was helpful. This point of view was based on their previous experience at university level. All the teachers told that they used some sorts of technology in classroom. Most of them mentioned that they used technology to improve students' listening and reading skills. Seven of the participants mention that they motivated students through technology. Some of their samples are as follow;
"I like technology. It is really very helpful. First time I experienced it when I was at university. I use technology in my class as well"

"I use CDs to improve students' listening and reading skills and it works"

"When I use technology student enjoy it. It is very helpful to motivate students".
On the other hand participants also complained about lack of motivation from government side to integrate technology in classrooms.

Type of Technology

Another important theme was the type of technology, which was being used in Sabt Al-Alaia schools. During our semi-structured interviews eleven of the participants mentioned that they used Fawaz Al-Harbi CDs for listening and reading. Fawaz Al-Harbi CD is a CD project that designed by a person his name is Fawaz Al-Harbi. His CD included the ministry English curriculum. Fawaz Al-Harbi Just added sound and videos and some pictures to the curriculum. Also, he got assistance from native speakers to record the reading passages and the speaking parts by their voices. Therefore, many teachers prefers to use it in their classes because it assisted them in teaching the receptive skills (Listening and Reading) so teachers do not do much efforts in their classes, while in the productive skills (Writing and Speaking) it does not take please in Al-Harbi CDs.

They also told that they bring their own CDs and videos to use in the classroom. All the teachers expressed that they also used data show.
One of the participants said,

"I use Al-Harbi' CDs, you know Fawaz Al-Harbi. His CDs are good for listening and reading".

The other participant said,
"We have nothing to use in terms of technology except data show. So we use it occasionally".

Main Concerns

When we talked about their main concerns three sub themes appeared. First of all, all of the teachers were concerned about paucity of technology. They described that they did not have computers, language teaching soft wares, and internet connections for classroom.
One sample is as follow;

"I know what technology is. But the main problem is that we do not have technology in our school. I bring CDs to school. I myself buy it. We do not have funds to buy"

Secondly, they lamented for the lack of funding. They made clear that whatever they brought to school to teach they brought it from their own pocket. The third sub theme was lack of training. All the teachers emphasized on the need of training to use modern technology in the classroom. One of the participants said,

"We need computers, internet connections and proper training to use technology for language teaching".

Unawareness of Intel (to teach to learn) program

We were also eager to know teachers' awareness of Intel program. All the participants were asked about Intel program, its vision, and its implementation. It was serious identified by the participants. They expressed their bewilderment of Intel program. Only one teacher knew the program because he was transferred from another region where Intel program has already been commenced. One of the samples is as follow;

"I know nothing about Intel program. I use only CDs bought by myself. Our government has not provided us anything related to technology"

It is a positive thing that the teachers in Sabt Al-Alaia region have adequate knowledge of modern technology. They not only know digital technology but also use it. It is also note worthy that they are optimistic to use it in the future as well which supports Ewa (2005)'s point of view that teachers were willing to use technology in the future. Most of the teachers find it useful for students which validates Saglam and Sert (2012)'s statement that technology is beneficial for both. One critical issue appeared in this study which shows that Saudi English language curriculum in schools does not equally emphasize on all four skills. Eventually, teachers have to use privately made CDs which mainly focus on receptive skills (listening and reading). This also affirms Albirini (2006)'s finding that locally created soft wares can be useful. A very important issue appeared that Saudi English language curriculum does not much attention on productive skills (writing and speaking).

The teachers in this region have serious concerns. The scarcity of technology is a main issue which shows that Sabt Al-Alaia regional schools do not have same technology as other regions such as Riyadh, Makkah, Jeddah, Madina and Dammam posses. This point of view made clear when we asked about Intel (to teach to learn) program and all the participants nodded in negative except one. One teacher knew this program because he worked in Dammam region before coming to Sabt Al-Alaia region. Intel (to teach to learn) is a latest program of King Abdullah's government. The main purpose of this program is to integrate technology at school level in all schools of Saudi Arabia. It is clear that Sabt Al-Alaia regional schools need technology and funding. It is also visible that Intel program has not been introduced in Sabt Al-Alaia region. Finally, teachers need proper training to use technology. In his article,Khan (2011) recommends pre-service and in-service teacher training for English language teachers in Saudi Arabia. From above discussions it is crystal clear that English language teachers in Sabt Al-Alaia region are willing to integrate technology into their classes but they need technology and proper training to use it.

Further Research and Recommendations

Our study cannot be generalised to other regions or cities of Saudi Arabia. It is limited to Sabt Al-Alaia region. We also do not know about female English teachers' concerns and perceptions. In future studies, the

effectiveness of technology for langaue learning would be helpful. The effectiveness of Intel (to teach to learn) program has not been explored yet.

Our first recommendation is to provide modern technology in all schools in Sabt Al-Alaia region.

Our second recommendation is to provide proper training to in-service teachers to use technology for language teaching. Saudi Universities should offer a course at bachelor of education level to use technology for teaching.

Our third recommendation is to redesign English language curriculum at school level. In which all the four skills should have equal importance. Special attention should be paid to active skills as well. Proper soft wares and computer programs should be prepared to teach these skills.

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Are Laptops Distracting Educational Tools in Classrooms

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Abstract

Laptop use for undergraduate students is increasingly becoming popular; it is often deemed a necessity. Students are using laptops for academic as well as non-academic activities. Researchers are debating on the effect of this trend on students' educational and learning outcomes. There is therefore a need for investigation in order to determine how efficient the use of laptops is in the educational process. The main purpose of this study is to investigate if laptops could be distracting educational tools inside classrooms during the learning phase of undergraduate students. A questionnaire was designed and completed by a random sample of students at the United Arab Emirates University's Colleges of Engineering, Science, and Information Technology. Data analysis showed that students used laptops mainly for academic as well as non-academic purpose which was indicative that laptops were indeed distracting tools in the classrooms.

Keywords: Laptops; Educational Tool; Classroom; Undergraduate Education.

Introduction

Laptops have become standard tools used by most university students. Furthermore, it is mandatory in many undergraduate colleges around the world for students to utilize them in their studies. The number of universities with plans for campus-wide computer adoption is quickly growing (Weaver & Nilson, 2005; Brown, Burg, & Dominick, 1998). E-learning design and simulation programs are the main drivers of the development in this field. In United Arab Emirates University (UAEU), it is a mandatory that each student, regardless of his/her major, to have a laptop; the campus is equipped with wireless network connectivity in all academic and non-academic facilities. The university policy is promoting the use of laptops in lectures in order to target the development more interactive type of classes and to enhance lecture delivery. Therefore, the UAEU campus was selected for conducting this study.

Many educators raised the issue that usage of laptops could be a source of distraction for students in classrooms and it should be carefully monitored. Indeed, some studies, such as the one done by Levine (2002a) & (2002b), suggested that instructors should have special softwares to control the students' use of laptops during class time. Kay & Lauricella (2011) investigated and compared beneficial and challenging laptop behaviors in higher education classrooms. Kay & Lauricella (2011) and Lindorth & Bergquist (2010) reported beneficial behaviors such as note-taking activities, in-class laptop-based academic tasks, collaboration, increased focus, improved organization and efficiency, and the possibility to address special needs. Challenges observed by Kay & Lauricella (2011) were as follows: distracting behaviors, instant messaging, surfing the web, playing games, watching movies, and decreased focus. However, beneficial behaviors were more often reported by Kay & Lauricella (2011) than challenging behaviors; the ratio of beneficial to challenging behaviors was 2:1. Kay & Lauricella (2011) concluded that actively integrating meaningful laptop activities into the classroom will increase the frequency of beneficial laptop behaviors. Indeed, a number of researchers have concluded that if the faculties do not make an active attempt to meaningfully integrate technology into the classroom, distractions and decreased performance are inevitable (Baron et al., 2008; Hall & Elliot, 2003; Kolar, Sabatini,& Fink, 2002; MacVay, Snyder, & Graetz, 2005; Weaver & Nilson, 2005).

The present study addresses primarily the question: could a laptop, which is considered an educational tool, be a source of distraction, specifically during classroom learning activities? In this paper, Section 2 and 3, respectively, present the methodology, results and analysis. Section 4 presents the conclusion.

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Methodology

Participants

The participants recruited for this study are undergraduate female students from the United Arab Emirates University's Colleges of Engineering, Science, and Information Technology. This sample is deemed representative of the university's students since the official statistics of UAEU indicates that 74.9% of the students registered at UAEU during the 2010/2011 academic year, are female students (3,082 male students and 9,197 female students). The distribution of the students who participated in this study among the three colleges is as follows:

23. Table 1. Distribution of the student's sample among the IT, Science and Engineering Colleges

College	Number	Percent
IT	55	38.5
Science	30	21
Engineering	58	40.5
Total	**143**	**100**

Questionnaire

A questionnaire shown in Table 2 is developed to investigate the possible distracting effects of laptops in the classroom. Prior to the distribution of the questionnaire, reliability is calculated using the Cronbach's alpha coefficient which revealed that the questionnaire has an overall reliability of 0.77 indicating that the test is deemed reliable.

Table 2. Questionnaire used for the current study

Question No.	Question	(1) Strongly Agree	(2) Agree	(3) Neutral	(4) Disagree	(5) Strongly Disagree
1.	I use my laptop for academic purposes only (ex: note taking, finding information online, viewing the lecture notes etc.)					
2.	I use the laptop for chatting, checking my e-mail, playing games, or watching movies					
3.	I am more concentrated and focused when I can view the lecture notes on Power Point on my laptop.					

The questionnaire has been distributed to 143 students. Laptops are deemed to be effective in increasing educational learning if:
1) They are primarily used for academic purposes by students
2) They aren't used much for non-academic purposes
3) They help students in increasing their concentration in class
The above criteria for this study are presented in the questions 1 to 3 of the questionnaire in the respective order. The students are allowed to answer each question on a Likert scale from one to five; one being strongly agreed and five strongly disagree.

In order to conclude that laptops do not have distracting effects during classrooms academic activities, a standard of at least 70% of the students answering questions one and three with agree and strongly agree and at least 70% of students answering to question two with disagree and strongly disagree is preset. We select 70% as a standard for positive responses due to our judgment of the adequacy of this percentage to evaluate the results of our study.

Results and Analysis

Students Responses

The report below shows the response to each question and the designated percentages.

Table 3. Students' responses to Question No. 1

	Frequency	Percent	Cumulative Percent
Strongly agree	30	21.0	21.0
Agree	46	32.1	53.1
Neutral	33	23.1	76.2
Disagree	27	18.9	95.1
Strongly disagree	7	4.9	100.0
Total	**143**	**100.0**	

Table 3 shows that only 53.1% of the students either strongly agree or agree with question number 1, while 23.8% either disagree or strongly disagree. 23.1% of the students were neutral.

Table 4. Students' responses to Question No. 2

	Frequency	Percent	Cumulative Percent
Strongly agree	29	20.3	20.3
Agree	40	28.0	48.3
Neutral	36	25.2	73.4
Disagree	25	17.5	90.9
Strongly disagree	13	9.1	100.0
Total	**143**	**100.0**	

Table 4 shows that 48.3% either agree or strongly agree with question number 2, while only 26.6% of the students either strongly disagree or disagree. 25.2% of the students were neutral.

Table 5. Students' responses to question No. 3

	Frequency	Percent	Cumulative Percent
Strongly agree	25	17.5	17.5
Agree	49	34.3	51.7
Neutral	35	24.5	76.2
Disagree	20	14.0	90.2
Strongly disagree	14	9.8	100.0
Total	**143**	**100.0**	

Table 5 shows that only 51.7% of the students either strongly agree or agree with question number 3, while 23.8% either disagree or strongly disagree. 24.5% of the students were neutral.

Table 6. Correlations Tests

		v1	v2	v3
q1	Pearson Correlation	.680**	-.481-*	.379
	Sig. (2-tailed)	.001	.027	.090
	N	21	21	21
q2	Pearson Correlation	-0.243457	.688**	.140
	Sig. (2-tailed)	.288	.001	.544
	N	21	21	21
Q3	Pearson Correlation	.549**	-0.111344	.789**
	Sig. (2-tailed)	.010	.631	.000
	N	21	21	21

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Test Reliability

In order to test the reliability of the questionnaire, a random sample of 21 students was selected from the three colleges. Those students answered the same questions, one week after the first completion of the questionnaire. The correlation between the two sets of responses is calculated as shown in Table 6. These tests show that the questionnaire is reliable.

Statistical Evaluation of the Effectiveness of Laptops for In-class Learning Enhancement

As we mentioned in Section 2 of this paper, at least 70% of the students answering questions one and three with agree and strongly agree and at least 70% of students answering to question two with disagree and strongly disagree was deemed essential in order for the use of laptops in the classrooms to be considered beneficial. In this section, we will test if the average percentage of students, who answered strongly agree and agree for the questions one & three, is greater than 70%. The cumulative percentage is entered and the average percentage is tested against 70%. The null and alternative hypotheses are as follows:

H_0: Average percentage of students selected strongly agree or agree for question number one and question number three is less than 70% (x<70%).

H_1: Average percentage of students selected strongly agree or agree for question number one and question number three is greater than or equal 70% (x≥70%).

Test statistics

One-sample T-test is used to test the likelihood that the results do not fit the null hypothesis. The results presented in Tables 7 & 8 show that the observed data set provides no strong evidence against the null hypothesis, i.e. based on the answers analyzed from the drawn sample, we can't say that the use of laptops in the classroom does not have distracting effects on the students learning.

Table 7. T-Test (One-Sample Statistics)

	N	Mean	Std. Deviation	Std. Error Mean
Cumul	3	43.800	14.9121	8.6095

Table 8. T-Test (One-Sample Test)

	Test Value = 70					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Cumul	-3.043-	2	.093	-26.2000	-63.244	10.844

Variability Analysis based on One-Way ANOVA

In this section, we use one-way ANOVA to test whether the students from different colleges have significant differences in their opinions regarding the use of the laptop.

Table 9. ANOVA of Question No. 1 (I use my laptop for academic purposes only (ex: note taking, finding information online, viewing the lecture notes etc.))

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.173	2	.587	.432	.650
Within Groups	190.281	140	1.359		
Total	191.455	142			

Table 10. ANOVA of Question No. 2 (I use the laptop for chatting, checking my e-mail, playing games, or watching movies?)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.323	2	.661	.428	.653
Within Groups	216.230	140	1.544		
Total	217.552	142			

Table 11. ANOVA of Question No. 3 (I am more concentrated and focused when I can view the lecture notes on Power Point on my laptop?)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.445	2	1.223	.838	.435
Within Groups	204.366	140	1.460		
Total	206.811	142			

Tables 9, 10 & 11 show no significant difference in the responses to the 3 questions between the students of the three groups of students from the different Colleges.

Conclusion

In this paper, we investigated the question: are laptops distracting tools inside classrooms? This study showed that the majority of students were not using laptops in class for class-related material. Rather, most of the laptops' use was for non-educational purposes such as chatting, checking e-mails, playing games, or watching movies during educational lectures. This implies that laptops are likely a source of distraction when used by students in an educational setting. Based on this study, we recommend that the use of laptops in the classroom to be monitored in order to decrease students' distraction and enhance learning.

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Attitudes towards the use of ICT Training Curriculum for Thai Elderly People

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Abstract

Learning and using information and communication technologies (ICT) such as computer technologies and internet by the elderly is seen as an important demand for their integration in daily life and as a factor related to active aging. The aim of this research is to explore the attitudes of the elderly towards ICT literacy in the context of a training curriculum about the utilization of a personal computer platform such as introduction to computer, using Windows, internet: web browser usage, e-mail management, searching information, and Facebook. It is the result of an empirical study with a sample of 32 older people (65 years and older), consisted of retried employee from the schools and universities that took place in the centers for the elderly in the province of Chiang Mai in Thailand. They registered in the special short course training for the elderly at information technology center, Maejo University, Thailand. The data were collected through questionnaire. The data were analyzed by frequency, percentage and mean. They have more skill in ICT after learning course. The research findings indicate that the elderly who use ICT learning show more positive attitudes towards new technologies. They thought of training as a means of social participation and lifelong learning.

Keywords: Curriculum, ICT Literacy, Elderly People, Lifelong learning.

Nomenclature	
A	Curriculum Training
B	ICT Literacy
C	Elderly People

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Introduction

In Thailand, population ageing is defined as the increasing proportion of elderly people (60 years and above) in the total population. Thailand's population is rapidly ageing. In 1950, with 5 per cent of its population aged 60 years and over, Thailand ranked as the seventh most aged country among the eleven countries in South-East Asia. It has now moved up to be the second most aged country in the region (next to Singapore), with elderly people constituting more than 10 per cent of the population. This is a result of a relatively higher rate of increase in older population as a consequence of decline in fertility and improvement in longevity (UNFPA, 2006). The proportion of elderly people in total population will increase to 14.0 per cent in 2015, 19.8 per cent in 2025 and nearly 30 per cent by 2050. The population of elderly people will increase from the current 6.4 million to 9.0 million in 2015, 12.9 million in 2025 and exceed 20 million in 2050. (Figure 1)
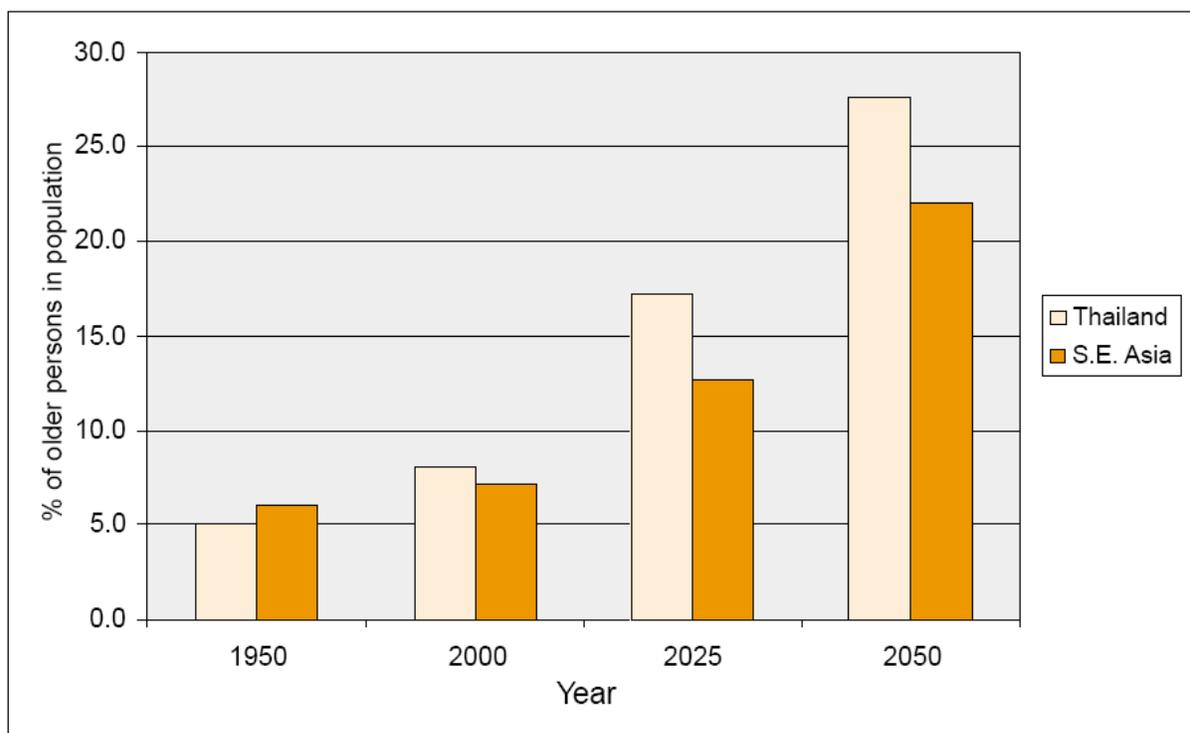
Figure 1: Thailand is ageing faster than others in South-East Asia.

Sources: Institute for Population and Social Research, Mahidol University, Population Projections for Thailand, 2005-2025, 2006; and United Nations, Department of Economic and Social Affairs Division, World Population Ageing 1950-2050, Population Division, New York. 2002.

Moreover, ICT can help elderly people to improve their quality of live, promoting them to stay healthier, live independently for longer and if it this possible counteract reduced capabilities which are more prevalent with age that may allow them to remain active at work and/or in their society. Today ICT offers several solutions for elderly people for their independent living by managing their preferred environment by maintaining their independence and autonomy in order to enhance their mobility and quality of life, improving their access to age-friendly ICT and personalized integrated social and health care services. Ageing well and active ageing means for elderly people continue active and able to participate in social life and work. However, there are barriers, problems and constraints when elderly people use ICT (Amaro & Gil, 2011). Thus, they should to develop ICT literacy and skill for lifelong learning and social participation.

The Study

This study focused to develop the ICT training curriculum for Thai elderly people, to manage learning environment for training such as trainer, assistant trainer, content, practices, computer, training room etc. , and to evaluate attitudes towards the use of ICT training curriculum for Thai elderly people.

Objectives

This exploratory sought to study and evaluate attitudes towards the use of ICT training curriculum for Thai elderly people.

Methodology

1. Population and Sample
   1.1 Population of the study was retried employee from the schools and universities that took place in the centers for the elderly in the province of Chiang Mai in Thailand.
   1.2 Sample was selected by purposive sampling which composed of 32 elderly people for ICT training (65 years or older).
   2. Developing lessons and practices of ICT training curriculum for elderly people which were the trainer's handbook and learner's handbook for use in the ICT training. The ICT training curriculum composed of 5 topics which were synthesized from opinions' 5 specialists. The contents composted of 5 topics: 1) introduction to computer, 2) using Windows, 3) using internet, web browser usage, e-mail management, 4) searching information and 5) using Facebook. They needed to train as 1 day short course in the computer laboratory at information technology center, Maejo University, Thailand. The contents for presentation used rich multimedia for drawing attention and gave the highest effective learning (Sompong, 2012).
   3. Preparing research instrument was questionnaire which evaluated attitudes towards elderly people the use of ICT training curriculum for Thai elderly people. The questionnaire included 20 items and each item was accompanied by using a 5-point Likert Scale which begins with Strongly Disagree (1), Disagree (2), Undecided (3), Agree (4) and Strongly Agree (5), with 1 representing "strongly disagree" and 5 representing "strongly agree" for positive items. The questionnaire was validated by researcher. The questionnaire was pilot tested on a group of elderly people (30) who took the same course a semester before this study was conducted. The items were found and the reliability for the 20 items was established at .80 using the Cronbach's alpha coefficient, indicating good internal consistency.
4. Data collection and analysis
   4.1 The data were collected through the trainer's observation for ICT skill of elderly people and the questionnaire's attitudes towards the use of ICT training curriculum for Thai elderly people.

4.2 The data were analyzed by frequency, percentage and mean.

Results

After training course, the elderly people were given more skill in the use of ICT. They ware survey questionnaire to assess their attitudes towards use of ICT for elderly people. The sample size was 32 elderly people (N=32). The data were analyzed using statistical package program. The elderly people were 68.8 per cent female and 31.2 per cent male. They ranged in age between 65 and 80 years and average 66.4 years. The survey was conducted to evaluate elderly people on their attitudes and perceptions towards use of ICT training curriculum. Analysis on the survey items showed that the overall average means of responses towards these areas were positive attitudes the use of ICT training curriculum (Mean=3.84). The learners felt that these contents were suitable for the level of elderly people, could be integrated to real life.

Conclusions

In conclusion, the study was successful in demonstrating the importance of incorporating ICT learning approaches in order to enable elderly people to acquire ICT skills and presentation skills, and create a learning environment where they are engaged in the special contents and learning process. Here the results provide very positive attitudes and encouraging results for using ICT training curriculum in the computer training room, and would be an effective learning for elderly people in Thailand who are interested in enhancing ICT skills for social participation and lifelong learning. Moreover, the Thai population ageing is the increasing proportion of elderly people in the total population. This ICT training curriculum is suitable for the level of Thai elderly people.

Acknowledgements

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Augmented reality in the higher education: Students' science concept learning and academic achievement in astronomy

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Abstract

The purpose of this study was to examine the effect of providing learners with diverse approach of simulation-based instructional design, 2D animation (2D), 3D simulation (3D), and augmented reality (AR) on students' moon phases concept learning and their academic achievement. There were 104 senior college students participated in this study. Based on ANOVA analysis, the result showed that: (a) all of the three approaches could enhance learners' performance on academic achievement, however, there were no significant difference between them; (b) students in AR approach outperformed the other two instructional design on moon phases concept learning; (c) students in 3D and AR approach demonstrate higher motivation and concentrate their attention on the learning tasks. This study provided insights for better understanding the design, theory and practice of e-learning through augmented reality technology.

Keyword: augmented reality; moon phases; concept learning; instructional design; empirical research

Introduction

With the continuous evolution of simulation-based instructional models, it has become possible for education researchers to introduce proper e-learning systems to enhance those learning tasks for which subject attribute and traditional models are ineffective (Yeh, 2004; Guo, 2007). Integrating the advantages of the authentic technologies to provide solutions unlimited by the real environment can resolve problems caused by the following circumstances: the concepts of some subjects may be excessively abstract; some subjects require dangerous experiments and operations; a certain subject may require long periods of time for recording and observation; the surroundings for observation cannot be easily constructed or meet the necessary requirements due to cost and technological limits or remote locations. Researches on simulation-based learning indicate that teaching aided by the operation of interactive 2D or 3D models can significantly help learners to understand spatial concepts (Shelton & Hedley, 2002). In addition, research into using augmented reality (AR) technologies to develop instructional materials desired by teachers and students have confirmed that AR materials can effectively enhance the academic motivation of learners and help them obtain better learning effects (Chen, Wu, & Zhung, 2006). Therefore, simulation-based e-learning system may help learners to obtain more diversified and abundant knowledge in order to construct a complete and correct conceptual framework (Hsu, 2008).

Nowadays, it has become a trend to utilize the characteristics of multimedia and computer aided instruction models for scientific concepts. Through research into the application of 3D animation and the teaching of the moon phases, Ma (2008) discovered that 3D animation instruction improved learners' immediate learning effects on the concepts of moon phases, but that it had no significant difference to the learning outcomes in delayed posttest. Moreover, Li (2010) adopted "Interactive Software of Lunar Phase" to conduct e-learning, proving that multimedia courseware had a significant improvement on the learning effects of concepts, such as the phenomena, causes and periods of the moon phases, as well as the motions of the earth, the sun and the moon. In addition, the learners' misconceptions of the moon phases can be clarified through the presentation of the multimedia. All the above

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researches came to the same conclusion; by providing teaching materials, such as 2D and 3D animation, a simulation-based e-learning model is really helpful for improving the learning effectiveness of the concepts of the moon phases. However, more evaluations are still required to confirm whether other more authentic presentation modes, such as AR materials, can improve the learning effectiveness of abstract conceptual knowledge, such as the changes and periods of the moon phases.

This research aims to apply AR technology to develop a simulation-based concept learning system on the phases of the moon, as well as discuss the influence of different simulation-based instructional models on the academic achievement in astronomy. It hopes to lay a foundation for further researches into the application of AR on the concepts learning in the natural science field.

Augmented reality

AR has been widely applied in many aspects, including medicine, entertainment, education and interactive action guides. This study will integrate AR's application to nature and earth science, and is as follows:

With the Nine Planets system and Garden Learning system as the research content, the researches of Liu, Cheok, Mei-Ling and Theng (2007) helped to develop instructional materials using AR. According to their research, an AR instructional model can give a full demonstration of 3D virtual objects, which is a great advantage compared to narrative or static image-text types. The research results also indicated that this kind of instructional model can effectively improve learners' attention and learning outcomes. Shelton and Hedley (2002) compared the AR model of the Nine Planets with the traditional simulation material (including on-line 2D picture displays and 2D animation), and pointed out that AR model can save time spent by learners on practice and can also reduce the cost of materials designed. Moreover, learning with AR assisted technology, can provide learners with perceptual feedback and interaction, allowing them to understand the content better and reach the learning objectives more easily and less practice through actual interaction with the system (Milgram, Takemunra, Utsumi, and Kishino, 1994).

Billinghurst (2003) holds that the development of AR material supplies a unique education application model in which learners can interact freely with virtual objects in a real environment and acquire new knowledge that is not so easily imitated in a real environment. Kikuo and Tomotsugu (2005) consider that AR is a new pattern applied in teaching and has great potential for future development. This new and unique instructional method and strategy can help learners with little computing experience to interact easily. In addition, different from traditional learning content that only provides static texts and pictures, AR instructional model can lead learners directly to the essence of the learning content.

Eric, Mark, Graham and Barbara (2004) integrated five examples of AR teaching in their research to illustrate the advantages of AR teaching. These advantages include: (1) learners like this kind of instructional material; (2) as far as the courses about spatial concept relations are concerned, AR materials can help learners to clarify relative conceptions; (3) AR materials can better demonstrate knowledge about time concepts than traditional teaching materials; (4) virtual objects produced by the AR learning system are presented as 3D objects and learners can interact directly with these virtual objects; and (5) referring to the concept of constructivism, AR model can allow learners to change their native knowledge, independently.

In accordance with the above researches, applying AR to education has the following advantages:

- Novelty towards learning: AR learning uses new multimedia technology and presents diversified multimedia content through the system, which allows learners to acquire knowledge of concepts and increases their interest in learning. Aided by simulation-based materials, AR combines virtuality and reality to improve the interaction level, stimulating the learners' learning motivation and enthusiasm.

- Interaction with learners: With regards to relatively difficult abstract concepts, learners can practice repeatedly through the interactive operation process. This model can deliver the correct knowledge of concepts to the users. Even learners with little computing experience can improve their comprehension abilities and familiarity through this model.

- Establishment of spatial concepts: If the instructional material can make abstract spatial concepts visible and visualized, it will be of great benefit to learners in terms of promoting learners' understanding towards the spatial concept. AR materials are developed with the possibility of turning abstract to concrete and, thus, they can improve learners' learning effectiveness of spatial concepts.

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Referring to the above three advantages which are about the AR's applications in teaching aspects, the content design of the instructional materials should be in accordance with the learning objectives and concepts that teachers wish to convey to their learners. The development of simulation-based materials should meet the requirements necessary to initiate the different experiences, sensorial stimulation or interaction of learners and even help them to visualize abstract concepts. It is expected that AR materials will help learners to establish correct scientific concepts.

Research method

This study aimed to discuss the influence of simulation-based materials on the learning effectiveness of the learning unit on the phases of the moon. Quasi-experimental research was adopted to replicate the students' learning effects in this study. In addition, through T tests on independent samples, this study obtained statistics for the effectiveness of different instructional design for the learning unit between learners using 2D animation materials (2D), 3D simulation materials (3D), and augmented reality materials (AR).

Simulation-based moon phases Materials

The 2D animation materials on moon phases used in this study were taken from the interactive animation software system on moon phases designed by Wang (2006) through Flash technology, has proven itself was a effectively 2D animation learning system. The 3D simulation system of moon phases was flowered from Google Earth. Tilting the image and flying through the moon in Google Earth suddenly makes the structure and relationships obvious to students. The moon's color stripes and zigzags become more lively and authentic before their eyes. All of these content and materials contains the learning objectives of the learning unit. The system overviews were shown in Fig 1.

24. Fig. 1: (Left) The 2D animation materials; (right) The 3D simulation materials

Meanwhile, this study developed its own AR materials using virtual reality technology based on the Total Immersion D'Fusion AR software package, 3D molding software Maya and 2D image processing software Photoshop. The process of material development is shown in Fig 2.

25. Fig. 2. The construction process of the Augmented Reality Materials of this study

First, the 3D model was imported into D'Fusion AR using molding software Maya. Second, the D'Fusion CV was used to set the graphic cards' pattern, named AR tag, for camera identified. Then, 2D surface materials and system pictures were drawn and design by using Photoshop. Next, we using the D' Fusion AR package to process the above completed model, graphic cards and interfaces with the interactive program language Lua Scipt for advanced

interactive. Finally, the design for interaction and the setting of functional dimensions was completed and then upload all files to the learning system website. The system overviews were shown in Fig 3.
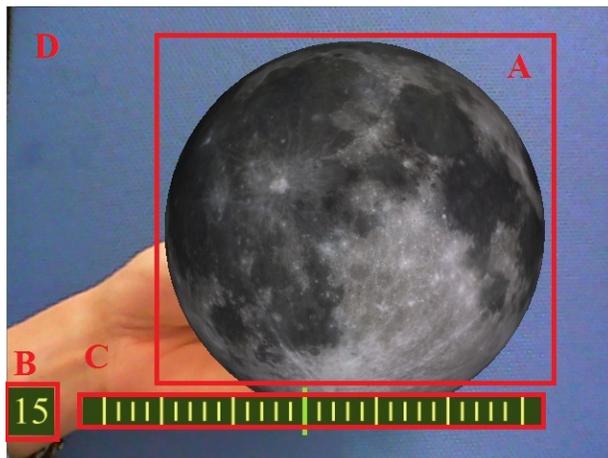
26. Fig. 3: (A) show 3D object; (B) show lunar calendar date; (C) each day of the month; (D) real world scenarios

It should be noted that the image resolution level of pictures influences the sense of reality of the 3D virtual objects displayed. Additionally, the charting of the adjustments in the moon's shadow area should be in accordance with the real shape of the moon.

Participants and Scenario

The present study investigated the effect of providing learners with diverse approach of simulation-based instructional model, 2D animation (2D), 3D simulation (3D), and augmented reality (AR) on students' moon phases concept learning and their academic achievement. The participants were 104 juniors students from an education college at a university in the north of Taiwan, including 41 male (39.42%) and 63 female (60.58%), enrolled in two selective course on "computer animation and applications." The samples were divided into three groups and randomly assigned to experimental conditions (AR group) and control group (2D animation and 3D simulation). Base on the simulation-based instructional design, the experimental group and control group adopted exactly the same procedures but different assistant materials. The experimental group (AR group) carried out the unit activities on moon phases with our AR materials. Meanwhile, the control group (2D and 3D group) conducted activities using 2D animation and 3D simulation materials. The research framework is shown in Fig 1.
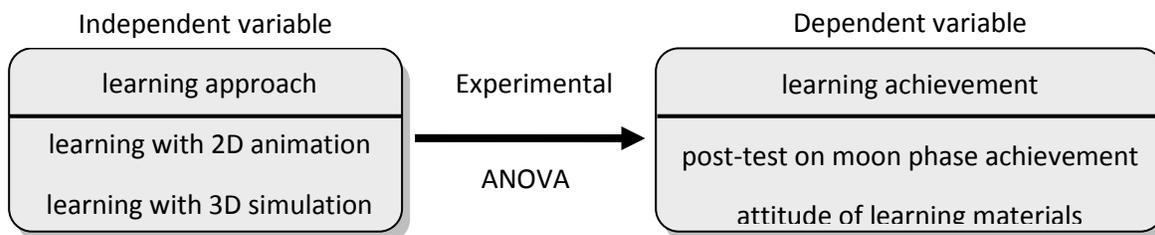
27. Fig. 4. The research framework of this study

Firstly, the study ran a homogeneity of variance on the students' concepts of the moon phases among three group. Then, the research experiment adopted difference approaches of computer simulation materials to learn related concepts of the moon phases. The primary data collected for this study consisted of: (1) self-report collected from learners, in which after completing each stage of the experiment, they were asked to describe in 30 words the learning task and; (2) weekly interviews recorded by the instructor in class meetings throughout the course; and (3)

attitude questionnaire of learning materials; and (4) an online post-test achievement test on moon phase was conducted to examine participants' progress.

Two-stage questionnaire on the elementary school students concepts of the moon

This study applied two-stage questionnaires on the students' concepts of the moon, as designed by Lai (2002). It aimed to assess the learners' learning degree of the four major concepts in the unit on moon phases, including the phenomena, causes and periods of the moon phases, as well as the motions of the earth, the sun and the moon. It also aimed to analyze the changes in the learners' misconceptions from before the study and after the study. In order to clarify if the notions in the learners' minds were correct scientific concepts, this test applied the two-stage answer method. Two tests were done, specifically a pre-test and a post-test. The test-retest reliability method was applied and the related coefficients of all questions were significantly correlated ($0.41 \leqq r \leqq 0.78$), indicating a good test-retest reliability. The index of internal consistency (α) was 0.64, representing the acceptance level of test reliability. As for the validity, this test adopted content validity. Three professors from the Nature Department and two primary schools teachers were invited to examine the test content in order to construct the content validity of the test. There were a total of 16 test items. Each item of single choice included two parts, option and reason. Two scores were given if both the option and reason were right; otherwise, no score was given. The total score was 32.

28. Fig. 1. The learning scenario of research implementation

Research results and discussion

Different learning approach of concept learning effects was not significant

The Analysis of Variance (ANOVA) was conducted to examine the main effects of the different learning approach on the dependent measures. Significance level was .05 for data analysis. The descriptive statistics and summary of learning achievement are shown in Table 1. The achievement mean score of all three group indicated that the participants obtained positive progress toward the simulation-based learning. The mean score of the AR group (12.76) was slightly higher than that of the 2D animation group (12.63) and 3D simulation group (11.58). The effects of different treatment on participants' achievement were further analyzed by means of ANOVA.

29. Table 1. Descriptive statistics and summary of learning achievement in different approach

Learning Approach	N	Learning Achievement			
		Pre-test		Post-test	
		M	SD	M	SD
2D animation	36	7.95	3.28	12.63	3.77
3D simulation	35	7.92	3.23	11.58	3.45
AR simulation	33	8.03	3.39	12.76	3.91

First, the Levene's test of equality was conducted on participants' pre-test score of achievement toward simulation-based learning. The result was not significant ($F(3, 101) = .312$, $p = .817$). The homogeneity assumption that the error variance of the dependent variable is equal across groups was sustained. Then, the ANOVA summary of different simulation materials for the independent measures of participants' post-test score of achievement is shown in Table 2. The main effect of the ANOVA result was not significant ($F(3, 101) = 1.085$, $p = .216$).

30. Table 2. Summary of the ANOVA result

Source	Type III Sum of Squares	Df	Mean Square	F	p
Learning Approach	1478.649	2	359.550	1.085	.216
Error	32561.587	101	102.303		

*$p<.05$

Students in 3D and AR approach demonstrate higher motivation

Furthermore, an ANOVA was conducted to examine the main effects of the different learning approach on the learners' attitudes toward the simulation-based learning materials are shown in Table 3. The significance level was also .05 for data analysis.

31. Table 3: Summary of learners' attitudes on different learning approach

Attitudes	N	Descriptive Statistics		F	p
		M	SD		
2D animation	36	3.513	.510	3.212	<.01
3D simulation	35	4.509	.608		
AR simulation	33	4.775	.542		

The results showed that some striking effects of difference treatment on learners' attitudes toward simulation-based learning. The effects of different learning approach on the learners' attitudes were very significant (F=3.212, p<.01). Further check by the mean values found the AR simulation group (M=4.775) and 3D simulation group (M=4.509) scored higher than the 2D animation group (M=3.513). The data indicated that the learners perceived more authentic and more realistic outperformed the plain significantly while learning in the learning system with the mechanism of simulation-based design. The result was similar to the researches of Wu, Lee, Chang, and Liang (2013) and Yen, Lee, and Chen(2013). It is interesting and seems worthy to pay more attention on how simulation-based learning design could result in this outcome.

Conclusion

This study aimed to discuss the influence of different learning approach (2D animation, 3D simulation and AR materials) on the learning effectiveness of the concepts of moon phases and to analyze the learners' experiences when using AR teaching materials. Owing to this study was a pilot study, the teaching content of which chose only a few concepts related to moon phases as the operating variables. Therefore, the influence of learners' concepts and learning effectiveness other than changes of the moon phases cannot be predicted. Two experimental lessons of 70 minutes were given during this study. According to the data collected from the pre-test and post-test, the following conclusions were obtained.

Firstly, in terms of the influence of different approach of instructional design on the learning effectiveness of the concepts of moon phases, 2D animation, 3D simulation and AR simulation are all helpful for the improvement in learning. However, the differences among the three groups did not reach a significant level. It means that the AR materials on moon phases, as developed by this study, can improve learning effectiveness, but the advantages of AR materials require further exploration. A suggestion for future researchers is to fully understand and authentically display the knowledge content when producing AR materials. More importantly, a complete interactive operation mode that can improve the students' learning interests should be provided.

Otherwise, according to the observations and records of the learning experiences, learners in the 3D and AR simulation group had higher motivation levels and degree of concentration. This study deduces that the reason may be that these materials can provide a more intuitive interactive mode and present abstract concepts more authentically. Therefore, using AR materials can rise the students' learning motivation levels and their degree of concentration. We suggests that future researchers of AR materials explore these aspects further.

Acknowledgement

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Augmented Reality-based Support System
for Teaching Hand-drawn Mechanical Drawing

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Abstract

This research aims to reduce the time, effort and monetary cost needed for developing various educational materials for teaching hand-drawn mechanical drawing by replacing actual educational materials with virtual ones on an augmented reality (AR) -based support system. This system is used for training of sketching and orthographic projection drawing, and has following features. 1) The virtual educational materials constructed by using 3D-CAD are superimposed to a real-time camera image as AR objects. 2) Students can watch the objects from various directions by using a cubic-marker intuitively. 3) The objects are applied realistic textures similar to the actual materials.

Keywords: Augmented Reality, Education in Engineering, Education Support System, Educational Application

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INTRODUCTION

In this research, we developed an augmented reality-based support system for teaching hand-drawn mechanical drawing at a faculty of mechanical engineering of a university. Recent industrial products are mainly designed by using computer aided design system called, CAD. Therefore most of the faculties of mechanical engineering teach the mechanical drawing by using CAD. Though the above situation, our faculty thinks that it is necessary and important for the students to learn the hand-drawn mechanical drawing. So firstly we teach hand-drawn mechanical drawing, and after that we teach by using CAD. We think that learning the hand-drawn mechanical drawing is not only to learn the drawing skills, but also it is able to learn the stereognostic sense effectively. Here, we define the stereognostic sense as an ability of understanding a shape of three-dimensional object and then drawing it onto a two-dimensional drawing.

We are using mechanical parts such as gears, bearings as educational materials on teaching the hand-drawn mechanical drawing. Each student draws a mechanical part by using sketching or the third angle orthographic projection drawing, while he has the part in hand and watches it from various orientations. Through the above learning, he will have mastered the stereognostic sense. On the other hand, there are problems to maintain those educational materials. In order to give the materials to each student, we have to maintain various parts, but it requires the time, effort and monetary cost.

In this research we aim to reduce the above problems by replacing actual educational materials with virtual ones on an augmented reality (AR) -based support system. This developed support system overlays virtual materials on the digital camera image. Student can feel as if he had the actual material by watching the virtual object from various orientations by using the system. As the result, we can provide various educational materials for each student rapidly, easily and low cost.

This paper describes the structure of the system and then shows some demonstrations of the system.

DEVELOPMENT OF AR-BASED SUPPORT SYSTEM

This section describes the system configuration of the developed AR-based support system.

Overview and Structure

The developed AR-based support system recognizes a cubic AR marker from a digital camera image and overlays a virtual mechanical part made by 3D-CAD as educational material on the image.

The hardware of the system is composed of a personal computer and a digital camera. The software of the system is constructed by using some programming library, such as ARToolKit, OpenCV and OpenGL. The ARToolKit is a programming library for implementing augmented reality application. A virtual object is overlaid on an AR marker taken by the digital camera. Position and orientation of the virtual object is defined by recognizing the position and the orientation of the AR marker. Figure 1 shows the procedure of how to overlay the virtual object on AR marker by ARToolKit.
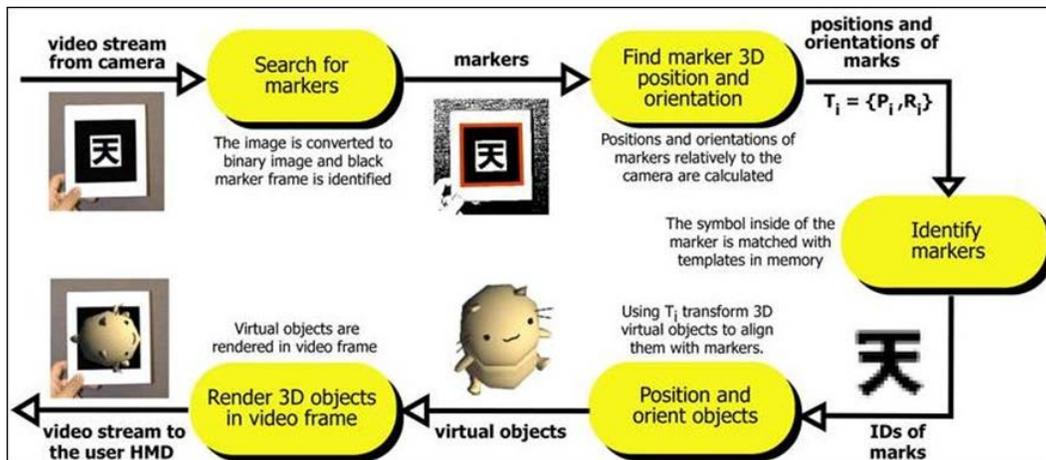
Fig. 1. How to overlay a virtual object on an AR marker by ARToolKit

(Quote from http://www.hitl.washington.edu/artoolkit/)

Cubic AR Marker

The AR system displays virtual objects as if they existed on real world. In order to do so, the system needs to recognize the position and the orient of the objects. It is called registration. An example of a procedure of the registration to overlaying a virtual coordinate into a real coordinate is shown in Fig. 2. At the registration, the direction and the distance of a virtual object from a camera is calculated by recognizing edges of an AR marker using a binarized camera image.

Our support system uses a cubic AR marker for the registration. The cubic AR marker provides recognition of every aspect of virtual object to the system. Each student takes the cubic AR marker in hand and watches it from various directions of front, back, top, under, left and right. It serves a user experience similar to holding an actual educational material in hand. A drawing of the cubic AR marker is shown in Fig. 3.
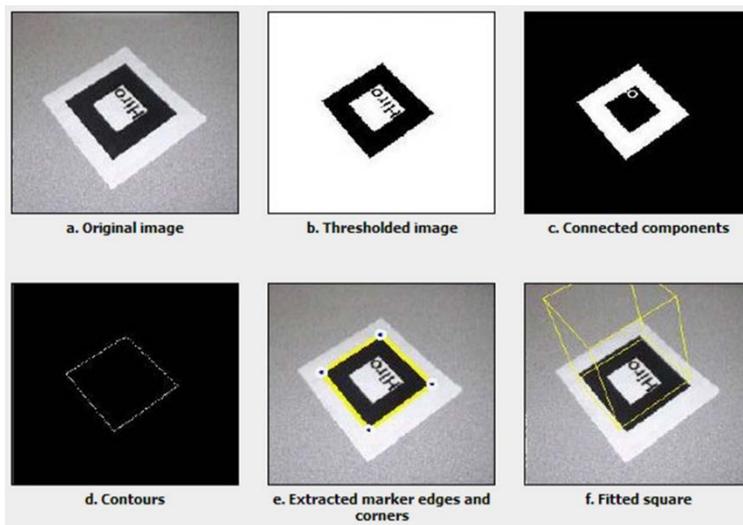
Fig. 2. How to recognize AR marker from camera image by ARToolKit

(Quote from http://www.hitl.washington.edu/artoolkit/)
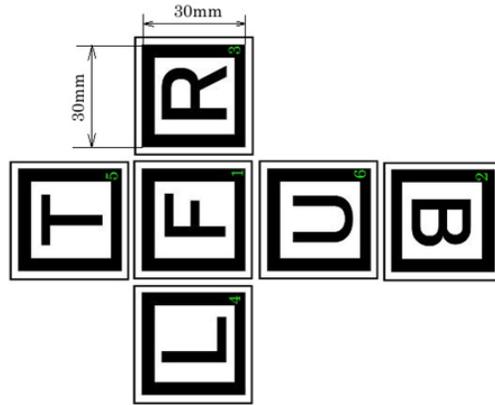
Fig. 3. Drawing of cubic AR marker.

Realistic Texture of Material

Colors of materials which are expressed by setting various color tones provide realistic textures to the educational materials. The textures are set by using glMaterialv( ) function of OpenGL library. Various textures of materials are expressed by controlling the glMaterialv( ) function parameters, Ambient Light Reflection Coefficient (GL_AMBIENT), Diffuse Light Reflection Coefficient (GL_DIFFUSE), Specular Light Reflection Coefficient (GL_SPECULAR) and Shiniss Coefficient(GL_SHININESS). Some examples of these control parameters are shown in Table 1.

RESULTS

In this section firstly, we demonstrate some examples of the operation of the system, and then we show the effectiveness of the cubic AR marker and the expression of realistic texture.

Demonstration

The windows of the system are shown in Fig. 4. The upper is main window and it displays overlaid virtual object. The lower right window displays source image and the lower left window displays binarized image. Although the lower windows are not necessary at the actual use, we show them in order to explain our system here.

Four examples of the mechanical parts for educational materials are shown in Fig. 5. These examples of a knuckle joint, a gear, an L shaped bracket and a bearing holder were made by using CAD. The left object is the virtual mechanical part and the right one is the actual part. Each virtual object seems similar to the actual one.
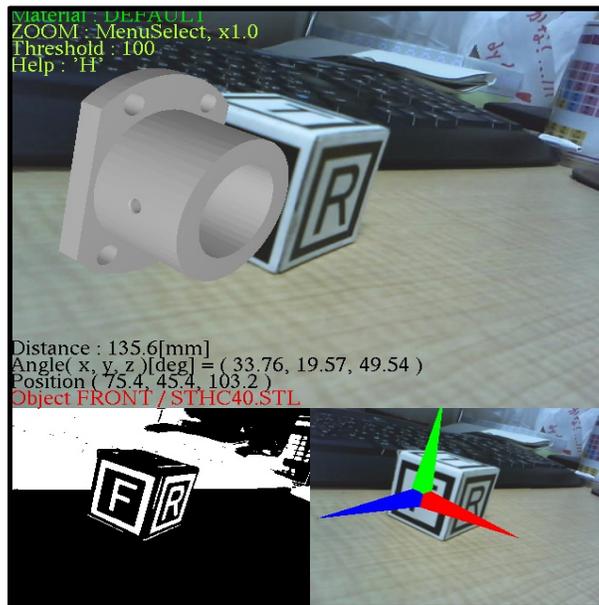
Fig. 4. Window of the AR-based support system.

(a) Knuckle joint

(b) Gear

(c) L shaped bracket

(d) Bearing holder

Fig. 5. Example of the mecanical parts for educational materials.

(a) Front

(b) Back

(c) Top

(d) Under

(e) Left

(f) Right

Fig. 6. Recognition of orientation by using cubic AR marker.

Cubic AR Marker

Result of the recognition of each orientation by using a cubic AR marker is shown in Fig. 6. From the Fig. 6, we can confirm that the cubic AR marker recognized exact orientation and provided various aspect of the virtual object successfully. This result shows that students can watch any aspect of virtual object intuitively.

Realistic Texture of Material

Texture of each material is set by selecting any texture from a list on window shown in Fig. 7. When user selects any texture, the control parameters shown in Table 1 are used to paint the virtual object. Presently, we prepare 25 textures. Examples of any texture painted on virtual object are shown in Fig. 8.

32. Table 1. Control parameters of texture of materials

Name of material	RGBA of GL_AMBIENT	RGBA of GL_DIFFUSE	RGBA of GLSPECULAR	GL_SHININESS
Default	0.45/ 0.45/ 0.45/ 1.0	0.60/ 0.60/ 0.60/ 1.0	0.04/ 0.04/ 0.04/ 1.0	0.60
Turquoise	0.10/0.19/0.17/1.0	0.40/0.74/0.69/1.0	0.30/0.31/0.31/1.0	0.10
White Plastic	0.0/0.0/0.0/1.0	0.55/0.55/0.55/1.0	0.70/0.70/0.70/1.0	0.25
Black Rubber	0.02/0.02/0.02/1.0	0.01/0.01/0.01/1.0	0.40/0.40/0.40/1.0	0.78
Brass	0.33/0.22/0.027/ 1.0	0.78/0.57/0.11/1.0	0.99/0.94/0.81/1.0	0.22
Bronze	0.21/0.13/0.054/1.0	0.71/0.43/0.18/1.0	0.39/0.27/0.171/1.0	0.20
Chrome	0.25/0.25/0.25/1.0	0.40/0.40/0.40/1.0	0.77/0.77/0.77/1.0	0.60
Copper	0.19/0.074/0.023/1.0	0.70/0.27/0.083/1.0	0.26/0.14/0.086/1.0	0.10
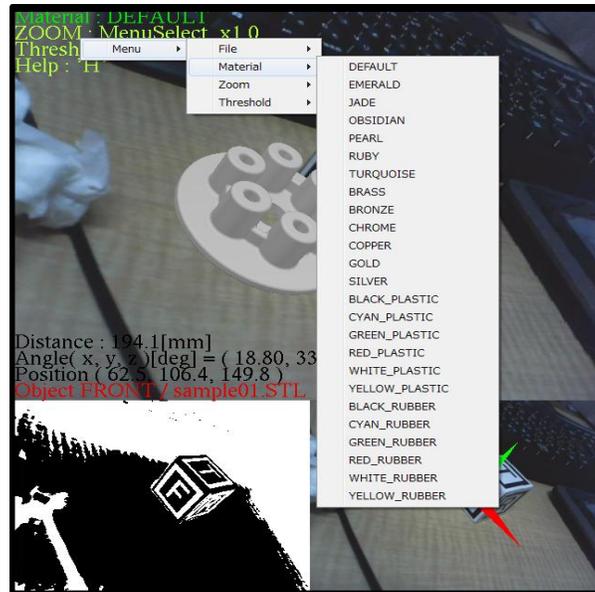
Fig. 7. Window of material list for selecting texture.
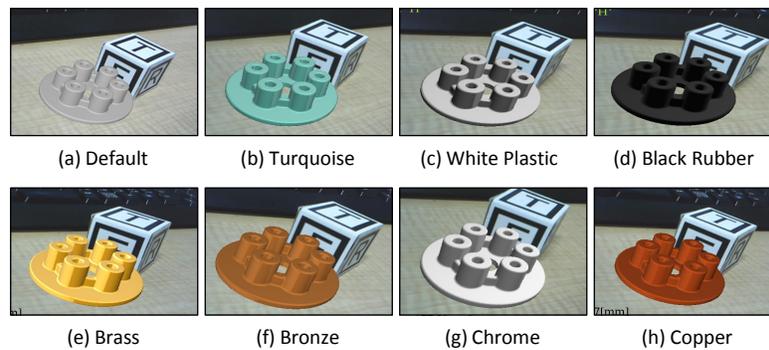
Fig. 8. Examples of texture.

CONCLUSION

In this paper, we showed an AR-based support system for teaching hand-drawn mechanical drawing. The virtual educational materials were made by using 3D-CAD. Easy and intuitive user experience was achieved by using cubic AR marker and realistic texture. As the result, this system achieved the reduction of time, effort and monetary cost for preparing various mechanical parts as educational materials by replacing actual materials with virtual ones.

Head-mounted display, HMD is becoming familiar in recent years. We think that implementing our system on HMD will improve usability and we aim it as our future work.

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Automatic Detection of Learning Styles in Learning Management Systems By Using Literature-Based Method

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Abstract

Previous studies showed that automatic approach as a better approach to identify learning style in online learning because it is based on the actual students' behaviour pattern while learning. However, there are several methods in an automated approach can be used to identify learning styles and literature-based method is said to be practical by using LMS. Therefore the purpose of this study is to identify the learning style based on patterns of behaviour for 20 students who studied Interactive Multimedia course within LMS environment in the context of Malaysian polytechnic student. Patterns of behaviour were analyzed based on literature-based method. The Findings indicate the predicted and ILS learning style are different because it depends on the actual behaviour patterns of students. Therefore, identifying learning styles literature-based method is needed to ensure the measurement is based on actual student behaviour during online learning.

Keywords: Learning styles; automatic detection; literature-based approach;

Introduction

Learning style is not a new concept in education. It was started in the 1960s (Coffield et al., 2004; Dag & Gecer, 2009), but until now this area continue to be relevant in accordance with the development of educational technology primarily involves online learning adaptive learning feature (Akbulut & Cardak, 2012; Dung & Florea, 2012). Adaptive learning is matching the personality characteristics of students with learning materials and activities (Lee & Park, 2008). Practitioners and researchers in the field of education believe that by matching the materials and learning activities with learning styles can make learning easy and effective (Felder & Silverman, 1988; Graf, Liu & Kinshuk, 2010; Hsieh et al., 2011). In relation to this, learning style is one of the personality traits that are important in adaptive learning (Bajraktarevic, Hall & Fullick, 2003; Papanikolaou & Grigoriadou, 2004) and is predicted to be the contributor to the success of the online learning system (Lim, Morris & Yoon, 2006).

There are two approaches for identifying learning styles, which uses a collaborative and automatic approach (Brusilovsky, 1996). Automated approach is based on the actual behaviour patterns during online learning progresses, while the collaborative approach using a questionnaire to identify the learning style (Brusilovsky, 1996). Collaborative approach is considerably less accurate as current students answered the questionnaires it may be influenced by the nonchalant attitude (Schiaffino, Garcia & Amandi, 2008), students are not willing to give information (Joerding, 1999; Kobsa, 2002) and only measure to one specific point of time (Graf, Kinshuk & Liu, 2008). On the other hand, a research done by Zaidatun (2002) showed that not all student display the same learning style as obtained from collaborative approach during actual learning. While the process of identifying learning styles said to be more accurate with the automatic approach due to the information technology that can provide explicit information during online learning (Garcia et al., 2007; Graf et al., 2008). In relation to this, identifies automatically learning styles are very much in the present researchers of learner model because it can make the learner model more dynamic and comprehensive.

Considering learning styles using the automatic determination is not something new, but it has been introduced by some previous researchers (Garcia et al., 2007; Graf et al., 2008; Lo & Shu, 2005; Simsek et al., 2010), but this

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study would like to see the differences between learning styles are identified in collaborative and automatic approach in the context of engineering students at one of the polytechnics in Malaysia. Therefore the objective of this study was to identify the learning style model of Felder and Silverman automatically using literatured-based method and to compare the findings obtained with style collaborative approach.

Learning Style

James and Blank (1993), define learning style as 'the complex manner in which, and the conditions under which, learners most efficiently and most effectively perceive, process, store and recall what they are attempting to learn'. By identifying students' learning styles, teachers could design classroom activities and provide learning materials that are in line with the students' learning styles (Felder & Silverman, 1988). In addition, students would be able to recognize their own learning strategies when they know the strengths and weaknesses of their learning styles (Felder, 1993)**.** There are many models of learning style refers to the variety and interest in the field of model designers. However according to Ozpolat and Akar (2009) there are five models of learning style that are often used by engineering students in the previous studies: Myers-Briggs Type Indicator (1978), Kolb(1984), Felder and Silverman (1988), Herrman (1990) and Dunn and Dunn (Dunn & Price, 1989). Nevertheless, the model that is used commonly is Felder and Silverman learning styles model (Akbulut & Cardak, 2012; Dag & Gecer, 2009). This model is able to analyze clearly the dimensions of learning styles based on a scale of range between +11 to -11 (Felder & Spurlin, 2005). In addition, the questionnaire (Index of Learning Style, ILS) also has acceptable reliability and validity (Litzinger, Lee, & Wise, 2005; Van Zwanenberg, Wilkinson, & Anderson, 2000; Zywno, 2003) and the model is also proposed suitable for use for online learning (Kuljis & Liu, 2005).

Felder-Silverman learning style model was exclusively designed for engineering students (Felder & Silverman, 1988). This model was to identify students' learning styles and help instructors to formulate approaches to teaching to be in line with a range of learning styles of students. There are five dimensions of learning style models: perception, input, organization, processing and understanding. However, there are only four dimensions found in the instrument used to determine learning styles (Felder & Soloman, 1997). According to the Felder-Silverman learning style, there are four dimensions of learning styles, namely: - (i) the perception or type of information that becomes a choice of someone while understanding a piece of information be it through sensory or intuitive, (ii) the most effective input or sensory channels that receive either visual or auditory perception, (iii) the active or reflective method of processing information and (iv) the sequence or global way a person understands a knowledge.

Richard M. Felder and Barbara A. Solomon created a Learning Style Index (ILS) in 1991 based on the Felder-Silverman learning style model (Felder & Spurlin, 2005). This ILS questionnaire consists of 44 items and was placed on the World Wide Web in 1997 (Felder & Soloman, 1997). The instrument was designed with only four dimensions of learning style models: active / reflective, sensory / intuitive, visual / verbal and sequence / global. Each dimension in the questionnaire has 11 items. ILS scale is a bipolar scale with option 'a' brings value +1 and 'b' gives value -1. The total score for each dimension produces a scale from +11 to -11 (Felder & Spurlin, 2005). Value scale of 1 to 3 shows a balance between the two learning styles in one dimension, value of 5 to 7 refers to moderate learning styles while value 9 to 11 illustrates strong learning styles.

Although the Felder and Silverman model has four dimensions of learning styles, this study however, would only focus on the dimensions of information processing which are active and reflective. Processing dimension describes how to process the favourite information of a person whether it is active (actively involved in learning) or reflective (make observation on their own). Students with active learning style are easy to understand information through learning activities that allow them to actively use the learning materials like doing experiments. Students with this type of learning style love to manipulative the learning materials, try and test something new, give opinions and discuss in group. However, the reflective learning style's students are more comfortable making observations by investigating and manipulating learning materials or activities on their own. Next, to match learning materials and activities with appropriate teaching styles, learning styles should be identified. The next sections will describe various approaches that can be used to identify students' learning styles in automatic approach.

Determination of Learning Style

There are several methods that can be used to determine the learning styles automatically. These methods are different from each other based on the attributes used (personality factors, behavioural factors, and so on), the technique used (bayesian networks, decision trees, fuzzy, etc.) and infrastructure system used (Learning Management System) (Özpolat & Akar, 2009). However, in this study will be discussed in terms of methods used in

identifying learning styles automatically. Previous studies have shown that there are two approach used to identify learning styles in automatic approach: data-driven method and literature-based method (Garcia et al., 2007; Graf et al., 2008; Lo & Shu, 2005). Data-driven method aims at building a model that imitates the ILS questionnaire and uses sample data to construct a model (Garcia et al., 2007). While the literature-based method is to use the behaviour of students in order to get hints about their learning style preferences (Graf et al., 2008). Neural networks (Lo & Shu, 2005), decision trees and Hidden Markov Model, fuzzy clustering (Latham et al., 2010) and bayesian networks (Garcia, et al., 2007) are the techniques that based on the data-driven approach. The literature-based method on the other hand uses only simple rule-based to calculate learning style from the number of matching hints (Atman, Inceoğlu & Aslan, 2009; Dung & Florea, 2012; Graf et al., 2008; Şimşek et al., 2010).

The literature-based method which was proposed by Graf, Kinshuk and Liu (2008) is said to be practical and widely used regardless the courses since the focus is more on the content of the objects such as quizzes, tests, assignments and forum which are the most featured items used in most open source learning management system (LMS) (Dung & Florea, 2012; Özpolat & Akar, 2009; Popescu, 2009). Besides that, the calculation of learning style in this study is based on the simple rules and does not involve the design of the system. Therefore, it could be used in all learning situations which are LMS based (Dung & Florea, 2012). Graf (2007) conducted a comparative study of both data-driven and literature-based methods and found that the literature-based method resulted in more accurate data of identifying learning styles compared to the data-driven method. However, the literature-based method has its own weakness where there is a possibility that there might be other patterns that are not taken into account in the calculation which are also the behavioural indicators of learning styles (Atman, Inceoğlu & Aslan, 2009; Dung & Florea, 2012).

Literature-Based Method

Literature-based method is a method for identifying learning styles based on the behavior when using the LMS, then the relevant behavior with features found on the learning style model to be determined. Because this study uses a model Felder and Silverman's learning style, then the characteristics and behaviour patterns should refer to the dimensions found in this model. In addition, the characteristics and behaviour patterns should be selected based on the characteristics of the most commonly used by instructors in the LMS and can provide many information. According to Graf and Kinshuk (2006), there are a number of features found in the LMS can be used to see patterns of behavior that are relevant to the learning style model of Felder and Silverman content, course outline, example, exercise, assessement and forums.

Based on the features that are available in LMS, the behavior pattern is matched with the learning style characteristics in the model Felder and Silverman's learning style. Based on a study done by Graf, Kinshuk and Liu (2008), students with active learning style expected to show behavioural patterns of online learning as follows**:-** (i) frequently send messages in the forum to ask questions and explain things, (ii) perform more exercise due to preference of testing and trying things out and, (iii) spend only little time on reading material like content object because of favour to retain information by doing something active with learned material. On the other hand, students with reflective learning style expected to show behavioural patterns of online learning as follows:- (i) participate passively by frequently reading the postings and rarely posting message in the forum due to the preference of think about the material and work alone, (ii) visit and spend more time on reading material to think and reflect about the material and (iii) Take longer time on exercise for reflecting on their result but expected to perform less exercise. After determining the relevant patterns of behaviour based on Felder and Silverman learning style model dimensions, threshold value is needed to classify the occurence of behaviour pattern.

In order to classify the occurence of such behaviour, the threshold used to categorize patterns of behavior based on the hint of 0 to3. The threshold value is used to determine whether the presence of behaviour pattern indicators is high (3), moderate (2), low (1) or no information about student's behaviour (0) with respective learning style. The threshold value is based on the value that has been adapted from the value suggested by previous researchers as well as the existence of actual student behavior refers to the structure used in the LMS course (Table 1).

Table 1. Behaviour pattern based on learning style dimension of Felder and Silverman

Features	Behaviour Pattern	Pattern Description	Threshold value	
Outline	outline_stay	percentage of time spent on outlines (based on a predefined expected value)	50%	75%
Example	example_stay	percentage of time spent on examples (based on a predefined expected value)	50%	75%
Content	content_visit	percentage of visited content object (based on the number of available content)	60%	80%
	content_stay	percentage of time spent on content object (based on a predefined expected value)	20%	45%
Exercise	exercise_visit	percentage of performed exercises (based on the number of available exercises)	60%	80%
	exercise_stay	percentage of time spent on exercises (based on a predefined expected value)	30%	50%
Forum	forum_visit	number of visit forum (per week)	8	12
	forum_stay	time spent in the forum (per week)	5 min	8 min
	forum_post	number of postings in forum (per week)	1	2

To determine patterns of behavior relevant to the dimensions of active and reflective learning style either it is high or low occurance, significant determination test used were two tailed t-test for normal distributed data and two tailed Mann-Whitney U test for non-normal distributed data. Table 2 shows the relevant pattern for active and reflective learning style.

Table 2. Relevant pattern for active and reflective learning style
(The "+" and "-" indicate a high and low occurrence of pattern)

Active	Reflective
content_visit (-)	content_visit (+)
content_stay (-)	content_stay (+)
exercise_visit (+)	exercise_visit(-)
exercise_stay (+)	exercise_stay (-)
example_stay (-)	example_stay (+)
outline_stay (-)	outline_stay (+)
forum_visit (+)	forum_visit (-)
forum_post (+)	forum_post (-)
forum_stay (-)	forum_stay (+)

Next, calculations for the determination of learning styles is based on the hints. As an example of the active dimension, the hint value is 3 when behaviour for visit exercise is high or visit the content is low. While the other hand is rather reflective dimension hint value is 3 when behaviour for visit exercise is low or visit the content is high. Similarly, the value of hints 2 and 1. Once the value of each behavior hints relevant to dimensions of learning style is determined, then the calculation to determine the learning style. Calculation of learning styles (ls_{dim}) obtained by calculating the sum of all hints for each relevant behavioural dimensions and divided by the total pattern of behavior as in formula 1, with sign ($h_{dim,\ i}$) obtained from each dimension (dim), behaviour patterns (i) and the total pattern of behavior (P_{dim}). This measure is then will be normalized from 1 to 0 using the formula 2. The normalized learning style (nls_{dim}) will be determined based on the threshold of 25% and 75%, for example, nls_{dim} smaller than 0.25 is "reflective", nls_{dim} between 0.25 to 0.75 is "balanced" and nls_{dim} greater than 0.75 is "active".

$$ls_{dim} = \frac{\sum_{i=1}^{P_{dim}} h_{dim,i}}{P_{dim}} \tag{1}$$

$$nls_{dim} = \frac{ls_{dim} - 1}{2} \qquad (2)$$

Methodology

To identify learning style by using literature-based method, the behaviour patterns of 20 electrical engineering students who were taking the Interactive Multimedia subject in their semester five were analyzed. The analysis took over 11 weeks of the whole learning process of a semester that covered up the 12 major sub-topics of the subject. The teaching of the subject utilized three types of learning materials: learning notes in the Sharable Content Object Reference Model (SCORM) format (12), examples (25), exercises (6) and forums (12). With reference to the relevant behaviour patterns and the threshold from Table1, hints for every student behavior pattern determined whether 3,2,1, or 0 based on Table 2 as described in section 4. Next, calculation of learning styles by using formula 1 and normalized the value using formula 2. While collaborative approach by asking students to answer ILS Felder and Silverman early in the semester before the online learning sessions begin.

In order to compare the learning styles obtained in collaborative and automatic approach, formula introduced by Garcia et al. (2007) have been used as in formula 3. Based on this formula, if the value obtained from collaborative approach (LS_{ILS}) is same with automatic approach ($LS_{predicted}$) then the formula is worth 1. If one of the values is balanced and the other is active or reflective then the formula will takes value 0.5. Finally, if the two values are mutually different from each other, then the formula takes the value 0. The value of the whole formula will be summed and divided by the number of students.

$$\text{Precision} = \frac{\sum_{i=1}^{n}(LS_{predicted_i}, LS_{ILS})}{n} \cdot 100 \qquad (3)$$

Result and Discussion

The purpose of this study was to determine the learning style using literature-based method. This method is based on the simple rule for calculating learning styles from indications gathered from students' behavior during an online learning course in LMS in the context of students' and different learning subjects. Next, the learning style using this method ($ILS_{predicted}$) will be compared with the learning style obtained collaboratively (LS_{ILS}). Table 3 shows the LS_{ILS} and $ILS_{predicted,}$ obtained from this study with comparative accuracy of 75%. Turns out that 10 students have the same learning style for both the calculation of the balanced approach (BAL) and active (ACT). While there are 9 students who have different LS_{ILS} and $ILS_{predicted}$, that is from active (ACT) / reflective (REF) to the balanced (BAL) and vice versa. BAL probability to become the ACT / REF or otherwise is high, as BAL is located between the ACT and REF, but for the ACT to be REF or otherwise is less common that is only one student in this study.

Table 3. Comparison of ILS Result to Predicted Result

No	ILS Result	Predicted Result	No	ILS Result	Predicted Result
1	BAL	BAL	11	BAL	BAL
2	*ACT*	*BAL*	12	*BAL*	*ACT*
3	BAL	BAL	13	BAL	BAL
4	*ACT*	*BAL*	14	BAL	BAL
5	*ACT*	*BAL*	15	*ACT*	*BAL*
6	*ACT*	*BAL*	16	ACT	ACT
7	*BAL*	*REF*	17	ACT	ACT
8	*ACT*	*BAL*	18	ACT	ACT
9	BAL	BAL	19	*ACT*	*REF*
10	ACT	ACT	20	*ACT*	*BAL*

While Table 4 shows the accuracy obtained by a number of researchers. According to Garcia et al. (2007) the accuracy of the comparison between active and reflective learning styles derived from the study was 58%. This value is relatively low because most of the students made little use (or no use) of chat, mail and e-mail features and

cause the number of experiences recorded in most cases was small and the behavior of the bayesian network was biased. However, for the other dimensions of learning styles are only 77% for the sensing/intuitive dimension and 63% for the sequential/global (Garcia et al., 2007). Thus, according to Graf (2007) which obtained 79.63% for comparing the accuracy of the dimensions of the active learning/reflective claimed that literature-based approach is better than data-driven based. Graf (2007) used 127 samples instead of Garcia et al. (2007) of 27 samples and each learning style dimension proposed by Graf (2007) consists of relatively high number of patterns compared to the model introduced by Garcia et al. (2007).

Table 4. Comparison with previous studies.

Modeling Approach	Subject	Web based /LMS	Study	Sampel	Precision for Active/Reflective
Data-driven	Artificial Intelligent	Web based	Garcia et al. (2007)	27	58.00%
Literature-based	Object Oriented Programing	LMS	Graf (2007)	127	79.33%
Literature-based	English	Web based	Atman et al. (2009)	17	83.13%
Literature-based	Mathemathic	LMS	Simsek et al. (2010)	27	79.63%
Literature-based	Multimedia Interactive	LMS	This study	20	75.00%

Studies conducted by Atman et al. (2009) has the highest accuracy comparison of 83.13%. Yet Atman et al. (2009) uses the web-based as online learning system and used the feature that has been built in the web-based such as introduction, form, example and exercise. Meanwhile, the study conducted by Simsek et al. (2010) is very similar to thiis study utilizing LMS to calculate the learning styles using the literature-based approach with the accuracy comparison of 79.63%. However Simsek et al. (2010) used features like the video content, PDF content, user profile and questionnaire to determine the patterns of behavior. Unlike Atman et al. (2009) and this study, Simsek et al. (2010) uses the threshold value which was proposed by Garcia et al. (2007) and Graf (2007) without having to make adjustments to the actual usage of the investigated comment in the course.

Overall, the studies conducted using the literature-based approach to identify the learning styles automatically, have the accuracy of comparison within the range of 75% to 83%. This difference may be due to a number of differences for each study in terms of features, relevant behavior patterns, samples, subjects learning and learning systems. Difference in the LS_{ILS} and $ILS_{predicted}$ much anticipated since there are some things that allows these differences, such as students who are not proficient using the LMS may take a long time while using certain features or students may have changed their learning styles dimensions due to the features that they are comfortable with on online learning. Thus by identifying learning styles automatically through actual behavior during the online learning, provide true information of student learning styles. In addition, this information is said to be less error prone as it is analyzed in a period of time compared to data the collected in a collaborative manner, referring to one spesific point of time.

Conclusion

Literature-based method for identifying learning styles automatically, can help teachers identify learning styles based on real behavior patterns of students during online learning, more accurately. This method uses a simple rule-based mechanisms for identifying learning styles based on the behavior pattern hints corresponding to the characteristic dimension of learning styles of the Felder and Silverman model. Information about the learning styles is used in matching it with learning materials and activities in adaptive learning. Therefore, to ensure the appropriateness of this matching accuracy identifying learning styles should be noted.

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Blended learning in foreign language teaching

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Abstract

The paper deals with practising the blended learning in foreign language teaching at the Faculty of Manufacturing Technologies in Presov (Slovakia). The author states that traditional forms of foreign language teaching at present are not very attractive for university students. The term blended learning can be applied to a very broad range of language teaching and learning situations. It can be commonly applied to a foreign language course where all the students meet with the teacher in a face-to-face class, but in which the language course includes a parallel self-study component such as a CD-ROM or access to web based materials. This kind of approach of the foreign language teaching is desirable.

Keywords: blended learning, learning environment, foreign language teaching;

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Introduction

The rapid advances in technology have changed the way students now learn. Technology, which is a part of students' everyday lives, changes very fast. Universities need to provide 21st century learning environments that promote highly mobile, self-directed, and personalised learning. The term technology covers a wide range of recent technologies, such as the internet or CD-ROMs. It is also includes the use of computers as a means of communication, such as chat and email and many other environments which enable teachers to enrich their language courses. In this connection I could ask the question: How can we, as educators, effectively integrate technology in our language teaching to cater for specific learning needs? or Do new technologies have the potential to transform education by replacing current teaching methods? The latest technological innovations, key interpersonal skills for customer relations, real people talk about their work in technology are very important in the foreign language teaching, too. The students can use online interactive exercises to revise and recycle language (Glendinning, 2007). For example, you can share ideas and experiences with other like-minded teachers. Thoughts about use of new technologies show us some of the most varied and divided questions in language education and classroom practice. On a far side of that divide are idealists who believe that new technologies can radically transform language education. To the idealists, digital tools provide means for viewing various media, collaborative network learning, and so forth. To others, new technologies are a great equalizer; nearly anyone can construct a level of product that a few years ago was only within the capacity of a few people with specialized training.

Blended learning in foreign language teaching

New technologies have revolutionized our conception of knowledge – from something some people might have, to something which everyone should be able to find. The distinction has grown exponentially since the early days of the Internet. Before its inception, students relied on the language education that was relatively fixed in its knowledge content. Computer-based language learning in its various generations has acted to open up the world of knowledge to everyone and its most powerful variant, online blended learning, has become a catalyst that has enabled huge changes in what is learned and who is able to learn it (Sharma & Barret, 2007).

For this purpose Moodle Learning Management System (LMS) has been adopted by the Technical University of Košice (Slovakia) as one of the e-learning platforms. Moodle is an open source LMS and has become very popular among teachers at the Faculties as a tool for creating online dynamic web sites for their students. I suppose that The Faculty of Manufacturing Technologies will be successful with using Moodle in foreign language teaching to deliver online courses and to supplement traditional face-to-face classes (known as blended learning). Moreover, Moodle offers a wide variety of tools that can make language course delivery more effective. It provides an easy way to upload and share materials, hold online discussions, give quizzes and surveys, and record grades. The term blended learning can be applied to a very broad range of language teaching and learning situations (Bielousova - Gluchmanova, 2011, pp. 5-95). It can be commonly applied to a language course where all the learners meet with the teacher in a face-to-face class, but in which the language course includes a parallel self-study component such as a CD-ROM or access to web based materials. Use of these elements may be optional. The foreign language teachers at the Department of Humanities (Faculty of Manufacturing Technologies) prepare for their students a wide range of foreign language materials in three languages: English, German and Russian. Because of they are the students of Technical University, they prefer teaching technical materials which is closely connected with their study branches and study programmes. It means they try to use online materials with specification for manufacturing technologies, computer aided manufacturing technologies, manufacturing management, industrial technologies operations, etc. (Bielousova, 2008, pp. 695-700). They practice blended learning opportunities which incorporate both face-to-face and online learning opportunities. The degree to which online learning takes place, and the way it is integrated into the teacher's plan, can vary across the faculties and the departments. The strategy of blending online learning with university-based instruction is often utilized to accommodate students' diverse learning styles and to enable them to work before or after school in ways that are not possible with full-time conventional classroom instruction. Online foreign language learning has the potential to improve educational productivity of the students by accelerating the rate of learning, taking advantage of learning time outside of school hours, reducing the cost of instructional materials, and better utilizing teacher's time. This form of study is very appreciated not only by full time students in bachelor and engineering study, but mostly by part time students or foreign students who attend foreign languages within the exchange programmes, such as Erasmus mobility of students. The Common European Framework of Reference for Languages, abbreviated as CEFR, is a guideline used to describe achievements of learners of foreign

languages across Europe. It plays a central role in language and education, helps to define language proficiency levels and interpret language qualifications (Rohalova, 2007, p. 299). Concerning managing learning and managing students is necessary to consider the basic principles of effective classroom management how to generate ownership of the classroom, while establishing a positive learning environment, how to organize students effectively to facilitate different task types basic teaching strategies that lead to successful English (or German and Russian) lessons, how to implement these strategies in the classroom. Regardless of the own level of expertise when it comes to information and communication technology (ICT), there can be no doubt that the students you teach will have more knowledge of and access to such technologies than ever before.

Planning to teach a foreign language lessons place a sequence of technical topics into a long-term plan. Some teachers will say that there is no substitute for experience, therefore, until you have gained that experience, detailed and focused planning is an essential part of preparing a successful lesson. Our students are prepared for international labour trade, so it is necessary to be creative and innovative. Creativity and innovation in foreign language teaching and learning discusses what creativity is and offers a rationale for why it is important outlines aspects of creative and innovative teaching and learning in foreign language teaching. It includes a creative curriculum framework for technically oriented students, creative language classrooms and creative experimental work identifies, some creative and innovative language activities and approaches, particularly – using ICT.

I would like to stress a wide range of electronic language-teaching materials which are available to the contemporary teachers. The main topics that have been selected to meet the needs of our students or technical materials for the classroom deals with e.g. traditional and advanced manufacturing processes, engineering materials, operating machines as well as computer aided manufacturing or computer aided design, engines, welding, safety at work, environmental problems, internet terminology, etc. They can be downloaded from the Web and carried into the access to a computer with an internet connection. Yet others can be accessed from CD-ROMs. This range of electronic material available to today's language teacher is frequently referred to as blended learning. Combining manufacturing technology and coursebook support is practiced in foreign language teaching at my department. Nowadays, the coursebook is just one component in a suite of technical material, which may include both CD-ROMs and online exercises. Selecting the best mix of chosen technical materials for a course is nowadays an increasingly important part of the teacher's role at my department. Recently, the range and variety of support special technical material offered by publishing companies has grown tremendously. One particular product, the Macmillan English Campus, offers existing ways of integrating online material into courses, as a complement to paper-based material or an alternative. Enterprising foreign language teachers can also create their own interactive materials, especially which is closely connected with the special technical topics during student's study.

What is very appreciated nowadays by both, teachers and students, it is a wide range of using electronic dictionaries. They are available to teachers and students, and can be a useful addition to any language course. Their capabilities allow the user to look up words quickly, and they have a wider range of functions than their print equivalents. The students can use them if they are not certain with the meaning of some technical terms, their definitions or description. The dictionaries often have additional examples, too. An electronic dictionary can help students in the area of pronunciation, and the inclusion of sound files and audio clips is an exciting key feature. The Macmillan English Dictionary also includes a Sound Search function, which enables students to perform searches using the phonemic symbols. The pronunciation is sometimes difficult for Slovak students, especially in English, so the pronunciation function is very helpful for them (www.merriamwebsteronlinedictionary.com).

In considering the use of electronic materials and learning environments, language teachers should bear in mind: how the electronic technical material fits with the aims, outcomes and objectives of the proposed learning experiences: Why am I using this technical material? What connections can I make between the electronic technical material and curriculum expectations? For example curriculum contains news from the field of science and technology which are the part of international magazines (www.iht.com). At the beginning of the foreign language lessons students prepare and present the most interesting and important news from the field of manufacture and technology. They try to choose the latest ones. Next, it is necessary to have in mind the connections between the electronic technical material and learning theory: How does the resource match my beliefs about foreign language learning?, the connections between the electronic technical materials and student learning needs: How will my students engage with the resource? How does it support identified learning needs, etc.? I think that this question is very important, because one of the main aims of foreign language teaching is to prepare the students of the Faculty of Manufacturing Technologies for their future careers and their future jobs as technologists, engineers and technicians. Next question can include students specific pedagogical practices needed to support the use of the electronic technical material during the foreign language teaching and learning experience: What information, skills

and strategies do the student need to engage with the chosen technical material? What explicit modeling and scaffolding of the necessary knowledge, skills and strategies do I need to offer? How will they be able to analyse, interpret, synthesise and evaluate the input provided by the electronic technical material? Later the chosen technical electronic materials available to support language teaching will continue to change and expand. What is critical, though, is that teachers have a clear rationale for the use of any suitable, especially technical materials within foreign language teaching and learning experiences (Tomlinson, 2011, s. 349-350).

Conclusion

Before I finish, I would like to summarize that in a blend approach, we would separate the role of the foreign language teacher and the role of the used technology. A blended approach sees the role of language teacher and prepared and used technology as complementary. I suppose that an artificial intelligence is not yet sufficiently developed to cope with real-world interactions in any but predictable exchanges, and there is no danger of it replacing the language teacher.

In conclusion, we have seen that the term blended learning can have a range of meanings. I have mentioned only a few of them which are used by the language teachers at my department. The results of using technology are very interested. It has brought a new dimension in foreign language teaching. Blended learning is defined as referring to a foreign language course which combines a face-to-face classroom component with an appropriate use of technology and the suitable materials. I have suggested that the technology can be integrated into the language lessons, or be used by students outside the classroom for further practice, and to complement the taught element of the language course at all.

Acknowledgements

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Blog Kullanımının Eleştirel Düşünceye, Kalıcılığa Ve Akademik Başarıya Etkisi

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Özet

Çalışmanın amacı, blog kullanımının öğrencilerin eleştirel düşünme becerilerine, akademik başarılarına ve bilgilerin kalıcılığına etkisini araştırmaktır.

Araştırma, 2009 – 2010 Eğitim – Öğretim yılında, Bolu Gazipaşa İlköğretim Okulu' nda Bilişim Teknolojileri Dersinde yapılmıştır. Bu araştırmada "öntest-sontest-izleme testi kontrol gruplu desen" kullanılmıştır. Blog kullanımının öğrencilerin eleştirel düşünme becerilerine etkisini araştırmak amacıyla, Kritik Davranma Düzeyi Belirleme Ölçeği(öntest) uygulanmıştır. Blog, deney grubunun ders işleme sürecinde kullanılmıştır. yaklaşık 6 haftalık süre sonunda, eleştirel düşünme becerilerinde değişiklik olup olmadığını incelemek amacıyla son-test (kritik davranma düzeyi belirleme ölçeği) uygulanmıştır. Deney ve kontrol gruplarının akademik başarılarını ölçmek amacıyla araştırmacı tarafından hazırlanan 5 soruluk sınav uygulanmış olup, deney ve kontrol gruplarının bilgilerinin kalıcılığını ölçmek amacıyla aynı sınav 45 gün içinde tekrar uygulanmıştır. Bu süreçte veri toplama araçlarından, deney grubunun yorumları(öğrenci yorumları) ve öğretmen günlüğü ile ek veriler toplanmıştır.

Yapılan uygulama sonrasında sontest sonucuna bakıldığında, deney ve kontrol gruplarının eleştirel düşünme becerileri arasında istatistiksel olarak anlamlı bir fark olmadığı görülmüştür. Ancak verilerin nitel analizleri incelendiğinde, blog ortamının öğrencilerin eleştirel düşünme becerilerini geliştirdiğine dair sonuçlara ulaşılmıştır. Öğretmen günlüğünden elde edilen bilgilere göre, öğrencilerin sordukları sorulardan, yaptıkları yorumlardan blog ortamının eleştirel düşünme becerilerini geliştirdiğini söylemek mümkündür. Akademik Başarı Testi sonuçlarına göre deney ve kontrol grubunun akademik başarı puanları arasında anlamlı bir farklılık bulunamamıştır. Kalıcılık Testi sonucuna göre deney ve kontrol gruplarının kalıcılık puanları arasında anlamlı bir ilişki bulunmaktadır. Kalıcılık puanlarına dair ortalamalar incelendiğinde deney grubunun daha yüksek bir ortalamaya sahip olduğu dolayısıyla, kalıcılığın deney grubunda daha fazla olduğunu söylemek mümkündür. Bulgulardan yola çıkarak uygulamaya ve ileride yapılabilecek bilimsel araştırmalara dair öneriler sunulmuştur.

Anahtar Kelimeler: Ağ günlüğü, Eleştirel düşünme

Abstract

The aim of this research is to determine the effect of the using of blog on student's critical thinking skills, academic achivement and retention of information.

Research was held on the İnformation Technology course in 2009-2010 academic year, in Primary school of the Gazipaşa in Bolu. At the study, "pre-test post-test permanence test control group design" has been used. The aim of to determine the effect of using of blog on student's critical thinking skills, the Measurement of Determining Level of Critical Behavior, has been implemented as pre-test. Blog is used in the process of processing the experimental group's lessons. approximately at the end of 6 weeks, the Measurement of Determining Level of Critical Behavior has been implemented as post-test to examine if there is a change in the critical thinking skills of the students. An exam prepared by the researcher that includes 5 questions has been implemented on experimental and control groups to measure their academic success, and after 45 days the same exam has been repeated to check the knowledge retention of experimental and control groups. During this process, the data collection tools have included comments of experimental group (comments of students), and supplemental data collected via teacher's blog.

After the implementation, the results of post-test have demonstrated that there is no statistically significant difference between critical thinking skills of experimental and control groups. However, the qualitative analysis results have shown that weblog environment develops the critical thinking skills of students. According to the students' questions and comments on teacher's blog, it is possible to say that weblog environment develops the critical thinking skills of students Academic Success Test results have indicated that there is no significant difference between the academic success scores of experimental and control groups. Retention Test results have shown that there is no significant relationship between the retention scores of experimental and control groups. The mean of experimental group's retention scores have been higher; therefore it is possible to say that the experimental group has more knowledge retention. As a result of findings, suggestions have been made about applications and scientific researches that will be conducted in the future.

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Giriş

'Eleştirel düşünme' ve 'yaşam boyu' ve 'yaşam çapında öğrenme' hedefleri dünyada bir çok toplumun eğitim hedeflerindendir (Mason, 2008). .Bireyler, bilgiye olan ihtiyaçlarını her geçen gün daha çok hissetmekte, daha üretken, daha verimli ve daha mutlu olmanın yollarını aramaktadırlar. Bu nedenle teknolojinin, bilginin ve dolayısıyla bireylerin hızlı gelişimine bağlı olarak eğitim sisteminin değişmesi, gelişmesi gerektiği açıktır.

Toplumlar, hazır bilginin aktarıldığı, ezberlemesi beklenen geleneksel öğrenci yerine bilgiye ulaşma yollarını bilen, öğrenmeyi öğrenmiş ve grup çalışmasını benimsemiş bireylere gereksinim duymaktadır. Bu nedenle, eğitim sistemlerinde köklü değişikliklerin olması kaçınılmazdır. Buradan yola çıkarak, uzun yıllar boyunca içeriği "kesin doğru" kabul edilerek yoruma kapatılmış öğretim programlarının topluma katacağı fazla bir şey kalmadığını söylemek mümkündür.

Saban' a göre (2004), günümüz okullarından ve öğretmenlerinden beklenen en önemli görev, topluma yaratıcı, eleştirel ve çok yönlü düşünebilen, öğrenmeyi öğrenen, problem çözebilen, kendi öğrenmesinden sorumlu olan ve sağlıklı kararlar verebilen bireyler yetiştirmektir.

Facione (1997) bu konuda şunları belirtmektedir:

> Eleştirel düşünme becerileri ve eğilimlerinin geliştirilmesine özen göstermek ilk ve orta öğretim müfredatının bütün düzeylerinde öğretimsel bir hedef olmalıdır. Eleştirel düşünme eğilimlerini geliştirme ve sebepler sunma ve değerlendirmede ısrarcılık, ilköğretim okulu eğitiminin bütüncül bir parçası olmalıdır (Akt. Özdemir,2005).

Yapılan araştırmalara göre "Eleştirel düşünme", okul sıralarından iş hayatına kadar hayatımızın her döneminde sahip olunması gereken başlıca özelliklerden biridir. Eleştirel düşünme becerilerine sahip olan, bireylerin mevcut düşünme sistemlerinin dışına çıkarak bağımsız düşünebilen, paylaşımcı, edindiği bilgileri hayata geçirebilen ve böylece bireysel ve dolayısıyla toplumsal gelişime katkı sağladıklarını söylemek mümkündür.

Eleştirel Düşünme

Bireylerin yaşamında eleştirel düşünme becerilerinin rolü büyüktür (Lin, Hmelo, Kinzer & Secules, 1999). Eleştirel düşünmenin amacı, sorgulama yeteneğini öğrencilere kazandırabilmektir. Bu yetenek in vd diğerlerinin belirttiği gibi, bir yaşam felsefesi olarak görülmelidir. Eleştirel düşünme becerisinin doğuştan gelen bir özellik olmadığı, öğretilebilir, anlatılabilir ve rahatça uygulanabilir bir sistem olduğu göz önünde tutulduğunda, bu konuya verilmesi gereken önem daha da artmakta hatta eğitim ve öğretimin temel amaçlarından biri haline gelmektedir (Kürüm, 2003).

Eleştirel düşünme becerisi, bireyin ne yapacağından, nasıl yapacağına, neye inanacağına kadar geçen süreci etkiler (Evancho, 2000).

Norris(1989) eleştirel düşünmeyi, öğrencilere daha önceden bildikleri her şeyi uygulamaları ve kendi düşünceleri doğrultusunda uygulamalarına yön vermek olarak tanımlamıştır.

göre eleştirel düşünme; geçerli çıkarımları yapabilme, tümdengelimli muhakeme ve değerlendirme yapabilme becerilerinin bir bileşkesi olarak tanımlanmaktadır. Onlara göre eleştirel düşünme; problem çözme, sorgulama ve araştırma davranışlarını kapsayan bir süreçtir ve bu süreç hem beceri hem de tutum olarak ifade edilmektedir (Watson ve Glasser, 1980).

Epstein'e (1999) eleştirel düşünmeye farklı açıdan yaklaşmıştır. Eleştirel düşünme, bilgiyi ve çok fazla insanı içinde barındıran dünyaya karşı bir savunmadır.

Chafee' ye göre (1988) eleştirel düşünme, algıladıklarımızı açıklığa kavuşturmak, geliştirmek ve dünyamızı anlamak için diğer insanların düşüncelerini dikkatli bir biçimde inceleyerek yaptığımız etkin, amaçlı ve organize edilmiş çabalarımızdır.

Öğrenenler, eleştirel düşünme durumunda kişisel çaba sarfetmeli, dikkatli ve istekli olmalı, içinde bulunulan durumla birlikte kendini gözlemleme içinde bulunmalıdırlar (Facione, 1990). Eleştirel düşünme becerisinin durağan bir süreçte kazandırılması beklenemez. Bireyin içinde olduğu, aktif bir süreç gerektirir ki birey eleştirel düşünmenin zihinsel becerileri olan analiz, sentez ve yansıtma gibi beceriler kazanabilsin (Schafersman, 1991).

Eleştirel düşünme akımının öncülerinden Paul ve Elder (2001), bireylerin eleştirel düşünme becerilerini geliştirmelerini sağlayabilmek için, eleştirel düşünme öğelerinin belirli disiplinler ve konu alanları içinde işlenmesi

gerektiğini savunmaktadır. Bu nedenle Bilişim Teknolojileri dersi kapsamında araştırma yapılma gereği duyulmuştur.

Neden Blog?

Bloglar sosyal ağ sistemlerinden biridir. Blog, düzenli olarak güncellenebilen ve son metinden ilk metine doğru kronolojik olarak sıralanan bir internet sitesidir (O'Reilly, 2007). Bloglar kullanılarak başka bloglara ya da sitelere bağlanmak, farklı kullanıcı gruplarıyla bilgi paylaşmak mümkündür (Koçoğlu, 2009).

Bir blog, metin, hipermetin, resimler ve linkler (diğer web sitelerine bağlantılar) içerir. Blog, karşılıklı konuşma (conversational) formunda, bir dokümantasyon,(metin, video, ses ve bunların kombinasyonu olan her türlü iletişim kurmaya yarayan materyalleri) olarak kullanmaktadır. Ve genellikle özel bir "ilgi alanına" odaklanmaktadır. Blog kitle iletişim araçlarını etkileyerek, iletişimin önemli ve popüler bir aracı olarak ortaya çıkmıştır (Akar ,2006).

Blog, yazarın konu hakkında fikirlerini yayınlamasına ve yorumlanmasına, bugünden düne kronolojik bir sistemle verileri düzenlemesine, arşivlemesine imkan sağlayan web siteleridir.

Okuma ve yazma, matematik ve fen gibi disiplinler olmak üzere bütün akademik disiplinler için gerekli olan temel nitelikleri sağlamaktadır. Blog, dijital ortamlarda okuma ve yazma ile desteklenen uygulamalardır. Nasıl ki kâğıtlardan okuyarak, kâğıtlara kalemlerle yazarak okuma yazma nitelikleri geliştiriliyorsa, blogleriyle de bu nitelik geliştirilebilir. Öğrenenlerin, ilkokul çağından bu yana kullandıkları defterler yerine kendilerine birçok konuda esneklik sağlayan "sanal defteri" tercih edeceklerini söyleyebiliriz.

Bilindiği gibi internet ortamı 7 den 70 e birçok insanın ilgisini çekmektedir. Bu tür bir ortamın parçası olan blog uygulamalarıyla öğrenenlerin derse olan ilgileri de pekiştirilmektedir.

Blogları beş türe ayrılmaktadır (Gilchrist, 2007):
- İçsel blogleri (yalnızca kurum çalışanlarını hedeflemektedir),
- Dışsal blogleri (genel kamuoyu üzerine odaklanmaktadır),
- Tematik blogleri (belirli olaylar ya da projelerle bağlantılıdır),
- Desteklenen blogleri,
- Kişisel blogleri.

Blog kullanıcıları ise Goldman ve Schmalz, tarafından şöyle sıralanmaktadır (Goldman ve Schmalz, 2007):
- Kişiler: Kişisel ya da profesyonel amaçlar için,
- Gruplar: Kentsel, dinsel, eğitimsel, sosyal, eğlence için,
- Kurumlar: Kamu ve özel sektör,
- İşletme ve Endüstri: Yasal, finansal, spor, eğlence,
- Devlet Yönetimi: Tüm düzeylerde.

Altun (2005) 'a göre blog içeriği oluşturma şekli teknik açıdan, medya türü ve kullanım amacına göre sınıflandırabiliriz.

Bu bilgiler ışığında "Neden Blog?" sorusunun cevabı açıktır.' Bilgi oluşturma, yapısı gereği, ilişkilendirici, iletişimsel ve etkileşimsel yapıdadır Altun (2005).

Tekinarslan (2008)' a göre ;
- Blog ortamının kullanımı kolaydır.
- Öğrenenler, yazı becerilerinin geliştiğini belirtmektedir.
- Ortamda bilgiye ulaşmak zevkli bir iştir.
- Geleneksel yöntemlerle ders işlemek yerine, farklı ortam kullanmak olumlu etki yaratmıştır.

Yöntem

Çalışma Grubu

Araştırma, Bolu Gazipaşa İlköğretim Okulu 2009-2010 öğretim yılında gerçekleştirilmiştir. Araştırma örneklemi beşinci sınıf toplam 68 öğrenciden oluşmaktadır. Deney grubuna toplam 32 öğrenci dâhil edilmiştir ve bu öğrencilerin % 56,2' i kız, %43,7' i erkek öğrencidir. Kontrol grubuna dâhil edilen öğrenci sayısı ise 36'dır. Bu öğrencilerin de % 52,7'i kız, % 47,2'i erkek öğrencidir.

Veri Toplama Aracı

Bu çalışmada aşağıdaki veri toplama araçları kullanılmıştır.

- <u>Kritik Davranma Düzeyi Belirleme Ölçeği</u>: Soner Mehmet Özdemir(2007) tarafından eleştirel düşünme becerilerini ölçmek amacıyla 5 likert tipi ölçek olarak hazırlanmıştır.

- <u>Öğretmen Günlükleri</u>: Araştırmacı tarafından kaydedilmiş olup, öğretmenin gözlemlerini yansıtmaktadır. Bu veri toplama aracı öğrenenlerin eleştirel düşünme becerilerinde gelişme olup olmadığını test etmek amacıyla kullanılmıştır.

- <u>Öğrenci Yorumları</u>: Öğrencilerin blog ortamında yaptıkları etkinliklerden, yorumlardan oluşmaktadır. Bu yorumlar blog ortamının kullanılmaya başlandığı ilk günden incelenmeye başlandığında, öğrencilerin eleştirel düşünme becerilerinin gelişimi hakkında araştırmacıya bilgi sağlamaktadır.

- <u>Akademik Başarı Testi</u>: Bu veri toplama aracı, örneklem grubunun akademik başarılarını ölçmek amacıyla konu alanı uzmanları tarafından hazırlanmış olup, 4 açık uçlu ve 6 madde içeren 1 uygulama sorusundan oluşmaktadır.

- <u>Kalıcılık Testi</u>: Kalıcılık testi soruları başarı testinin aynısı olmakla birlikte kalıcılığı ölçmek amacıyla başarı testinin uygulanmasından yaklaşık 6 hafta sonra uygulanmıştır.

- <u>Öz Değerlendirme Formu</u>: Öz değerlendirme formu, Bilişim Teknolojileri kitabında her ünitenin sonunda bulunan, uzmanlar tarafından hazırlanmış, konunun öğrenci tarafından anlaşılıp anlaşılamadığını ortaya çıkarmaya yarayan formdur. Bu form 3 dereceli anahtar ile (evet, bazen, hayır) derecelendirilmiştir.

BULGULAR VE TARTIŞMA

Eleştirel Düşünme Becerileri İle İlgili Bulgular

Deney grubu (60,56) ve kontrol grubu (60,44) eleştirel düşünme becerileri ön-test puanları arasında 0,12 puanlık bir fark vardır. Bağımsız örneklem t-testi ile bu farkın anlamlılık düzeyi incelenmiştir. Deney ve kontrol grupları öntest sonuçlarına göre ortalamalar arasındaki fark anlamlı bulunmamıştır (t(66)=0,054; p>0.05). Buna göre iki grubun eleştirel düşünme becerilerinin deney öncesi birbirine yakın düzeyde olduğu söylenebilir.

Deney grubu (61,54) ve kontrol grubu (60,22) eleştirel düşünme becerileri son-test puanları arasınki fark incelendiğinde, istatistiksel olarak anlamlı bir fark bulunamamıştır (t(65)=0,433; p>0.05).

Akademik Başarı İle İlgili Bulgular

Deney ve kontrol grubunun akademik başarı puanları arasında anlamlı bir farklılık görülmemektedir (t(62)= 1,317; p>0,05). Ancak ortalamalar incelendiğinde deney grubunun başarı testi sonuçları ortalamasının (52,22), kontrol grubunun başarı testi sonuçlarına(47,16) göre daha yüksek olduğunu söylemek mümkündür.

Bilgilerin Kalıcılığı İle İlgili Bulgular

Deney ve kontrol gruplarının kalıcılık puanları arasında anlamlı bir ilişki bulunmaktadır (t (68)= 2,088; p< 0,05). Kalıcılık puanlarına dair ortalamalar incelendiğinde deney grubunun (54,25), kontrol grubuna göre (46,62) daha yüksek bir ortalamaya sahip olduğu dolayısıyla, kalıcılığın deney grubunda daha fazla olduğu söylenebilir.

SONUÇ VE ÖNERİLER

Eleştirel düşünme becerilerini ölçmek amacıyla deney ve kontrol gruplarına uygulanan ön test-sontest KDDBÖ sonuçlarına göre, blog ortamının eleştirel düşünme becerilerini geliştirmeye yönelik olarak anlamlı bir etkisi bulunmamıştır (p=0,67). Deney ve kontrol gruplarının erişi puanları incelendiğinde sonuç anlamlı çıkmıştır (p=0,049). Her ne kadar ortalamalar arasındaki fark çok küçük ve manidarlık düzeyi düşük olsa da bu sonucun bir dönemlik bir uygulama ve sınırlı bir örneklem ile elde edildiği ve eleştirel düşünme becerisini etkileyen çok fazla dış

değişken olduğu da göz önüne alınırsa elde edilen sonuç önemli görülebilir. Ayrıca nitel verilere göre, blog ortamıyla işlenen dersin, grubun eleştirel düşünme becerilerini geliştirdiğini söylemek mümkündür.

Öğrenciler blog ortamı sayesinde yorum sorularına kısa cevaplar vermek yerine, diğer arkadaşlarının düşüncelerini ele alarak ve araştırma yaparak kendi düşüncelerini oluşturduklarını belirtmişlerdir. Aynı zamanda duydukları, okudukları bilginin her zaman doğru bilgi olmadığı ve bu bilgileri de sorguladıklarını belirtmişlerdir. Dolayısıyla öğretmen günlükleri ve öğrenci yorumları incelendiğinde, blog ortamının öğrencilerin eleştirel düşünme becerilerini geliştirdiğine dair sonuçlara ulaşılmıştır. Buradan yola çıkarak blog ortamının öğrencilerin eleştirel düşünme becerilerine olumlu katkı sağladığını söylemek mümkündür.

Deney ve kontrol gruplarının akademik başarılarını ölçmek amacıyla ABT uygulanmıştır. ABT sonuçları incelendiğinde blog uygulanan deney grubunun ortalama başarı puanı (52,2), kontrol grubunun başarı puanından (47,1) yüksek olsa da bu fark istatistiksel olarak anlamlı bulunmamıştır (p=0,19). Blog uygulamasının akademik başarı puanlarına anlamlı bir etkisi olmadığını söylemek mümkündür.

ABT' den yaklaşık 6 hafta sonra uygulanan kalıcılık testi sonuçlarına göre deney grubu ortalamasının (54,2) kontrol grubu ortalamasından (46,6) yüksek olduğu ve aradaki farkın da anlamlı olduğunu söylemek mümkündür (0,04). Öğrenci bilgilerinin kalıcılığının sağlanmasında blog ortamının kullanılması, kullanılmayan ortama göre daha etkilidir.

Öğrenci yorumları incelendiğinde blog ortamının öğrenciler üzerinde olumlu etki yarattığı gözlemlenmiştir. Öğrencilere göre ağ günlüğü ortamı; birbirleriyle yardımlaşabildikleri, farklılıkları keşfetmelerine yardımcı olan, anında dönüt sağlanabilen, birbirlerine tavsiyelerde bulunabildikleri, sınırlı bilgiyi kullanarak yaratıcılıklarını ortaya çıkarabildikleri, birbirleriyle ya da öğretmenle iletişim kurabilmelerini sağlayan, birbirlerine rehberlik yaparak, öneride bulunabildikleri, öğretmenin öğrencilere rehberlik ederek öğrencileri kolaylıkla yönlendirebildiği, konu tekrarı sağlayarak bilgilerinin kalıcı olmasına yardımcı olan, dersten keyif almalarını sağlayan (ders içi motivasyonu arttıran), bilgilerini devamlı güncellemelerine ve yeni bilgiler edinmelerine imkan sağlayan etkili bir öğrenme ortamıdır.

Günümüzde insanlar bilgilerin güvenirliklerini sorgulamadan bilgileri olduğu gibi kabul etmektedirler. (Swartz ve Parks, 1994). Bu durum bireylerin eleştirel düşünme becerilerinin zayıf olduğunu göstermektedir. Bu araştırma dahil olmak üzere yapılan araştırmalar incelendiğinde, bireylere eleştirel düşünme becerilerinin kazandırılabilmesi için blog gibi uygun eğitim ortamı hazırlanmasının gerekli olduğu savunulabilir.

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Bridging the Digital Divide among Public High School Teachers: An Adopt-a-school Experience

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Abstract

This study evaluated the iSchools Project implementation in the public high schools in the Province of Tarlac, Philippines. It is a development project of the Commission on Information and Communications Technology (CICT) that supports the effort of the department of education in promoting ICT in education. Its goal is to bridge the digital divide among public high school teachers and students by providing ICT literacy through access to digital applications in education. The component of the project includes provision of ICT equipment, capability building and strengthened local support. This paper also determines the problems encountered by the public high schools in the implementation of the project.

This study made use of the CIPP model developed by Donald Stufflebeam. The CIPP stands for the core concepts of the model: Context Evaluation, Input Evaluation, Process Evaluation and Product Evaluation. The respondents were the teachers under the adopt-a-school program of the Tarlac College of Agriculture (TCA) who were recipient of the project. Survey questionnaires supplemented with interview and observation were used in the gathering of data. The data gathered were tabulated, organized, analyzed and interpreted using appropriate statistical tools.

Keywords: technology, teacher training, education, ICT integration

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INTRODUCTION

Information and Communications Technology (ICT) in the Philippines is a milestone in the educational system. It opens a wide variety of opportunities both for teachers and students. Transferring of information, data collection and researching are the multiple benefits that people can get from ICT, but still it is a dream to many. Most public schools in the Philippines have no ICT facilities and most teachers are not ICT literate which results in the poor students and school's performance.

iSchools project is one of the flagship projects of the Commission on Information and Communications Technology (CICT) which supports the efforts of department of education to integrate ICT in education. Its long-term goal is to contribute to the efforts of the Philippine government in bridging the digital divide by developing an educational digital network that equips all public high school teachers and students with ICT literacy as well as provide them access to relevant digital content and applications in education that they can use to make learning effective.

iSchools focuses on integrating ICT in education towards strengthening classroom learning and instruction by expanding access to various sources of information. In so doing, the project hopes to enhance the capability of public high school students throughout the Philippines to successfully compete with their peers for jobs and other opportunities in the expanding global knowledge economy.

The CICT, through its eQuality program for State Universities and Colleges [SUCs] such as Tarlac College of Agriculture (TCA), joined hands in implementing the iSchools project, from choosing a pilot site, social preparation activities, deployment, capability building for teachers, and progress monitoring.

Under the iSchools project, schools were provided with twenty [20] computer units, server, printer, projector, air-conditioning unit, wireless router, one year free internet connections, as well as relevant educator training in the use of ICT in education. Strengthened partnerships with Local Government Units (LGU), Parents Teachers Association [PTA] and other local educational stakeholders are also part of the components of the project.

The iSchool's project has ended its implementation, hence, evaluation of the project is deemed necessary. Evaluation of this project is an integral part of the development process to determine the effectiveness of the program which can be the basis of improving future activities.

1.1 Statement of the Problem

This study evaluated the iSchools project implementation in bridging the digital divide among public high school teachers in the province of Tarlac, Philippines.

Specifically, this study was sought to answer the following questions:
1. How is the iSchools project evaluated in terms of:
   1.1 Project Administration?
   1.2 Project Components?
   - 1.2.1   iSchools Laboratory,
   - 1.2.2   Capability Building for Teachers,
   - 1.2.3   Local Educational & Institutional Support?
   1.3 Project Delivery System? and
   1.4 Project Effectiveness?
   - 1.4.1   ICT Literacy of Teachers,
   - 1.4.2   ICT Integration in Education,
   - 1.4.3   Client Satisfaction?
2. What are the problems encountered in the implementation of the iSchools project?

1.2 Significance of the Study

Evaluation is an inherent part of any process to gauge the strengths, weaknesses and effectiveness of any program. This study evaluated the implementation of the iSchools project in the Philippines in attaining its objective which is to bridge the digital divide among public high school teachers and to integrate ICT in education. Likewise, this study evaluated the components of the project which include the provision of the iSchools laboratory, capability building for teachers and strengthened local educational support. It also determines the problems encountered in the implementation of the project.

The result of this study will serve as an assessment in determining the strengths and weaknesses of the iSchools project which will be used as a benchmark in improving the implementation of future projects. The project administrators, beneficiary public high schools and other stakeholders of educational system will be benefited through the various informations that may be derived from this study.

The implementers of this project will make use of the findings of this study a basis in improving aspects of project needing improvement. This includes improvement on the project management, project implementation, project components, capability building for teachers, utilization and maintenance of the laboratory and sustainability of the project. The beneficiary public high schools which include teachers, students, parents and community will utilize the findings in adapting measures to help the administrators in implementing the project successfully and to make use of the project in integrating ICT in education to produce quality, competitive and ICT literate graduates.

1.3 Scope and Delimitation of the Study

This study focused on evaluating the implementation of iSchools project in the public high schools under the adopt-a-school program of the Tarlac College of Agriculture in the province of Tarlac, Philippines. The evaluation focused on project administration, project components, project delivery system and project effectiveness. This study also determines the problems encountered by the recipient schools in the implementation of the project.

1.4 Definition of Terms

- **Capability Building for Teachers.** It is one of the components of the iSchools project which is composed of five ICT trainings for teachers. Trainings include Computer and Internet Literacy Course [CILC]; laboratory management; library management & information system and website development.
- **Client Satisfaction.** It is the acceptability of the teachers of the recipient public high schools on the components of the iSchools project such as the provision of iSchools laboratory, capability building of teachers and local educational support.
- **Commission on Information & Communications Technology [CICT].** An executive branch of the Philippine government under the office of the president that implements the iSchools project which supports the efforts of the Philippine government and the Department of Education to integrate ICT in public high schools.
- **ICT Integration.** The process of incorporating ICT in all aspects of education. It is the application of ICT productivity tools such as computer units, application programs, internet applications and relevant educational resources of all learning areas to improve the teaching – learning process.
- **ICT Literacy.** The competence and expertise of the teachers in utilizing ICT equipment and productivity tools in improving the teaching-learning process. It includes the use of computers, application programs, internet connection and other ICT equipment in the preparation of instructional materials, reports, lesson plans and in teaching-learning process.
- **Project Administration.** It is the application of knowledge, skills, tools, and techniques to describe, organize, oversee and control the iSchools project implementation. It includes the development of project design and implementation guidelines, management of trainers training and educators training, implementation of project quality measures, monitoring and evaluation, and all related activities to successfully implement the iSchools project.
- **Project Components.** The project package that was received by the recipient public high schools. This include iSchools laboratory *[20 desktop, UPS, 1 printer, DLP projector, air condition unit, wireless router, 1 year internet connection, Edubuntu Software],* Capability Building *[Sustainability Planning, Computer and Internet Literacy Course + ICT for Education, Laboratory Management, Website Development Training, and Library Management]*, all expenses paid by the project, and strengthened partnerships with collaborating agencies.
- **Project Delivery System.** This refers to the process of utilizing the iSchools laboratory in integrating ICT in education in all learning areas of the basic education curriculum.
- **Project Effectiveness.** It is a measure of whether and to what extent set goals have been achieved. This refers to the products of the iSchools project which include ICT integration in education, ICT literacy of teachers and the client satisfaction of the iSchools Project.
- **Tarlac College of Agriculture (TCA).** A state college which served as a partner of CICT in the implementation of the iSchools project in the public high schools in Tarlac, Philippines.

1.5 Conceptual Framework

This study made use of the CIPP model developed by Donald Stufflebeam in 1971. The CIPP stands for the core concepts of the model; Context, Input, Process and Product. This model recognizes types of decisions encountered in education planning, programming, implementing of projects and recycling. This model is suitable for this kind of evaluation because on this concept, evaluation is for improvement of the project. [Stufflebeam 2002].
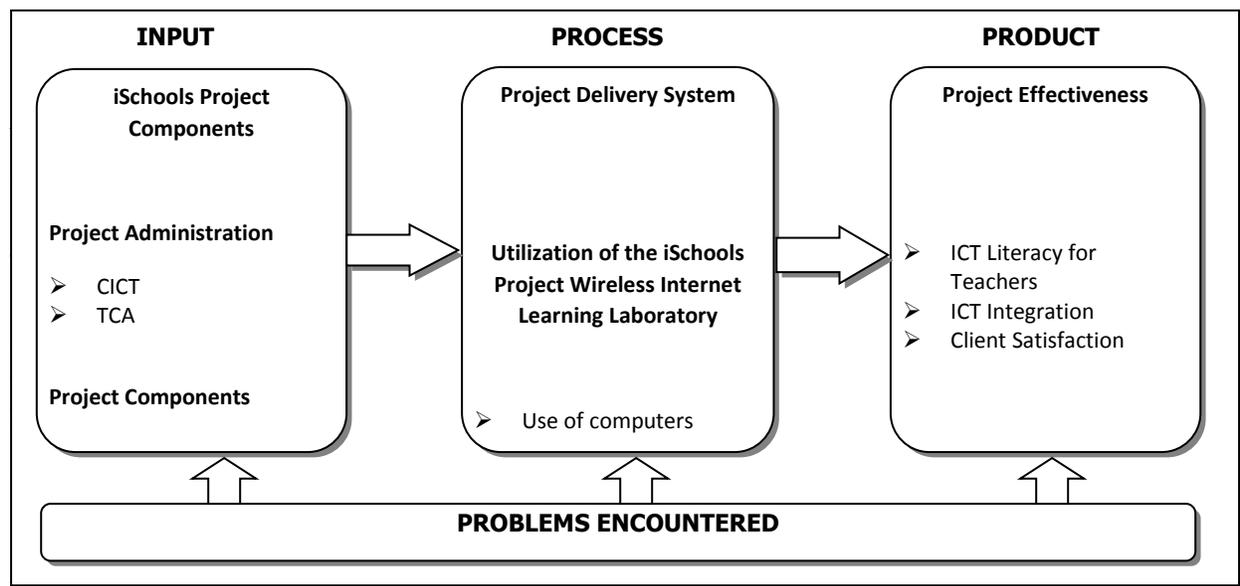
Figure 1. Paradigm of the Study

In the light of this study, the CONTEXT evaluation revealed the issues and problems encountered in the implementation of the iSchools project in Tarlac Philippines. This provided feedbacks on the project project administration, project components, project delivery system and project effectiveness, which are used for the implementation of the project. The INPUT evaluation was on the components of the iSchools project given to the beneficiary schools. The project includes iSchools laboratory, capability building for teachers and strengthened local educational support. The PROCESS evaluation involved the utilization of the availed project components. The availed facilities and trainings to various public high schools should be used to integrate ICT in education. The computers, internet and other educational software's should be used by the teachers in all learning areas to improve teaching-learning process. The PRODUCT evaluation was concerned with the project effectiveness. It was the attainment of the goal of the project which is the ICT literacy for teachers, ICT integration in education and client satisfaction.

2. Methods and Procedure

This chapter presents the description of the subjects, data gathering tools and procedure, and statistical treatments used.

2.1 Respondents of the Study

The respondents of this study were the teachers and principals of the recipient schools under the adopt-a-school program of Tarlac College of Agriculture (TCA).

2.2 Data Gathering Instruments

Survey questionnaires supplemented with interview and observation were used as tools in gathering data. Survey questionnaires were prepared based on the project scope plan of the iSchools project.

Evaluation questionnaires on ICT literacy for teachers and ICT integration were based from the CICT assessment evaluation sheet on ICT Skills survey based on the National ICT Competency Standards [NICS] for teachers.

2.3 Data Analysis

The data on the evaluation of project administration, project components and project delivery system were interpreted using means, weighted means and verbal description. Frequency counts and ranks were used to present data on the problems encountered by the teachers in the implementation of the iSchools project.

3. Results and Discussion

3.1 Project Administration

Administration of the iSchools project was done by the Commission on Information and Communications Technology (CICT) and its partner State College, the Tarlac College of Agriculture (TCA) in Tarlac province.

The data show that in terms of project administration, the CICT which is the prime mover of the project was evaluated as *very satisfactory*. This indicated that the CICT did well in managing the project as a whole and in conducting activities related to iSchools project management such as project project briefing and training of trainers. This could be because the project has competent personnel, functional organizational structure, and has enough funding and resources which made the implementation successful.

The TCA as co-administrator of CICT in implementing iSchools project in the PHS level was rated also *very satisfactory*. This shows that TCA, with its pool of experts, performed well in implementing the project as partner of CICT. This could be attributed to the fact that the CICT conducted training courses and trainers training as part of the project management activities, to equip the TCA personnel the necessary knowledge and skills in conducting activities related to the project.

3.2 Project Components

The basic iSchools project components include the provision of iSchools laboratory, capability building for teachers, and strengthened local educational support.

Result shows that the provision of the iSchools laboratory was rated as *very satisfactory* with a composite mean of 4.25; the capability building for teachers was rated as *very satisfactory* with a composite mean of 3.53; while local educational support was evaluated as *satisfactory* with a composite mean of 3.40.

This shows that the quality of the iSchools project components was acceptable to the recipient public high schools; the training activities were implemented well, and the supports from local educational stakeholders were attained. The project components were rated very satisfactory because the project has enough funding. Personnel involved in the project were trained and properly compensated. Also, recipient principals and teachers were very cooperative and stakeholders were supportive of the project. This further shows that project was not just a computerization project but it was a development project where support and participation of local educational stakeholders were necessary in attaining the project goals. Cooperation, commitment and support to the sustainability of the project were the key measures to the success of the project. For these reasons, the project components were very satisfactory.

3.3 Project Delivery System

This shows the utilization of the project on the different beneficiary schools after the project implementation. The result shows that in terms of utilization of the iSchools laboratory**,** it was evaluated as *very satisfactory* with a mean score of 4.25. This indicated that the iSchools laboratories were utilized frequently by the teachers. The study revealed that most of the respondent teachers utilized the iSchools laboratory everyday and once a week or more in their teaching – learning process.

With regard to the laboratory usage in different learning areas, the respondents evaluated it as *very satisfactory* with a mean score of 3.78. This shows that the iSchools laboratory was utilized by teachers of different subject areas in teaching.

The ICT equipment in education was evaluated as *excellent* with a mean score of 4.46. This manifested that the equipment given by the project were very much suitable in integrating ICT in education.

The productivity tools in education were evaluated as *very satisfactory* with a mean score of 3.43. This shows that edubuntu (open source software) and its application programs were relevant to the needs of teachers and students for education. The rating was quite low although very satisfactory because teachers need to shift from the use of proprietary software such as microsoft into edubuntu software. Adopting this alternative lessened the expenses of the government in providing ICT to the public schools in the Philippines.

In terms of ICT integration using the laboratory, the evaluation was *satisfactory* with a mean score of 3.40. This indicated that the iSchools laboratory was effective means in integrating ICT in education although the obtained score was not quite high. This could be because some teachers still find difficulty in integrating ICT on their lessons and can hardly shift from the traditional approach to the use of ICT.

3.4 Project Effectiveness

It shows on the result that the project was evaluated as *effective* in terms of ICT literacy and ICT integration with a mean scores of 3.33 and 2.77 respectively; while the client satisfaction was evaluated as *moderately effective* having a mean score of 3.44. In summary, the iSchools project effectiveness was evaluated as *effective* obtaining a grand mean score of 3.18. This result shows that the project in general was effective in attaining its objectives which is ICT integration in education and to bridge the digital divide among public high school teachers in Tarlac, Philippines. This was proven by the result of evaluation on the project outcomes such as ICT literacy, ICT integration and client satisfaction.

3.5 Problems Encountered in the Implementation of the iSchools Project

3.5.1 Problems Encountered in the iSchools Laboratory

The problems encountered are classified into its sub-components which are hardware, software and internet connectivity problems.

The problems related to hardware are Uninterrupted Power Supply [UPS] failure; not functional workstations; weak router signal; and not functional air-con unit. This implies that the partner SUCs should monitor this problems and report immediately to the supplier since these units are covered by suppliers' warranty.

The problem related to software is the frequent bagging down of operating system. This can be resolved by reinstalling the edubuntu system which is the task of the designated laboratory managers who were trained to do the activity. However, when this happens, if affects the teachers and students who are suppose to be using the units. This implies that there should be regular schedule of laboratory maintenance to avoid problems on the frequent bagged down of operating system.

The problems on internet connection are no internet connections; slow internet connections; and fluctuating internet connection. This shows that many of the recipient public high schools in Tarlac province are not provided with internet connection. These schools are those located in areas where there is no service provider either DSL or broadband connection. These schools are part of the plans of the CICT to provide internet connection using satellite signal which is still on the process.

3.5.2 Problems Encountered in the Capability Building for Teachers

Capability building is one of the components of the iSchools projects. Teachers are provided with free trainings on Computer and Internet Literacy Course [CILC]; laboratory management; library management & information system and website development.

The problems on the capability training are: no hands-on training on internet; no echo training for teachers; no follow up training for teachers; lack of hands-on exercises and short training period for Computer and Internet Literacy Coursce (CILC); very fast pacing of training and lack of skills learned on website development training. This implies that the project implementers should look into these problems especially the hands on training on internet since this is critical for the teachers in looking various educational resources available in the web. This problem occurred because the computer and internet literacy course rollout training was conducted when most schools are not yet given internet connection.

Also, the problem on no echo training for teachers should be taken into consideration because it is significant in the goal of the project which is ICT integration in education. This problem occurred because during the CILC training, only two [2] teachers per learning area participated the training together with the laboratory managers, principals and librarians. After the training, it was expected that these teachers who attended must echo the training

to other teachers to equip them also the knowledge and skill needed for ICT integration. In some schools, this did not happen and this was the reason why many teachers remained ICT illiterate.

3.5.3 Problems Encountered on Utilization, Maintenance and Sustainability of the iSchools Laboratory

The result shows that most of the problems on utilization are on the difficulty of using edubuntu *(open source software)*. This is because it requires little adjustments on its functions and environment, and teachers were accustomed in using proprietary *[microsoft]* software. It shows also that there were problems on insufficient number of computer units. The provision of 20 computer units and server was not enough for the public high schools especially in big schools where population was big. The problem was not only on students but also on teachers because the higher the enrolment the school has, the more faculty and the more computers are needed.

With regard to maintenance and sustainability of the iSchools laboratory, the most common problem was the repair and maintenance cost. Repair was not much problem because laboratory managers were trained to the activity however; replacements of parts such as mouse, keyboard, and ink for printer were the problems. Electric bills, payment of internet connection after the one year free, and payment for security personnel were also problems on the maintenance of the project. It reveals also that there were problems on technical support from the supplier. Some schools experienced problems on technical support from the supplier, if there was assistance given; it took patience and perseverance to wait for their delayed action.

4. Conclusions

- The CICT and TCA as the administrators of the iSchools project in Tarlac, Philippines have a *very satisfactory* performance in terms of project administration. They did well in managing the project and other related activities. The TCA as co-administrator with its pool of experts, performed well in implementing the project in the PHS level.
- The iSchools project components are *very satisfactory*. The iSchools packaged are acceptable to the recipient public high schools; the training activities are implemented well; and the supports from local educational stakeholders are attained.
- The iSchools project delivery system is *very satisfactory*. The iSchools packaged provided to the recipient public high schools in Tarlac, Philippines are utilized in accordance with its purpose of building ICT literacy and interest of public school teachers to integrate ICT in education and improve the teaching and learning process.
- The iSchools project is *effective* in attaining its objectives of building ICT literacy and interest to the teachers of recipient public high schools in Tarlac, Philippines.
- The problems encountered by the recipient public high schools related to hardware are: UPS failure, not functional workstations, not functional air-condition and weak router signal. While in software problem, the most common is the frequent bagged down of operating system. And in internet connectivity, the problems are: no available internet connection provider in the area, slow internet connection, and fluctuating internet connection.
- The problems commonly encountered by recipient schools in educators training are: no hands-on training in internet, no echo training for other teachers, no follow up training for teachers, short training period for CILC and lack of hands-on exercises.
- The problems encountered by the recipient schools in the utilization of the iSchools laboratory are: difficulty on the use of edubuntu, insufficient number of computer units, limited access to laboratory and no available laboratory personnel. and
- The problems encountered on maintenance and sustainability of the iSchools laboratory are: no technical support from the supplier, no available ink for the printer in the market, and no replacement of defective parts and units.

5. Recommendations

- All iSchools activities including trainers training and educators training for teachers may be done if possible during weekends, vacation or summer to avoid interruptions of classes on the part of SUC partners and recipient public high schools.

- Project monitoring to recipient public high schools be done regularly to keep track of the progress of the project and assist the schools in any problems related to the project.
- More durable, quality and cost efficient ICT equipment be provided to lessen the problems of recipient schools on repair and maintenance and electricity bills.
- Stable and fast internet connection should be provided to all recipient schools before the conduct of all capability building for teachers.
- ICT integration training be provided to the teachers of recipient public high schools to equip them skills in integrating ICT on their lessons;
- The principal or school head of the recipient schools should monitor and encourage all the teachers to utilize the iSchools laboratory and not only for computer education subject.
- The follow up training be conducted for the teachers to enhance their mastery of skills necessary for ICT integration.
- The supplier should respond immediately to the problems on repairs and replacement of parts and units which are covered by warranty to make the laboratory always functional for ICT integration.
- The CICT should provide also technology leadership and management training for principal or school heads of the recipient schools to equip them skills in taking advantage of ICT in improving their school based management.
- Similar project be given also to elementary schools to help the teachers improve their teaching and learning through ICT.
- Similar study be conducted to other recipient public high schools in other provinces/regions of the Philippines.

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13th International Educational Technology Conference

Bütünleşik kentsel gelişme stratejisi ve eylem planı çerçevesinde yaşam kalitesinin artırılmasında yerel yönetimlerin rolü

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ÖZET

Ülkemizde kentlerin gelişmesi, büyümesi 1950'li yıllardan itibaren başlamıştır ve köylerden kentlere doğru olan göçlerin artmasıyla hızlı bir kentleşme süreci ortaya çıkmıştır. Kontrolsüz gelişen hızlı kentleşme süreciyle birlikte toplum hayatını olumsuz yönde etkileyen işsizlik, konut, yabancılaşma gibi birçok sosyal probleme ek olarak kentsel gelişme stratejisi ve kentsel yaşam kalitesinin artırılmasına yönelik faaliyetler de ciddi uğraş alanları içerisinde değerlendirilmektedir.

Hızlı kentleşmenin doğal bir sonucu olarak kuralsız bir şekilde artan kent nüfusu, kentlerde yaşayanların sosyal, ekonomik, psikolojik yapılarında olumsuz değişikliklere neden olabilmektedir. Sosyal, ekonomik ve politik etkenlerin, kentleşme süreci ve kentsel yaşam kalitesi arasındaki ilişkide önemli olduğu bilinmektedir.

Anahtar Kelimeler: KENTGES, Kentleşme, Kentsel Yaşam Kalitesi, Yerel Yönetimler

ABSTRACT

Turkey's urban development, growth began in the 1950s and the increasing migration from villages to cities with rapid urbanization process has emerged. With the process of developing an uncontrolled rapid urbanization negatively affect the social life of unemployment, housing, urban development strategy of alienation, in addition to the many social problems and to improve the quality of urban life in the fields of activities are considered a serious endeavor.

Deregulated as a result of rapid urbanization increasing the urban population living in urban areas, social, economic, and psychological structures may lead to unfavorable changes. Social, economic and political factors, the relationship between the process of urbanization and urban quality of life is known to be important.

Keywords: KENTGES, Urbanization, Quality of Urban Life, Local Governments

GİRİŞ

Küreselleşme süreci ve gelişen teknolojiye bağlı olarak kentlerin değişime uğraması, kentsel yaşamı değiştirmektedir. Farklı kesimlerden insanların yaşadığı kentlerde artık toplumlardan çok bireyler ön plana çıkmaktadır. Kentte yaşayanlar, yaşadıkları kentte var olan değerlerin kendi yaşantılarını kolaylaştırıcı ve yaşanabilir kent standartlarının var olmasını istemektedirler. Kentsel yaşam içinde her bireyin kendine özgü bir konumu bulunmaktadır ve bu konuma göre haklar ve sorumluluklar taşımaktadır. Bu haklar ve sorumluluklar çerçevesinde birey kendine bir yaşam alanı geliştirmektedir. Bu alan, bireyin sosyal hayatında anahtar rol oynamaktadır (Aslanoğlu, 1998: 86).

Kent yöneticileri, kent sakinlerinin kentsel yaşamdan beklentilerini karşılamak ve kentsel yaşam kalitesini artırmak amacıyla sürekli bir çalışma içerisindedirler. Bu amaçla kendi içindeki veya dışındaki birimlerle işbirliği gerçekleştirmeye çalışmaktadırlar.

Başta merkezi ve yerel yönetim kuruluşları olmak üzere kentte yaşayanlar, özel sektör kuruluşları, sivil toplum kuruluşları vb. tüm aktörler arasındaki ilişkiler ve toplumsal/kurumsal ilişkilere dâhil olma kentsel yaşam kalitesinin artırılmasında önemli bir rol oynamaktadır.

KENTSEL YAŞAM KALİTESİ'NİN TANIMI VE ULUSLARARASI ÖLÇÜTLERİ

Pacione'nin; bir bireyin ya da grubun algılanan ya da göstergelerle tanımlanan iyilik durumu (Pacione, 2005: 673) olarak ifade ettiği yaşam kalitesi, hiç şüphesiz kişilerin yaşadığı kent ve çevre koşullarıyla ilişkilidir. Kentlerin, sürekli bir değişim ve dönüşüm içinde olması beklentileri ve gereksinimleri de değişken yapacağından yaşam kalitesinin standart bir tanımını yapmak zorlaşmaktadır. Bu anlamda yaşam kalitesi; sosyo-ekonomik durumlara bağlı olarak değişebilen, farklı gereksinim ve beklentiler doğrultusunda, bireyin düşünce ve duygularına göre şekillenen bir kavram (Şimşek, 2010: 376) olarak niteliği taşımaktadır.

Sekizinci Beş Yıllık Kalkınma Planı'nın öngördüğü ve 1996-1998 yılları arasında Çevre Bakanlığı tarafından DPT'ye hazırlattırılan Ulusal Çevre Stratejisi ve Eylem Planı'nda (UÇEP) yaşam kalitesi; bedensel, ruhsal, zihinsel ve kültürel gelişme üzerinde olumlu etkileri olan etmenlerin niteliği ve niceliği ile bu etmenlerden yararlanma biçimi ve düzeyi (DPT, 1999: 2) olarak tanımlanmıştır.

Kentsel mekânın artmasına paralel olarak kentsel yaşamdaki hızlı değişim sürecindeki gelişmeler, yaşam kalitesi kavramını kentsel alanda da ön plana çıkaran olgulardır. Yaşam kalitesi kavramını etkileyen üç önemli faktörün olduğu belirtilmektedir. Bunlardan birincisi; iletişim ve bilişim teknolojisindeki gelişmelerdir. İkinci faktör; küreselleşme sürecidir. Yaşam kalitesini etkilediği ifade edilen son faktör ise; insan hakları, insani değerler, kişilik kavramı, insanın her şeyden önemli bir varlık olarak ortaya çıkması, eğitim ve yaşam düzeyinin yükselmiş olması gibi gelişmelerdir (Koçel, 2010: 372). Bu faktörler gerek doğrudan gerekse dolaylı yoldan, kentlerin ve kentleşmenin dinamikleri üzerinde etki edebileceği gibi bunun yanında kentsel yaşamı etkileyen gelişmeler olarak da değerlendirilmektedir.

Kentsel hayatı içinde barındıran ve çok boyutlu bir kavram olan kentsel yaşam kalitesi doğal, yapay ve sosyal çevreyle de ilgilidir. Bu anlamda kentsel yaşam kalitesi kavramı; kentleşme ve çevre sorunları, kent plancıları, mimarlar, yerel yönetimler gibi konularda uzman ve ilişkili olan kişilerce geliştirmiştir (Yavuzçehre, 2006: 185).

Kentsel yaşam kalitesinin ölçütleri belirlenirken kullanılan yöntemlerin başında uluslar arası kuruluşlar tarafından yapılan tanımlamalar gelmektedir. Dünya Bankası; yaşam kalitesini "kişinin kendi amaçlarına, beklentilerine, standartlarına ve çıkarlarına göre bir kültür ve değer sisteminde kendi yaşamını algılaması olarak tanımlamıştır. Birleşmiş Milletler sözlüğünde ise yaşam kalitesi; "gelir ve üretimin niceliksel ölçümünden öte sosyal göstergeler ile insanların mutluluğunu ölçen" bir kavram olarak tanımlanmıştır (dictionary.reference.com/browse/quality+of+life, 17.04.2013). Yine uluslar arası bir kuruluş olan ve özellikle Avrupa Birliği üyesi ülkelerin yaşam kalitesini belirlemek için çalışmalar yapan EUROFOUND, yaşam kalitesini; toplumsal yaşamı ilgilendiren toplum içinde genel iyi olma hali ile alakalı olan geniş bir kavram olarak tanımlamıştır (eurofound.europa.eu/areas/qualityoflife/index.htm, 17.04.2013).

Kentsel yaşam kalitesi fiziksel çevre, sosyal çevre ve ekonomik çevre gibi özelliklerin bir araya gelmesiyle ilişkilidir. Kentte yaşam maliyeti ve alım gücü gibi özellikler ekonomik çevre kalitesini oluşturmaktadır. Yaşam biçimi, eğitim ve sağlık hizmetlerine erişebilme, ister örgütlü ister gönlü olsun toplumsal faaliyetlerde bulunabilme, güvenlik, aidiyet duygusu, kimlik ve yerellik gibi unsurlar sosyal yaşam kalitesini oluşturmaktadır. Kentin içme suyu, yol, park, kanalizasyon gibi alt yapı hizmetlerinden kentin sahip olduğu imkânlardan ve sunulan

hizmetlerin düzeyine kadar pek çok unsur da fiziksel yaşam kalitesini oluşturmaktadır (Kaya, 2007: 35). Bu anlamda kentin sahip olduğu fiziksel yaşam kalitesi daha geniş bir anlam ifade etmektedir (Emür ve Onsekiz, 2007: 369).

Kentsel Yaşam Kalitesinin Uluslararası Ölçütleri

Kentsel yaşam kalitesi, kentlerin sahip olduğu yaşanabilirlik derecesiyle doğrudan ilişkilidir. Bu anlamda yaşanabilirlik kriterlerinin yerine getirilmesi kentsel yaşam kalitesinin sağlanmasında da öncelik taşımaktadır. Dünya Bankası tarafından hazırlanan "Kentsel Çevre Öncelikleri Raporu"na göre; kentleri yaşanabilir kılmak için alınması gereken önlemler şu şekilde sıralanmıştır:

- Çevresel bozulmanın kaynaklarını ortaya çıkarmak

- Kent yoksulları için temel çevre ve barınma hizmetlerine ulaşabilirliği kolaylaştırmak

- Çevresel tehlikelerden etkilenme oranını düşürmek

Yine aynı raporda yaşanabilir kent; sağlıklı ve onurlu şekilde yaşanan bir çevre olarak tanımlanmıştır (Dünya Bankası, 2001: 1).

Genel olarak kentsel yaşam kalitesi, kentte yaşayanların kentten beklentilerinin karşılanmasıdır. Kentlilerin beklentileri merkezi veya yerel idarelerle ilişkili olabileceği gibi kentte var olan diğer aktörlerle de ilişkili olabilecektir. Kentlilerin kentten beklentileri ise şu şekilde sıralanabilir;

- Kentte temel alt yapının kurulmuş olması

- Güvenliğin sağlanmış olması

- Hastalıklara karşı sağlık ve esenliğin sağlanmış olması

- Dinlenmeye yönelik park ve oyun alanlarının varlığı

- Kültür merkezi ve kütüphane hizmetlerinin sunulması

- Kendini geliştirme ve boş zamanı değerlendirmeye yönelik hizmetlerin sunulması

- Sosyo-ekonomik ve kültürel nedenlerden dolayı oluşabilecek uyumsuzlukların giderilmesi

- Suçların önlenmesine yönelik tedbirlerin alınması

- Zararlı, patlayıcı ve yanıcı maddelerin depolanması

- Sağlıksız, tehlikeli sıvı ve katı atıkların toplanması

- Yapay çevre ve doğal çevre dengesinin gözetilerek alt yapı çalışmalarının planlanması

- Yol, cadde ve sokakların yapımında yaşlı, çocuk ve engellilerin göz önüne alınması

- Kent içi ulaşımın planlanması

- Sağlık, trafik başta olmak üzere çeşitli konularda bilgi sağlayan işaret, yazı ve görsel araçların yeterli olması

- Sürücülerin dikkatini dağıtacak ve yayaları tehlikeye sokacak levha ve araçların düzenlenmesi

- İlan ve reklam panolarının görsel kirlilik ve fiziksel tehlike yaratmayacak şekilde yapılmış olması

- Cadde ve sokakların geceleri yeterince aydınlatılması

- Altyapı tamir ve bakım çalışmalarında uyarı işaretleri ve diğer bilgilendirme araçlarının kullanılmış olması

kentsel yaşam kalitesinin ölçütleri arasında sayılmaktadır (Ünlü, 1994: 63).

1996 yılında Birleşmiş Milletler tarafından İstanbul'da düzenlenen İnsan Yerleşimleri Konferansı'nda kentsel yaşam kalitesinin ölçütleri şu şekilde belirlenmiştir (HABİTAT-II, 1996).

- İnsanın beden ve akıl sağlığı için gerekli koşulların sağlanması,

- Sağlıklı çevre koşullarının sağlanması (içilebilir su, temiz hava, gürültünün önlenmesi gibi),

- Kentin gereksindiği enerjinin ucuz, kesintisiz ve çevreyi kirletmeyecek biçimde sağlanması,

- Doğal afet tehlikelerine karşı gerekli önlemlerin alınmış olması,

- Kentin dünya sistemiyle bütünleşecek haberleşme ağlarına bağlı olması,

- Kent mekânının kullanılması ve kentin yarattığı fırsatlara ulaşılmasında eşitsizliğin ortadan kaldırılması

- Yeterli altyapı standartlarına erişilmesi

- Kentin içindeki ve çevresindeki doğal ve tarihi varlıkların korunması

- Yeşil alanların varlığının korunması ve yeni yeşil alanlar üretilmesi

- Yaya bölgelerinin geliştirilmesi

- Kentte yaşayanların çok zaman kaybetmeden ve kent içi ulaşımlarını ucuz bir şekilde gerçekleştirebilmeleri

- Gürültü düzeyinin insani boyutlar düzeyinde belirlenen seviyeyi aşmaması

- Kentsel altyapıların, ulaştırma araçlarının ve binaların engellilere uygun olarak tasarlanması

- Kentte yaşayan erkek, kadın, çocuk herkesi kapsayacak şekilde her bireyin dinsel, siyasal inançlara bakmadan temel ihtiyaçlarının karşılanması

gibi ölçütler HABİTAT-II konferansında belirlenmiştir ve aynı yıl hazırlanan Türkiye Ulusal Eylem Planı'nda yer almıştır.

KENTSEL YAŞAM KALİTESİNİN ARTIRILMASINDA YEREL YÖNETİMLERİN ROLÜ

Yerel yönetimler, merkezi yönetimle beraber kentsel alanda aynı halk kitlesine hizmet etmesine rağmen yerel yönetimlerin görev ve hizmetleri doğal olarak merkezi idare tarafından belirlenmektedir. Dolayısıyla yerel yönetimlerin görev ve sorumlulukları kendi imkânları dâhilinde kendilerince değil, merkezi idare tarafından hukuki zemine oturtulmaktadır.

Kentsel yaşam kalitesi şüphesiz kentte üretilen ve sunulan hizmetlerin etkililiğiyle doğrudan etkilidir. Çünkü söz konusu bu hizmetlerin yürütülmesinde yerel yönetimleri daha etkin hale getiren unsur yeni yönetim anlayışıdır. Bu yeni yönetim anlayışının merkezinde kentsel yaşam kalitesinin artırılması vardır. Bu anlamda yerel yönetimler de kentsel yaşam kalitesinin artırılmasına odaklanmışlardır (Torlak ve Özdemir, 1999: 113). Vatandaş odaklı yeni

yönetim anlayışının bir sonucu olarak halk, yaşam kalitesinin artırılması amacıyla yerel yönetimlerin daha etkin olmasını istemektedirler (Sezer, 2008: 170).

Kentte yaşayanların gelir seviyeleri ve oturma alanları, yönetimden beklentileri de farklılaştırmaktadır. Alt gelir grubuna ait olan ve kenttin kenar mahallelerinde oturanlar alt yapı ve ulaşıma yönelik beklentiler taşımaktadır. Gelir durumu daha iyi olanların ise yönetimden beklentileri kültür, eğlence ve dinlence alanlarıyla ilişkilidir. İster alt gelir grubunda olsun ister yüksek gelir gurubuna ait olsun kişilerin hizmet sunumundan beklentileri hizmetin zamanında ve kaliteli sunulmasıdır (Başaran, 2007: 208).

Kentsel yaşam kalitesinin sağlanabilmesi için gerekli olan ölçütler incelendiğinde, bu ölçütlerin neredeyse çoğununun yerel nitelikli olduğu görülmektedir. Dolayısıyla kentsel yaşam kalitesinin artırılmasında yerel yönetimler ve özellikle belediyeler daha etkin konuma gelmektedir. Örneğin İl özel İdaresi 6. maddesi ve Belediye Kanunu'nun 14. maddesi kentsel yaşam kalitesiyle ilgilidir. Kentsel yaşam kalitesi konusunda belediye ve yerel yönetimleri doğrudan yetkili kılarken yanı zamanda kanunen de sorumluluk yüklemektedir.

Avrupa Kentsel Şartı da yerel yönetimleri kentsel gelişmeden sorumlu tutmuştur ve bu konuda yükümlülükler getirmiştir. Kentsel sorunların çözümü ve geliştirilmesi gereken stratejilerde yerel yönetimler sorumlu tutulmuştur. Çünkü kentsel gelişmenin niteliksel özellikleri yaşam kalitesiyle doğrudan ilgilidir (Erbay ve Yener, 1999: 81).

Kentsel alanda yaşam kalitesini sağlamak ve artırmak için katılım vazgeçilmez bir araç olarak değerlendirmektedir. Katılımın sağlanabilmesi ve kolaylaştırılması için kentlilerin; yerel yönetimlerin almış olduğu kararların hangi aşamalardan geçtiğini, kararların oluşumuna, değişimine ya da gerçekleştirilmesine katılabileceği konusunda bilinçlendirilmesi halkın katılımını kolaylaştıracaktır. Katılım ne denli geniş ve kapsamlı olursa alınan kararlar da o denli etkili olacaktır (Koçak, 2009: 141).

BÜTÜNLEŞİK KENTSEL GELİŞME STRATEJİSİ VE EYLEM PLANI ÇERÇEVESİNDE YAŞAM KALİTESİ VE YEREL YÖNETİMLER

Kısaltılmış adı KENTGES olan Bütünleşik Kentsel Geliştirme Stratejisi ve Eylem Planı; yapısal sorunların çözümüne, sağlıklı, dengeli ve yaşanabilir kentsel gelişmenin sağlanmasına yönelik ilke, strateji ve eylemleri ortaya koyan ve bunların uygulama esaslarını belirleyen ve bir

eylem programına bağlayan ulusal bir dokümandır. KENTGES; ülkemizin mekânsal planlama, yerleşme ve yapılaşma konularında Cumhuriyetimizin 100. yılı olan 2023 yılını hedef alan bir kentleşme ve imar vizyonudur (KENTGES, 2010: 2).

Dokuzuncu Kalkınma Planı 2010 Yılı Haziran Programı'nda ve Orta Vadeli Program'da, Kentlerin Yaşam Standartlarının Yükseltilmesi ve Sürdürülebilir Gelişmenin Sağlanması öncelikli politika olarak belirlenmiş ve bu amacı gerçekleştirmek için bu planın hazırlanması öngörülmüştür (DPT, 2009).

KENTGES'in hazırlanması katılımcı bir süreçle gerçekleşmiştir. Özellikle 2009 Kentleşme Şurası, eylem planının hazırlanmasında önemli bir kaynak oluşturmaktadır. Bunun yanında eylem planının hazırlanmasında;

- Kentleşme Şurası Komisyon Raporları ve Sonuç Bildirgesi,

- DPT Müsteşarlığınca yürütülen Sürdürülebilir Kalkınmanın Sektörel Politikalara Entegrasyonu Projesinde yer alan Türkiye'de kentleşmeye ilişkin tespit ve değerlendirmeler, kentleşme alanında sürdürülebilirlik çerçevesi, yaklaşım ve modeller,

- Dokuzuncu Kalkınma Planı, Orta Vadeli Program, Yıllık Programlar, Özel İhtisas Komisyonu Raporları, Ulusal Strateji Belgeleri,

- BM'nin Habitat, Mekânsal Planlama Rehberi, Gündem 21 ve ilgili strateji ve eylem planları

- Avrupa Kentsel Şartı, Avrupa'nın Mekânsal Gelişmesi için Rehber İlkeler, Avrupa Mekânsal Gelişme Perspektifi ve diğer Belgeler

söz konusu eylem planının hazırlanmasında dikkate alınmıştır (KENTGES, 2010: 3).

Kentlerimizin yaşanabilirlik düzeyinin, mekân ve yaşam kalitesinin yükseltilmesi ile ekonomik, sosyal ve kültürel yapılarının güçlendirilmesine yönelik yol haritasının oluşturulması KENTGES'in temel amacı olarak belirlenmiştir. Eylem planının temel stratejileri ise üç ana eksende gruplandırılmıştır. Bunlardan bir tanesi kentlerin yaşam kalitesinin artırılmasıdır (KENTGES, 2010: 3).

Bütünleşik Kentsel Gelişme Stratejisi ve Eylem Planı'nda, yaşam kalitesinin artırılması için ilişkili olduğu politikalar şu şekilde sıralanmıştır;

- Planlama Sitemi, Kurumsal Yapılanma ve Yerel Yönetimler

- Kentsel Teknik Altyapı ve Ulaşım

- Kentsel Dönüşüm, Konut ve Arsa Politikaları

- Afetlere Hazırlık ve Kentsel Risk Yönetimi

- Koruma, Mekân Kalitesi ve Kentsel Tasarım

- İklim Değişikliği, Doğal Kaynaklar, Ekolojik Denge ve Enerji Verimliliği

- Kentsel Yoksulluk, Göç ve Sosyal Politikalar

- Bölgesel Eşitsizlik, Yerel Kalkınma ve Rekabet Edebilir Kentler

- Kentlilik Bilinci, Kültür ve Eğitim

- Yerel yönetimler, Katılımcılık ve Kentsel Yönetim

Bütünleşik Kentsel Gelişme Stratejisi ve Eylem Planı yaşam kalitesinin artırılmasını sürdürülebilirlik ile eş değerde tutulmuştur ve kentlerin yaşam kalitesinin artırılması için geliştirilmesi gereken stratejiler, hedefler ve eylemler sıralanmıştır. Buna göre;

➢ Yerleşmelerde sürdürülebilir bir makroform oluşturmak

➢ Sürdürülebilir ve çeşitlendirilmiş arsa ve konut üretimini ve sunumunu gerçekleştirmek

➢ Merkezi iş alanlarının, alt merkezlerin ve mahalle merkezlerinin sürdürülebilir politikalarla geliştirilmesinin ve canlandırmasını sağlamak

➢ Sürdürülebilir kentsel ulaşım sistemini oluşturmak

➢ Kentsel altyapı plan, proje ve yatırımlarını mekânsal planlarla bütünleştirmek

➢ Yerleşmelerde sosyal donatı ve hizmetlerin dengeli dağılımını sağlamak

➢ Mekânsal planlarda açık ve yeşil alanları sistem bütünlüğü içinde geliştirmek

➢ Doğal ve kültürel varlık ve değerlerin korunmasını sağlamak

➢ Sosyal, kültürel ve ekonomik boyutlarla bütünleşik bir kentsel yenileme ve dönüşümü sağlamak

➢ Afet ve yerleşme risklerini azaltmak

➢ Yaşam ve mekân kalitesi yüksek, güvenli yerleşmeler oluşturmak

➢ Kent kimliğini korumak ve geliştirmek

➢ Kentlerde, çevreye duyarlı bir yaşam ortamı oluşturmak (KENTGES, 2010: 49-52).

kentlerde yaşam kalitesini artırmak için eylem planında yukarıdaki hedefler belirlenmiştir.

Kentsel yaşam kalitesinin artırılabilmesi için gelişme stratejisi eylem planında kurum ve kuruluşlar arasında uyum ve eşgüdümü sağlayacak bir merkezi otoritenin bulunması zorunlu görülmüştür. Bu anlamda yaşam kalitesinin artırılması için merkezi yönetim düzenleyici ve denetleyici rol, yerel yönetimlerin ise yerel planlama ve uygulama alanlarında rol oynaması gerekmektedir.

Kentsel hayatın en önemli aktörlerinden biri olan yerel yönetimlerin yaşadıkları sorunlarda yaşam kalitesini olumsuz yönde etkilemektedir. Bunlar arasında öncelikli sorunlardan biri belediyelerde ve il özel idarelerinde alanında uzman teknik eleman eksikliğidir. Yerel yönetimlerin mali kaynaklarının yetersizliği ve öz gelirlerinin arttırılamaması da hizmetlerin etkin şekilde yerine getirilmesinin önünde ciddi bir engel oluşturmaktadır. Bu anlamda yerel yönetimlerin kapasitesinin artırılması yaşam kalitesinin sağlanmasında büyük önem göstermektedir (KENTGES, 2010: 8).

Bütünleşik Kentsel Gelişme Stratejisi ve Eylem Planı'nda kentsel yaşam kalitesinin artırılabilmesi için yerel yönetimlerle ilgili olan hedef, strateji ve eylemler şu şekilde sıralanmıştır:

➢ Yerel yönetimlerin hizmet sunumunda şeffaflık, hesap verebilirlik, katılımcılık ve verimliliğin esas alınması

➢ Kentleşme, imar ve planlamayla ilgili bakanlığın yerel yönetimlere rehberlik eden ve denetleyen yeni bir yapıya dönüştürülmesi

➢ Genişleyen görev, yetki ve sorumluluk alanlarıyla uyumlu bir şekilde yerel yönetimlerin kapasitelerinin artırılması

➢ Yerel yönetimlerin kapasitelerinin artırılabilmesi amacıyla; Belediye Kanunu, Büyükşehir Belediye Kanunu ve İl Özel İdaresi Kanunu'nda ve ilgili diğer kanunlarda düzenlemelerin yapılması

➢ Yerel yönetimlerde teknik elemanlara yönelik mesleki ve teknik eğitim programların düzenlenmesi

➢ Yerel yönetimlerce hazırlanacak olan kentsel yaşam göstergelerini içerecek sayısal veri tabanı ve izleme sistemlerinin Ulusal Mekânsal Veri Portalı aracılığı ile kamuoyuna açık tutulması ve sürekli olarak güncellenmesi

➢ Kentleşme ve imar konularındaki uygulamaların AR-Ge çalışmaları ile desteklenmesi

➢ Nitelikli kentsel yaşam çevrelerinin oluşturulabilmesi için katılımcı proje geliştirme süreçleri gibi mekanizmaların uygulanması ve bu amaçla yerel yönetimlerin meslek odaları, sivil toplum kuruluşları ve üniversitelerle iş birliği yapmaları önerilmektedir

➢ Beş yıllık imar programları ile yerel yönetimlerin stratejik planları arasındaki ilişkinin güçlendirilmesi ve uyumlulaştırılması

➢ Kentsel dönüşüm uygulamalarında yerel yönetimlerin belirlenen usul ve esaslara göre yöntem kullanması

➢ Dönüşüm ve yenileme uygulama süreçlerine yerel yönetimlerin etkin katılımı

➢ Güvenli ve tehlikesiz bir kentsel alan için yerel yönetimlerin polis ve diğer kurumlarla işbirliği gerçekleştirmesi

➢ Sosyal yardıma muhtaç olanların belirlenip ihtiyaçların karşılanarak kent yaşamına kazandırılması çalışmalarının yerel yönetimlerce aktif olarak çalışılması

➢ Yerel yönetimler tarafından gençlerin kentsel yaşama katılımı için programlar geliştirilmesi

➢ Mekânsal planlama süreç ve kararlarında yerel yönetimler tarafından katılımın ve denetiminin sağlanması

gibi hedef ve stratejiler belirlenmiştir (KENTGES, 2010: 14-44).

SONUÇ

20. yüzyılın ikinci yarısında itibaren yaşam kalitesi üzerine Birleşmiş Milletler, Avrupa Birliği ve Avrupa Konseyi gibi organizasyonlar tarafından uluslararası seviyede birçok çalışma

yapılmıştır. Bu çalışmalar genel olarak, kentsel yaşam kalitesinin yükseltilmesi amacıyla eylem planlarının hazırlanması ve yürütülmesi için stratejiler geliştirmektedir.

Birleşmiş Milletler (BM) İnsani Yerleşimler Programının düzenlediği konferanslar: 1972 Stockholm Çevre Konferansı, 1976 BM Kanada HABITAT I Zirvesi, 1992 BM Rio Yeryüzü Zirvesi, 1996 BM İstanbul HABITAT II Zirvesi, 2000 BM New York Milenyum Zirvesi ve 2002 BM Johannesburg Sürdürülebilir Kalkınma Zirvesi gibi organizasyonlar kentsel yaşam kalitesini de içermektedir.

Yaşam kalitesi üzerine Avrupa Birliği (AB) düzeyinde yapılan anlaşmalar ve konferanslar; AB'nin temel kuruluş antlaşması olan 1957 Roma Antlaşması. Avrupa Birliği tarafından kabul edilen; 1987 Avrupa Tek Senedi, 1993 Maastricht Antlaşması, 1988 Yerel Yönetimler Özerklik Şartı, 1992 Avrupa Kentsel Şartı, 2004 Avrupa Peyzaj Sözleşmesi ve 2007 Leipzig Sözleşmesi kentsel yaşam kalitesini yükseltme amaçlı düzenlemeler yapmıştır.

Türkiye'nin de üyeleri arasında bulunduğu Avrupa Konseyinin, kentsel yaşam kalitesinin yükseltilmesi amaçlı ve sonuç alan başarılı çalışmaları olmuştur. Avrupa Konseyi kurulduğu günden günümüze insan hakları ve yaşam kalitesi gibi konular üzerinde çalışmalar yapmıştır ve ayrıca Avrupa Birliğini bu konuda bilgilendiren, destekleyen ve teşvik eden kurumların başında gelmektedir.

Tüm bu gelişmelere rağmen kentsel yaşam kalitesi ve ölçütleri ülkemizde yeni yeni oluşmaya başlamış bir olgudur. Kentsel nüfusun sürekli bir artış göstermesi, kentsel alanda sunulan hizmetlerinde çeşitlenmesine sebep olmuştur. Çünkü kentte yaşayanların sayısı artıkça talepleri de doğal olarak artmıştır. Modern hayatın gerektirdiği şartlar neticesinde kentlilerin, kentsel ihtiyaçların karşılanmasına yönelik beklentileri de artmıştır. Kentte yaşayanların ihtiyaçlarının karşılanması ve yaşamdan elde ettikleri doyumun artırılabilmesi için yaşam kalitesi ölçütlerinin dikkate alınması gerekmektedir.

Kentsel yaşam kalitesinin tanımı ve kapsamı her ne kadar uluslar arası kuruluşlarca tanımlansa da içeriği ve öncelikleri açısından ülkeden ülkeye değişebileceği gibi kentten kente de farklılık göstermektedir. Her ne kadar kentte yaşayanların beklentileri ve ihtiyaçları aynı olsa da öncelikleri açısından farklılık gösterebilmektedir. Kentte yaşayanların gelir durumları beklentilerin öncelik sırasını etkileyebileceği gibi kişilerin psikolojik ve sosyo-kültürel yapıları da şüphesiz etkili olabilmektedir. Yine kentte var olan problemler ve çözülemeyen sorunlar da

kentsel yaşam kalitesini etkilemektedir. Yerel yönetim birimleri kentte yaşayanlar, sivil toplum kuruluşları, özel sektör ve kamu kuruluşları ile birlikte kentsel yaşam kalitesini artırmak için çaba göstermelidirler. Buna ek olarak gerek uluslar arası kentsel yaşam kalitesi ölçütlerinin sağlanması yolunda gerekse KENTGES'in hazırlanması sırasında olmazsa olmaz olarak görülen katılımın sağlanması için yerel yönetimler öncülük etmelidirler.

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Career Adaptability and Intention to Leave among ICT Professionals: An Exploratory Study

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Abstract

Adaptability was found to be the important trait for employees to survive in their career especially in the ICT industry which involved with consistent work changes, creative thinking, and advanced technological upgrading. Although organizations supposed to encourage career adaptability among the employees, previous studies showed that it will encourage employees' turnover rather than retention. In order to generalize the previous findings into Malaysian work context, this study explored whether career adaptability would have such influence on intention to leave the organization and the career. Findings of this study found that career concern, career control, career curiosity and career confidence were negatively correlated with both intentions to leave. However, only career control and career confidence were found to be significance in explaining the study model in multiple regression analyses. Implications of this study and recommendation for future studies were discussed.

Keywords: career adaptability, intention to leave, ICT professionals

INTRODUCTION

The uses of Information and Communication Technology (ICT) have been increasing in the world of business and education. Technological advancement today has passed beyond cables and wires where the means of communication now can be done from just about anywhere. Office works can be done from home, meetings can be conducted virtually and educational classes can be handled from two thousand miles away without having to have students sitting in front of the teachers. However, the technological advancement would not be continued without the people who make it possible which are the ICT professionals. The issue of high turnover rates among these professionals continues to rise especially in Malaysia (*Malaysian Employers Federation*, 2012). These professionals also have the tendencies to leave the ICT career itself (JobStreet.com, 2010).

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The issues of intention to leave among the ICT professionals in Malaysia has been paramount to both the studies in academic and industrial. The gap between the turnover rates of ICT as the highest in the list (75.72%) with the second highest is 43.32%. Such big gap required immediate attention for researchers to conduct such studies that can lead to lessen the turnover rate in the near future. On a similar note, the new generations seems not to be interested to take ICT as their career plan (MDec & Synovate, 2011). Therefore, in order to determine the current situations of turnover issues in ICT industry, the aspects of intention to leave among the ICT professionals was examined. It is also important to look at the potential antecedents that can contribute to reduce the level of intention to leave. Tracing back with the work among ICT students, Der Vyver (2009) suggested that students in ICT programs need to be adaptable in order for them to complete their study courses and to enter the ICT career successfully. In line with the theory in determining individual's decision to participate by March and Simon (1958), career adaptability represents the ease of movement that will influence the decision to leave. Hence, this study used an exploratory approach to test whether having adaptability in career will lead to reducing the level of intention to leave among the ICT professionals in Malaysia.

Intention to Leave

Intention has been recognized as the immediate to actual behavior (Sommer & Haug, 2010). Sheeran (2002) provided evidence that there is significant correlation between intention and behavior. Hence, this study measured the intention to leave in order to determine the final outcome which is the real leaving. Although having intention to leave will not necessarily lead to actual leaving, the thought of leaving itself will affect organizational performances because it contributed to work inefficiencies and absenteeism (Kivimaki et al., 2007).

The issues of intention to leave in ICT industry do not just occurred recently. It began since the early 2000s with the burst of dot-com bubble in the US. Although the salaries and benefits associated with this career continue to increase, the number of employee's leaving did not decrease. This is also happening in Malaysia where the numbers of ICT graduates who continues working in the same field are now decreasing (Wong, 2010). There are few types of turnover which are changing from unit to unit, organization to organization and finally the most severe case is leaving the current career for other career (Krausz, Koslowsky, Shalom, & Elyakim, 1995). Thus, it is timely to examine the current state of the ICT professionals whether they are having high or low intention to leave both their organization and the ICT career itself.

Previously, the relationship between career adaptability and intention to leave was tested and the relationships were positive (Ito & Brotheridge, 2005). This means that the increasing of career adaptability will also increase the intention to leave. Although the relationship seems to encourage intention to leave, the study was only measured intention to leave the organization. This study however extends the intention to leave to leaving the career. As the key to survive in ICT field (Van Der Vyver, 2009) career adaptability in this study aspects is expected to encourage individual to stay in ICT career. Thus, this constructs of career adaptability is relevant to be studied in determining the antecedents to lessen the turnover issues.

Career Adaptability

Career adaptability is defined as "the attitudes, competencies and behaviours that individuals use in fitting themselves to work that suits them" (Savickas, 2005, p. 45). Career adaptability is a plan for unforeseen events that involves an individual undertaking in handling changes (Rottinghaus, Day, & Borgen, 2005). It also deals with how an individual constructs a career where it involves with adjusting to vocational development tasks, occupational transitions, and personal traumas by solving problems that are usually unfamiliar, often ill-defined, and always complex. Originating from the work of Super (1980) in career maturity, career adaptability was introduced by Savickas (1997) where the adjustment would be more suitable to be used among working adults. Career maturity denote the fact that adolescents could peak at a level of maturity, as displayed in their career-related competencies and attitudes whereas career adaptability implies an ability that may either improve or deteriorate during the life span (Super & Knasel, 1981). In other words, an adolescent may become progressively more mature in terms of careers, whereas an adult may, due to psycho-social circumstances, be less or more adaptable during different stages in their careers. Adult career is characterised not only by the entry into, training for and working in an occupation, but relates also to the setbacks faced whilst working and the adaptability required to cope with the changing world circumstances (Savickas, 2005).

Career adaptability has been suggested as a key competency in career success generally (O'Connel, McNeely, & Hall, 2008) which enable individuals to effectively implement their self-concepts in occupational roles, thus creating their work lives and building their careers. Savickas (2005) developed a career construction theory's model of self-regulation for social and developmental with a set of specific attitudes, beliefs, and competencies which is known as the ABCs of career construction. These four syndromes of attitudes, beliefs, and competencies constitute career adaptability and represent resources for self-cultivation. The adaptive individual is conceptualized as (a) becoming *concerned* about the vocational future, (b) taking *control* of trying to prepare for one's vocational future, (c) displaying *curiosity* by exploring possible selves and future scenarios, and (d) strengthening the *confidence* to pursue one's aspirations (Savickas, 2005). Hence, the dimension for career adaptability is also known as the 4C's which are career concern, career control, career curiosity and career confidence.

Career concern involved with the individual views about the current career and how the future career will be like. It emphasizes preparation and planning for the career in the future. Career control is associated with the responsibility of a person to construct his/ her own career (Savickas, 2005). Individual with career control can decide on which job and career that should be taken based on his/ her own. Even though they can listen to other people's advice, the final decision will be made by the person's own decision. Career curiosity reflects the ability of a person to explore and finding information that are related to the development of the career (Savickas, 2005). People with high career curiosity normally will do large amount of research such as reading journals, brochures of training and development, asking expert advice and many more activities associated with developing the undertaking career. Finally, career confidence derived from the self-confidence (Rosenberg, 1989) which denotes the striving for success by encountering challenges and overcoming obstacles. The level of career confidence will determine the ability to solve problems related to work tasks.

The potential connection of the relationships between career adaptability and intention to leave was taken by the work of Ito and Brotheridge (2005) and Der Vyver (2009) using the underlying theory by March and Simon (1958). The theory stated that for individual need to consider the level of desire of movement and ease of movement in order to decide whether to stay or to leave an organization. Desire to move consists of commitment and satisfaction while the ease of movement was the availability of job market elsewhere (Anderson & Milkovich, 1980). The theory was then extended in recent work among IT professionals in Singapore where the antecedents for desire to move and ease of movement was modified to suits the current work situation (Joseph, Ng, Koh, & Ang, 2007). Career adaptability was inferred to influence job mobility (Trevor, 2001) and akin to flexibility (Wessel, Ryan, & Oswald, 2008) which contributed to the ease of movement for individual to leave the organizations. However, because there was previous evidence that stressed on the importance of adaptability in order to survive the ICT world, this relationship between career adaptability and intention to leave need to be further examined.

METHOD

The quantitative method is used in this study in order to explore whether there are relationship existed between career adaptability and both intention to leave the organization and the career. It also aimed to measure the relationship (if any) between career adaptability and both intention to leave based on past researches that has been established in the west which reported on the existence of this particular relationship.

2.1 Participants
The study samples were consists of 303 ICT professionals from Selangor and Kuala Lumpur. The sampling frame was taken from the lists of World Class Status listed by Multimedia Super Corridor (MSC). The samples work nature ranging from and not limited to networking, software development, system technician and etc. There were 59% males and 41% females. 63% have bachelor degree18.6% have master degree and 1.7% obtained professional courses.

2.2 Measures

2.2.1Intention to Leave
The instruments used for intention to leave were taken from Alam and Mohammad (2010). There were three items which covering the aspects of searching, thought and intend. For example 'Presently, I am actively searching for other job'. The same instrument was used to measure intention to leave the organization and intention to leave

the career. The words that referred to leaving the organization were modified in order to give meaning to leaving the career. For example 'Presently, I am actively searching for *other career than ICT*'. The instrument use 7-points scale where 1 represent 'strongly disagree' and 7 represent 'strongly agree'. The cronbach's alpha for intention to leave the organization is .88 while intention to leave the career is .92.

2.2.2 Career Adaptability

To measure the four C's of career adaptability (concern, control, curiosity and confidence), this study adopt the instruments from Savickas (2008). This instrument was chosen because it has been thoroughly studied by Savickas and his colleagues where the replicating of different settings was done in various countries such as US, Europe and Australia. The questions required the respondents to select from scale 1 to 7 where 1 referring to 'very not strong' and 7 referring to 'strongest'. The internal consistency result for the constructs of career concern, career control, career curiosity and career confidence are .89, .89. .82, and .88 respectively.

2.3 Analysis

The responses obtained from the respondents in measuring their intention to leave and career adaptability were analyzed using SPSS version 20. The data was first analyzed for the means in order to determine the level of the respondents' intention to leave and career adaptability. The data was then further analyzed for correlation and regression to test the relationships that might exist.

RESULTS

3.1 Descriptive Statistics

The mean score for all variables are at moderate level. The respondents have higher intention to leave the organization (M=4.13; SD=.88) compares to intention to leave the career (M=3.53; SD= .85). This shows that the possibility of the ICT professionals to leave the organization is much higher than they are to leave the ICT career.

Career curiosity achieved the highest mean score (M=5.13; SD= .97) within the career adaptability constructs followed by career confidence (M=5.13; SD= .95). The ICT professionals are curious have confidence in their career. The average mean score for career adaptability construct is 5.07 which indicated that these ICT professionals are moderately adaptable into their ICT career.

Table 1: Mean score for Intention to Leave and Career Adaptability

Dimensions	Mean	SD
Intention to Leave Organization	4.13	.88
Intention to Leave Career	3.53	.85
Career Adaptability		
Career Concern	4.95	.87
Career Control	5.05	.97
Career Curiosity	5.14	.97
Career Confidence	5.13	.95
Average for Career Adaptability	*5.07*	

Note: 1.00 – 3.99 = low; 4.00 – 5.99 = moderate; 6.00 – 7.00 = high

3.2 Correlation

Correlation results shown in Table 2 stated that the relationships between the constructs of intention to leave and career adaptability were significant negatively related. All results were significant at .01 levels. In intention to leave the organization, it was highly correlated with career control (r= -. 478) followed by career confidence (r= -.466). The highest correlation between career adaptability constructs and intention to leave the career is for career confidence (r= -.447) followed by career control (r= -.427).

Table 2: Correlation results between ITLO, ITLC, career concern, career control, career curiosity and career confidence

Variable	1	2	3	4	5	6
1. ITLO	1					
2. ITLC	.791**	1				
3. Career Concern	-.441**	-.381**	1			
4. Career Control	-.478**	-.427**	.739**	1		
5. Career Curiosity	-.432**	-.384**	.694**	.739**	1	
6. Career Confidence	-.466**	-.447**	.693**	.781**	.766**	1

**. Correlation is significant at the 0.01 level (2-tailed).

3.3 Coefficient for the predictor of variables

Using stepwise analysis, Table 3 showed the coefficient results for career adaptability and intention to leave the organization. In model 1, only career control is significant with the t-value at -9.430 ($p < .001$). The standardized Beta coefficients for career control and intention to leave the organization is -.478. The R square is .228 significant at .ooo level. This means that the proportion variance of intention to leave explain by 22.8% of career control. For model 2, career control (B= -.291; $p < .001$) and career confidence (B= -.239; $p < .01$) were significant with intention to leave the organization. Career concern and career curiosity were both removed from the model tested due to the insignificant results. The r square for model 2 is .250 ($p < .01$). This means that in model 2, 25% of intention to leave the organization was explained by career control and career confidence.

Table 3: Coefficient results for career adaptability and intention to leave the organization

		Coefficients[a]				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.736	.390		19.850	.000
	ccontrol	-.714	.076	-.478	-9.430	.000
2	(Constant)	8.200	.415		19.769	.000
	ccontrol	-.435	.120	-.291	-3.638	.000
	cconfidence	-.365	.122	-.239	-2.991	.003

a. Dependent Variable: itlo

The same analysis was carried for intention to leave the career. Referring to Table 4, only career confidence was significant with intention to leave the career (B= -.447; $p < .001$) with the t-value of -8.66. The r square for the first model is .20 significant at level .000. In the second model, career confidence (B= -.291; $p < .001$) and career control (B= -.200; $p < .05$) were found to be significant with intention to leave the career. The r square for the second model is .215 significant at .015. The second model showed that 21.5% of intention to leave the career was explained by career confidence and career control.

Table 4: Coefficient results for career adaptability and intention to leave the career

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.082	.417		16.990	.000
	cconfidence	-.692	.080	-.447	-8.666	.000
2	(Constant)	7.374	.430		17.135	.000
	cconfidence	-.450	.127	-.291	-3.556	.000
	ccontrol	-.303	.124	-.200	-2.442	.015

a. Dependent Variable: itlc

3.4 Regression

Table 5 shows that the regression for model 1 and model 2 between career adaptability and intention to leave the organization. Both models were significant at level .000. The F value for model 1 is 88.9 while for model 2 is 50.11. The first model only consists of career control while model 2 consists of career control and career confidence. Career concern and career curiosity were both removed from both models.

Table 5: Regression analysis for career adaptability and intention to leave the organization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	145.086	1	145.086	88.931	.000[b]
	Residual	491.064	301	1.631		
	Total	636.150	302			
2	Regression	159.307	2	79.653	50.113	.000[c]
	Residual	476.844	300	1.589		
	Total	636.150	302			

a. Dependent Variable: itlo

b. Predictors: (Constant), ccontrol

c. Predictors: (Constant), ccontrol, cconfidence

Table 6 shows the regression results for career adaptability and intention to leave the career. Both models were significant at level .000. The first model only consists of career confidence while model 2 consists of career confidence and career control. Both career concern and career curiosity were removed from the models. The F value for the first model is 75.1 and model 2 is 41.14.

Table 6: Regression analysis for career adaptability and intention to leave the career

ANOVAª

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	130.562	1	130.562	75.091	.000[b]
	Residual	523.355	301	1.739		
	Total	653.917	302			
2	Regression	140.761	2	70.380	41.146	.000[c]
	Residual	513.156	300	1.711		
	Total	653.917	302			

a. Dependent Variable: itlc

b. Predictors: (Constant), cconfidence

c. Predictors: (Constant), cconfidence, ccontrol

DISCUSSION

The results indicated that the relationship between career adaptability and intention to leave the organization and intention to leave the career existed. In contrast with previous studies where career adaptability and intention to leave were positively correlated (Ito & Brotheridge, 2005), this research found that the relationships were significantly negative. This means that having career adaptability will prevent the ICT professionals to have intention to leave for both the organization and the career. However, this research findings can be used to support previous research where it was found that student of ICT program in higher learning required being adaptable in order to cope with the study modules and to survive in the ICT field (Van Der Vyver, 2009). The existence of adaptability in career is just an extension of having adaptability in studying ICT courses. Perhaps due to the constant changes and the advanced complicated technical upgrades required individuals who venturing into this line of work to be able to cope with the turbulent work environments. This ICT industry also required individual to have critical thinking, creative work skills and expert in some tactical knowledge. Therefore, such adaptability skills need to be taught since during the studies level at the higher learning institutes.

Although Ito and Brotheridge (2005) found career adaptability to be quite problematic for organization as it encourages job-hopping, this has only been tested in Canada among the federal civil services. Their study does not represent the ICT industry especially within Malaysian work context. Cultural and individual personality differences are the elements that might contributed to the difference results found in this current research. Therefore, findings of this study will contribute to the body of knowledge where it entails that ICT organizations should encourage career adaptability without having the worries of employees' turnover.

Even though all career adaptability constructs were significantly correlated with intention to leave the organization and the career, further tests in multiple regressions analyses showed that only career control and career confidence are able to significantly explain the intention to leave for both organization and career. Whereas, career concern and career curiosity were both found to be not significant to be included in the study models. Individual who has sense of confidence in their career would also have the potential to have the control in determining the career directions that they are choosing. Individual with these attributes able to adapt to constant changes in work environment and pre-prepared with uncertainty within work related (Savickas, 2005). This will reduced the feelings that can contribute to leaving the organization or the career such as giving up, loosing self-esteem, job dissatisfaction, work-conflicts and etc.

CONCLUSION

Findings of this research indicated that career adaptability appear to have influence on ICT professionals' intention to leave the organization and intention to leave the career. The higher career control and career confidence that the ICT professionals are having, the lower their intention to leave will be. Career adaptability that could lead to employees' retention is a field still underexplored, especially in the Malaysian setting. An extension of this study in

looking at the relationships between career adaptability with intention to leave aspects within the same ICT field or other industry through a qualitative method, or a blend of both qualitative and quantitative methods can be helpful in providing in-depth understanding of this issue. Thus, more focus should be emphasized on the career adaptability-variables involved, specifically in studying the employees' career retention. It is also suggested that adaptability should be tested among the students in higher learning institutes in regards to relating it to the level of the students' study engagement/participation. This is because the skills of career adaptability cannot be developed in overnight. The adaptability skills in career need to be consistently developed and it must start as early as in higher learning institutions.

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Comparison of the Use of Social
Network in Education between North and South Cyprus

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Abstract

The purpose of this study is to determine and compare the use of social networks in education of two private secondary and post-secondary schools in North and South of Cyprus with a focus on the possible differences and similarities. The use of social networks in education was investigated as new common classrooms in this study. A qualitative method of research was used to gain an insight deep understanding of the participants' experiences, related to semi-structured interviews and observations. The study group consisted of 35 teachers interviewed by the researcher. The data was collected over the period between January and April 2013. Consequents showed that the two schools at both sides of Cyprus share common elements than differences, regarding the use of social networks in education. Significant difference between the two schools was that there was no school policy for using social networks in education in North although the teachers were positive to use social networks. However social networks were used for communication under the school policy in the South although the teachers were negative to use social networks in education. The similarities of North and South is to use SNs for communication, not for education and to avoid abuse of students for not knowing privacy and security matters and to promote teachers to spend more time and effort in eliminating inappropriate materials regarding lessons, and also to promote parents to appreciate the use of SNs in education. The difference between the North and South is that although using SNs for communication is school policy in the South, it is not a school policy in the North. Although North school teachers have positive perceptions for using SNs in education, the South teachers have negative perceptions.

Keywords: Education, social networks.

Introduction

Education is an ongoing phenomenon of a person until death and it has political, social, cultural, and economic diversities. Education is a process which affects people to gain society standards, belief and way of living. Education is continuous, dynamic, comprehensive, multi-dimensional, scientific, objective-oriantated, limitless and cultural. Production and sharing of knowledge is accelerated by the developing technology and according to the needs of individuals (Tiryakioğlu & Erzurum, 2011).

Education is important for modern life (Arap, 2010; Uzgören & Uzgören, 2005), in order to change the behavior of the individual via experience throughout life (Çetin, Çakıroğlu, Bayılmış & Ekiz, 2002). Education is an investment in changing attitudes of an individual. Formal education is a planned system at the schools however informal education is applicable everywhere and not planned. Education is a social and cultural process which is lifelong learning (Göksan, Uzundurukan & Keskin, 2009). Education aids students, communities and business life (Semerci, 2003).

The Internet becomes more widespread, common use of various applications originated from technology that has come into question. Among these, Web 2.0 applications like Youtube, Facebook, Twitter, Wikis and Blogs facilitate the following of the information, enhance the interaction between knowledge communities due to its attractive features as being interactive and anytime and anywhere (Odabaşı, Mısırlı, Günüç, Timar, Ersoy, Som, Dönmez, Akçay, & Erol, 2012). The global use of the Internet has developed in recent years and now impacts all aspects of society from business, education to social activities. (Leitch & Warren, 2011)

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Education and technology play an important role in providing efficiency to human life (Seferoğlu, 2006). The most significant indications of the knowledge era are science, rapid technologic changes and globalization (Gedikoğlu, 2005; Karasar, 2004). Knowledge is the capital of human being. Nowadays, it is a necessity to communicate to large populations as there is huge demand for quick communication (Karasar, 2004). Advancement of the web technologies is correlated to increase of memberships of social networks. Online collaborative networks are a network that brings people together for a mutual aim (Acun, 2010).

One of the latest developments are online social networks. Nowadays, many social networks are appearing and shaping the way that people communicate, interact, collaborate, work and even learn (Gülbahar, Kalelioğlu & Madran, 2010). Social networks started out as a hobby for some computer literate people and have become a social norm and way of life for people from all over the world (Flad, 2010). Sharing of the videos, photos, texts and sounds can be possible by using the SNs, at the same time, online games which are embedded in them lead to growth in interest in these sites (Kert & Kert, 2010). Nowadays there are many social networks as Facebook, MySpace, Twiter to provide communication to their users (İgman, Kiyici, Tercan, Kiper & İgbulan, 2010). Facebook assisted courses facilitated the aspects in sharing and cooperation; access to the lecturer; visualizing the course content for some students. However, there were also some students having negative opinions about the application (Keleş & Demirel, 2011).

Social networks are used not only for social networking and entertainment, but also for access to information (Tonta, 2009), for educational purposes (Gülbahar, Kalelioğlu & Madran, 2010), for learning and for carrying out professional work (Tonta, 2009). Social networks have an important educational potential with their interaction and communication tool (Ekici & Kıyıcı, 2012). Globalization, educational requirements in whole life, and intense and fast improvements in communication technologies had deeply and widely effected the educational institutions (Karaca, 2008).Social networking can be transformed to educational networking (Eteokleous, 2012).

Educators started using SNs in education due to the fact that SNs are mostly used by youngsters and students and that SNs provide rich interaction opportunities. SNs enable teachers to get information about their students and better communication. SNs have relation with constructive and pedagogical approaches, and supports active and social learning, and implementation (Keleş & Demirel, 2011). Online social networking can be regarded as a platform allowing teachers and students to communicate and collaborate on school subjects and projects outside the classroom. Teachers can post school related works on these online communities and students can further enrich their learning experiences by teaming up with their class mates to work on assignments and projects (Khedo, Elaheebocus, Mocktoolah, Suntoo, 2012).

Widespread use of information and communication technologies has changed learning environments. These kinds of changes forced learners in being online or blended learning environments as well as face to face. It has seen as a result of both lifelong learning and knowledge society which learners must have developed digital proficiency (Atici & Polat, 2010).

The social network tools via internet provide a wide range of opportunities for educational activities. As an educator, it is important to experience good examples of technology integration into curriculum with students (Gülbahar & Kalelioğlu, 2010).Through the social networks, users re-define themselves, involve in various social relations and even re-shape their teaching or learning process. Providing new opportunities and conveniences in educational settings, the rapidly developing information and communication technology, play crucial roles for providing a learning environment for schools, as well as for the societies (Özmen, Aküzüm, Sünkür & Baysal, 2011).

At present, social networks are developing usually outside the formal educational activities (Acun, 2010); they have an important educational potential with their interaction and communication tools (Ekici & Kıyıcı). Most of the students are highly aware of social networking and have the ability to use computer and internet with Web 2.0 tools which are very important for education (Uçak & Çakmak, 2010).Social networks can be used in education processes for improving communication skills of students and teachers, expanding participation, empowering peer support, realization of collaborative learning. Social media also provides facilities which are enriching the learning and teaching processes with text, video, audio materials, supporting learning, teaching and evaluation processes (Toğay, Akdur, Yetişkin & Bilici, 2012).

Many educational institutions have taken advantages of social networking websites for maintaining their teaching and learning activities (Tinmaz, 2012). The introduction to the concept of social networking, the discussion turns towards the exiting definitions of knowledge, leading to the question of what and how we are attempting to accumulate, manage and share knowledge resources through applications of online social networking (Benson, Morgan, & Tennakoon, 2012).

Educators must have a clear vision and guidelines for doing so, or they will face serious technical and legal pitfalls. Schools have a role to play in educating students about safely and appropriately using such sites (Davis, 2008). Teenagers and young adults have especially embraced SNs as a way to connect with their peers, share information, reinvent their personalities, and showcase their social lives (Flad, 2010). In order to develop learning communities with increased student engagement, educators are increasingly adopting the use of social networks to supplement teaching and learning in both fully online as well as traditional classroom learning environments (Buzzetto-More, 2012). In this context, online social network environments are effective sites which can be used as constructive and social cognitive learning sites. Theoretical approaches are based on individual orientation, interaction with environmental factors and self-control (Kert & Kert, 2010).

There are many challenges facing the use of social networking in education such as privacy, real friendship, taking up time, flexibility, repeatability, convenience and accessibility and miscommunication. The privacy is one of the obstacles that faced the use of social networking in education. SNs have effect on health of individuals, due to spending a lot of time. Flexible learning expands choice on what, when, where and how people learn. Social networking is easy and quick in term of accessing accessibility, reviewing, updating, editing; anytime, anywhere. Scholars praise social-networking tools for their capability to attract, motivate and engage students in meaningful communicative practice, content exchange, and collaboration (Zaidieh, 2012).

Though many arguments can be made about the possible risks of adolescent social networking, it is important to point out the benefits of these websites as well in order to promote education, keep students updated with assignments, offer help to those in need, provide an outlet for teens to express. In general, the Internet and social networking sites can be a positive influence (Flad, 2010)

Social networking sites, as well as other new forms of communication technology, are also a concern to many school professionals because of the level of distractions during instruction time and have a negative impact on the learning environment. They create within the school such as forbid the use of handheld technology during school or that block certain social networking websites (Flad, 2010). Teachers are increasingly finding themselves in trouble for their use of social media in and out of the classroom. Teachers most frequently are getting in trouble for posting inappropriate contents during their personal time (Papandrea, Mary-Rose, 2012). Parent-child conflicts have also become more of an issue since the sudden escalation of online social networking and causes distress in the household and may ultimately lead to a barrier between parent, child, and communication about school work and grades (Flad, 2010).

Based on the litreture a set of questions were derived regarding the use of SNs in education as new common classrooms, the kinds of networking used, the use of SNs in and out of the school time, the reason of why teachers started using SNs, the age group of the teachers that use SNs, the lessons for which SNs are useful, the students learning affection of SNs, the teachers and students skills improvment by SNs, the policy and criteria for using SNs, the communication one to one and one to many with SNs, the advantages and disadvantages of using SNs and the sharing of information with parents, the perception on SNs and F2F in education. The specific purposes of this research was to compare the use of Social Networks (SNs) in secondary and post secondary education at two private schools in North and South of Cyprus.

Objective

The purpose of this study is to determine and compare the use of social networks in education of two private secondary and post secondary schools in the North and South of Cyprus and the importance of such comparison.

Method

A qualitative method of research was used to gain an insight of deep understanding of the participants' experiences, relying on semi-structured interviews and observations. The study group interviewed by the researcher, consisted of 35 teachers from two secondary and post secondary private schools; one in North and one in South. The data was collected over the period between January and April 2013 with a pregranted permission. The interview schedule consisted questions which were set up after a thorough study of litarature on the use of Social networks in education. Each interview took approximately half an hour. The tape-recorded interviews was transfered to a transcript. Thematic coding was based on the relevant literature.

Findings

SNs as New Common Classrooms

Physics, Mathematics, Science and computer studies (ICT) teachers of North claimed that SNs are used during lessons and out of the classroom for sending and reminding deadlines of homework, getting answers, giving feedback and sharing selected youtube materials. The ICT teacher said that he used selected youtube materials, during the lesson at the technology lab which is equipped with smart-board, projectors, internet access and computers for year 11 and year 12. Physics, Mathematics and English teachers claimed that SNs could not be used for education but they could only be used as education tools. They prefer to use only traditional methods for education which was face to face. All the South school teachers said that they had to use school group facebook in order to send students homework, questions and reminders on assignments and exams, and for communicating with parents about the school activities. Most of the South school teachers especially ICT, French, English and Mathematics teachers stated that they did not use SNs for education because they did not like technology and believed that it would not be helpful for learning so they did not encourage students to use SNs. Science, Greek and psychology teachers claimed that they used youtube during the lessons, yet they prefer face to face education. One of the teachers complained that even if they wanted to use SNs for education the school would not provide them the infrastructure.

Kinds of SNs used

Most of the North school teachers said that they used facebook as a class and email to post homework and to share selected youtube materials and videos to visualize their lessons, ask questions or answer the students' questions especially during the exam period. The students under year 11 did not have the opportunities to use technology room or lab so they used SNs only out of school. Most of the South school teachers used school group facebook.

The Necessity of Using SNs

North school teachers claimed that SNs were useful in following technology improvement and communication with students, in order to attract their attention for lessons, in visualizing science experiments which they could not do at the school lab due to limited infrastructure and to guide senior students about undergraduate education in abroad. The case was similar for South school teachers.

Timing of SNs In and Out of School

North school teachers said that there were limited infrastructure and internet access in their classrooms especially for students of under year 11, so they could not use SNs in the school. They used SNs out of the school if the students had facebook and email account and if they got their parents' permission to access internet or their parents could provide internet and computer at home. Most of the South school teachers claimed that they mostly used school group facebook out of school having inadequate infrastructure in most classrooms.

Age Group of Teachers

Most of the North school teachers said that although the age is not very important for using SNs, the teachers under 30 were more familiar with technology because they were born with it and teachers over 30 were more reluctant to use any form of technology because of not having confidence. Some of the older teachers had never used SNs for education, but at the same time there was a teacher over 60 who not only used SNs, even taught young teachers how to use SNs. Most of the South school teachers claimed that younger teachers were more familiar and confident to use SNs whereas teachers aged over 30 had negative thoughts and fear about SNs.

Lessons Where SNs is Used Most

North school teachers stated that SNs were useful especially for Language, Science, Physics, Biology, Mathematics and ICT lessons. Some teachers claimed that SNs were useful for all lessons summarizing, especially during exam period. Others said that SNs were not useful for Mathematics because they could not solve equations through SNs. South school teachers said that SNs were more useful for theoretical lessons. One teacher said that SNs were good for all the lessons, some South school teachers claimed SNs were not good for Mathematics and one teacher believed that SNs were not useful for any lesson.

Skills Improved by SNs

North school teachers claimed that SNs improved teachers' skills. Some teachers claimed that SNs improved their skills by accessing other teachers' lessons through the internet and learning and teaching methods. South school teachers claimed that SNs did not improve their skills.

Policy and Criteria

North school ICT teacher believed that it should be forbidden to open any other computer programs or sites during computer lesson. Other teacher stated that she had her own self policy for communicating with graduates. Some believed that there should be a school policy for using SNs. South school teachers claimed that privacy, honesty and security were important policy issues.

One to One, One to Many Connections

North school teachers said that it would be possible to communicate both one to one and one to many between teachers and students. Some teachers said it was quite easy to send individual instant messages from facebook to students and to ask them questions and get answers. Some teachers said SNs are good for one to one dialogue with their colleagues, for sharing ideas about the lessons or news. North school teachers said that SNs are good for students who are not good at lessons and do not have confidence within themselves to communicate in the class. South school teachers said SNs are good to keep teacher in touch with students through SNs either one-to- one communication or one-to-many and even students who are not confident enough to participate.

Communicating with Parents Through SNs

North school teachers said that they prefer to communicate with parents through the schools in the formal way face to face (F2F) communication. In this way teachers talked with real parents and not somebody else hiding behind the computer. Some teachers were reluctant to communicate with parents through SNs because conversation could turn into an argument. They believed communication with parents should be done formally by school through weekly reports or emails. South school teachers said that they communicated with parents through email which was used as the formal communication way and they also had group facebook for students and parents. Some said that if the parents neglected their children, teachers could inform them about the students' improvement with SNs.

Advantages and Disadvantages

Advantages

North school teachers said that SNs had a lot of advantages for education such as finding material from youtube, sharing with students and colleagues worksheets, power point presentations, links, and enrich their perception on the lesson. Some said that students did not have to take notes during lesson. Some said that SNs provided communication between teachers and students out of school times. Teachers said that students could learn anywhere, anytime and at their own speed and also retrieve lessons. Some teachers said that SNs should be promoted by the ministry of education or by the school not by teachers individually. Some claimed that there was not enough infrastructure to perform lab experiments, so they used youtube to visual the experiments. One said that SNs should be used in a more casual and friendly atmosphere to support communication between students and teachers. Furthermore they said that students felt more confident to contribute to the lesson via SNs. South school teachers

said that they could find different kinds materials from youtube, videos, worksheets, power points presentations, links and share them via the SNs. Some teachers said that by using SNs they saved time for students which not have to take notes during lesson. Some said that shy students were encouraged via SNs. Some said they informed parents about activities, announcements, events of the school. One teacher said "An advantage of SNs is that a teacher can see from pictures if a student smokes and try to convince them that smoking is a dangerous habit".

Disadvantages

North school teachers said that students lost their concentration and wasted a lot of time by watching pictures, playing games and chatting. Some teachers claimed that student should first learn about privacy, security and then start using SNs in productive and correct way of education. Some said that they needed more effort and more time to select the appropriate materials from the internet. Teachers also claimed that parents did not give permission to their children for access to internet because they did not have economic power to afford it. Some teachers said that only year 11 and 12 students were given the opportunity to use the technology room. Two teachers were reluctant to use the SNs because of the information, photos security and privacy issues. One teacher said "We should be careful about privacy to avoid the example of the teacher who misplaced her inappropriate photos on facebook and she was dismissed from her job and soon after she committed suicide" and he added that "We can see many bad examples on youtube about student abuse". Another teacher said "Once a student got my photos from facebook and changed it for having fun and they abused our facebook friendship, so I am afraid to use SNs after this experience". South school teachers claimed that students created fake accounts, used bad words, had concentration problems and some got addicted using SNs without control. Additionally they said that students relied too much on internet, they did not pay attention to the lesson. Some teachers said that although they could share power point and youtube links with students, if parents do not give permission to their children to access internet it will bring difficulties for using SNs and students would not feel good. Some parents were against social networking but if SNs was used as compulsory parents would be able to follow the school's decision. One teacher said there are many scandals because people share inappropriate pictures at facebook.

The Perception On SNs and F2F In Education

North school teachers said that "F2F is the most important way of teaching but we need to use blended education. We feel, we touch, we understand students' problems and emotions with F2f, but with SNs we just have a screen in front of us and we don't know if s/he plays games". Some teachers said that SNs provided them opportunity to connect with other teachers, labs, different fields and countries and share their knowledge and experiences throughout the world and carry out F2F education to a better level. Most said that F2f has social importance and improves students' social capability. SNs are not being used during the lessons efficiently. South school teachers said that traditional F2F method was the best way for improvement. One teacher said that each one of the teaching methods provided different relationship between teachers and students and combination of F2f and SNs would be the most appropriate system to be used.

Conclusions

SNs are not commonly used both in North or South schools. However SNs are used by some teachers for individual purposes in North. In South there is an official policy to use SNs in schools. Either way there is limited infrastructure and limited use of SNs out of lesson due to parents' negative perception that cannot afford internet expenses. It was very interesting to see that both school ICT teachers did not believe SNs were useful for education and South schools' language teachers did not like to use SNs at all. In both sides some students did not have self-confidence to communicate F2F to use SNs and vice versa. North and south school teachers find SNs useful only if combined with F2F education and feared to use facebook.

Teachers of both schools used SNs as a guide for undergraduate education information overseas for year 12 students. SNs were useful to communicate with their students, to draw attention to their lessons, to visual science experiments, to wish them good luck for the exams. The use of SNs was obligatory at the South school, for teachers to communicate and inform their students about homework, exams and activities and also for posting materials. Both school teachers under 30 years of age were more familiar with technology compared to the teachers over 30, although there are exemptions.

Both school teachers had common beliefs that F2F education was the best traditional teaching way with using five senses but when there is a screen between the students and the teachers when using the SNs in education teachers could not know if the students played games or did other activities while online. Both the North and the South school teachers had common beliefs that blended education to carry F2F education to higher level although SNs were not used in education. SNs provide both one-to-one and one-to-many communication between students and teachers for both sides. Students who have not enough confidence to participate to the lessons, they feel more comfortable to participate through SNs.

SNs are useful for language, science and theoretical lessons but not for mathematics or computer studies according to both school teachers. North school teachers insisted that SNs were useful for all kinds of lessons. However in the South there was a contradiction. There was not a policy or criteria for using SNs for North and South school teachers. However, South school teachers insisted on security, privacy, formal communication, sharing appropriate photos, and efficiency and productivity of SNs in education.

There were general worries in North and South schools' teachers for security and privacy problems but there is a demand to have updated computer knowledge use of internet facilities for teachers and students in both sides. There was concern for the loss of students' concentration and time and parents' negative perceptions to SNs and internets in general.

North school did not use SNs for the communication with parents and the South school had school policy to use facebook for the communication with parents. SNs would be a real time saver if used in education appropriately to provide unlimited sources and materials for teachers and students in North. SNs improved and enriched teachers and students' perspectives in the North school teachers. SNs could be the best way to extend education time and also to remind students of their homework in North.

Discussions

There are parallel findings between the research of Gülbahar & Kalelioğlu (2010) and this research and that the social networks provide a wide range of opportunities for educational activities.

Buzzetto-More's (2012) research is parallel to this research that educators are increasingly adopting the use of social networks to supplement teaching and learning online as well as traditional classroom learning.

Zaidieh's (2012) research has common findings that SNs have effect on health of individuals due to spending a lot of time with social networks but at the same time SNs provides flexible learning, expands choices as what, when, where and how people will learn.

Flad's (2010) research has common arguments with this research that there are possible risks of adolescent social networking. It is important to point out the benefits of these websites to promote education, to keep students updated with assignments, to offer help to those in need, provide an outlet for teens to express.

Kert & Kert's (2010) research have similar findings with this research that online social network environments are effective sites which can be used as constructivist and social cognitivist learning sites based on individual orientation, interaction with environmental factors and self-control in online interaction.

The research of Dwyer, Hiltz and Passerini (2007) and this research have common findings that trust is not a necessary factor in the building of new relationships on SNs, yet trust is very important for face to face relationship.

The research of Zaidieh (2012) shows similar to this research results that there are many challenges facing the use of social networking in education such as privacy, real friendship, taking up time, flexibility, repeatability, convenience and accessibility and miscommunication.

Ministry of Education policy should be effective in application of face to face education and teachers should have training on SNs safety and security in order to have competency and comfort in using SNs. ICT teachers could be a very important link between teachers and students and the safety of use of SNs in education.

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13th International Educational Technology Conference

Computer aided education

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Abstract

While all sort of written information were widely used in education, studies showed that visual perception is very important in learning. For this purpose new teaching strategies were developed using computer. The aim of this paper was to emphasize roles of computer in education and to make a comparison of computer aided education vs. traditional education. Computer aided education (CAE) system is a key to improve the effectiveness and the quality of education system. Computer education forms a part of the school and college curricula, as it is important for every individual today.

Keywords: Computer Aided Education; Computer Aided Education's Advantages; Computer Aided Education's Materials; Comparison between Computer Aided Education and Traditional Education; Education

Introduction

Computer aided education eases the process of learning. Life without computers would seem almost unimaginable for many individual using computers daily.

Computer aided education (CAE) is not a new fact. In the early 1960s, Stanford University psychology professors Patrick Suppes and Richard C. Atkinson experimented with using computers to teach math and reading to young children in elementary schools in East Palo Alto, California. Stanford's Education Program for Gifted Youth is descended from those early experiments. In 1963, Bernard Luskin installed the first computer in a community college for instruction, working with Stanford and others, developed computer-assisted instruction (Wikipedia). Usage of computer in data communication has commenced in 15th Century. Most of the individuals in 15th Century were extremely ignorant.

Computer aided education eases the process of learning. A life without computers would seem almost unimaginable for many individual using computers daily. Traditional teaching methods and course contents have all been affected by the introduction of computer technology.

Therefore, one case study quoted for showing importance of computer-aided education. Ath. Kehagias and Pan. Vlachos has a research called Melon project for Melon foundation grant to their project, which is fulfilled in The American College of Thessaloniki. They choose American College students for their diverse educational backgrounds. They wanted to design courses, which will teach to the students basic mathematical knowledge

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(necessary for follow-up courses); and , They want to relevance them to mathematics. And They though thing to keep a fine balance between showing more technical (in which case students will be alienated) and too simple (in which case students will lose interests in the course). Then they organized a course which they can use computer in class. by They using some software packages such as Microsoft Excel and Mathcad. At the end of the course they had also found that it computers did play a positive role, in "sweetening mathematics"; and. And they have found that CAE students were better at it than traditional ones (Kehagias&Vlachos, 1999).

In this paper, types of computer aided education were mentioned such as autonomy, model creation, demonstration, game model, storytelling model, virtual reality, animation, e-books, user created content and distance education. Designing materials for creating computer aided education; text, color, illustrations, sound, video, and characteristic of the learner were also explained. Advantages of computer-aided education (CAE) and comparison for CAE and traditional education were also discussed.

2. Types of Computer Aided Education

Traditional teaching methods and course contents have all been affected by the introduction of computer technology. Education is the main step of all disciplines and should be carried out seriously. In our competing world every individual should learn more and fast in order to take a front row in this competition.

Education is defined as the process of forming an individual identity, becoming sociable and gaining economic effectiveness. It is also the process of constructing the balance between human and the environment by interaction, which has many aspects (Aydın&Sütçü, 1999).

Education is a fundamental part of differentiating from a simple living creature to a thinking human being taking part in social, economic and industrial world. In this highly competing world it is getting more and more important to learn more and faster.

Education is a complex process in which both human and technical resources should be utilized in a carefully balanced way. Traditional teaching practice, learning methods and course content have all been affected by the introduction of computer technology. The challenge is to develop and use modern learning environments in education while the curriculum of university education is continuously evaluated and modified to both include new ideas, thinking and learning methods, and to eliminate redundant material (Kızıl et al, 2004).

Encyclopaedia of Britannica described the word "Education" as follows, which is very difficult to accept today: "Education is a discipline that is concerned, in this context, mainly with methods of teaching and learning in schools or school like environments as opposed to various informal means of socialization" (Britannica Online Encyclopaedia).

As we know and use distance education by means of computers now, the definition of a highly trusted Encyclopaedia became incorrect. Actually changing time and technologies even made the difference in definitions of Encyclopaedias.

It is very well known that learning gets easier if the information could be given by a combination of different sources at the same time as sound, picture and words. It starts with the alphabet only with letters and letters with pictures. It is obvious that if it is possible to teach letters with motion and sound concomitantly, it will be easier to learn. Beside this teaching advantage it will bring another differentiation, which is willingness to learn. Autonomy may be described as the willingness or self-determination of every individual to study and to learn.

Various techniques were described and analysed in order to improve education methods, because it is almost obligatory to learn more in less time in this competing world. This is the aim of many research groups to provide a teaching method for faster learning and better understanding.

Traditional teaching methods and course contents have all been affected by the introduction of computer technology. Education is the main step of all disciplines and should be carried out seriously. In our competing world every individual should learn being quickly in order to take a front row in this competition.

It is very well known that learning gets easier if the information could be given by a combination of different sources at the same time as sound, picture and words. It starts with the alphabet only with letters and letters with pictures. It is obvious that if it is possible to teach letters with motion and sound concomitantly, it will be easier to learn. Beside this teaching advantage it will bring another differentiation that is willingness to learn. Autonomy may be described as the willingness or self-determination of every individual to study and to learn.

Regardless which theory we believe, computer aided education is of importance for sure. Different application areas of computers are examined and evaluated according to the changing needs and improving technology. New devices and methods have been developed besides autonomy, model creation, demonstration, game model, storytelling model, virtual reality, animation, e-books, user created content, distance education and online education and for sure they will be more development in near future.

3. Designing Computer Based Education Materials

Computers have a wide range of education materials contrary to traditional tools. Text is still the most important tool to transfer information. But there are many different additives to text in computers such as colour, graphics, sound, animation, third dimension and interactive sections.

Moreover, in preparation of the computer-based learning materials the characteristic of the learner has great importance. Different learners will respond to stimuli in a range of ways so it is important to be aware of the characteristics of the group you are designing for. You can't design same material to adult and child.

Alan Clarke summarized these factors in details. The factors, which may influence the learners' response, include age, computer literacy, previous experience of computer-based learning, gender, educational experience, learning skills, physical characteristics, reading age, knowledge of the subject and first language (Clarke, 2001).

The best way to transfer knowledge is text. Although computers have various possibilities, text is the most condensed way of giving theoretical information. Computers have many advantages when preparing reader friendly text pieces and when reading pre-prepared texts. Arrangements of paragraphs, headings and subheadings are important parts of text preparation.

Selection of fonts is a very important subject. The font of a storybook that is prepared for elementary school children should be different than a postgraduate master degree paper. A scientific paper should also have different letters than a joke book.

Moreover colours are very important in our daily life, psychology and mood. Actually the human eye can recognize millions of colours. So colours may be used to draw attention to important points. Setting the same colour for related topics may also be helpful.

Colour is a powerful motivating force. People will often judge coloured products as having a higher value and quality than the equivalent monochrome products. It is an important way of gaining learners' attention, reinforcing key points and segregating information (Clarke, 2001).

4. Advantages of Computer Aided Education

The advantages of computer-aided education can be overviewed in various topics. But for me the most important ones are correction and update possibility of the education materials. Computers in education provide us quick information processing and very importantly the saving of paper.

The roles of computers in education may be summarized as follows.
* The initiation of education may start earlier in preschool children which were not able to write and read yet
* It will be more interesting and attractive to use a colourful software with animations than reading a book especially I children
* Computer education module can help students deeply understand the content with diagrams, pictures and movie clips when needed.
* Softwares are easy to carry, copy and distribute

* Instruction manuel

* Decrease of labour

* Chance of sharing personal experience, ideas and new methods

* Chance of searching in seconds

The uses and advantages for this system are endless. For example, teachers are encouraged to use edutainment computer-based learning for introducing students to new or difficult lectures or concepts. Times, tables or grammar are incorporated into platform games that use positive reinforcement to encourage children to move onto new difficulty levels. Children are able to pick which times, tables or grammatical problems they wish to tackle in the session. This interactive element is essential to ensure children feel they have some control over their education (Roschelle et al., 2005).

5. Comparison of Computer Aided Education vs. Traditional Education

Computer aided education system is a key to improve the effectiveness and the quality of education system. Conventional education system, which is using a book or hardcopy material, can easily make the student to feel bored and complicated to understand what they have learnt in class. The information need to be digging out from the whole bunch of the book out of nowhere and this might consumes a lot of time. Differ from the computer aided education which is much easier to amend and update the material. Besides, Computer aided education system can reduce publishing and distribution costing. Therefore it worthwhile to replace the existing of the conventional education system with computer aided education (Sabariman, 2008).

Another issue is changing time and changing habits. Traditions, fashion and preferences change from generation to generation. While I am very comfortable with computers my parents are using them with minor problems whereas my grandparents have major difficulty in using them.

Computers have revolutionized common man's life and have brought a dramatic change in the life of every human being. Plentiful information is available on the Internet that can be read by means of a computer. Hence one might not want to be deprived of this new world of information. The information is inclusive of all aspects of knowledge. It ranges from preliminary facts in science to philosophy of life. Almost everything that the books once carried is now accessible through a computer. Everything that the textbooks have is now just a click away! (Oak, 2008).

Information can be presented in different forms over a computer. Information can be in the form of an audio recording or a video clip. Computer teaching is thus much more than just making students read from the screen. It is about providing them with a learning system wherein they can view pictures, watch videos and listen to speeches or lectures. It is about making the process of teaching and learning, interesting and interactive.

According to Manali Oak's paper, writes "teachers are irreplaceable", but on the other hand life conditions necessitated teaching with computers which may be accepted as virtual teachers. Another extension of this situation is distant education. Distance education may be accepted as third revolution in education. It is obvious that it is the last stage of computer aided education (Oak, 2008).

Ath. Kehagias and Pan. Vlachos has a research related with this subject, which is fulfilled in The American College of Thessaloniki. They choose American College students for their diverse educational backgrounds. They want to design courses, which will teach to the student's basic mathematical knowledge. They want to relevance them to mathematics. And they think to keep a fine balance between showing more technical (in which case students will be alienated) and too simple (in which case students will lose interests in the course). The problem is worsen because in some of our classes we teach concurrently two groups of students: the first group will major in the Liberal Arts and the second in Business Administration.

To fix the above problems, they have found it necessary to continuously engage in curriculum reform. They have been especially interested in computer aided education (CAE) to increase both the learning material and teaching process. They have experienced with software packages such as Microsoft Excel, Mathcad and Scientific Notebook as well as with HTML-based hypertexts for three years.

Their efforts for emphasized conceptual understanding, through the use of graphical and numerical approaches. In particular, in the Calculus course they have used numerical and graphing experiments (in Excel and in Mathcad). They have also experimented with various teaching strategies: we have taught traditional, classroom-based courses, as well as courses almost exclusively taught in the computer lab; they have used collaborative assignments and individual take-home projects.

They have also noticed that students are eager to participate in classroom activities in computer-intensive classes. On the other hand, they have found that when teaching a computer-intensive class the students may become quite proficient in the use of computers and mathematical software, without grasping the mathematical concepts in which are ultimately interested.

Their main goal during this phase was to familiarize us with the symbolic math software Mathcad and with teaching computer lab-based courses. They chose Mathcad because of its combination of symbolic math operations with "live" computation (i.e. changes made at some part of a document result in immediate update of the whole document). They found this feature very useful both for demonstration by the instructor and for experimentation by the students.

According to their work's results, it appears that CAE did not make a difference as far as concepts understanding

is concerned. More specifically, CAE students were better at conceptual understanding both at the beginning and at the end of the course; but, on the average, they improved at the same rate as traditional students. However, CAE did make a difference regarding general mathematical performance both in absolute and differential terms. CAE also made a difference regarding the attitude of the students to the course (i.e. students liked the CAE course better than the traditional one). Statistics and numbers do not tell the whole story. So it is useful to briefly relate our informal experiences. They definitely felt throughout the course that CAE students were more active and interested than the traditional ones.

They also find it computers did play a positive role, in "sweetening mathematics". They have found that, the CAE classes developed so much momentum, it is particularly important to plan class activities and teaching strategies very carefully so that the learning process does not degenerate into an exercise of computer gaming. Also, they think that some lecturing is still necessary, even in the CAE course; they do not want to revert to 100% lab course because if they revert.

Regarding mathematical performance, they did feel that on the average CAE students were better and remained so at the end of the course. Statistical analysis offers a further significant insight: not only were CAE students better in absolute terms, but they also improved more than traditional students (Kehagias&Vlachos, 1999).

Finally, regarding the understanding of mathematical concepts, they have found that CAE students were better at it than traditional ones. This is substantiated by statistical analysis, which further reveals however, that there was no difference in differential improvement. In other words, statistics suggests (and as of now we have no grounds to dispute this), that CAE students were originally better at conceptual understanding and remained so at the end of the class. A scenario which they found plausible after consideration of the statistical analysis and their subjective experiences is that better students were drawn to the CAE course than to the traditional one. This seems to be supported by the statistically significant difference in GPA between the CAE and traditional students (Kehagias&Vlachos, 1999).

In conclusion, course was a useful improvement over the traditional course and they intend to refine and repeat it. Teaching Mathcad to CAE students created an overhead, which was partly compensated by spending less time in teaching traditional techniques of differentiation and integration.

6. Conclusion

Computer aided education eases the process of learning. A life without computers would seem almost unimaginable for many individual using computers daily.

Internet, which is the source of all kind of information, can play an important role in education. As it is an

enormous information base, it can serve as a source for a wide variety of subjects. Search engines are very helpful in reaching the target. It is usually possible to reach the headed information when the clues or keywords were obscure. This is another advantage of computers to thick textbooks.

The importance of computers is evident today and having the perfect know-how of computers can only propel one's career in the right direction. Today, computers are a part of almost every industry. They are no more limited to the software industry. They are widely used in networking, information access, data storage and the processing of information. So why not introduce computers early in education? Introducing computers early in education lays the foundation of most of the major competitive careers. Computers play a significant role in one's personal and professional life (Oak, 2008). Computer aided education has the advantage of easy teaching, better learning, free repetition and furthermore all sort of distance education.

In final, I defenced computer aided educations superiority again with supporting a case study. Ath. Kehagias and Pan. Vlachos has a research called Melon project for Melon foundation grant to their project, which is fulfilled in The American College of Thessaloniki. They choose American College students for their diverse educational backgrounds. They want to design courses, which will teach to the students basic mathematical knowledge (necessary for follow-up courses), They want to relevance them to mathematics. And they think to keep a fine balance between showing more technical (in which case students will be alienated) and too simple (in which case students will lose interests in the course). Then they organize a course which they can use computer in class. They used some software packages such as Microsoft Excel and Mathcad. At the end of the course they also find it computers did play a positive role, in "sweetening mathematics". And they have found that computer aided education students were better at it than traditional ones.

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Computer animation in teaching surgical procedures

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Abstract

Animation is a developing and interesting visual communication instrument. It may have multipurpose functions such as entertainment, advertisement and education. The aim of this paper is to investigate the use of animation in teaching theoretical medical information and especially surgical procedures. Three, animations were planned and created about endonasal surgery focused on procedures which are known as difficult to understand. Then a group of 20 medical students were taught with this animation whereas a second group of 20 students were taught by theoretical information and plain figures. Different evaluation questions were asked in order to clarify the benefit of the animations in learning. Then the second group was taught again by using the animations. It is concluded that animation is a very useful tool to teach difficult procedures in medicine especially in teaching complex topics.

Keywords: Animation; Medical Education; Education Materials; Teaching; Teaching Methods

Introduction

Medicine may be the most interesting and important field of science, but it is extremely difficult to study and learn. Although learning a main concept may be sufficient in other disciplines, medical students must learn many details, must understand all mechanisms, and must study hundreds of pages. They must understand details and attempt to remember them forever.

In addition to texts, pictures and posters are widely used to explain medical information and surgical procedures. However, it is often difficult to verbalize procedures. Instructors must provide theoretical information and then explain the steps of the procedure. Diagrams used for this purpose may be insufficient. Thus, it is important for students to complete internships and residencies to learn the practical details of medicine.

Although many types of written information are widely used in education, studies have shown that visual perception is very important. For this purpose, new teaching strategies have been developed using figures, pictures and videos. Recently, education centers have begun preparing animations for both teaching and practice.

Many studies have examined this topic. Fallman said, "Learning consists of acquisition of information that is provided by the, in this case, virtual environment. Training, on the other hand, involves mainly responses from the user on the environment itself. Training arises from actions carried out by the user on the environment, while learning results from contextual factors" (Fallman, 2008).

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Aydın stated, "In medicine, training will improve by operating on virtual argons, and training for pilots will benefit from VR training materials that will enable the user to saw or drill wood and build a project before attempting to use the real equipment" (Aydın, 2005).

Animation is a developing and interesting visual communication instrument. It may have multiple functions, such as entertainment, advertisement and education. For example, animation may be a useful tool to plan a new nose prior to rhinoplasty or to teach surgical maneuvers. The aim of this study is to investigate and quantify the use of animation to teach theoretical medical information, especially surgical procedures. Three animations were planned and created for endonasal surgery. These animations focused on procedures that are known to be difficult to understand.

2. Materials and methods

2.1. Study groups

Our study group consisted of 40 medical students between the ages of 21 and 29. The participants included 20 males and 20 females. They were divided randomly into two groups of 20 participants.

2.2. Educational material

Three tasks were prepared for rhinoplasty maneuvers. The two sets of educational materials included theoretical information with figures and the same information with animations. The steps of the surgical maneuvers were explained in both sets.

The two groups of subjects were given educational materials including either theoretical information with figures or the same information with animations. Twenty minutes later, each student was asked questions related to the subject. Then, the students were asked to explain the main idea of the educational material.

In a second step, the first group, which received theoretical information with figures, was given the second educational set, consisting of the same information with animations. Then, the students had the opportunity to compare the difference in the two materials. Finally, the students were asked the same set of questions a second time to evaluate the influence of the second set of educational material.

Task I: Alar cartilages are very important in the constitution of the nose. They may vary in shape and hardness, and they provide the projection of the nose. The nasal septum is an important support for the nose projection. The

aim of this task is to show how septum or columellar grafts affect the projection of the nose and to focus on the influence of projection on the shape and position of the nostrils.
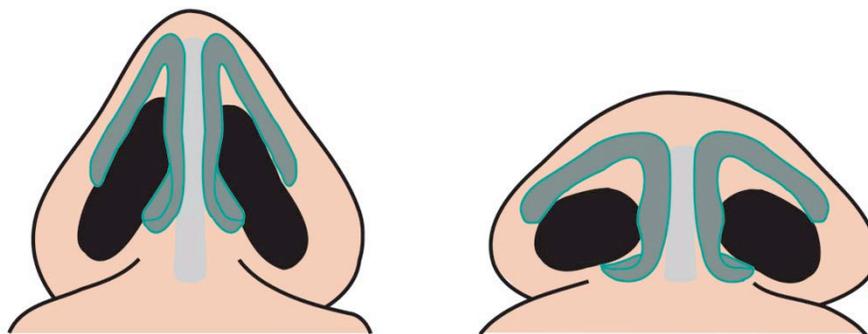
3. Fig. 1. (a) The relationship between the shape of the alar cartilages and the nostrils;
(b) The relationship between the shape of the alar cartilages and the nasal valve angle

Task II: Dome suture is a very important binding to narrow the tip of the nose. It also serves as an important support to provide symmetry for the nose. The level of this suture is an important issue because this level affects the tip position. When the dome-binding suture is placed high, the tip becomes sharper, and the rest of the cartilage flares and looks wider at the middle portion.
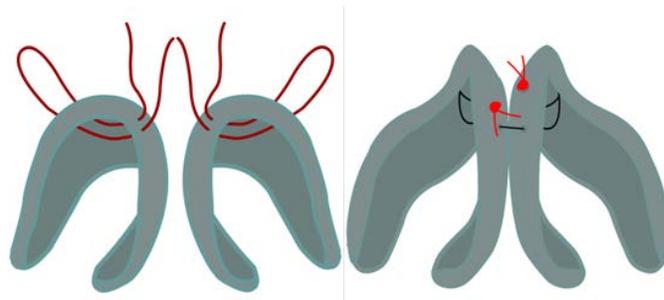
4. Fig. 2. (a); (b) The narrowing effect of the dome suture

Task III: When the dome-binding suture is placed 3 or 4 mm lower than the highest point of the tip, the tip looks slightly wider but more natural, and the rest of the cartilage becomes closer.
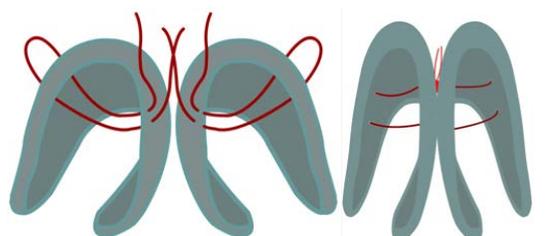
5. Fig. 3. (a); (b) The narrowing effect of the dome suture at a lower localization

2.3. Evaluation Questions:

After the educational period, the subjects were asked to explain the tasks in detail. The study group was asked questions related to the data. A jury was established, and this jury evaluated each subject's knowledge about the tasks that were explained.

The topics were as follows:
1. The shape and the position of the alar cartilages
2. The correlation between the position of the alar cartilages and the nostrils
3. The effects of the alar cartilages on nose projection
4. The correlation between dome binding sutures and the width of the tip
5. The correlation between dome binding sutures and alar flaring
6. Where to put the suture to prevent a pinched nose
7. Where to put the suture to narrow the nostrils.

2.4. Self-Evaluation of the Subjects:

Each subject evaluated the educational material on a scale of 0 to 10, with 0 indicating the worst and 10 indicating the best.

3. RESULTS

The age and sex distribution of the study groups and the evaluation of the students and the jury are shown in tables 1 and 2.

Table 1. Age, sex distribution and evaluation grades of study group I

No	Age	Sex	Evaluation by students after instruction with theoretical information + figures	Evaluation by jury after instruction with theoretical information + figures	Evaluation by students after instruction with animations
1	22	f	4	4	9
2	22	m	5	5	9
3	21	m	5	4	10
4	21	f	6	5	8
5	21	f	4	6	8
6	21	f	5	4	8
7	21	f	6	6	9
8	21	m	5	5	9
9	21	f	6	6	10
10	21	f	3	5	8
11	21	m	7	5	10
12	21	m	3	5	8
13	21	m	4	5	8

14	21	m	4	6	9
15	21	f	5	6	9
16	21	f	5	4	9
17	21	f	6	7	10
18	21	f	4	5	9
19	26	f	5	5	10
20	28	f	6	8	9

6.

Table 2. Age, sex distribution and evaluation grades of study group II

No	Age	Sex	Evaluation by students after instruction with animations	Evaluation by the jury after instruction with animations
1	21	f	6	9
2	21	m	7	8
3	21	f	9	7
4	21	m	10	8
5	21	m	7	9
6	22	f	7	9
7	22	m	8	9
8	25	m	9	8
9	25	f	9	8
10	26	f	10	8
11	26	m	7	9
12	28	m	6	9
13	28	f	6	8
14	27	f	9	7
15	28	m	9	8
16	28	m	10	8
17	25	m	7	7
18	29	m	6	9
19	21	m	9	9
20	21	m	10	8

The grades of the second group are much higher than the grades of the first group. The second group of subjects, who were given information with animations, showed a better learning curve then the first group. They explained the main idea of the education much better than the first group. The difference is statistically significant ($p<0.001$) for the evaluations of the students and the jury.

The first group, which received the theoretical information with figures, was given the second educational set, consisting of the same information with animations. Then, this group had the opportunity to compare the difference between the two materials. The fifth and seventh columns of the first group show their comparison, which is statistically significant ($p<0.001$). All of the students concluded that animation is a useful educational material.These data were not available for the second group because they were initially educated with the theoretical

information supported with animations. Therefore, they could not compare both methods. However, their higher grades may be considered proof of the benefit of animations for education.

4. DISCUSSION

It is well known that education is the first level of influence in all disciplines. Medical education is particularly important because the subject of this study involves human life. Thus, before beginning to work on the human body, one must learn as much as possible. We suggest that theories of cognitive development and education may support the importance of animations and virtual reality (VR) in medical education and training. VR provides an exciting educational medium to explore information and to explore oneself. VR provides a training environment that is rich and responsive and that permits the direct evaluation of educational theory. The central educational issue for VR involves the transfer of experience (Bricken, 1990). Increasing numbers of researchers and educational practitioners believe that VR technology offers significant benefits to support education and training. For some of these researchers, VR's ability to facilitate constructivist-learning activities is a key issue (Bricken, 1990). Turkish noses often have humps so many people in Turkey seek rhinoplasty. Due to the unique nasal structure in Turkey and other Mediterranean countries, rhinoplasty is a very common procedure that should be mastered by all ear, nose and throat surgeons.

In practical practice, issue it is obvious clear that it is easier to that we all can learn easier by watching a procedure than by reading that about it. we see rather than that we read. But of course, in both we need theoretical knowledge is needed prior this step. I agree with Brick (Bricken, 1990) in that the idea that "animations and VR technology offers strong benefits to support education and training". Many authors have stated similar ideas on this same topic (Bell&Fogler, 1905;Alexiou et al., 2004).

Practical experience is an important component of the educational process. However, the time and economic resources required for to establish scientific laboratories is outside the scope of many institutions. A solution to this problem may be found in the adoption of virtual laboratories, which can be an important educational tool to address the lack of practical experience in education (Bell&Fogler, 1905).

I agree with the author that practical experience is an important component of the educational process. However, it is extremely difficult and dangerous to teach surgical procedures practically. Thus, before students begin surgical interventions, it is important to fully teach the procedures. Animation can be a helpful tool for this purpose. Other surgical interventions have been taught by animations in recent years (Ullrich et al.,2009; Henderson&Ali, 2007), and new studies will be published on this topic in the near future.

Animations and virtual reality are more efficient that training on real patients. These methods eliminate the risk that students will harm patients while attempting to learn new skills. They also eliminate the time restraints of

waiting for specific types of cases and allow the trainees to practice independently. Furthermore, using virtual patients for training is less expensive and less offensive than training on animal models.

5. CONCLUSION

The importance of education is clear in all disciplines. Education in medicine has particular importance because the material involved in this subject is human life. Thus, before beginning work on the human body, medical students must learn as much as possible.

Teaching materials are useful in all scientific fields, but they are especially important in medicine. It is extremely difficult and dangerous to teach surgical procedures in practice. Therefore, before students begin surgical interventions, it is important that they are completely familiar with the procedures. A theoretical education is usually not sufficient for complete comprehension. Visual devices such as diagrams, drawings, and pictures can be utilized for this purpose.

Animations of anatomical structures and surgical procedures are helpful educational materials. When we compared the efficacy of various education materials, we observed that animation was an effective teaching tool.

Further studies should be performed to improve this type of educational material. Cooperation among various disciplines, such as medical doctors and visual art creators, is particularly needed.

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Computer Based Courseware in Learning Mathematics: Potentials and Constrains

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Abstract

Computer Based Learning (CBL) in teaching and learning process is becoming a phenomenon in the educational field. CBL serves to establish more effective learning situations than traditional teaching methods. However, research studies show that most teachers do not make use of CBL to contribute and further improve the quality of learning environments. This paper discusses the potential of CBL and its' constrain regarding this issue which is focusing on the barriers of integrating the technology in the teaching and learning process among the Malaysian teachers and also in learning Mathematics.

Keywords- Computer Based Learning; technology; Mathematics.

Introduction

In general, Mathematics is a compulsory subject for all the primary and secondary school students in Malaysia. Nowadays, educators take opportunities to harness the power of computer technology in helping students to learn Mathematics. Using computers to help students to learn Mathematics through the use of courseware is becoming common in Malaysia. There is much educational software available for teacher to use in teaching and learning. Some of them are even free in terms of money and downloadable through the Internet known as freeware (Teoh, 2009). CBL in Malaysia has emerged as an instructional technology with the potential to overcome the limitations of traditional media in supporting the prospect to provide learning environments with strong visual elements (Nordilah, 2010). Nevertheless, it is not to replace traditional educational methods which are usually carried out by chalk and talk (Nordin and Fatimah, 2011).

Eventhough CBL is being implementing, teachers still remain central to the teaching and learning process (Martin, Khaemba and Chris, 2011). Computer is just an additional aided learning tool for teacher in some areas that require more attention. The educational software in the market is an alternative method to assist teacher in teaching, apart from the traditional way of teaching (Noordin and Fatimah, 2011). Therefore, CBL become most exciting innovation in the educational technology. CBL is a set of programming instructions which is used in instructional process to develop certain predefined skills for the students' mastery over the subject content. It generally refers to a specific programmed which is designed to teach (Vansia, 2012).

Computer Based Learning in Malaysia

Computer based learning refers to the use of the computer as a tool for facilitating and improving instruction. CBL programs use tutorials, drill and practice, simulation and problem solving approaches to present topics and to test the student's understanding. CBL uses a combination of multimedia element which is combination of text, graphics, sound and video in the learning process. It is especially useful in distance learning situation. It is also integrated the use of Internet or intranet in the process of teaching and learning. According to Lee (2012), CBL improves students' attitudes, motivation and academic achievement.

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The history of CBL in Malaysia starts from the year of 1999. In 1999, Smart School was commenced. It is a learning institution that has been systemically reinvented in terms of teaching and learning practices and school management in order to prepare children for the information age. Most of the teaching and learning practices in Smart School have been carried out through ICT initiatives. The Smart School solution package includes ICT-enabled learning courseware for Bahasa Malaysia, English, Sciences and Mathematics. Presently, the whole courseware package has been distributed to all Smart Schools in Malaysia. It was aimed to produce analytical and creative students with widespread use of computers in school. Its concept was to develop thinking students with information technology tools playing an important role in the teaching and learning process (MSC, 2007).

In 2003, courseware became one of the support tools in the *"Implementation of Teaching Science and Mathematics in English"* program which known as PPSMI. PPSMI is an initiative to teach Science and Mathematics subjects in English rather than Bahasa Malaysia. The purpose of this initiative is to allow students to be better connected to the rest of the world, as English is a universal language. It will allow students to move seamlessly shift from their primary and secondary education into international tertiary institutions. In 2009, Education Minister announced the abolishment of PPSMI. According to the Deputy Prime Minister Tan Sri Muhyiddin Yassin, PPSMI will be abolished in 2012 after discovering that the policy failed to achieve the objective of improving students' proficiency in English while it (policy) has also affected the performance of students, especially in the rural areas.

Potential of CBL in Learning Mathematics

There are recent studies reveal that CBL serves to establish more effective learning situations than traditional teaching methods which involve teacher presentation, question and answer techniques, and discussions (Ragasa, 2008). The use of computer in conjunction with effective teaching strategies has great potential in the teaching and learning process (Hoon, Chong and Azilah, 2010). According to Lee (2010), the courseware constructed in her research showed positive effect on students. She claims that CBL improves students' attitudes, motivation and academic achievement. In addition, the research conducted by Janier, Afza and Wan Fatimah (2008) is also receives a positive feedback too.

The reason for this is that the CBL enables the students to progress at their own pace and provides them with appropriate alternative ways of learning by individualizing the learning process (Hoon, Chong and Azilah, 2010; Ong and Ruthven, 2010; Mudiana, *et* al., 2011). Moreover, Vansia (2012) stated that CBL has ability to provide quantifiable and instantaneous feedback for its users. Besides, CBL motivates students to learn better by providing them with the immediate feedback and reinforcement and by creating an exciting and interesting atmosphere (Sharina, Fatimah and Mazyrah, 2010).

There a lot of research been conducted to prove the positive effect of CBL in learning mathematics. Research conducted by Liao (2007) proved that CBL had a positive effect on individuals by comparing 52 research studies carried out in Taiwan in his meta-analysis study. In 2009, Mahmud, Arif and Lim (2009) created a courseware called 'G-Reflect'. The focus of their study was to develop and evaluate a courseware, 'G-Reflect' on students' achievement and motivation in learning Mathematics. The courseware was developed using Geometer's Sketchpad (GSP) software. The research indicated that students were motivated in learning mathematics and performed better than students taught in the conventional method. He further suggested the mathematics' topics that suitable to use the GSP software in teaching and learning activities in the secondary school Mathematics syllabus such as Translation, Rotation, Dilation, Polygons, Perimeter and Area, Coordinates, Graphs of Function, Circle, Trigonometry and Linear Equations.

In the same year, Teoh and his colleagues (2009) study the cognitive effects, in terms of the gain scores and time-on-task of a computer courseware by using mastery learning and collaborative strategies. A total of 262 Form Four students interact with two Matrices courseware. The students were randomly selected from four suburban secondary schools. For each school, three classes were chosen randomly. They are randomly assigned to the Computer-assisted Cooperative Learning (CCL) treatment, Computer-assisted Mastery Learning (CML) treatment, and Computer-assisted Cooperative Mastery Learning (CCML) treatment. All students had not been exposed to the topic of Matrices. The whole lesson on Matrices took four to six hours to finish. Students took a test after each subtopic. Students in CML complete all formative tests or quizzes independently. If CML students fail, they would

receive supplementary instruction and corrective activities immediately until the requirement is met. Students in CCL and CCML groups undergo all designated cooperative learning activities. CCL students received no corrective activities but if CCML students fail, they will receive supplementary instruction and correction activities immediately after each question until the requirement is met. Each student in CCML must wait until all members in the group have achieved the level of 80%. The achieved students are encouraged to help the others. This study showed that, CML and CCML are effective learning tools. If the time allocated for the learning process is longer, CCML would be the most ideal strategy otherwise CML is generally preferred in the learning process.

Furthermore, in 2010, S-Reflek courseware was developed by a researcher (Lee, 2010) to enhance the achievement of the higher lever thinking and the motivation in learning Mathematics of the student. S-Reflek was developed by using Geometer's Sketchpad program which allowed students to learn the topic of Reflection, a Mathematics Form 2 subject, using hands on and minds on. The research applied Problem Based Learning (PBL), an active learning's strategy which supports the constructivism theory. Through PBL, students would learn based on problems given and they would solve the problems with the aid of computer software. This would give students the opportunity to explore knowledge in their own pace. A number of 180 respondents were involved in this study. The research showed that PBL with S-Reflek increase the students' level in mastering the topic of reflection and improved their achievement. Students were able to explain in details about the concepts of reflection after the learning process and master higher lever thinking after the learning process. Thus, the learners' motivation level was considered as high motivation. To sum up, the application of PBL strategy with S-Reflek showed positive effect on students.

Next, in 2011 a research carried by Noordin and Fatimah (2011) utilised the Van Hiele's levels for teaching and learning Lines and Planes in 3 Dimensions. Based on an early study, students had been identified of having problems in visualising figures. To overcome this problem, a multimedia courseware was developed based on a framework that utilised Van Hiele's Geometric model for visualizing 3D models. A testing was conducted with 60 high school students aged 14-year old to measure the courseware's effectiveness as an aid for visualising 3D models. The results showed that the students had demonstrated the ability to visualise and enhance their understanding on the topic after learned using the courseware.

In the same year, the research of Zuraini and Fatimah (2010) evaluated on the effectiveness and usability of a 'Li2D' courseware. The interactive learning environment provided by 'Li2D' enabled students to visualize the movement of the locus and steps in constructing the locus. A total of 63 Form Two students were involved in the study. The students were divided into two groups which are control and experimental. The experimental group had to interact with 'Li2D' courseware as part of the learning activities while the control group used the conventional learning methods. Usability evaluation was accomplished based on four constructs of usability, which were efficiency, learn ability, screen design and satisfaction. The research also conducts an evaluation on the multimedia elements. The results showed that the experimental group performed better than the control group in understanding the Loci in the topic of Two Dimensions. In a nut shell, from several recent studies above proved that the use of computer in conjunction with effective teaching strategies has great potential in the teaching and learning process.

Constrain in applying CBL in Mathematics

Integrating technology in teaching has been a challenge to teachers since they need to make effective use of it in order to develop student's independent learning skills and enhance students' learning. It also influences the way mathematics is taught and learn. In addition to that, it provides the way for developing independent learning skills and an alternative for learning. For instance, to solve a problem in mathematics, students need to explore ideas, see the relationship between concepts and finding a solution to a problem. With the advancement of multimedia technology, the problems can be solved (Lee and Kim, 2012; Zuraini and Fatimah, 2010). However, research studies show that most teachers do not make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly (Smeets, 2005).

The Malaysian government believes that using courseware can increase student engagement and motivation, providing students with a greater level of individualised instruction (Barrow, Debraggio and Rouse, 2008; Chong, Horani and Daniel, 2005). The Ministry's Technology Education division had prepared Smart School courseware for self-directed learning, individually-paced, continuous and reflective. Students thought that Smart School

courseware was attractive, highly interactive, and usable and it has a potential to replace the conventional teaching and learning materials but the surrogate user especially the teachers had thought otherwise (Jaafa, 2008). Therefore, in order to achieve better result, some courseware need for improvement and development for future utilisation (Murni, 2006). In addition, it was found that only 12% of the 609 students claimed to have frequent use of Smart School courseware in school (Jaafa, 2008). According to the research conducted by Lee (2010), the findings revealed the need for improvement in mathematics courseware for future utilisation as individual differs in traits such as skills, aptitudes and preferences for processing information and applying in real world situations.

There are lots of barriers for teachers to integrate ICT in teaching. To begin with, the findings from Goktas, Yildirim, and Yildirim (2009) indicate that a majority of teachers believe that the main barriers for integrating ICT are lack of in service training, lack of appropriate software and materials, and lack of hardware. Furthermore, teachers are lack of access to computers and negative attitudes toward the integration of technology in teaching (Chong, Horani and Daniel). Some of them fear of change (Mishra and Koehler, 2006). In fact, many teachers still fear using ICTs, and thus they are reluctant to integrate them in their teaching (Martin, Khaemba and Chris, 2011). They have contributed to the limited impact of computer-based learning tools (Kay and Lauricella, 2011).

According to the report of "Integrating ICT-Based Content in Teaching and Learning Mathematics", MSC Malaysia (2007) believes that there is not enough time and that there is too much content to cover for examination require consideration on what really matters in teaching. It is also supported by Kay (2011) and Goktas, Yildirim and Yildirim (2009) that time constraints is one of the factors teachers are unwilling to integrate ICT in teaching. Beside, studies and observations in schools provide consistent evidence that teachers show minimal or inappropriate use of ICT applications in mathematics teaching and learning at all levels (MSC, 2007). Only a few teachers are confident in using a wide range of ICT resources. Then, the limited confidence affects the way the lesson is conducted (Martin, Khaemba and Chris, 2011).

Moreover, according to Lee (2010), many instructors claim that the courseware is ineffective for certain students. The researcher claims that courseware has some strong factors that may de-motivate the learners (Lee and Kim, 2012). Some of the factors are unattractive presentation, boring style of writing, undefined/ambiguous learning objectives, irrelevant content, content that is too simple or too complex and too much to grasp in one go (Lee and Kim, 2012). The next barrier is the interface designs that fail to support learning and also presents unattractive presentation (Norfadilah, 2010). According to Norfadilah (2010), interface design for existing courseware should be improved to support the quality of learning experiences. It includes the level of interactivity and the availability of the interfaces to interact with the users. As suggested by Samah et al. (2011), the interactivity function should be considered by instructional designers in order to develop learning materials. So that external conditions of learning such as feedback and attentions devices will be meet the students' need. Besides that, the lack of knowledge about the role of interface design by the designers in the development process is also the reasons that most acknowledged (Norfadilah, 2010).

Yet, sometimes the problem is the way the courseware is used as a tool for teaching and learning (Bortolossi, 2012). The way CBL is applied in teaching and learning can affect its effectiveness. Therefore, new studies are needed to clarify the effect of CBL in contemporary students' environment (Hassan, 2008). Besides, it is needed to study the courseware whether it meets the requirements before it is being used (Mutalib, 2008). In fact, CBL allows the educators to expand their repertoire of methods, tools and strategies beyond those that are frequently used in the classrooms. So, in relation with that, the courseware needs to be tested (Mudiana, et al, 2011).

Conclusion

From the discussion above, it is shows that computer technology and developed courseware give significant effects on students' learning especially in Mathematics. However, there are many problem faces from many aspects such as from teachers, from the courseware itself and so on. Thus the question of what are the effective criteria for computer based mathematics learning courseware remain unanswered. However, The Ministry's Technology Education division had prepared courseware using the Smart Schools budget of RM53 million (Chong, Horani and Daniel, 2005). Since the Malaysian government has contributed lots of money and afford in integrating ICT in education, the question is worth answering. So, to better understanding what are the main construct of the aspects to be concerned to design and develop the mathematics learning courseware need to be investigated. When the effective

criteria have been identified, it is hope that the learning courseware will be designed and developed that best fit the needs of all parties and furthermore can be used as a tool for teachers in order to teach mathematics in school.

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Constructing a comic to communicate scientific information about sustainable development and natural resources in mexico

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Abstract

Nowadays sustainable development is a subject of particular relevance due to the Earth's environmental crisis, for which humankind is to a large degree, responsible. A possible way of addressing sustainable development is science education and communication. In principle, a society that is aware of environmental problems will be more participative than an uninformed one, and more committed and efficient when putting in practice measures to mitigate the environmental crisis. Sustainable development is a matter that concerns the Mexican public in terms of biodiversity and ecosystems conservation which in turn is relevant both to the country and to the entire planet.

The importance of communicating science by means of narrative forms has been suggested by several authors (McKnight, 2010; King, 2007; Schank et al, 2002; Korkmaz, 2011; Frisch, 2010; Lanza and Negrete, 2007; Negrete and Lartigue, 2004). In this research I propose that comics represent an opportunity to communicate scientific information to low literacy communities and I also present an example of the use of comics in communicating information about the sustainable use of the Mayan Nut in rural areas in Mexico.

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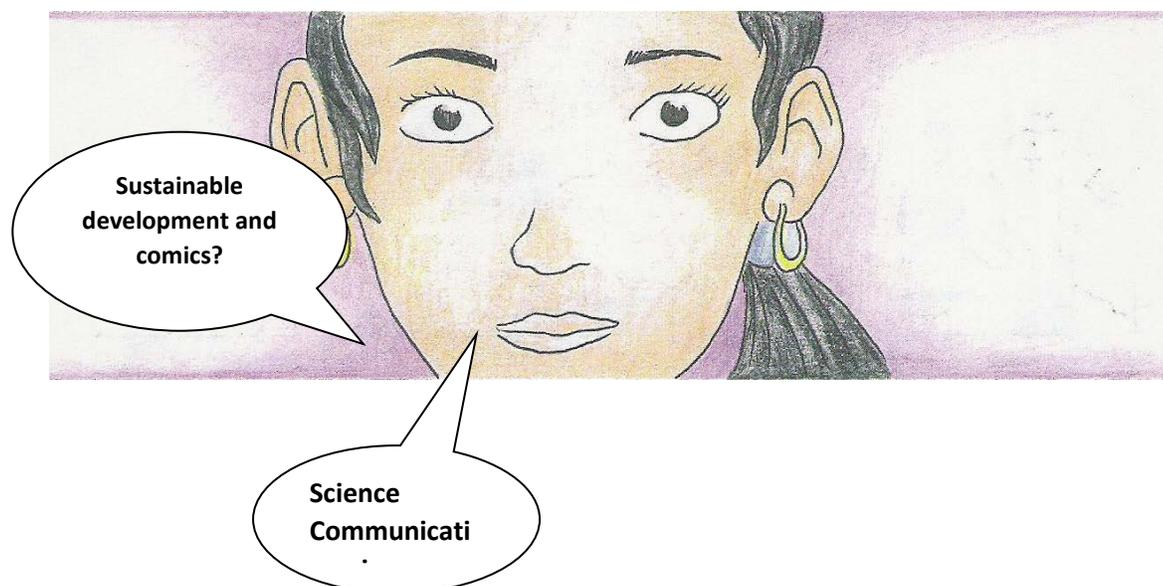
Introduction

In general, one of the greatest problems faced by governments in developing countries is letting the general public know about the programs and services that they develop. Creating a new policy is not enough if the policy stays at the desk where it was developed or if the information is conveyed to the public through conferences and leaflets that use technical and scientific jargon with which the public is not familiar. Consequently, it is of paramount importance that besides defining and implementing public policies, governments communicate the scientific knowledge emerging from research to the population that will benefit from it. To do so, it is important to use the appropriate channels of communication. In order to present knowledge to the public it is fundamental to use every day language, focusing on people´s daily lives and using elements with which they are familiar, to enable them to construct meaning and promote long term memory for the knowledge in question.

In the particular case of Mexico, it is essential to appreciate that the general public has a relatively high level of illiteracy and little interest in reading. The Mexico´s population is approximately 100 million (INEGI, 2005) of which; the majority has less than eight grades of basic education (Op. cit.). Out of each 100 inhabitants of more than 15 years of age, 11 females and 7 males are illiterate. UNESCO recommends the reading of 4 books a year per individual in order to guarantee an appropriate national level of culture and social development. But in Mexico the per capita reading mean is only 0.2 books per year (Marcín, 2005).

Although the Mexican mean reading level is low, given the total population of the country, the total number of readers is still considerable. What the majority of the public reads is light or "junk" literature (Malvido, 1993). Evidence of this is the large circulation of magazines with themes encompassing gossip of show-business people, fashion, and comics with tasteless themes (sex, gossip, sensationalist stories, etc).

Currently, the comic is one of the most preferred communication media and provides the principal reading access for millions of Mexicans (CANIEM). In 2002, comics represented 33.5% of all the total number of publications in the country (López, 2003). "*Libro Semanal*" (Weekly book) and "*Libro Vaquero*" (Cowboy Book), are two of the most widely read comics in Mexico. More than half a million copies of each are sold each week and, on average, each copy is read by five individuals. Thus, five million readers are reached by these publications per week. The two comics combined, sell more than 40 million copies per year (López, 2003), placing them among the country`s five weekly magazines with the highest circulation (Gutierrez, 2001). The widely accepted status of comics among readers in Mexico makes them a very attractive means to approach the local general public.

México, as well as many other developing countries, needs new ways to communicate sustainability in low literacy situations. The evidence found in literature suggests that comics offer an opportunity to communicate scientific information in a reliable way (Wright, 2001; Weitkamp, 2007; Iacono and de Paula, 2011), to reach audiences with low literacy level in México (CANIEM; López, 2003; Gutierrez, 2001) and they represent a good vehicle to convey environmental issues to low reading capacity audiences (Jansen, 2008).

Comics are an interesting means to convey information as they include narrative as well as pictorial forms of representation. Narratives and images facilitate learning, thanks to the schemas that individuals possess from both languages as well as to the emotional response that visual and literary resources evoke (Greenfield, 2000; Erdelyi and Stein, 1981). Additionally, image and narrative contribute to learning because they act as mnemonic elements that prevail in an individual's long term memory (Mcloud, 1993).

Taking into account the evidence suggesting that comics represent a possible media to communicate scientific information, I planned a study in two parts: (1) developing a comic and (2) testing it for memory and learning.
In developing the comic I found the following problem: how to ensure that purpose-written comics properly follow comic books conventions?

Propp´s narrative model (Propp, 1968) has been suggested as a way to analyze modern narratives (Landau, 1984; Harré *et al.*1999). Propp suggested that fairy tales can be understood by using only four principles: (1) the functions of characters are stable elements in a tale, (2) the functions known in a fairy tale are limited, (3) the sequence of functions is normally the same in every story and (4) fairy tales are of one type with regard to the structure. According to Propp, functions are acts, episodes or entrances of people of various sorts. He further claimed that fairy tales are based on 31 functions (acts or episodes), which are summarised in *Table 1*.

Not every story will include all the functions proposed in the classical work by Propp (1968), but the ones that are incorporated will normally appear in the order in which they are presented in *Table 1*. In Proppian analysis, the functions are played out in seven 'spheres of action': the villain, the provider, the helper, the princess, the king, the dispatcher, the hero and the false hero. Functions and spheres of action constitute an ordered set. Their presence or absence in any particular story allows their plots to be classified. The plots take four forms: development through struggle and victory, development through the accomplishment of a difficult task, development through both of the previous categories and development through neither of them. The important point that Propp is making is that when we work with stories we are dealing with discernible and repeated structures (Hawkes, 1977).

In previous research (Negrete, 2011), I analyzed the Mexican "Libro Vaquero" and "Libro Semanal" comics. From the analysis of the narrative structures of *Libro Vaquero* and *Libro Semanal* it was possible to conclude that the structure of the comics fits remarkably well in the one proposed by Propp. Both comics present a similar structure in terms of dramatic structure, plot, characters, spheres of action and functions. The analysis of narrative structures of these popular Mexican comics suggested that classical simple structures are the most effective way to construct attractive comics for the Mexican general public. The explanation seemed to rely on the fact that people are familiar with classical narratives. That means that schemas to guide the interpretation pre-exist in the individual and foster understanding.

	Function	Description
I	Absentation	Family member absents him/herself
II	Interdiction	An interdiction is made to the hero
III	Violation	Hero violates interdiction. Villain appears
IV	Reconnaissance	Villain or hero attempts reconnaissance
V	Delivery	Information about victims is delivered to victims
VI	Trickery	Villain attempts deception of victim
VII	Complicity	Victims submit to deception
VIII	Villainy	Villain causes harm to family members
IX	Mediation	Misfortune or deficiency is made known
X	Counteraction begins	Hero agrees /decides on counteraction
XI	Departure	Hero leaves home
XII	Donor's first function	Hero is tested
XIII	Hero's reaction	To donor
XIV	Provisional receipt	Of magic agent
XV	Guidance	Spatial transfer of hero is made to vicinity of object of search.
XVI	Struggle	Hero and villain are in direct combat
XVII	Branding	Hero is marked
XVIII	Victory	Villain is defeated
XIX	Liquidation	Initial misfortune or deficiency is made good
XX	Return	Hero returns
XXI	Pursuit	Hero is pursued
XXII	Rescue	Hero is rescued from pursuit
XXIII	Unrecognized arrival of hero	At home or in another place
XXIV	Unfounded claim by false hero	Hero is at home
XXV	Difficult task	Proposed by false hero
XXVI	Solution	Task is achieved

XXVII	Recognition	Hero is recognised, often by special sign
XXVIII	Exposure	False hero is exposed
XXIX	Transfiguration	Hero is given new appearance or possessions
XXX	Punishment	Villain is punished
XXXI	Wedding	Hero marries, ascends throne or is rewarded

Table 1. Fairy tale functions proposed by Propp (1968)

Taking into account the findings on the structure analysis of the Mexican popular comics I developed a comic, using Proppian structure, involving a particular issue of importance in México: The Mayan Nut (*Brosium sp.)*.

Brosium (commonly named as Ramón) is a native tree of the rain forest in Mexico, Central, South America and the Caribbean. It produces an easy to collect and nutritive seed. The *Brosium seed* was used as food in pre-Columbian cultures. Its pulp, seed and seedlings are also very important for the fauna of tropical forest ecosystems in which the tree species live. The *Brosium* represents a food source for many human communities in south eastern Mexico. The seed of this tree is rich in fibre, calcium, potassium, folic acid and vitamin A and B. It represents an important source of proteins, due to the fact that its amino acid composition is very similar to that found in meat. It also has medical properties: it is a source of iron, tryptophan (a natural relaxation agent) and has lactogenic properties (helps women to produce milk during lactation) (Mayan Nut Institute, 2012).

Brosium constitutes a social, economic and conservationist alternative to the agricultural production systems that are now destroying our forests, because this tree produces large amounts of seeds, reducing the need for deforestation, burning, pesticides, fertilization or irrigation. It functions to protect the soil, water reservoirs and biodiversity. It produces four times more food than corn per hectare and can be stored, contributing in this way to food reserves (Op. cit.).

Nowadays communities in south eastern Mexico that previously utilized this resource, have to a large extent, abandoned its use. In its place they clear forests to use trees as firewood and to use the land for agriculture. In these communities a comic could be of help in communicating information about how to use and conserve this native species. This, in turn, could contribute (through the generation of economic resources) to alleviate the problems of poverty, unemployment, malnutrition, loss of self-esteem of rural women (by providing them employment) and reversing outgoing cultural and environmental degradation. Also if science communication comics are effective, this model could easily be replicated and spread to other areas of Mexico and Central America with a very low cost/benefit ratio.

Developing the Comic

To produce a comic that includes information about the Mayan nut, I developed the following procedure:

To generate the narratives I researched recent literature about sustainability, sustainable harvest, biology and ecology of *Brosium* sp. With this information I constructed a table entitled the "list of main active principles", implying the information about *Brosium* that I wanted to convey to the communities using the comic as a "vehicle" (as a metaphor of the active principles and the vehicle in a commercial drug). *Table 2* shows the basic scientific concepts to be included in the comic (active principles).

I developed the dialogues for the new comic using the Proppian structures identified in the two popular Mexican comics, combined with the "main active principles" and information obtained via interviews directly with the people in the communities.

Sustainability
1 Sustainable harvest
2 Natural resources conservation
Brosium sp.
1 Biology of the plant
2 Ecology of the plant
Ecology
1 Native species
2 Plant-polarizer interaction
3 Biodiversity
4 Natural selection
Food and medical uses
1 Nutritious value
2 Etnobotany

Table 2. Main active principles, scientific facts to be communicated in the comics

Images: As mentioned before, in a previous research I analyzed *El Libro Vaquero* and *El Libro Semanal* in terms of narratives and imagery (*Negrete, 2011*). In order to preserve, as much as possible, the style and language of these two popular comics, I emulated their content regarding for example the total number of images, images per page, number of characters per image, images dedicated to sensual encounters, sex implicit images, etc. (*op cit.*). Finally I constructed a story board and a consulting designer produced the images imitating the style of the comics mentioned above. I adapted the appearance of the characters as well as the settings (buildings and landscape) to the rural landscape.

The new comic, "Sustainable Love" is a narrative about a woman (Jesusa, the heroine) whose father (the king) died. She is forced to decide whether to immigrate with her boyfriend to the United States or to stay and work the land inherited from her father. The land is rich in local forest species including the Mayan nut trees (Ramonales). She has a friend (Maria, the helper), a biologist who is trying to convince her to stay in the village and use the Mayan nut to earn a living. Jose Carlos, María´s boyfriend (the villain and the princess), who just came back from the US wants to convince her to emigrate with him. Ramiro, Jose Carlos` friend (helper), arrives in the same bus as Maria's boyfriend. His aim is to use the area as a study site for his ecological research. Ramiro and Maria fall in love with each other and Jesusa convinces José Carlos to stay in the village and start a family.

Appendix I shows the comic that was developed using this methodology. Dialogues were written in Spanish, a translation to English is alongside the original comic. Table 3 shows the spheres of action played by each character in the comic.

Characters	Spheres of action
Jesusa	Heroine
María and Ramiro	Helpers
José Carlos (Boyfriend)	Villain and princess
Jose Carlos	Princess
Jesusa´s father	King

Table 3. Spheres of action played by each character in the comic.

Jesusa´s goal is to convince José Carlos to stay in the village. José Carlos plays a double role in the narrative. He is the villain because he tries to convince Jesusa to leave the place (his intent is contrary to Jesusa´s) and he also represents Jesusa´s prize if she wins the struggle. Ramiro represents a "helper" for Jesusa in the sense that he contributes to make Jose Carlos change his mind and decide to stay in the village. According to Propp's classification the comic´s plot would be like the development through "struggle and victory". Table 4 shows the functions included in the comic.

Propp's Functions	Description
Mediation	Jesusa`s father is dead. He asks Jesusa, just before dying, to keep his lands for her and their descendants.
Struggle	Jesusa struggles with José Carlos to decide whether they should emigrate to the United States and sell the land or to keep the property and use the Mayan nut products to make a living.
Victory	Jesusa decides to stay and convinces her boyfriend to remain with her.
Wedding	They agree to start a family together and cultivate the Mayan nut.

Table 4. Functions included in the comic.

Learning Study

In order to obtain feedback on the effectiveness of the comic, obtained with this method, to communicate the desired "active principles", the comic was presented to volunteers in a rural community (in the state of Morelos in México) with similar characteristics as those of the studied communities (with no specific scientific background, low scholastic level, rural area, etc.). Immediately after reading the comic they were asked to answer a questionnaire. In average it took 30 minutes to read the entire comic. The sample consisted of 45 individuals between 20 to 50 years of age (25 females, 20 males).

The effectiveness of the comic in communicating information was assessed through the RIRC method. The RIRC method explores the effectiveness of a narrative (and other formats) in communicating scientific information using four independent memory tasks to asses learning (Negrete, 2009; Negrete and Lartigue 2011). This method assesses an individual's ability to retell, identify, remember and contextualize scientific information presented to them in narrative form. The input consists of a qualitative complex stimulus (a story narrative or another text format) and the measurement is performed using questionnaires. The structure of the questionnaire used for this research can be seen in Table 5.

Questions	Questions	Intention of the question
Retell the story (Retell)	1	To measure how much the participant remembered about the story as a whole and which parts of the story were better remembered (science *vs*. narrative).
Multiple-choice (Identifying)	3	To assess how much of the information given in the story the participant was able to identify.
Short answer (Remember)	5	To test how much of the scientific information the participant was able to remember and retell.
Hypothetical situation (contextualise)	4	To determine if the participant was able to put the information in context and apply or extrapolate the knowledge (learning).

Table 5. Structure of the questionnaire.

Results obtained using the RIRC method

In all of the memory tasks the participants were able to remember more than 50% of the scientific content included in the comic (Table 6 and Figure 1). According to previous results using the RIRC method with narratives, scores of more than 50% on the four memory tasks, represent good performance (Negrete 2005; Negrete, 2011). Although this is an exploratory study and more research with this comic is needed, the fact that participants were able to remember this amount of scientific information suggests that this narrative was well understood and remembered by the participants.

Retell	Identify	Remember	Contextualize	
51	63	70	63	%*
2.8	.8	1.3	1.5	STD

*The percentage represents a measure of how close to the ideal the groups performed.
Table 6. Performance of the participants responding the questionnaires after reading the comic.
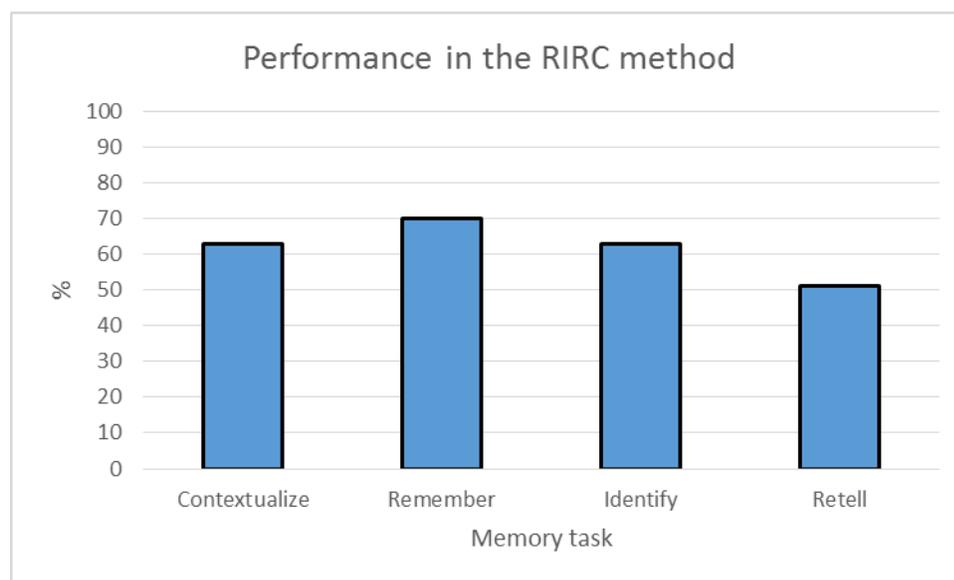
Figure 1. Performance of the individuals compared to the ideal mark for every memory task.

Future work and research

The next step on this research is to use and study the comic in the communities that it was designed for (Cuzalapa, municipality of Cuautitlán, Jalisco and Chulavista community, municipality of Bahia de Banderas, Nayarit).

In the future, it would be interesting to generate more comics with this same methodology to communicate information in other areas of scientific knowledge. For example, at present, I am working on a project that involves generating a comic book to convey scientific information about diabetes and obesity, which together with HIV/AIDS are major health problems in Mexico.

Conclusion

The analysis using the RIRC method suggests that comicss narratives are a good way to reach low literacy audiences with socially worthwhile messages. The results also suggest that the comic generated in this research was quite effective in communicating scientific information. These results, compared to previous studies using other narratives, show a good performance and therefore a good understanding and retention of the scientific information included in the narrative.

The Mayan nut in Mexico is an important natural resource as food, medicine and because of its ecological relevance. There is simple scientific information about natural resources and conservation that could encourage communities to make a sustainable use of *Brosium*. Comics could represent an ideal media for communicating such knowledge to communities in a reliable way.

In this research I propose that popular comics can, for certain audiences, be used as a tool to communicate scientific information to a large population in an understandable, memorable and enjoyable way. In the case of Mexico, they represent a unique opportunity to communicate scientific information about sustainable development and natural resources to a large sector of the population with low literacy levels, often very difficult to reach through other means.

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13th International Educational Technology Conference

Continuing with the promise of "scratch" in the applied linguistics classroom

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Abstract
Students and student-teachers of applied linguistics (LN400/G) taught at the University of Guam continue to explore the promise of SCRATCH, a free downloadable program from MIT (Massachusetts Institute of Technology). For the past three fall semesters, students and student-teachers were required to design class projects with Scratch. They were instructed to integrate principles of second language teaching/learning and or other subfields of applied linguistics into their projects, and told that they should be able to use these in the language, literature, or other content area classroom. A CD Rom of their individual projects, accompanied by written reports evaluating SCRATCH, were submitted at the end of each semester. In Fall 2012, students were required to integrate their computer projects into their lesson plans for elementary, middle, and or high school students. This presentation will propose criteria for evaluating students' computer projects and summarize their evaluations of and comments about MIT's SCRATCH computer program.

Keywords: communication, barriers, technology

In the 21st century, technology has become an integral part of students' lives, and, by extension, a vital part of many effective educators' teaching and lesson plans. Students of Applied Linguistics at the University of Guam were required to design SCRATCH computer projects starting Fall semester 2010, after the instructor attended a conference on educational technology. Students were told to consider some practical applications of the program to second or foreign language learning theories by, for example, integrating the SCRATCH technology project into possible classroom lessons not only in foreign language teaching, but also in teaching in the content areas like literature and social studies. They were told that their projects had to reflect their creativity, imagination, (multi-)cultural / ethnic sensitivity, and teaching ability.

They were told that this computer program could help put them on the cutting edge of teaching and learning, and as a result, hopefully be better teachers to their present and future students.

What is SCRATCH? SCRATCH is a programming language that enables anyone to do graphics, animation, interactive games, music – the possibilities are endless. The SCRATCH Program consists of a sprite (and other) characters, & a list of commands that can be added to a project to say and or do whatever is to be taught. All commands are listed on the side of the program in the form of puzzle-like pieces that can be added to the script. Developed by MIT Media Lab's Lifelong Kindergarten Group, with support from organizations and businesses like the National Science Foundation, Microsoft, Google, and Intel, SCRATCH was designed to stimulate and encourage

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anyone interested, from children to adults, not only to think critically, logically and creatively, but also to work collaboratively. Posted sample programs and tutorials on the net can be invaluable to those who wish to learn using the program.

In these tough economic times, SCRATCH is an attractive option for educators because it gives student-teachers a chance to learn doing hands-on basic programming as well as apply the theories they have learned in class, to actual lessons that put those theories to the student and classroom test.   Most importantly, it is free: anyone can download it from the net. Even though the program was originally intended for younger learners to learn basic programming, I wanted to see what university students of applied linguistics could do with this MIT-generated program since it is gratis and easily downloadable from the net, to help their present and future students with the acquisition of a second language, or the learning of content areas like literature. [Mention ScratchEd for teachers].

For the past three years, the program has been an integral part of the work required of the university's applied lx students. None of them have a computer programming background. They ranged from computer and or technology-challenged, to those who thrive on tinkering with what a computer program can do to improve teaching delivery!

Applied Linguistics at the University of Guam (LN400G) is a one-semester, 3-month undergraduate/graduate course that ESL, English, and secondary education majors take. Although the course surveys the main subfields of Applied Linguistics, the first half of the semester covers second language acquisition theories, e.g., Cross-linguistic Influence or CLI (Kellerman 1995, Odlin 2003) –the weak version that remains from the controversial Contrastive Analysis Hypothesis (Lado 1957); Krashen's (1981, 1982, 1983, 1985, 1997) theory with its bundle of five hypotheses – Monitor, Acquisition vs. Learning, Affective Filter, Input i+1, and Natural Order Hypotheses; Cognitive Theory (McLaughlin 1987, Scovel 1999, R. Ellis 1997); Social Constructivist Theories (Long 1996, 2003); Inter/Intralanguage/Fossilization Theories (Selinker & Lamendella 1979, Long 2003), and Eckman's (1981, 2004) Markedness Differential Hypothesis from Universal Theory (Chomsky(an) and language universals and typology (Greenberg, Ferguson).

Below is a suggested model of the relationship between L2Acquisition theories and
 communicative classroom methods in the applied linguistics class projects:

COMMUNICATIVE COMPETENCE IN A FOREIGN LANGUAGE CLASS (Hymes 1974)

Fun, Engaging Activities

L2Acq.THEORIES ← →   COMMUNICATIVE CLASSROOM METHODS ← → Lesson Plans & Tools
TASK-BASED   (exploring SCRATCH)
Linguistics, Grammar
Content area learning
Culture, social learning/teaching
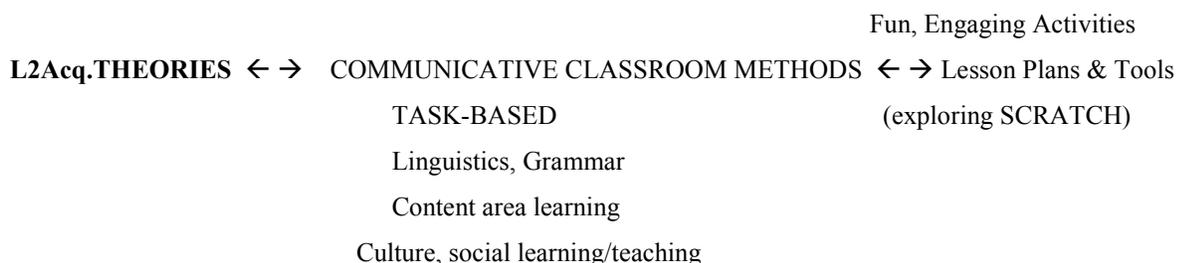
H.D. Brown (2007) enumerated five characteristics of an ideal communicative language teaching classroom (q.v., Hymes 1972 on communicative competence).

1. Lesson plans should cover all the components of communicative competence, i.e., cultural, social, and not just grammatical nor linguistic.

2. Language activities should be authentic, functional, meaningful, as well as fun and interesting, so that learners are drawn into the world of foreign language learning and not lost by the wayside.

3. Fluency and accuracy are both important goals; but, to keep communication channels flowing and open, accuracy sometimes may have to be sacrificed in favor of fluency, even if the fluent sounding speech is less than perfect grammatically!

4. Lessons must be geared to helping develop students' ability to function in real-life situations, beyond the classroom.

To this list, I will add a sixth:

5. Activities must support establishing rapport and collaboration in the foreign language classroom. Instructor-student as well as student-student relationships must be, as much as possible, positive. Learning a second language is facilitated when stress is minimal. There is nothing wrong with learning a language or learning to teach a language in a relaxed but competitive environment – a worthwhile goal.

The question then is, where does SCRATCH belong in these communicative competence teaching requirements? How can it help learning in the classroom? At home?

Criteria for evaluating students' projects are in process of being developed. They involve examining how the individual projects tie in with the theories of foreign language acquisition and communicative learning methods. Questions asked are:

I. The theory or hypothesis behind the project

    A. Reasons for choosing a particular project

    B. The L2Learning theory / hypothesis that "jives" with the program design or that the
        design addresses

II. Use of the Scratch Program

    A. The simplicity/complexity of the programming project: mastery or lack thereof?

    B. The planning vs. the execution: any technical problems with the program or content?

III. Execution and Communicative Goals in the Classroom

    A. User-friendliness of the program for the intended audience

    B. Fun and appropriate for learners/students/intended audience

    C. Task based? Goal oriented?

    D. Any Cultural sensitivity or awareness and social rules addressed beyond grammar or declarative knowledge?

    E. Are activities (content, inputting responses) age-appropriate with regards to the intended
        audience?

IV. Adjustability and Modifiability

    A. With the basic design of the program remaining unchanged, can the lesson content be
        modified for use in other content areas?

B. Any bugs? Glaring problems?

The first year of the SCRATCH project was exploratory. I divided the class of twelve into groups of 3 or 4; each group worked collaboratively and submitted only one project each. The most knowledgeable naturally became group leader. This first year project was the most basic, yet showed the great cultural and ethnic sensitivity. Among their projects were the following:

1. Sirena the Mermaid legend of Guam narrated and illustrated by a
   student/artist who insisted on doing the mixed media artwork
   herself, with Guam locales serving as the background
2. Teaching colors in Tagalog/Pilipino – with a plane flying and droning in
   the background; background applause when answer is correct
   encourages students to answer questions
3. A lord of a castle giving commands to a knight using TPR – setting: castle
   with a lady in the background
4. Teaching vocabulary words in Chamorro – with Chamorro cartoon
   characters
5. A few lines from Shakespeare's *Romeo and Juliet*, with
   local-looking characters & setting.

In the second and third Fall semesters, every student was required to program his or her own project, although they were encouraged to work in groups to help each other out, or for "knowers" to help others. A student from the previous year was invited to speak to the class, give advice, and answer questions about the program. This knower-helping-novices approach apparently helped students a lot.

Second year Fall 2012 semester projects can be divided into the following groups:

1. Interactive Storytelling
2. Illustrations, Sing-a-longs for identifying body parts
3. Drills
   a. Identification /counting of objects
   b. Editing Grammar and Punctuation
   c. Ballerina Coordinating Conjunctions
   d. Max the Monkey and Homophones
4. Teaching Methods: Total Physical Response: a knight, a lord, and his princess
5. Interactive poetry: composing cinquain interactively
6. Sociolinguistics: illustrating Irving Goffman's response cries and uptalk (XXXX).

Attachments in the appendix illustrate some of these programs.

Finally, students were required to critique SCRATCH as a program and classroom tool. The table below summarizes their comments.

UOG Applied Linguistics Students' Comments about SCRATCH

POSITIVE COMMENTS	NEGATIVE COMMENTS
1. Fun!	1. Very time-consuming
2. Great learning experience	2. Not easy to use/learn in the beginning
3. A useful tools for educators who want a different teaching method in the classroom	3. Hard to coordinate sounds, movements
4. A creative alternative to Powerpoint, lectures, chalkboards, with the teacher talking all the time!	4. Takes a few days to learn and feel comfortable with the program
5. Allows teachers to be very creative	5. UTube videos and tutorials were too basic
6. Middle and high school students can use SCRATCH to do presentations, have fun, create games themselves	6. Commands are hard to learn; challenging for teachers who are not programming-savvy!
7. No limit as to what it can do	7. Takes a lot of patience and time that teachers may not have
8. A useful tool for ESL/EFL students as well as native speakers of English 9. Teachers placed on the cutting edge of technology!	8. *What if classrooms don't have computers?*

Students' suggestions for improving SCRATCH include the following:

1. Make it more user-friendly because colorful and inviting interface belies the
   complexity of the scripts needed to make a functional product
2. Simplify the tabs: there are too many tabs and dozens of options: hard to know
   where to start to move a sprite from points A to B- so simplify the commands!
3. Simplify complex terms that are hard for ordinary people to translate to layman's
   terms
5. Make tutorial more user friendly!

With SCRATCH's new version 2.0 coming out in May 2013, hopefully, some of the students' concerns will be addressed. Meanwhile, students of Applied Linguistics at the University of Guam will continue to create SCRATCH projects that are relevant to L2Acquisition theories and communicative teaching methods. As in the three previous years, they will continue to present these at the University of Guam's Annual Regional Language Arts Conference in November of every year.

APPENDIX

Sample Scratch Projects Snapshots
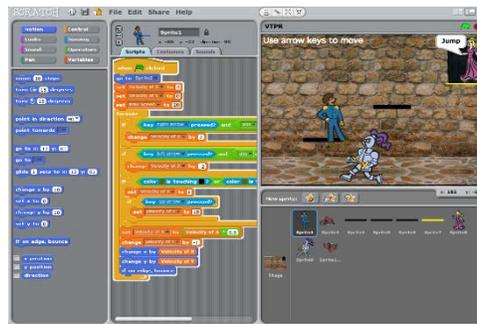
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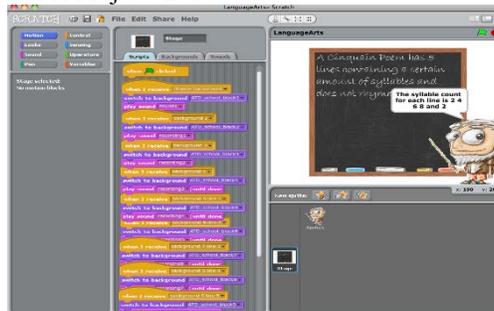
J. Mendiola. Cinquain Poem. 2010.
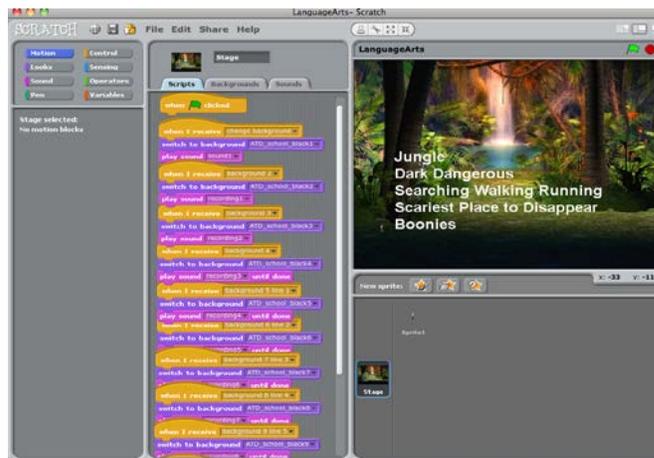
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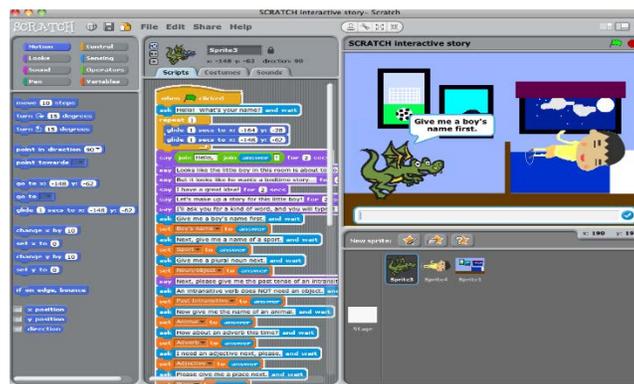
K.Borja. Interactive Storytelling. 2011.
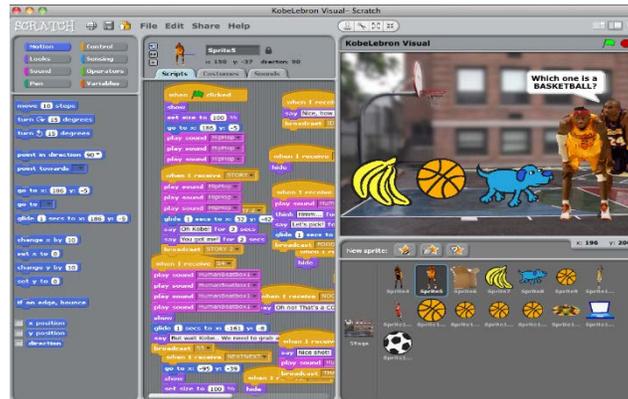
B. Sapida. Basketball Object Identification. 2011.

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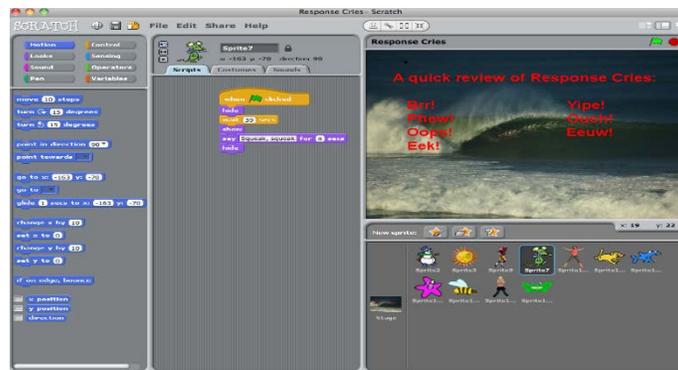
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13th International Educational Technology Conference

Cyber security: rule of use internet safely?

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Abstract
Cyber security plays on important role to guarantee and protect people who use internet in their daily life. Some cases take place around the world that people get inconvenience condition when they access and use internet. Misuse of internet becomes a current issue which some cases take place including a university. Advantages of using internet in the university of course assist the student to get some information in internet. However, they have to be protected in order to feel convenience when use internet.

Keywords: Cyber Security, Internet

Introduction

Internet is becoming an important thing in people daily life and has grown at an explosive rate (Pratap Singh and Bagdi, 2010). According to International Telecommunication Union (ITU) (2013), internet users (population) around the world are over 2.7 billion, which corresponds to almost 40% of the world's population. In the developing countries, people who use internet is around 31% of the population, compared with 77% in the developed countries (ITU, 2013).

Basically, internet was used to military, defense contractors, and a university research purpose. However, in recent years, it has been developed to multi-purposes including information, communication, leisure, shopping, education, e-social activities, financial, job seek, homepage, file share service, and download (Kisa, 2011). Those internet usage purposes bring both advantages and disadvantages for people and their community. In terms of disadvantages of internet use such as illegal contents, online fraud, identity theft, espionage, sabotage, cyber terrorism, and cyberstalking (Boateng, 2011), (Department of Economic and Social affairs, 2012), (Greitzer and Frincke, 2010), (M. Arif Mansur and Gultom, 2005), (Suhariyanto, 2012), cyber security is therefore needed to guarantee people who use internet to be safe.

Theoretically, cyber security has to fulfill 3 (three) critical points: measure to protect information technology; the degree of protection resulting from application of those measures; and the associated field of professional endeavor (Fisher, 2009). The three critical aspects of cyber security play an important role to protect a personal data of every person, government, and businesses. Those data are pivotal because they can be misused or manipulated by other person for criminal purposes.

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Internet misuse and manipulation are mostly committed by young and adult people especially people who in level senior high school and university students. In South Sulawesi for example, some Hasanuddin University students in 2011 committed financial fraud (Indonesia Hackers, 2011). The crime usually intended to the personal information stored on personal data forms in computer, such as credit card number and ATM PIN numbers. They were then arrested by the police and should face suing for their committed crime.

Complexity of definition of cyber security

It is quite difficult to define what does cyber security mean? The difficulty definition arises from several reasons and tends to be complex. (Fisher, 2009). According to Eric A. Fisher, "there are many components of cyberspace and many potential components of cyberspace" to be used in order to determine the cyberspace's meanings. (Fisher, 2009).

The meaning of cyber security tends to be decided in different context. In some cases, it refers to economic terms or in social and cultural terms or even in politic and military terms. As it is commonly used, "cyber security refers to 3 (three) things:

1. A set of activities and other measures intended to protect — from attack, disruption, or other threats — computers, computer networks, related hardware and devices software, and the information they contain and communicate, including software and data, as well as other elements of cyberspace. The activities can include security audits, patch management, authentication procedures, access management, and so forth. They can involve, for example, examining and evaluating the strengths and vulnerabilities of the hardware and software used in the country's political and economic electronic infrastructure. They also involve detection and reaction to security events, mitigation of impacts, and recovery of affected components. Other measures can include such things as hardware and software firewalls, physical security such as hardened facilities, and personnel training and responsibilities.
2. The state or quality of being protected from such threats;
3. The broad field of endeavor, including research and analysis, aimed at implementing and improving those activities and quality."(Fisher, 2009).

According to Rich Rosenthal's Cyber Assure Program (Andress, 2011), the complexity of definition of cyber security can be drawn as if:
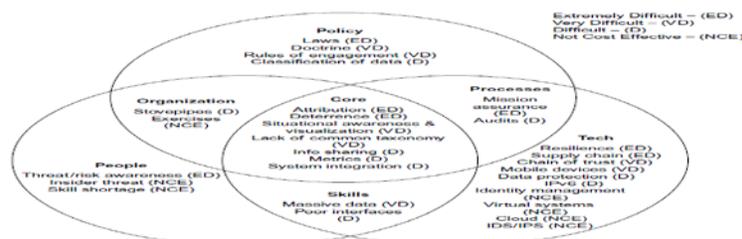
Source: Rich Rosenthal's Cyber Assure Program

The mapping as shown in figure 1 draws complexity of definition. There are 7 (seven) elements, namely as policy, organization, core, processes, people, skills, and technology, that influence security in cyberspace. Those elements essentially has connection one to another. They have to be developed in one system to create security in the area of cyber space. For example, people as an actor of internet use have intention and skill to use internet in appropriate ways. However, if other elements do not support their intention, it means that they cannot get any advantages from it or otherwise.

According to Andress (2011), some of elements of cyber security issues definition as mentioned in figure 1 are categorized as extremely difficult (ED). They are laws, threat/risk awareness, attribution, deterrence, mission assurance, and resilience and supply chain. Other elements are classified as very difficult (VD) and difficult (D). Classification of those elements actually shows that cyber security plays important role to create "peace" in using internet. Indeed, it is realized that it is not easy-job to reach it.

Cyber Security: Rule of Use Internet

Internet user is growing dramatically in variety generation and the purpose of using internet then is done in various ways as explained above. The number of internet users in Indonesia for example is increasing every year. According to Internet World Stats (2010), commercial internet services commenced in Indonesia in 1995 and coming into 2008, Indonesia had an estimated 25 million Internet users. It is predicted that in the beginning of 2013, the number of internet user in Indonesia is becoming bigger than in 2008. Guharoy and Morgan (the Jakarta Post, 2012) furthermore states that internet users in Indonesia is climbing dramatically in the last two years, "20 percent of Indonesians 14 years of age and older now access the Internet every month. That's over 30 million people, and growing steadily each month. But we need to remember two important facts that characterize the usage. First, roughly 10 of the 30 million users access the Internet via their mobile phones. Second, roughly 70 percent of those 30 million users visit Facebook and twitter each month, making it the most popular address in the country".

This fact actually is not surprising because computer and its function including internet as introduction have been introduced since the young people in elementary school. It means that the Indonesian young people especially university students have skill to access internet but they are also potentially to misuse or to be misused by the internet. Presence of internet for students in university actually helps them to get a lot of information related to their tasks. The information is provided in forms of book online and journals. Both books and journals give an easy task for the students to finish their tasks particular when they conduct their final paper to be graduated. However, a lot of cases of misuse the internet function also conducted by university students. Plagiarism is one of the most internet misuse conducted by the students. They tend to copy some materials to their tasks but they do not mention the author's name. Other internet misuse can be found such as illegal contents, online fraud, and identity theft.

According to National Research Council (2003), there are 3 (three) classes of attack that addressed to internet, as following:
1. Service disruption; it causes a loss of service and can result from disabling of networks through a variety of attacks such as denial of service (DoS) and destruction of information.
2. Theft of assets; it misuses critical information on a large enough scale to have major impact.
3. Capture and control; it involves taking control of cyberspace and using them as a weapon.

Those classes of attacks are then classified as cybercrime and also have been modified in various modus. Those modus in fact threaten all human beings activities including infrastructure. To handle and to prevent those crimes, cyber security plays important role to guarantee people to use internet safely.

As we known, cyberspace compiles a huge range of related elements of cyberspace activities and it is therefore cyberspace activities are potentially at risk. To eliminate or dismiss the risk, protection of cyberspace infrastructure is needed in order to stop hackers to commit their crimes. The protection of the infrastructure must cover internet hardware, telecommunications infrastructure, computing devices as control system and computing devices as desktop computer (Fisher, 2019). Andress (2011) furthermore stipulates that to eliminate the risk is not only protection to the infrastructure (hardware) but also must protect the software.

Protection of software is intended to help everybody to use computer/internet safely. It is because so many computers are used in homes and businesses. The computer operating systems and email programs are two aspects

of computer/internet that is vulnerable to be attacked and exploited. Case of computer worms that attacked Microsoft Windows operating system in 2003 was a proof to see that the protection of software is needed to protect the internet user (Scheiner); or other sample of a worm (spionage) took place in 2010, when a worm called stuxnet was launched to attack the Iranian nuclear program (Farewell and Rohozinski, 2010).

Both protection of hardware and software are the main point of cyber security. They are able to guarantee people to use internet safely. People will use internet to support their activities without any worry to negative impacts of internet. However, both protections must be implemented and embedded in national and international strategy (regulation) to reach its goals. In United States, for example, it can be found National Strategy for Homeland Security. The purposes of this strategy are to prevent cyber attacks against critical infrastructure; to reduce national vulnerabilities to cyber attack; and, to minimize the damage and recovery time from cyber attacks that do occur (Anonymous, 2003); or another example in Canada, its national strategy is placed on three pillars: securing government systems; partnering with the private sector; and helping Canadians to be secure online through awareness raising (Deibert, 2012).

In terms of Association of Southeast Asian Nations (ASEAN) in which Indonesia one of its members, its regional strategy is put in the area of economic and security cooperative comprised of 10 member nations from Southeast Asia. According to its Roadmap for an ASEAN Community 2009-2015, it has effort to combat transnational cybercrime by fostering cooperation among member-nations' law enforcement agencies and promoting the adoption of cybercrime legislation. In addition, the road map calls for activities to develop information infrastructure and expand computer emergency response teams (CERT) and associated drills to all ASEAN partners (United States Government Accountability Office, 2010). To develop information infrastructure as one of the ASEAN' roadmap, Indonesia continues to complete Indonesian Law Number 11/2008 Concerning Information and Electronic Transaction. One of its efforts is enacting some Government Decree such as the Government Decree No. 82/2012 Concerning Maintenance System and Electronic Transactions.

Those regulation strategies as implemented in domestic law each country essentially show huge effort of them to create convenience and comfortable environment to internet user to feel safely. Those regulations also must be completed every time to respond some changes related to using internet. So cyber security goals can be reach and are able to eliminate and dismiss negative side of internet usage as discussed above.

Conclusion

Internet has become a global phenomenon; numerous advantages and disadvantages (crimes) are being gotten and committed through the internet. To cope with both advantages and disadvantages, cyber security is needed to guarantee people to use internet safely, particular to young people including university students. Cyber security covers hardware and software infrastructure that is supported by national and international strategy and regulations.

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Design and development of a Sustainable Tourism Indicator based on human activities analysis in Inle Lake, Myanmar

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Abstract

Inle Lake encompasses immense cultural and biological features, it is the second biggest Lake in Myanmar and it is home to different ethnic groups such as Intha, Pa-O and Shan people that have been making the lake their source of revenue for several decades. Conversely, some of the activities being performed by these communities have caused diverse environmental challenges for the lake. The risk of losing part of the lake ecosystem, including local endemic fish, snails and migratory birds has been increasing in recent times. Though, there is a lack of leadership and control over these actions. Tourism is one of these key activities that can either be a difficulty or an answer to the lake ecosystem conservation. To analyze the range of actions within the lake, this document develops a methodology that analyzes and places the main hazardous activities in one scheme, it evaluates its social, economic-social and ecological cumulative impacts, and refer the main stakeholders involved in it. The outcome information from the study aims to facilitate information analysis to formulate strategies to switch from harmful activities on the lake towards Sustainable Tourism actions. The research paper indicates the methodology of incorporating data into the indicator table and its value as Sustainable Tourism analysis tool for different stakeholders, the analysis tool aims to be a sample for other case studies analyses.

Keywords: Sustainable Tourism; Human Activities, Inle Lake Myanmar; Sustainable Tourism Indicator.

Introduction: Ecotourism and Sustainable Tourism

The significance of questioning the controversial definition of Sustainable Tourism (ST) (Honey, 2008) and distinguishing it from the term Ecotourism that have been implemented in media as blooming solution to achieve Sustainable Development (SD) (Allen, 1993; Isaacs, 2000; Maclaren, 2002) is fundamental when exploring human activities in tourism and its effects on the Natural Ecosystem. The widely accepted term of Ecotourism (Valentine, 1992; Carter, 1994) defined as: *"Responsible travel to natural areas that conserves the environment and sustains the well-being of local people"* by International Ecotourism Society (TIES) (1990) has been declared incomplete by authors as Ziffer (1989) or Isaacs (2000) due to its insufficiency, thus, this shortened designation tolerates unrelenting abuse of natural resources by mass tourism. Furthermore, Allen (1993), Blamey (2001) Maclaren (2002) and other contemporary authors shaped broader definitions to illustrate the misapprehension between their visions on ecotourism and Nature Tourism. Nonetheless, most of these explanations as well cannot embrace a comprehensive approach for most of the elements related to Tourism and Sustainable Development (Honey, 2008). World Tourism Organization *(*WTO) and United Nations Environment Program (UNEP) (2005) had defined ST as: "*Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities*" This definition addresses the three main elements of Sustainability: Economic, Environmental and Social (UN, 1987). Concerning the social component of ST description, WTO-UNEP rationalization is divided into two main factions: (1) the visitors and (2) the host

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communities. The interrelation between these two target groups with natural environment is critical for the development of SD in Tourism (Koeman, 2002; Pierre ,Walter and Reimer, 2011), primarily to address matters as environmental impact reduction, cultural preservation, promotion of community livelihood and visitor satisfaction (Honey, 2008; Fredline, 2006).

This paper investigates the interrelationships between these two social elements, connecting human activities with ecological environment. Inle Lake is selected as a case study in this investigation because of its particular circumstances: it encompass a fragile and rich eco-habitat, there are previsions of vast tourism affluence and the local community is getting disrupted from their usual habits (UNESCO, 2008; BEWG, 2011) This study aims to create an understandable framework to analyze human activities impacts related to ST by defining the critical social indicators involved on it, computing the cumulative impact for the main activity groups and creating strategies and alternatives to implement ST efficiently.

Inle lake: Customs that pollute the environment

Inle Lake in Myanmar: Ecological Significance

The physical heritage, cultural expressions and biological environment of Myanmar are attracting more tourists every year (UNESCO, 2008). This fact has been generating vast international and national tourism investment and speculation that is threatening the ST Myanmar industry (ADB, 2012). A large part of Myanmar, including Inle Lake, is situated within the Indo-Burma Biodiversity Hotspot and is one of the 34 richest and most threatened flora and fauna reservoir on the planet (IID, 2012). There are about 1,027 species of birds, 300 mammals, 425 reptiles and amphibians and about 7000 plants recorded (BEWG, 2011). Thus, it is significant for the country to create a comprehensive framework to develop SD and preserve its natural ecosystem.

Inle Lake, also known as Inlay Lake, is positioned within southern Shan Plateau in central Shan State and is one of the main sightseeing attractions within Myanmar (IID, 2012). The Lake and its environs was converted into a officially protected bird sanctuary in 1985. The Steering Committee of Inle Lake Conservation was formed in 1992. Additionally, the Lake was designed one of the Earth's 200 most valuable eco-regions in 1998 as well as being designated as ASEAN Heritage Site in 2004 (BEWC, 2011).

Endangered Endemic Species of Inle Lake

 In order to generate appropriate ST measures it is important to identify local eco-habitat elements where tourism actions are executed. The fragile Inle Lake ecosystem is the natural habitat to 9 native fish species in 3 endemic genera, additionally, it is home for above 20 species of gastropods (snails), 2 cyprinid genera (*Sawbwa and Inlecypris*) and 16 of 31 species appear to be endemic in Inle Lake and its surroundings. Fish species include the Inle swamp eel (*Chaudhuria caudata*) and Inle barb (*Sawbwa resplendens*). The Inle carp *(Cyprinus Carpio intha*) is a cultural character of *Intha* community, this fish specie, locally known as *nga-phein* has been an important food for this community until recently (IDE, 2012; ADB, 2006). However Inle carp population has been diminishing in recenttimes, one of the reasons seems to be the reduction of water clarity due to sediment and euthropication (Su and Jassby, 2000). Other reason for this native fish declining appears to be about two invasive fish varieties that have been seen in the lake, *Grass carp* and *Labeo rohita* that could deplete native species (Retrieved from WWF, 2013). Furthermore, Inle lake also encompasses an important Birds Sanctuary with 240 bird species recorded(57 forest birds and 43 water fowls). The lake and wetland are the nesting places of endangered Sarus crane (*Grus antigone*) included in vulnerable class species by IUCN Red list (2007). Any activity involving remedial actions without Strategic Environmental Assessment (SEA) in the lake's ecosystem can have irreversible consequences in losing some of these endemic native species.

Inle Lake Environmental reports: Inle Lake shrinking causes

Recently, numerous environmental reports have been emerging with reference to Inle Lake from different organizations, such as, Asian Development bank (ADB) (2006); Burma Environment Working Group (BEWG), (2011), Institute of Developing Economies (IDE) (2012), United Nations Educational, Scientific and Cultural Organization (UNESCO) (2008), United Nations Development Program (UNDP) (2012), Institute of International Development (IID) (2012) and others. A number of these studies overlap each other in data analysis. Consequently, outcomes are not efficient, generally resulting in wasting economic and human resources whereas the lake eco-system remains being depredated.

For instance, according to an estimation from Sidle, Ziegler, and Volger (2007), from 1935 to 2000, the net open water area of the lake declined from 69.10 to 46.69 km2, reducing 32.4% of its capacity. A survey of the lake's dimensions conducted by Myanmar Land Records Department in 2007 revealed that it's surface area   is about 163.17 km2, of which 62.16 km2 was open water surface area. Both of these information were published in the year 2007 and have a disparity of 15.47 km2 in size. Most likely this gap is produced because both reports didn't mention the climate circumstances in the lake environs and the period of time when it was considered. Indeed, previous analysis from ADB (2006) stated that the lake is situated within a tropical monsoon quarter with three main seasons: rainy, dry, and hot, with different rain patterns that makes the size of the open water area vary. Precipitation exceeds 5cm a month from April until November, it peak point is in August, through characteristic precipitation of 20cm. This rain pattern affects both local community, tourist activities significantly and therefore, lake's reproductive biology. (BEWG, 2011; IDE 2012) Cooperation between report editors can contribute to identify efficiently the overall circumstances within the lake and its environs.

Sources of lake shrinking are also debated, but most of the reports agree that the main reason largely resides on sedimentation. Sidle et al. (2007) analyzed the alterations on the exposed water surface vicinity of Inle Lake, their analysis states that large quantity of sediments have been deposited on the lake in a short period of time; this is attributable to different human activities. The main sources of siltation are:

(1) *Deforestation,* There are three main reasons of deforestation on the hills in the catchment:
- Shifting agriculture, in the upstream
- Wood fuel, used by local communities
- Livestock Production

(2) *Floating gardens*[40]: Typically the gardens are 'shifted' to the edge of the lake after their fertility exhaustion . Thus, this activity contributes notably to the loss of the lake open water area.

(3) *Residential/Tourism*: Residential and tourism development within the north area of the lake results in the creation and deposition of more siltation because of soil disturbance and their proximity to the lake. Unprocessed sewage discharging, that includes petroleum derivates and detergents, contribute considerably to the lake ecosystem degradation trough sedimentation, turbidity, eutrophication, and pollution (Sidle et al, 2007)

(4) *Mining*. The Tigyit coal mine, is on the watershed 13 Km from the Lake, it is Myanmar' major open pit coal mine, it generate approximately 2,000 tons of coal on a daily basis. As well, there is a coal combustion energy plant in Tiygit,. Contaminated water from the mine and waste from the power plant run through the Balu creek into Inle Lake. Conversely there not exist relevant assessment on the environmental impacts of this activities on the lake (BEWG, 2011).

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[40] Floating gardens are based on hydroponic farming in floating islands of decomposed grasses, reeds and marsh plants. The islands (locally known as *ye-chan*) are usually around 2 meter (m) wide and 40 m long. By trimming these islands annually, *Inthas* continue floating gardening year-round by growing vegetables. Floating gardening is a very productive and economically beneficial practice. In recent years, a high yield variety of tomato was introduced from Thailand and Inle has become a major production area of tomatoes, supplying the whole country (ADB, 2006; Sidle et al., 2007).

Community Sectors and related Human Activity

Inle Lake is situated in *Nyaung Shwe* Township. It holds 36 village areas, encompassing 444 villages, 32,139 households, and according some reports, an estimated population of more than 160,000 people inside the lake and its environs (IID, 2012; IDE,2012). Population includes diverse ethnic groups (Table1).

7. Table 1. Population Breakdown from Nyaung Shwe Township, Data Source: UNDP (2008)

Ethnic Group	Percentage
Intha	70%
Pa-O	10%
Bamar	3%
Taung Yo	2%
Shan, Myanmar, Others	15%

The number of individuals residing within the lake is complex to calculate due to diverse reasons such as lack of updated census in Myanmar, undefined lake boundaries and seasonal migration. It is roughly estimated that population that live in inundated areas are between 60,000 and 100,000 individuals (IID, 2012). Large proportions (about 90%) of these households are regarded as rural. The major ethnic group within the lake is Intha. The income distribution along the township, illustrates that agriculture, specially tomatoes, account for more than half of the income of the lake households (Table 2). Tourism is relatively a new way of income, so it isn't measured as a separate category in this report; hence there are no accurate estimations on that.

8. Table 2. Income Distribution in the Lake and community involved. Data Source: IDE (2007)

Activity	Income	Community
Agricultural Activities	50%	Intha, Shan, Taungyo, Myanmar, Others
Small Scale production/ Manufacturing	30%	Intha, Shan,Pa O, Others
Local Business	10%	Intha, Shan, Myanmar, Others
Trading	7%	Intha,Shan, Myanmar, Others
Fisheries	3%	Intha, Shan, Others

Tourism of Inle Lake

There does not exist reliable long term data about tourism in the lake, existing accessible statistics are not accurate. Some rough estimations have been made by IID (Figure 1), representing the gaps of dissimilar information sources. They state that in the year 2012 Inle Lake received roughly 300,000 visitors, of which half of them were international. Forecasts predict the number of visitors will double within the following three years (IID, 2012). There have been no imperative needs to address tourism impact in recent years due to the reduced amount of visitors. Previous tourists were believed to have little economic, environmental and social impact. Nonetheless, some opinions estimate that in recent times the tourism industry within the lake accounts for about 50 million USD a year (Personal communication, Joen Kristensen, Director and Representative at Institute for International Development (IID), 2013).

Phaung Daw U pagoda festival is held in September every year, it is a distinguished celebration in the country. There is a large flow of international, national, and regional visitors, they stopover within the lake in this short period of time where all travels and numerous marketplace are happening on the water. Because of the celebration, larger disposal of solid waste is deposited into the lake, contributing to its pollution. This problem can be solved by raising awareness in this rush moment of the year, which can help to extend environmental awareness for the tourists, local communities and social entities involved in it.

There is a need to differentiate the impact from different tourist target groups, such as domestic and international visitors, with its diverse costumes and habits. It is important to raise an enclosed strategy that encompasses the

groups' main activities to minimize their impacts. Many of their cumulative impacts are very similar, such as sewage disposal, water footprint and food, usage of motorboats as transportation in the lake (plying of motor boats result in oil/lubricant spillage), etc. However, there exist some cultural differences on tourist activities, including different waste disposal behaviors. International tourists generally are aware of waste disposal habits, whereas local tourists should be well-informed and enforced to practice sustainable waste disposal behaviors. (Personal communication, Achim Munz, Resident Representative at Hanns Seidel Foundation, 2013)
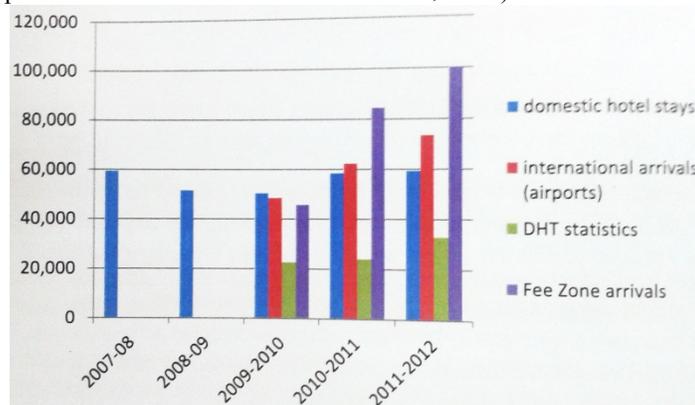
Fig. 1. This graphs illustrate the differences on statistics from four
different data indicators on the lake. Source: IID 2012

Finding accurate indicator of human activities impact within the lake

ST Indicator Methodologies and Approaches

Once acknowledged the eco-habitat and social elements within Inle Lake, it is important to recognize the group of people undertaking each activity that is affecting the lake's environment (Table 2). There exist numerous investigations on ST indicators. Several of them failed to formulate a comprehensive approach of all factors involved on ST. A number of studies are focused on the environmental parts of ST as the one by Colin and Jon (2007). Some other investigations carried out a scale to assess the social impact of tourism within communities (Fedline, 2006), however, they failed to address environmental problems of ST. There are some other researches that addressed the complexities of all issues involved on ecotourism, including human activity analysis, but they only provide a limited scope for the case study where they are working on, as Zambrano Et al. (2010) carried out in Costa Rica or Wuver and Attuquayefio (2006) did in Ghana.

Most of these ST studies have been targeted for specific scientist groups, their outcomes are not entirely comprehensible and available for broader audiences, such as tourism industry, environmental advocates, tourists, media and concerned citizens. Ultimately, the focal point of this research paper is centered on the "decision-makers understanding". The decision-makers have the authority to choose the implementation of the policies that will have repercussions on the actions done by local population and tourists of one specific area. This fact will influence on the promotion of specific activities (Tin et al. 2009). Hence it is important to offer this decision-makers precise understandable information to encourage them to take decisions that support ST activities.

For instance, to implement correct measures on ST, it is necessary to emphasize that the major environmental problems in the lake are direct or indirectly caused by human beings, therefore, an association of human-environment should be constantly present to monitor human activities on physical environment. A carrying capacity index should be created and implemented. Carrying capacity in the context of tourism is defined by Cooper (1998) as "*the ability of a site or region to absorb tourism use without deteriorating*" yet, nowadays there is not existing a unanimously established explanation for it, neither a standard methical process for assessing it (White et Al, 2006)

The intrinsic challenges in the establishment of carrying capacities are the lack of understanding and consciousness of the concept regarding ST. In a comprehensive method, Koeman (2002) in an assessment report for Vietnam Tourism Ministry, split up Tourism carrying capacity into four branches: Physical, Biological, Psychological, and Social. All are related to the number of visitors/tourists to a site or area.

(1) *Physical* is the actual number of visitors a site can hold.
(2) *Biological* is the point at which environmental degradation occurs to the extent that it is irreversible or unacceptable.
(3) *Psychological* is the point at which the tourists feel the quality of their experience is damaged by the number of other tourists and/or their behaviors.
(4) *Social* is the level at which the local inhabitants of the site (possibly the tourist attraction themselves) feel disrupted, intruded upon.

Koeman (2002) as well, states that carrying capacities comprise qualitative as well as quantitative features, subsequently, there not exist precise figure for it. However is it essential that an effort is prepared to reach at some evaluation of the carrying capacity of each area, employing the best techniques and information obtainable.

Two main issues need to be addressed in this definition. First, the number of individuals that visit one place is significant (Physical branch), although, the activity that each of them performs on this place should be defined. It is significant to target what kind of tourists are visiting the lake and what activities they execute, trying to measure their cumulative impact. Other significant issue to state is that, current capacity is divided into four branches, but not all of them have same significance. Human-nature dualism should always be concerned, from a SD approach, biological factor should account for great part of the indicator. Every human activity should correspond with its impact on natural habitat.

ST Comprehensive framework to analyze Inle Lake human activities and its related impact

Human activities influence flora and fauna at numerous diverse stages of biological organization, arraying throughout habitats, communities, populations and individuals. Impacts can vary from small and momentary to harsh and long-lasting (Tin Et al. 2009). Accordingly, human activities measurement consists on a long process that requires uniformity on the analysis where lot of data need to be collected. An applicable study divides the classification of human activities as (1) research studies, addressing some specific subject with short term outcomes and (2) monitoring studies, involving quantifying changes in characteristics of resources over long period of time. (Robert Et al. 2006). A comprehensive ST Activities Indicator should encompass these two areas: (1) capable to explain specific questions in short term that determines the path toward actions and (2) able to be reused in the future when circumstances change and compare their results to predict future trends. The proposed framework in this paper attempts to create a clear methodology to address Inle lake's key human activities and its related impacts. Moreover, it aims to be used as reference for human activity indicator analysis in Tourism areas, flexible enough to acclimatize to other tourism destination studies and determined enough to maintain consistency in the methodology. Hence, every study appraised through this methodology would add value to the analysis tool in a process that follow these steps:

(1) *Identify the environmental–social problems that affect the lake.* Based on data research, questionnaires, interviews, experiments and related information.
(2) *Categorize the major human activities* that are the source of environmental-social problems, not necessary by specifying the whole compendium of all activities, but by encompassing a spectrum that can cover the activities that create the environmental-social problems identified previously.
(3) *Classify which community* or social group is responsible for each activity. Stating a clear identification of the ones that are responsible for the most "pollutant" activities
(4) *Input all this data in the Human Activities Indicator Table* .By the criteria of Table3,input data on social-ecological cumulative impact in Table 4. Previous analysis would help to categorize

(5) *Scrutinize* for every negative impact which activities and community of people are related (Table 3) Share it with interested parties, stakeholders and public.

(6) *Create a strategy* based upon the data analysis, targeting the groups of people that cause the impact, and encouraging them to transform the specific activities that are the source of the hazards.

(7) *Monitor* its effectiveness by updating the new data on the excel table through the time.

3.3 Indicator framework

Every activity is composed of quantitative and qualitative aspects. Firstly, recognizing the core human activities involved on the lake is essential to retrieve as much as environmental, social and economical data. This is classified in a list that shapes a scope to identify the main environmental degradation causes related to the lake. This list helps to identify the community actions responsible for the environmental problems. The outcome information should include three different types of data: environmental cumulative impacts, human activities and groups of people related to those impacts. All of these records are incorporated in Human Activities Indicator Table (Table 4) according to the criteria of Table 3 to analyze every group of human activities previously categorized.

9. Table 3. Tool analysis for the lake. Evaluation analysis

Impact	Evaluation	Feedback
Activity helps to reduce impact in this and most of the activities	5	Activity Performs well
Activity that helps to reduce impact in this activity but creates impact in others	4	Appraise other activities' negative impacts
Neutral, circumstances will not change due to activity	3	Neutral,
Activity creates more impact in this activity but create impact others	2	Appraise other activities' positive impacts
Activity creates negative impact in this activity and others	1	Activity need important appraisal.

To quantify the social ecological impacts created, Ecological Footprint (EF) has been chosen as biological indicator due to its major coverage of biological facts. EF is divided here into five elements : bio-reproductive land, bio-reproductive sea, energy land, built land and biodiversity (WWF, 2002). Furthermore, Human Impacts are divided in physical, psychological and social elements (Koeman, 2002). Due to limited time and capacity constraints, the examination of the impact of the activities of Inle lake in this paper, on both biological and social areas, may not be self sufficient in certain aspects. The objective of this paper is to disseminate the methodology of the usage and understanding of Human Activities Indicator Table (Table 4)

The process of input numbers in the table is very sensitive. A scale should be determined based on quantitative and qualitative information analyzed on this and previous case studies. The basic evaluation data determined for this appraisal is defined in Table 3. This table rates human activities from 1 to 5. Rating 1 means vast degradation of eco-habitat in the activity analyzed and other activities, 2 means negative impact in the activity investigated but other positive and/or neutral impacts in other activities, 3 means that the activity does not present positive or negative impacts when is developed, 4 means the activity analyzed creates good impact in some aspects but negative and/or neutral impacts in other activities, and 5 means that the activity creates good impacts in this aspect and also help to generate good impacts in other parts.

10. Table 4. Tool analysis for the lake.

Activity Group	Target Groups	% $	HI Physical	HI Psycologycal	HI Social	NI Biorep. Land	NI Biorep. Sea	NI Energ. Land	NI Built Land	NI Bio diversity
Floating garden	Intha, Shan, tourists, others	50%	4	4	4	2	2	3	2	1
Shifting agriculture	Pa-o, Intha, Shan	1%	3	3	4	1	2	2	3	1
Fishing	Intha, tourists	4%	4	5	4	2	2	3	3	2
Fuel wood	Intha, Pah-O, Shan, Myanmar	2%	3	2	4	1	2	1	2	2
Mining activities	Government Shan, others.	3%	1	1	3	1	2	1	1	1
Pagodas, temple	Monks, Tourists	2%	3	3	4	2	2	2	2	2
Residential.Building	Intha, Shan , Ministry, others	3%	3	2	4	2	2	2	2	2
Local Manufacturing	Intha, Pa O, others	20%	4	5	5	4	4	4	3	3
Trading	Shan, others	7%	3	3	4	2	3	3	2	2
Hotel	Tourist, hoteliers	10%	4	4	3	2	2	2	2	2
Boat Taxi	Intha, Shan, others	5%	2	5	4	2	2	2	3	3
Other tourism Attractions	Tourism, Shan, Intha	2%	4	4	4	2	2	2	2	2
Bird sightseeing	Tourist, Shan, experts	1%	4	5	4	4	4	4	4	4

Once the data is recorded on the Human Activities Indicator Table (Table 4), its apparent an understandable scope of the key pollutant activities related to tourism in the area, as well as its economic importance, the social communities that are performing each of these activities and the evaluation of the activity impacts that they create. Thus , this table helps to understand the overall situation of the lake. Different target groups can analyze and review the information on the table and add is as a tool to help to formulate strategies to minimize its impact by efficiently know who is creating it with the activities they perform.

As an outcome on the research in Inle Lake human activities we can observe that, for example, cultivating floating gardens is economically and socially beneficial for both local population and tourists. On the other hand, it creates great impacts on bio reproductive land (including wetland) and biodiversity (endemic species risk). The social groups that are involved in this activity (Shan, Intha, tourist and others) should change some patterns of their actions, or either switch to other non-impact activities with similar economical benefits. It should be developed in a way that is beneficial for the local communities, tourism and reduces its impact on the Inle Lake's water resources. Then, the decision makers involved in this activity should examine alternatives to address the environmental and social challenges, one of the alternatives is to encourage Sustainable Tourism, as it is economical beneficial, and can help to preserve the lake eco-habitat. Human Activities Indicator Table can be a tool for decision makers to help understanding the overall social, economical, and environmental situation of the lake while saving time and

economic resources. The outcome information can be re-examined during and after implementation of measures, as a result, the evaluation of the lake could be processed faster.

Conclusion

Human Activities Indicator Table has been developed in this paper by the measurement of relevant activities related to Inle Lake in Myanmar. The methodology to analyze and incorporate data in the indicator on this case study exemplify the complexity of Inle Lake particular circumstances. Every case study is different, and human activities involved on them fluctuate. To attain this two facts, the usage of this indicator encourages itself to be a tool to compare human activities from different case studies, moreover, it aims to be used as a effective monitor tool by updating applicable information of tourism activities. The analysis of the outcome data can help to implement efficient measures, on the economic, social and ecological situation of the area analyzed.

This document explain the Human Activities Indicator Table as an instructions manual to incorporate data and read it. However, the analysis and methodology to incorporate data on the table should develop further by generating additional standards and case studies data comparison. To do that, the tool its accessible to help to promote Sustainable Tourism (ST) for any party interested in developing it.

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13th International Educational Technology Conference

Design and development of Webquest for Physics Module by employing Isman Instructional Design Model

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Abstract

The study was aimed at designing and developing a web-based teaching courseware, Webquest, for secondary school Physics module by employing the Isman Instructional Design Model and to test the effectiveness of the module. The paper draws attention to the design principles of the Isman Instructional Design Model. The prototype module was tested among a teacher and 4 students. The findings from interviews with the teacher and students show a positive response in attracting the students' interests toward the topic. The module was then implemented with 30 participants. In the evaluation phase, students' achievement score instrument was used to collect data for this study. The pre-posttest design conducted suggested that the module is effective.The findings from this study suggest that the Isman Instructional Design Model which pays attention to instruction from the learner's perspective than from content perspective is suitable in designing and developing Webquest for Physics module in the secondary educational setting in Malaysia. The findings of this study are expected to provide insights into promoting teaching and learning of Physics based on Webquest.

Keywords: Isman Instructional Design Model; Webquest

Introduction

Technology is used in education for two main reasons: as a tool for increasing the effectiveness of instruction and to integrate technology into the curriculum (Gülbahar, Madran, & Kalelioglu, 2010). A webquest is a research activity that requires the learner "to collect information about a subject using the web" (Sharma & Barrett, 2007, p. 24). Webquests are a very common way of using Web resources to research a variety of topics, and if appropriately used can trigger the situations necessary to develop both written and oral communication (Laborda, 2009). Recent studies have indicated that Webquest has a very high potential as a tool in teaching and learning (Alshumaimeri & Almasri, 2012; Laborda, 2009; Segers & Verhoeven, 2009), enhancing students' potential (Allan & Street, 2007; Zacharia, Xenofontos, & Manoli) and creating a positive learning environment (Allan & Street, 2007; Chang, Chen, & Hsu, 2011; Kleemens, Segers, Droop, & Wentink, 2011).

Webquest is a relatively new tool for teaching and learning. The model of Webquest was first developed by Dodge (1997) which consists of six components: introduction, task, information, process, evaluation and conclusion. WebQuest, which makes students access the web to complete a task or solve a problem, elicits higher-order thinking rather than simple information searching and recall (Gülbahar et al., 2010). Research done by Allan and Street (2007) on the impact of a knowledge by pooling WebQuest in primary initial teacher training, shows that WebQuest has the potential to promote high order learning within different disciplines in higher education. It also creates a new enviroment in learning. Most of studies on Webquest used quasi-experiment as the research design (Alshumaimeri & Almasri, 2012; Chang et al., 2011; Halat, 2011; Segers & Verhoeven, 2009; Hsiao, Tsai, Lin & Lin, 2012), while only a few on design and developmental research (Gülbahar et al., 2010; Norazah Nordin & Ngau Chai Hong, 2009).

Gülbahar et al., 2010 developed a web-based interactive system, Web Macerasi, for teaching-learning and evaluation purposes, and to find out the possible effects of the system. The study has two stages. In the first stage, a

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WebQuest site was designed as an interactive system in which various Internet and web technologies were used for infusing technology into the teaching and learning process. The Web Macerasi site was used for project work by 92 prospective students who attended different courses in different years. For collecting thestudents' perceptions about the implementations of the system, a questionnaire of WebQuest effectiveness and a focus group interview guide were developed. Next, the first phase of the study was concluded, and theWebQuest system was updated based on the data gathered from students. In the second phase, 27 students from a different course used the system, and their perceptions were collected through the questionnaire and analyzed. It was found that the students favored the technology-supported media, were more willing to collaborate, found the feedback very useful, and agreed on the positive contribution of planned works. Consequently, the WebMacerasi site was found to be successful and to have been used effectively in terms of its aims.

The same scenario operates in Malaysia as only a few studies have focused on the design and development of Webquest. Norazah Nordin and Ngau Chai Hong (2009) developed a WebQuest for ICT secondary school subject. The main objective of the study was to develop teaching aids based on webquest and to evaluate students' perception towards it. Questionnaires were used to evaluate between face aspect and teaching and learning content structure of the WebQuest developed. The results of the study shows that the overall presentation of the WebQuest entitled Computer System is suitable and interesting for teaching and learning of the subject. It can be implied that Webquest has potential as a tool in teaching and learning. However, not much literature on Webquest has explored its potential in the design and development of Webquest for Physics module. Hence, this study was aimed at designing and developing a Webquest for Physics module in secondary educational setting by using Isman Instructional Model and to test the effectiveness of the WebQuest module.

2.The Aim of Research

The aim of this research is to design and develop a WebQuest Physics module according to the Isman Instructional Design Model in the secondary educational setting and to test the effectiveness of the module. In order to achieve this aim, we set two research objectives. The first objective is to describe the design and development of a Webqusest module by employing the Isman Instructional Design Model. The second objective is to test the module effectiveness by pre/posttest design and interviewing 4 students.

This study seeks to answer the following research question:

- Is a WebQuest Physics module developed by employing the Isman model effective?

3. Significance of the Study

The results of the study can be used by educators to determine the effects of Isman model in the design and development of a WebQuest module in the secondary educational setting in Malaysia.

4.Scope and Limitations

In this study, a sample size of 30 students at an urban secondary school in the state of Selangor was selected as the population reflected the proportion of the multiracial communities in Malaysia.

5.Instruments

The instrument is two multiple choice tests used for pretest and posttest. This test was designed to analyze students' achievement on "Charles's Law" and "Boyle's Law". There were 50 items in these two instruments. The content of the instrument was validated by three Physics teachers while the language was validated by two language teachers with more than 10 years' working experience.

6. Theoretical Framework

6.1 Employing Isman Instructional Design Model in Developing of a Physics Module Based on Learning Style and Appropriate Technology

The major goal of the Isman Instructional design Model is to show how to plan, develop, implement, evaluate and organize full learning activities effectively to ensure competent performance by students (Isman, 2011). The theoretical foundation of the new model comes from behaviorism, cognitivism and constructivism views. Firstly, Isman (2011) used realationship between stimulus and response, the reinforcement factor and designing environmental condition in behaviorism theory to motivate more in this model. Secondly, motivation, intellectual

learning process, experiences and contents in Cognitivism theory are used in this model to motivate students to learn more in this model. This model is interested in how to store information into long term memory, hence instructional activities are designed in this model. The Isman model also uses constructivism which pays attention to personal applications. Isman model was implemented on 100 graduate students at the faculty of education at Eastern Mediterranean University in North Cyprus with the purpose to analyze the effects of the model on academic achievement (2005). The findings of the research indicates that Isman model was implemented successfully in instructional activities in the experimental group and affected academic achievement and so, it may be said that this model could be implemented to design instruction. Norlidah Alias and Saedah Siraj (2012) employed the Isman model effectively in the design and development of Physics module based on learning style and appropriate technology in the Malaysian secondary educational setting. Hence, the researchers aim to employ Isman model in the design and development of WebQuest Physics module and to test the effectiveness of the module. The Isman Instructional Design Model is described in a five-step systematic planning process. These are input, process, output, feedback and learning as shown in Figure 1.
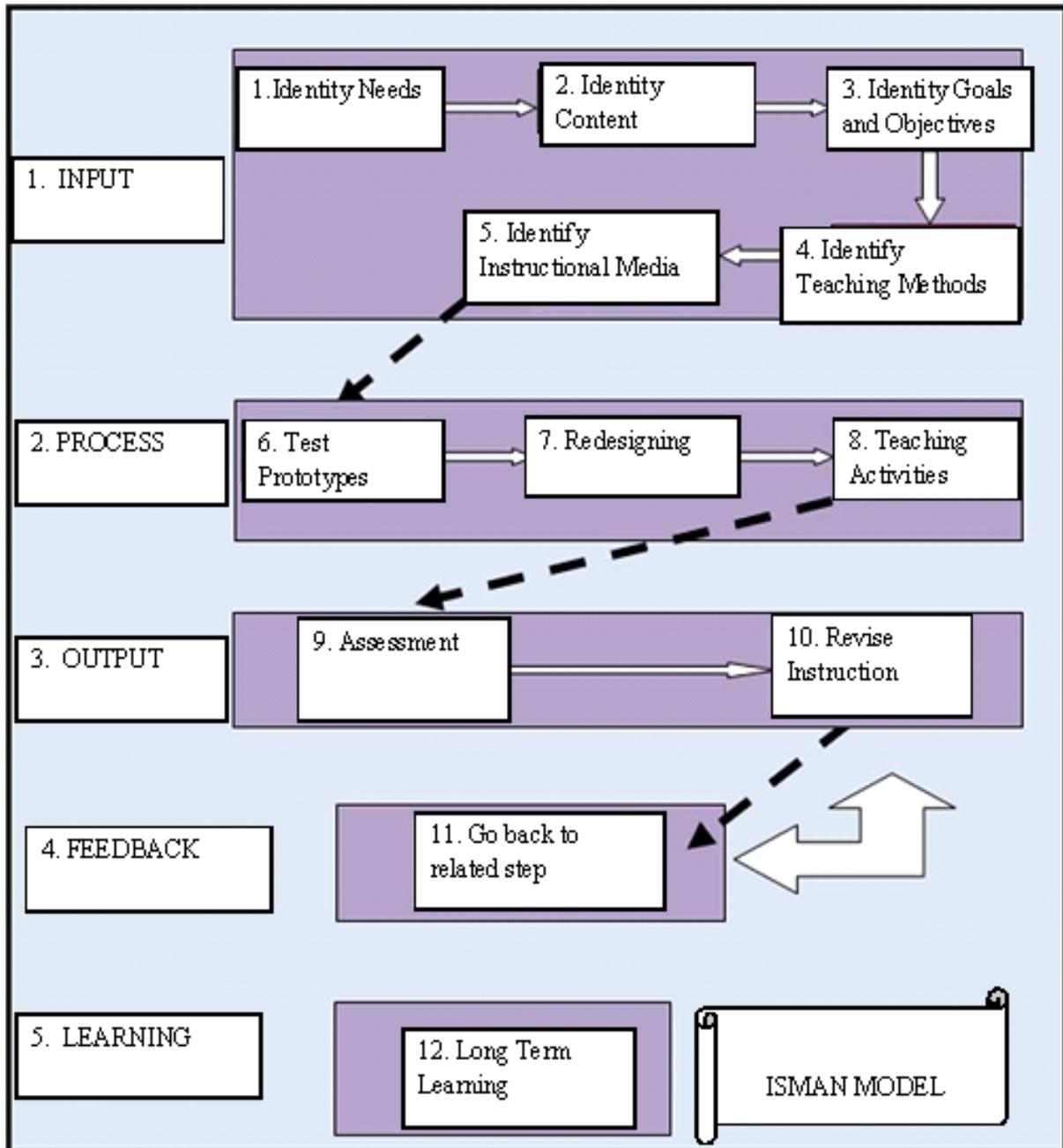
Figure 1: Isman Instructional Design Model (Isman, 2011, p.139)

6.2 Steps in the Isman Instructional Design Model

The first step in the Isman model is input. The input step involves identify needs, identify contents, identify goal-objectives, identify teaching methods, identify evaluation materials, and identify instructional media. Isman (2005) states that the main goal of first step is to identify factors for input. In this research, we use a panel of experts to identify the input for the WebQuest module based on six components of the WebQuest: introduction, task, information, process, evaluation and conclusion.

The expert panel consisted of five individuals, two Physics master teachers, one ICT master teacher, a Professor in Physics Education and a head of department of curriculum and ICT in a local university. The experts review suggested that a WebQuest Physics module be developed on two topics on gas laws such as "Charles's Law" and "Boyle's Law".

An example of WebQuest Physics module is as shown in Figure 2 and Figure 3.

The second step in the Isman model is process. The process step involves testing prototypes and redesigning of instruction and teaching activities. We also used the expert panel to redesign the Webquest Physics module produced.
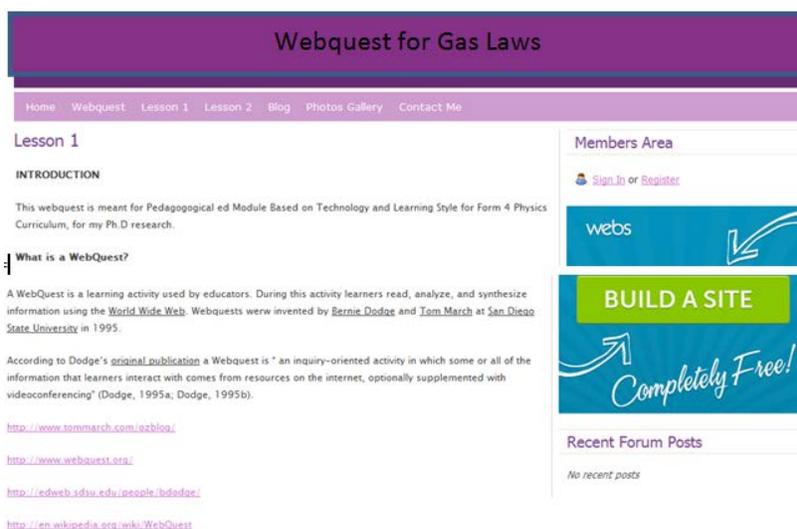
Figure 2: Main Page of Online Module of Webquest Website.
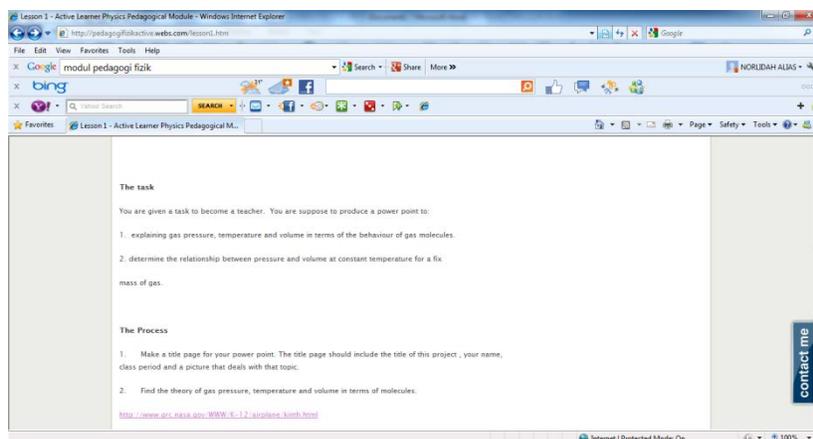
Figure 3: Main Page of the task and process in the Webquest Website.

The third step in the Isman model is output. The output process involves testing and analyzing results. To determine student learning, educational measurement and evaluation process should be implemented by teachers. In this research we tested the prototype by implementing the modules with a teacher and 4 students.

The fourth step in the Isman model is feedback. The feedback process involves revising instruction based upon the data collected during the implementation phase. If, during the phase, teacher finds that students are not learning what the plan wanted them to learn, or they are not enjoying the learning process, teacher will try to revise and improve some aspect of their instruction to enable the students to accomplish their goals. In this research, we revised the instruction according to the teachers' and students' comments.

The final step in the Isman model is learning. The learning process involves full learning. In this process, teachers want to ensure that their students have learned what the instructional plan wanted them to learn. This is when the pre/posttest was conducted to test the module effectiveness. Employing of the Isman model to design and develop a WebQuest Physics module is documented in work logs as illustrated in Table 1:

Table 1: Use of Isman model to design and develop a Physics pedagogical module

Steps	Work log	Descriptions
Step 1 Input	Identify needs Identify contents Identify goals-objectives Identify teaching methods Identify evaluation materials Identify instructional media	Designing Physics module based on WebQuest Designing the webpage Designing six components of the WebQuest: introduction, task, information, proses, evaluation and conclusion were designed.
Stage 2 Process	Testing prototypes Redesigning of Instruction Teaching activities	Using expert panel to redesign the WebQuest website produced.
Stage 3 Output	Testing Analyze Results	Implementing the WebQuest module with a teacher and 4 students.
Stage 4 Feedback	Revise Instruction	Revise the comments given by students and teachers.
Stage 5 Learning	Learning	Pre/posttest was conducted to test the effectiveness of the WebQuest module.

7. Results

The effectiveness of the WebQuestPhysics module by employing the Isman model was analyzed. Findings from the module evaluation conducted among 30participants suggested that the module is effective. A *t*-test was performed to determine if there were significant differences in achievement scores between the groups. Table 2 shows the results of *t*-test comparison of pre/posttest achievement for the WebQuestPhysics module.

The effectiveness of WebQuestmodule developed using Isman model

Findings from module evaluation conducted among 30 participants suggested that the module is effective.

Table 2: *t*-Test comparison of pre/posttest achievement towards WebQuestPhysics module

	Pretest (n = 30)	Posttest (n = 30)	*t*-value	*p*	Effect size
Mean	52.07	55.03	5.55	< .05	0.69
SD	18.18	16.58			

Table 2 shows that there is a significant difference between pretest (mean = 52.07, *SD* = 18.18) and posttest (mean = 55.03, *SD* = 16.58) marks, *t* (29) = 5.55, *p* < .05. The mean scores indicate posttest have significant higher achievement toward the WebQuest Physics module than pretest.

8. Implication and Conclusions

This paper has described an effort to design and developed a WebQuest Physics module in the Malaysian secondary educational setting by employing the Isman model. In addition, the effectiveness of the modules was tested and it was found that the module was effective for learners. It indicates that the Isman instructional model was implemented successfully in the design and development of the WebQuest Physics module in the Malaysian secondary educational setting. The outcome of this study will hopefully enhance the process of teaching and learning Physics in secondary educational setting by utilizing WebQuest.

Acknowledgement

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Developing sustainable relations with internal and external stakeholders in universities: vision and mission views

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Abstract

The basic mission of the universities in the current century has been undergoing a transformation since the last two centuries. This transformation also affects the degrees of emphasis on missions with the content. Community service missions have been taking precedence over education and research missions in 21st century universities. Also current missions have been re-designed by integrating each other and the key elements such as strategy and sustainable development. The biggest difference of this design from the earlier models in universities is effective and permanent participation of the internal and external environmental conditions to this process. The success of this participation is possible by making the participation of the students, academic and administrative employees as internal stakeholders and alumni, business, central and local governments and civil society organizations as external stakeholders to the processes in higher education more functional.

In this context the subject of this study is researching the internal and external stakeholders view on mission and vision of Selçuk University's surveys data in the axis of a conceptual model designed for developing sustainable relations with a comparative method. In this study first, university and stakeholders relations are discussed with conceptual dimension and changing process's components. In the second part of the study, the questionnaire prepared in the form of case study and applied to university's internal and external stakeholders has been analysed in comparison. In the last part of the study, the process and system suggestions have been developed for building up planned and sustainable relationships with internal and external stakeholders through analysed findings.

Keywords: stakeholder, sustainability, university

Introduction

In the later 20th century and in the beginning of 21st century, important developments have been occurred on roles and functions in Higher Education Institution, especially university, organization structures. These developments are possible to deal as developments which occur in markets and being in financial difficulty because of reducing the government support gradually, increasing the competition and globalization. Globalization, the first one of these developments, is a development to influence on all countries, companies and universities because of being integrated to go beyond the national limit of knowledge, technology and capital. Creating the knowledge and fast developments occurred in diffusion process have caused pressure on universities and accelerated the competition between universities and universities and other institutions (Smit, 2002: 6; Aalerud, 2004: 15).

The issue that the governments don't make fund-raising for higher education, the second development is, has turned an international fact and the universities have had an expectation on the subject of solving the social and economic problems from governments. Over against, government has had more quality higher education services expectation from universities. But, reducing the financial support has caused a confidence crisis between government and universities (Smit, 2002: 7). The mentioned reduce on government support, have caused that the institutions develop the own source of income in way of various methods as new or higher tuition fee, research scholarship, industry and enterprises and research agreement and private education programs (Gumbort and Sporn, 2001: 10). The other side, education and investment cost have continued to protect the high level and the highest performance presentation which will be possible less sources, have obligated to be managed the universities by basic management-finance principles (Kozeracki, 1998: 1).

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The third development is that labour shows alteration of student and institution requirements in recent 20 years. In economy and society, enterprises oriented knowledge have created the ever-growing and ever-changing labour market, universities have been expected to be brought the skilled studies for these markets. The main purpose of the universities have turned to gain the business opportunity, higher valued knowledge in society, skill, manner and behaviours for their students (Smit, 2002: 8).

Finally, period of change of higher education has made reconstruction subjects current issue in higher education institution. Reconstruction of higher education is the result of reform process occurred on knowledge and communication and importance of economic globalization, technical and socio-economic knowledge. At the same time, reconstruction is opportunity and threat interaction arose by being developed the run models and reconstruction the higher education institutions and reshaping the competition, fundamental change in education needs (Salmi, 2002: 8-12).

Fundamental change paradigm which influences reconstruction of higher education may be summarised as follows (Aktan, 2007):
- Quality assurance and accreditation
- Transparency and accountability
- Autonomy –academic freedom
- Differentiation
- Flexibility and specialization
- Entrepreneurialship and innovation
- Stakeholder participation
- Close relation with society
- Knowledge age learning and pedagogy system
- International cooperation

Four fundamental function and purpose of higher education which these paradigms influence may be ranked as follows (Taylor ve Miroiu, 2002: 9):

- The individuals are grown up with equipment which can use mental potential in the highest level and realize themselves along their lives, contribute the society and provide to improve their personality completely and freely.
- To allow to be used usefully for society and economy, by providing to be shared and being understood, increasing the knowledge.
- To generate the economic conditions based on compatible and sustainable knowledge in local, regional and national level.
- To contribute that generating a citizenship sensibility which the individual may improve freely themselves and democratic society.

Developments of fundamental mission, which have been explained above, in current century in universities have caused to realise a historical change for last two centuries. This change influences the orders in significance level with mission context. The current missions have been planned again with key aspect as strategy and sustainable development, being articulated with together. The biggest difference of former university models of this plan is activated and sustainable participation of environmental conditions in and out of university. This participation's success looks possible to make more functional that participation of alumni, business world, central and local governments and civil society organizations, which ocur the external environment, in higher education process as external stakeholder and students, academic and administrative staff who occur the internal environment of the university as internal stakeholder.

In the consequence of all developments, stakeholders, higher education institutions and their missions have been become different as stated above. Reducing the government role in higher education and increasing relatively the private university role have caused that the universities have been integrated with society much more. But, disadvantage of this tendency has been occurred and being departmentalized and social responsibility have become a threat to them. Management of university in dilemma and becoming overladen with request of stakeholders make current issue that the universities are managed well in stakeholder management sensibility of university (Jongbloded, Enders & Salerno, 2008).

The stakeholders of universities separated as internal and external, individual and partner, academic and not academic. Between these stakeholders, academic personal looks the most important internal stakeholder because of being core of scientific production. The other key stakeholder is students from being related to customer input technology sensibility of higher education (Rothschild & White, 1995). The students, who are output of universities at the same time, appear in society and sectors make essential active participation of external stakeholders in decision process of universities (Jongbloded, Enders & Salerno, 2008).

In the following sections, firstly it has been developed a conceptual model which participation of stakeholders to overcome the changes of universities has evaluated within change paradigms. Statement set, which has been occurred with component of model, has been presented as a case study and dealt with comparatively vision and mission preferences related to fundamental internal and external stakeholder of universities. Finally, process and system proposal have been developed on the point of stakeholders relations of universities.

Aim of The Study and Methodology

It is aimed to be contributed to explainability of stakeholder participation within conceptual model, which has been shown as follow, within the context of period of change in higher education which has been evaluated in introduction. Firstly, a statement set has been generated by specialist by using stakeholder analysis and case study which are one of the qualitative research methods within conceptual model in this study. Secondly, comments of internal and external stakeholders which obtained by means of the mentioned questionnaire, aimed at potential mission and vision statement of university, has been evaluated comparatively.

Model has been designed with the thought that sustainable and quality oriented stakeholder cooperation is an important issue for higher education institution. Therefore, model takes part sustainable and quality component in up and down position. *Accountability* and *improvement* which have two fundamental aims of quality and quality assurance have been used in the meaning of content in higher education (Hamalainen ve Jakku-Sihvonen, 2000). Therefore, quality has been associated with institutionalization case and generated the content of academic and institutional autonomy on the base of transparency and accountability management. A sense of social responsibility includes in order to be developed the sustainable relations with society on model in consequence of continuous improvement philosophy in quality.

External dynamic of higher education under the mentioned two fundamental components, taking part in model. These dynamics has been shown as;

- Cooperative development and internationalization
- Competition
- Recognition

These three dynamic are market conditions which globalization influence the higher education institution. Under these conditions, cyclical interaction of three dynamics and three missions, which are shown with social service, research-development and training and education missions, being fundamental mission of university, three fundamental missions has been included on model in order to take the opportunity. According to model, it is required get into strategic partnership and competition, internationalization and sectorial ad international cooperation, recognition has been determined as a fundamental and central problem area as European Higher Education Area (Lisbon Recognition Convention-1997 and Bucharest Declaration-2012) (EHEA, 2012).
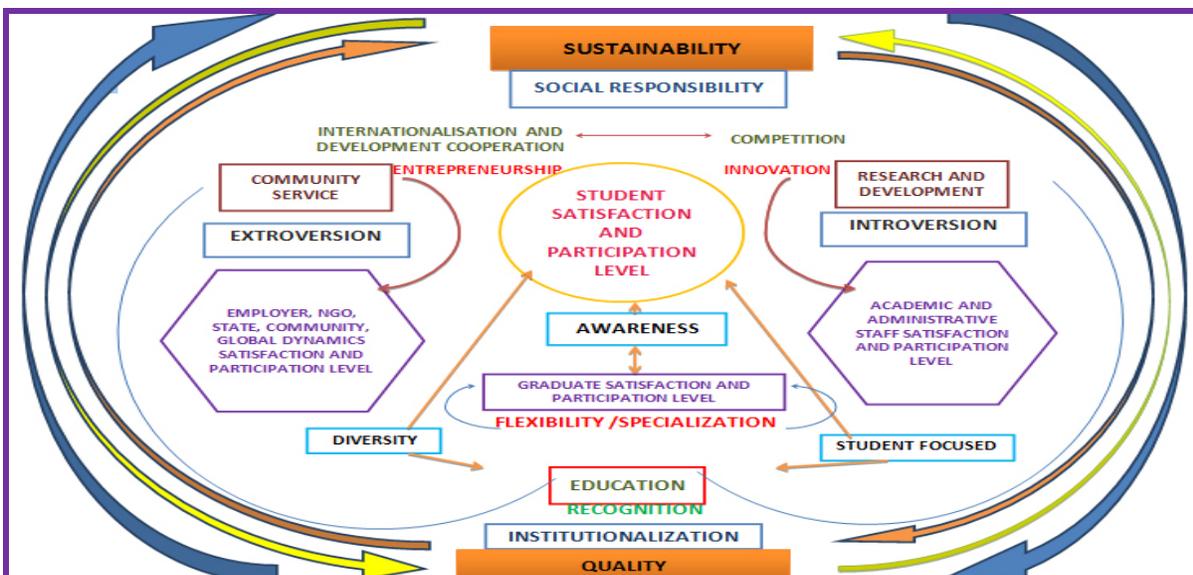
Figure 1.Stakeholder participation and satisfaction cycle

The participation and satisfaction levels by the basic stakeholders of the university are given within the framework of conceptual model. The satisfaction of students having an important role among internal stakeholders and their active participation into this higher education process due to the fact that they are the input, outcome and the self of the model is placed in a central position. The satisfaction and participation levels of students and graduates are classified as "awareness", the participation of academic and administrative staff by the internal stakeholders as "introversion", and the employer, non-governmental organizations, government, society and global dynamics by the external stakeholders as "extraversion". It is also emphasized that there is a circular relation among the elements in order to make an evaluation between internal viewpoint and external viewpoint in an interactive way and the key concepts have been determined as "innovation" for an exit gate to the introversion, "entrepreneurialism" for extraversion and "flexibility and specialization" for a consciousness raising education service.

Case Study: Selçuk University

Selçuk University was established in 1975. Being one of the most rooted universities throughout the country, it is ranked as the 10th university among 170 universities in total in accordance with the ranking by 2012 SCIMAGO Scopus. Also known as the second largest university with a population of almost 70.000, the University is consisted of 22 faculties, 7 graduate schools, 23 vocational high schools, 6 institutes and 1 state conservatory.

One part of the several stakeholder analyses conducted to arrange a Strategic Plan for 2014-2018 in the university is made though determining the vision and mission by the participation of stakeholders. In this study, the opinions of internal and external stakeholders of the university in terms of their vision and mission statements and their comparison are taken as a case study.

The stakeholders of the university are separated into two groups as internal and external stakeholders. The internal stakeholders are analysed separately as academic staff, administrative staff and students. The external

stakeholders are included in the analysis as managers of public and private sector, managers and employees of public and local administrations, managers of employer unions as the chambers of industry and commerce and non-governmental organizations. In the below section, the stakeholders are separated as students, academic staff, administrative staff and external stakeholders and their opinions on the vision and mission statements of the university are given and the findings are also investigated through comparisons.

3.1. Vision and Mission Opinions by Internal & External Stakeholders

At the time of this survey (initial period of 2012-2013 academic year), there are 74.832 enrolled students, 2.680 academic staff and 1.225 administrative staff in the university. The survey involves the participation of academic staff, administrative staff, students and managers from public, private and non-governmental organizations. Table 1 indicates the distribution of vision and mission statements of both internal and external stakeholders:

Table 1. Distribution of vision and mission selection by internal and external stakeholders at university

Vision and Mission Terms	Academic	Administrative	Student	External
In top 500 world-class universities	965	423	28.754	81
Competitive	896	399	4.233	80
Entrepreneurialial and innovative	1.040	472	3.442	80
Caring the historical values	880	423	1.242	77
Highly regarded	922	429	1.188	74
Self-confident	892	395	697	74
Institutionalized	1.042	463	747	72
Transparent and Participative	990	427	348	71
Honoured to be his/her student	1.032	432	678	71
Student-centred	802	326	641	70
Fair and reliable	1.004	473	392	70
Respectful to different and innovative ideas	986	430	167	70
Continuously changing and developing	983	455	373	66
Basing on scientific thoughts	1.073	416	122	65
Interrogative and researcher	985	394	143	65
Creating a value	913	389	207	65
Respectful to the social values	930	435	268	64
Initiator and leader	879	392	303	59
Socially responsible and sensitive to environment	943	418	255	59
Preferred by the students, preferable for graduates	1.064	425	719	58

3.2. Comparison of Vision and Mission Selections by Internal and External Stakeholders

When Table 1 is examined, it is seen that 1.073 people among the academic staff state that vision and mission concepts must "*base on scientific thoughts*". This concept is followed by the ones *"Preferred by the students, preferable for graduates", "Institutionalized", "Entrepreneurial and innovative", Honoured to be his/her student"* and *"Fair and reliable"*.

It is seen that 473 people among the administrative staff state that vision and mission concepts must be "fair and reliable" and this concept is followed by the ones *"Entrepreneurial and innovative"* and *"Institutionalized"*

It is seen that 28.754 people among the students state that vision and mission concepts must be *"in top 500 world-class universities"* and this concept is followed by the ones "*Competitive*", *"Entrepreneurial and innovative", "Caring the historical values", "Highly regarded", "Self-confident"* and *"Institutionalized"*.

The external stakeholders of the university state that vision and mission concepts must be *"in top 500 world-class universities"* and this concept is followed by the ones *"Continuously changing and developing"* and *"Preferred by the students, preferable for graduates"*.

Table 2 indicates the first three statements made when making the most and the least selections among vision and mission statements by the stakeholders.

Table 2. Comparison of initial and final three in vision and mission selections of stakeholders

Visions and Missions	Academic Staff	Administrative Staff	Student	External Stakeholders
Most preferred three statements	-Basing on scientific thoughts	-Fair and reliable	-Being in top 500 world-class universities	-Being in top 500 world-class universities
	-Preferred by the students, preferring for graduates	-Entrepreneurial and innovative	-Competitive	-Continuously changing and developing
	-Institutionalized	-Institutionalized	-Entrepreneurial and innovative	-Preferred by the students, preferring for graduates
Least preferred tree statements	-Student-focused	-Student-focused	-Basing on scientific thoughts	-Student-focused
	-Initiator and leader	-Creating a value	-Interrogative and researcher	-Transparent and Participative
	-Caring the historical values	-Initiator and leader	-Respectful to different and innovative ideas	-Self-confident

According to Table 2, the distribution of internal and external stakeholders within the group and their comparative weight levels are respectively as follows: *"in top 500 world-class universities", "Preferred by the students, preferable for graduates"* and *"Institutionalized"* for *the most preferred* vision and mission expressions; "Student-focused" and "Initiator and leader" for *the least preferred* ones.

Results

It is seen that academic staff puts a great importance on scientific thought, institutional conscious and institutionalization statements in their vision and mission statements. This result is different from the statements "competitiveness, innovation and entrepreneurialism", which are regarded as important by the university students. It is believed that high levels of awareness are quite effective in the selection of the statement "Basing on the scientific thought" by the academic staff. Students also have similar preferences when selection their vision statements in terms of institionalization and institutional conscious.

It is seen that administrative staff makes a reference to a "fair and reliable" understanding of administration. It is also important to see that administrative staff selecting the "entrepreneurial and innovative" statements in the same way with the students also selects "institutionalized" statement as a vision and mission in parallel to the opinions of academic staff.

It is also expressed in the vision and mission statements of the university students that the statements "competitiveness, innovation and entrepreneurialism", a trivet of being a world-class university in the centre of internationalization and globalization, are given importance by them. It is also expressed that the expectations of students in Selçuk University are quite high in terms of their rank among other universities, their preferability and familiarity; its re-organization and development with other innovations and minimization of concerns on employment within the cooperation between university and industry. The emphasis the students made upon historical values indicates that there is a perception on recognizing the local wealth within globalization; and the preferences of dignity, self-confidence and institutionalization also indicate that there are expectations to canalize the rooted potential history of Selçuk University into brand recognition and professionalization.

External stakeholders share the same opinion with the students by selecting the statement *"in top 500 world-class universities"*. In addition to this, they also have similar opinions with the academic staff in terms of the statement *"Preferred by the students, preferable for graduates"*.

Another important result of this study is that no stakeholders other than the students preferred the statement "student-focused". It should also be stated that the statement "student-focused" is not also preferred by most of the students.

It is also seen in the vision and mission statements preferred most by the university stakeholders following the findings of this study that levels of perception and awareness play an important role. The grounds for this opinion can be seen in the statements of both academic staff as "scientific thought" and of administrative staff as "fair and reliable".

The selection of "institutionalization" by the academic and administrative staff can be related to their sensitiveness in such issues as autonomy and professional organization. The expectations of benefactors from the university services can be concluded as internationalization and brandization because students are external stakeholders are in the centre of conceptual model of stakeholders as *"in top 500 world-class universities"* and due to their external position.

In this context, these issues are recommended to compose a stable strategic plan and program for the university by developing systematic and sustainable relations among the university stakeholders and within the framework of these relations:

- It is also possible to gather data by collecting opinions of internal and external stakeholders of the university via focus group discussion, workshop and search conference to get better results from the selections of vision and mission realized via stakeholder analysis and survey methods. Besides applying these methods separately for each stakeholder, common meetings for stakeholders can also be organized.
- Such surveys assessing the awareness and perception levels of the same stakeholders by basing on their vision and mission statements preferred most can also be applied. In this way, wrong perception problems will be removed in the vision and mission expressions of stakeholders, as the levels of conscious and awareness of the stakeholder selections are determined.
- Such informative meetings can be organized on "student-focused" subject for stakeholders mainly and "innovation" for students, "transparency and participation" for external stakeholders and "leadership" for employees. Relative negative ideas and their reasons can be interrogated on these concepts, which are the basic elements of becoming a world-class university and 21st century understanding of university.
- Stakeholders are encouraged to participate in all strategic administrative processes of the university as in vision and mission selections. An online data entry and sharing mechanism can be developed via some software to make this participation continuous and systematic and for its sustainability.
- An administrative unit can be established to account for senior administration and stakeholders in order to make qualitative and quantitative evaluations via a mechanism to be composed of stakeholder opinions, thereby increasing the visibility and awareness studies in this issue. In this view, an autonomous platform and in horizontal organization model, similar to the internal auditing unit or quality assessment, in which both internal and external stakeholders can meet as "Participatory University Center".

These can be recommended for future studies by following the opinions of stakeholders when selecting the vision and mission of the university investigated herein:

- The concepts of vision and mission can be presented for the evaluation of stakeholders with broaders and explanatory statements.
- The external stakeholders profile can be diversified primarily with graduates.
- Quantitative analysis methods can be diversified by the application of qualitative methods on the evaluations of stakeholders in a common platform first.
- Comparative examinations can be made with the stakeholders' analysis in other universities.
- Notification of stakeholders on such issues as universities, changes and new tendencies and evaluative processes can be increased on a regular and systematic basis.

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Development of an integrated learning environment with knowledge management for cultivating student critical thinking skills

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Abstract

With the development of information technology and popularization of internet web-based applications, students nowadays are prone to rapidly browse information, making them incapable of analyzing or integrating information received. Hence, knowledge management and critical thinking skills have in recent years become an important topic in tertiary education. In order to develop student critical thinking skills, this study proposed a learning environment integrating web applications based on a knowledge transformation model. Students should be able to undergo a knowledge transformation process to strengthen critical thinking skills by using popular web applications integrated in the proposed learning model. To evaluate the effect of the proposed approach, 40 university students were invited to participate in a semester-long experimental course. The students were then evaluated after the course. Results showed that the proposed approach was able to effectively improve student critical thinking skills. In addition, students were also satisfied with the courses and teaching methods implemented in the experimental course used in the study.

Keywords: Knowledge management, critical thinking, web application

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INTRODUCTION

Increased popularity of computers and Internet connectivity allowed students to easily obtain and share information. Hence, students are increasingly prone to scan and skim over information rapidly, and as a result, many were unable to analyze or integrate information, affecting their higher order thinking, creativity and their abilities to think critically. Thus, knowledge management that emphasizes knowledge creation, application, acquisition, sharing and internalization became an important research topic in recent years (Ungaretti & Tillberg-Webb, 2011). Continuous exchange of explicit and implicit knowledge was used to train students in higher levels of thinking skills and achieve the objectives of knowledge transformation. The principles of knowledge transformation referred to in this study were based on the theories of knowledge creation proposed by the Japanese scholars Nonaka and Takeuchi (1995). When members of an institution share knowledge through interactions and exchanges, the value of the knowledge would be elevated initiating knowledge transformation and creation in the entire organization.

The era of Web 2.0 also saw the emergence of many Internet services and programs such as Flickr, Wikis, WordPress and Google. These services are accessible and free, and their easy-to-use interfaces and powerful functions made them extremely popular. Many of these services have also become indispensable tools for some. Many papers have therefore pointed out that these Internet services and programs have the potential as useful educational tools for students and instructors in carrying out meaningful educational activities (Lin, & Jou, 2013; Schneckenberg, Ehlers, & Adelsberger, 2011; Thompson, 2007).

With this background in mind, this study has proposed an educational environment with a knowledge transformation model that integrated Google services. The objectives of the proposed environment would be to help promote student critical thinking skills and knowledge management processes. In order to assess the effectiveness of the proposal, an experiment was conducted in a college-level course that utilized the proposed environment in a Taiwanese university. Results showed that both instructors and students were pleased with the proposed approach, and the approach had effectively improved student critical thinking skills.

Literature Review

Teaching students how to think critically has become an important topic in education (Astleitner, 2002; Facione, 2007; Paul, 1995). This is because critical thinking is a basic element in knowledge development (Yeh, 2009). One of the most well-known definitions of critical thinking was made by Ennis (1991) who defined critical thinking as "reasonable reflective thinking that is focused on deciding what to believe or do" (p. 1-2). Moore and Parker (2009) provided another definition for critical thinking as "the careful application of reason in the determination of whether a claim is true" (p. 3).

In order to facilitate student's critical thinking skills, several researchers have identified argumentation as a key process in critical thinking and must be carried out through peer interaction and collaboration involving knowledge sharing and knowledge co-creation (Norris & Ennis, 1989; Moore & Parker, 2009). Moreover, engaging in social interactions, each student provides opportunities and resources for other participants to discuss and construct knowledge collaboratively that may cause disequilibration, knowledge inconsistency, opposability of perception and ideas, and inadequacy of logical reasoning and strategies for individual, which will facilitate higher-orfer thinking skills, such as critical thinking skill (Slavin, 1992; Yu, Liu, & Chan, 2005).

Additionally, a reflective mind is the hallmark of critical thinking (Schroyens, 2005). Thus, many research concluded that improving self-awareness and mindfulness would help develop reflective practices (Collier, 1999; Tillema, 2000; Yeh, Huang, & Yeh, 2011), provide adequate feedback, and improve self-awareness and mindful learning (Titone, Sherman, & Palmer, 1998). Some investigations also pointed out that interaction with other participants may help improve self-reflection, idea exchange and further development for mindful learning (Steele, 2001).

Approach of an integrated learning environment with knowledge transformation model

This study proposed an educational environment with Google services based on a knowledge transformation model, SECI (Socialization, Externalization, Combination, Internalization) model that would encourage learners to go through the process of knowledge transformation with Google services to improve their critical thinking skills. Figure 1 shows the educational environment framework. Google services used by this study as educational tools include Google Plus, Docs, Blogger and Sites. The tools would help learners undergo the four processes of

socialization, externalization, combination and internalization where tacit and explicit knowledge would be continuously transformed from one form to another in a knowledge spiral. The process would then help to improve critical thinking skills. The following describes the processes in detail:
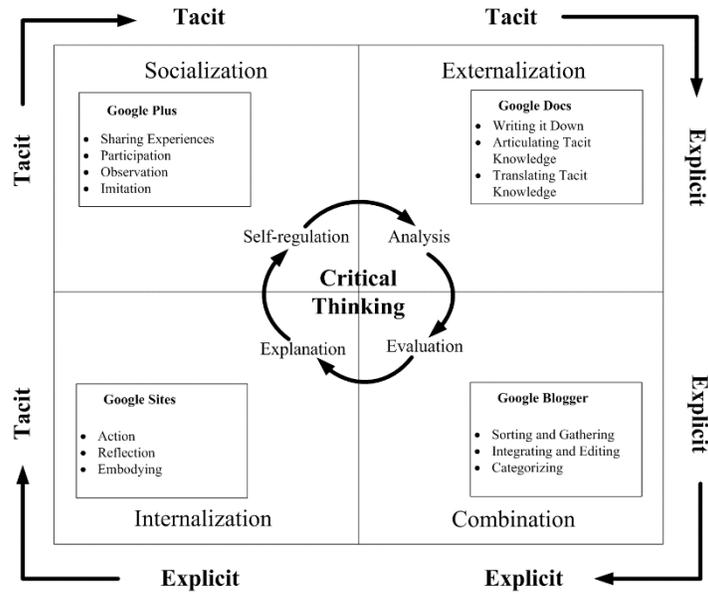
Fig. 1. A web application supported knowledge transformation model

- Socialization

Socialization is a process where tacit knowledge is transformed into another form of tacit knowledge. The process incorporates communication, observation, adaptation and practice to share and absorb knowledge, passing it on through subtle or immersive influences to create new personal tacit knowledge. In order to promote student observation and adaptation in socialization, this study incorporated Google Plus to construct webpages for the instructed course. Course participants would form study groups and socialize via the course webpage to improve student-instructor and student-student interaction and exchange of information. Students could also implement self-discipline via the socialization process (Piaget, & Garcia, 1974).

- Externalization

Externalization takes place when the individual uses text, analogies, pictures, film or other media to transform personal experience, techniques and other tacit knowledge into explicit knowledge. This study incorporated Google Docs to help students analyze and externalize their tacit knowledge. Students would be able use various functions provided by the service to use texts, pictures and other explicit media to externalize their tacit knowledge and create explicit knowledge.

- Combination

In combination, individuals systematically analyze, categorize and combine existing explicit knowledge with explicit knowledge received through different types of information media or language symbols. This study utilized Google Blogger to help learners analyze, categorize, combine, structuralize, and evaluate existing explicit knowledge. As students compose blog articles to share with their instructors and peers, they would be systematically combining and presenting various types of explicit knowledge.

- Internalization

Internalization is the process where explicit knowledge is transformed through symbolization and specification into tacit knowledge. To facilitate this process, this study used Google Sites to assist student collaboration as well as interaction. Students would use Wiki-based mechanisms in Google Sites to conduct collaborative projects with their peers. We hoped that the processes of organizing and compiling data would allow reflective processes for the students to internalize explicit knowledge into tacit knowledge.

The focus of the proposed approach was to facilitate knowledge transformation amongst the participants and enhance their critical-thinking skills through continuous interchange of knowledge sharing, internalization, and co-creation via class-based and online learning activities.

Experiment

Research instrument, measures and goals

Feedback questionnaires were utilized in order to evaluate the impact of the proposed learning environment to students in terms of instruction and learning. The questionnaires included assessments on student critical thinking and satisfaction of the proposed environment. A detailed description is provided in the following text:

- Critical thinking: This study implemented the traditional Chinese version of the California Critical Thinking Skills Test (CCTST) Form A to assess student critical thinking skills (Facione, 1990). The CCTST is a 34 item, multiple-choice test designed for college students, graduate students, and adult professionals. The maximum obtainable score in CCTST was 34 points. The CCTST assesses five areas of critical thinking (analysis, evaluation, inference, induction, and deduction), and the test was implemented before and after the students undergo the learning environment. The internal consistency of CCTST Form A, measured by Kuder-Richardson Formula 20 (KR-20), is 0.70.
- Satisfaction: This study utilized an SSQ (Student Satisfaction Questionnaire) with a five-point Likert scale to assess student satisfaction (Biasutti, 2011). The questionnaire was divided into 3 sections – Google services, Didactic Material, and Professor.

Experimental design, participants and procedure

To evaluate the proposed integrated learning environment, the environment was used in a semester-long course (17 weeks) on product design and assessed through a quasi-experiment. The participants were 40 university students with an average age of 20 years. Course content and lesson activities include professor lectures, class discussions, online discussions, after-class exercises and practical projects.

Figure 2 shows the experimental procedure. Students would fill in a CCTST Form A questionnaire at the beginning of the course. Relevant literature observed that most students were relatively unclear on the means of incorporating similar programs in their learning environment, even though they were seemingly adept in internet services and applications through daily use and exposure (Ng, 2012). Therefore, instructors would first provide students with correct user concepts and the guidelines of incorporating Google services into class activities, and give extra help for the few students who had never used Google services before. A course page was also constructed and administered by the course instructor on Google Plus before classes formally begin. The course page would help extend the time and space for student-instructor and student-student interaction, even when outside the physical classrooms and lesson times. With the conclusion of the course, students would fill in a second CCTST questionnaire form and SSQ form to evaluate their feedback on the entire course.
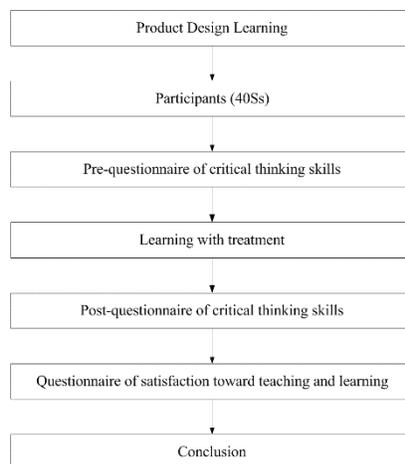
Fig. 2. Experimental process

Experiment

Critical thinking survey

Participating students were asked to take a CCTST Form A questionnaire before and after undergoing the learning activities to help assess their critical thinking skills. Preliminary analysis results revealed that the mean and standard deviation of the post-test (16.00 and 2.32) were slightly better than those of the pre-test (15.35 and 3.13). Additionally, a paired t-test was used in order to assess differences between student critical thinking before and after the learning activities. Results of the analyses, as shown in Table 3, show that student critical thinking increased significantly after going through the learning activities.

Table 3. Paired-samples t-test on the critical thinking skills of the students

	Group	N	Mean	S.D.	$t(39)$
Critical Thinking Skills	After participating in the learning activity	40	16.00	2.32	-2.292[*]
	Before participating in the learning activity	40	15.35	3.13	

[*]$p<.05$

Student satisfaction survey

Student Satisfaction Questionnaire (SSQ) was used to assess student feedback on the proposed approach. The Cronbach's alpha value of the questionnaire items was 0.855. Table 4 shows the statistical results. Cronbach's alpha

values for the three factors of Google Service, Didactic Material and Professor were 0.881, 0.870 and 0.831 respectively. Hence, we could see that students showed high degrees of satisfaction with respect to Google services, the didactic materials as well as the professor's instructions used during the learning.

Table 4. Students' satisfactions towards the learning process

#	Item	SA & A (%)	Neutral (%)	D & SD (%)	Mean
	Google service				
1	I like seeing other students interact with materials I had posted on each Google service	55.0	35.0	10.0	3.53
2	Use of Google services helped me share ideas with the other students	65.0	22.5	12.5	3.78
3	My group was able to come to a consensus by using Google Services	50.0	27.5	22.5	3.45
4	I had learned through information exchanges with other students via Google services	62.5	32.5	15.0	3.50
5	Use of Google services promoted knowledge transformation	70.0	17.5	12.5	3.70
6	I felt comfortable seeing other students reply or edit content I had posted	62.5	30.0	7.5	3.63
	Didactic Material				
1	Was clear	60.0	27.5	12.5	3.73
2	Was useful	65.0	25.0	10.0	3.73
3	Was challenging	72.5	25.0	2.5	3.90
4	Provided ideas for learning	67.5	17.5	15.0	3.70
5	Was connected to my background	80.0	15.0	5.0	3.98
	Professor				
1	Was friendly towards individual participants	60.0	32.5	7.5	3.75
2	Was dynamic and energetic in leading the learning activities	70.0	25.0	5.0	3.90
3	Made participants feel welcome in discussions	66.5	27.5	10.0	3.75
4	Encouraged participants to express ideas	65.0	25.0	10.0	3.78
5	Stimulated cooperation between participants	65.0	17.5	17.5	3.63
6	Stimulated formation of the online community	65.0	22.5	12.5	3.73
7	Gave feedback during activities	72.5	22.5	5.0	3.85
8	Gave appropriate suggestions	72.5	22.5	5.0	3.80
9	Helped in solving problems	65.0	27.5	7.5	3.73

Discussion

Participants developed critical thinking skills described in previous sections during their participation in the proposed integrated learning environment. The positive impact of the course was a result of several factors, such as the implementation of an appropriate pedagogical approach, an interactive technology tool, clear and organized didactic material, opportunity for participant collaboration, and support and feedback provided by the online tutor (Blass & Davis, 2003; Garrison & Anderson, 2003). In order to provide a clear discussion of these elements, this research shall evaluate the results based on three contexts – social, knowledge and technology.

Social context

Instructors play important roles in facilitating learning processes and implementing a learner-centered approach in the educational environment (Bower & Hedberg, 2010). In this study, the course instructor would stimulate and promote student interaction and collaboration in lectures and the online platform. The instructor would play the role

of an observer and encourage students to express personal thoughts and give appropriate feedback to students as required instead of providing traditional one-sided lectures. The Professor section in the SSQ investigation allowed us to know how students felt about the professor's role. Students provided positive feedbacks for the professor in terms of encouraging student discussion and expression of personal opinions, promoting peer collaboration, and guiding students in various learning activities. Additionally, results in the Google service section of the SSQ indicated that students were largely pleased when interacting with their peers via Google services. Therefore, in addition to the instructor, technology also played an important role in the social aspect. The online environment was simple yet efficient, expediting collaborative work, experience sharing, and peer support in the interdisciplinary project (Biasutti, 2011; Bliuc, Ellis, Goodyear, & Piggott, 2011; Bold, 2006; Hew & Cheung, 2008).

Knowledge context

Knowledge construction is not confined to an individual. Rather, it is a social process carried out between individuals, groups and organizations. The task of sharing individual knowledge or information after learning requires students to translate (encoding) and recall (retrieval) information as needed (Nonaka & Takeuchi, 1995). In the process of knowledge sharing, learners must figure out which information is important and worth sharing, and determine the methods of sharing it effectively. To accomplish the tasks of encoding and retrieving, students have to engage in various forms of information-processing activities such as rehearsal, organization, or elaboration in order to clarify relationships between pieces of information and compare newly acquired information to previous personal cognition (Gagne, 1985; Wittrock, 1979). The participants felt knowledge transformation processes in the proposed approach helped them create, share, transfer, and acquire knowledge mainly by social interaction. CCTST results concluded that participant critical thinking skills had improved. Participants were also engaged in searching for different knowledge aspects (concepts, ideas, videos, and pictures) that could be included in their interdisciplinary projects and were motivated to use Google services as a modern didactic tool.

Technology context

Despite the developments and popularization of modern technologies, they would often negatively affect the teaching and learning effectiveness of instructors and students (Zheng & Yano, 2007). From the teaching perspective, it appeared that different characteristics and functions of technology have the potential in helping instructors design a variety of teaching plans. However, inconsistencies in personal preferences and skills of the instructors would result in wide ranges of teaching performance and environments. Similarly, from the learning perspective, different technological preferences and skills amongst learners would also result in differences in learning attitudes and performance. It is therefore important for educators to eradicate or lower technological barriers imposed against students and instructor. Teaching activities must only incorporate appropriate technologies to make effective teaching and learning possible. In this research, Google services were applied with the objectives of helping students transform their knowledge. Student feedback on the effectiveness of the application in knowledge creation, sharing and transformation was assessed by a specific section titled "Google service" in the student SSQ. The section consisted of 6 items, and the resulting score was 3.60 out of 5.

Conclusion

This study proposed an integrated learning environment with knowledge management model to develop student critical thinking skills. An experiment was conducted in a product design course at a university in Taiwan. Two questionnaires were used to assess participant feedback. Results of the questionnaires revealed that the participants appreciated the use of the proposed approach to support the course.

Contribution of the proposed environment to knowledge transformation and critical thinking

Internet popularity and developments are increasing rapidly in the modern society. Students now enjoy extremely accessible information, and became increasingly prone to rapid browsing or skimming of information. This superficial intake of information negatively affected higher levels of thinking skills and significant gaps in critical thinking skills amongst students. As a result, students were unable to flexibly use what they had learned to solve daily problems. To tackle this issue, this study proposed an integrated learning environment that could help students

go through knowledge transformation processes, thereby promoting their critical thinking skills. The proposed approach could also provide significant assistance in training corporate and industrial professionals in the future. Additionally, the proposed learning environment could be used for other courses. Tertiary education is the cradle of corporate professionals. Only by improving student abilities in critical thinking would we be able to augment research and development capabilities of our corporations and industry and improve the competitiveness of our economy.

Limitations and future work

A limitation to this study was that the approach could not be conducted in a traditional classroom as not every student owns tablet PCs or smart phones. However, this issue should be resolved in the future with the increased popularity of such mobile devices. Another limitation was that although the majority of the participants were familiar with web applications in their daily lives, few understood the means of using these applications to support their learning (Ng, 2012). Therefore, course instructors had to give students explicit instruction and information on the educational uses of web applications.

Finally, the future direction of this study would be to apply appropriate web applications in strengthening the proposed learning environment for various subjects, disciplines and educational pedagogies. Further investigation would allow us to analyze specifically the learning effects amongst participants and develop suitable solutions to support the proposed approach by using application program interface (API).

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Development of ICT Competency Standard Using the Delphi Technique

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Abstract

The purpose of the paper is to discuss the application of the Delphi technique in the research design of developing a valid and reliable ICT (Information & Communication Technology) competency standard for teachers. Much investment has been placed on organizing ICT training programmes for in-service teachers but the effects of teaching and learning practices in the classroom have not achieved expected outcomes. In addition, allegations from teachers highlighted that the training programmes are inadequate to completely meet the needs of ICT competencies. Hence, an ICT competency standard is necessary and timely to be developed to serve as a guide for organizing ICT training programmes. The Delphi technique is a research approach used to obtain a consensus opinion from experts using a series of questionnaires. This study was carried out with the purpose to obtain a consensus opinion from the experts on the types of important ICT competencies to be mastered by secondary school Science and Mathematics teachers, and ultimately develop the ICT competency standard for Malaysian Science and Mathematics teachers. The developed competency standard using the Delphi technique is valid and reliable.

Keywords: ICT competency; Delphi technique; Science and Mathematics

Introduction

ICT (Information & Communication Technology) is proven of being able to provide new learning opportunities among students by making learning fun and simplifying the process of constructing new knowledge (Dooly, 2009). In addition, teacher's quality is another main determinant factor in the learning of students (Ololube, 2006). Therefore, school teachers should equip themselves with ICT knowledge and skills to design new learning environment which is termed as ICT-rich learning environment. Various types of professional development programmes relating to ICT implementation have been organised for in-service teachers with the objective to upgrade ICT competencies among teachers, and subsequently bringing change to their teaching and learning practices, such as integrating ICT in classroom teaching and learning effectively (Borko, 2004). Some examples of ICT training programmes organised for teachers are Intel Teach to the Future project (Toh et al., 2006), smart teacher training courses, 14-week professional development programme, and one-year expert certification training course (Asariah, 2009).

Are the aforementioned programmes effective? To answer this question, some past research were studied and it is found that most of the ICT training programmes did not achieve the expected outcomes set by the organisers, and moreover the needs of the participating teachers were left unfulfilled (Wan Zah et al., 2009; Fong et al., 2009; Toh et al., 2006). In other words, after teachers return to schools from the traning programmes, there are not much changes of behaviour in their teaching practices when being observed. The past research findings support Cuban's claim (2000) that much investment had been placed on organising ICT training programmes but only minimal usage and changes were implemented. What is the reason behind?

The fact to be emphasised here is that most of the ICT courses offered in the ICT training programmes lack of uniformity and the curricula were designed according to the organisers without following any ICT competency standards, such as International Society for Technology in Education (ISTE) National Educational Technology

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Standards for Teachers (ISTE 2000; ISTE 2008), European Computer Driving License (ECDL, 2007), European Pedagogical ICT License (EPICT) (Hojsholt-Poulsen, 2005) or UNESCO ICT Competency Standards for Teachers (UNESCO, 2008). It is clear that practices in the past did not manage to solve problems faced by teachers. Therefore, corrective actions are needed urgently.

In view of this phenomenon, this study was conducted to identify the types of important ICT competencies required to be mastered by Malaysian teachers. This study was carried out using the modified Delphi technique to ascertain elements needed in the content of ICT competency standard. This paper explains the research design used in the study in developing a valid and reliable ICT competency standard for teachers.

Research Design

The research design used to develop ICT competency standard for Science and Mathematics teachers is shown in Figure 1. It encompasses three stages, which are the stage of designing research instrument, the stage of validating instrument and the stage of developing ICT competency standard.

	Preparing initial draft for ICT competency standard for Science and Mathematics teachers (main category, competency ...)	• Analysis of overseas ICT competency standard guidelines

Designing

Validating the draft of ICT competency standard in 2 sessions of roundtable discussion involved experts from USM and school

• Document analysis
• Literature Review
• Exploratory interview
• Workshop ...

Developing Round 1 Questionnaire

Validating

Forming the team of Delphi panel

Carrying out the Delphi technique - 3

Analysing data and designing standards and ICT competency

Developing

Obtaining the content and construct validity from the experts of educational technology

Malaysian ICT Competency Standard for Science and Mathematics teachers

Determining the criteria for the assessment of ICT competencies among Science

Implication

Curriculum & Developing the Modules of ICT training

Competency-Based Assessment System

Figure 1: Research Design of Developing ICT Competency Standard

The Delphi technique is defined as a communication structure used to discuss and assess an issue critically (Linstone & Turoff, 1975). It is a qualitative method introduced as a way to allow a group of experts to discuss and make decision on policy without having to meet face-to-face (Goodman, 1987). According to Lang (1998), the Delphi technique has already become a research methodology in helping researchers to formulate plans for the future. The rationale of using the Delphi technique is its cost and time effectiveness in achieving desired results (Helmer, 1983). When conducting this study, it involved iterative distribution of questionnaires to collect opinions from a selected group consisted of experts. This technique is employed with the purpose to identify consensus opinions relating to a specific topic (Talbot, 1995). Although opinions of this expert group which gathered collectively seem to be subjective, they are considered more reliable and the results are more objective compared to views gathered solely from an individual (Helmer, 1983).

The Delphi technique is designed to optimise the use of group opinion and minimise the quality of conflict interaction within group (Lang, 1998). Therefore, the following four basic characteristics need to be fulfilled if the researcher intends to use this approach, which are:

1. Structured questioning in which questionnaires are used. With this method, moderator is able to control the whole research process and foster more concrete results.
2. Meaningful iteraction of questionnaires is performed numerous rounds to allow panelists to re-evaluate their responses.
3. Controlled feedback in which it is achieved by giving overall group response to the panelists in rounds (except Round 1). This means that all the responses of the panel group are considered on the subsequent rounds of assessment.
4. Anonymity is an important characteristic because every panelist has the freedom to express his/her views without feeling pressured from other more powerful group (Rowe & Wright, 1999).

The Delphi technique has already been applied to solve problems in education field, for instance, it was used to determine research areas in distance education (Zawacki-Richter, 2009), to determine secondary school future curriculum (Saedah & Azdalila, 2008), to design m-learning curriculum (Ahmad Sobri, 2009), and to determine unversity teachers' ICT competencies in online learning (Espasa, Guasch, & Alvarez, 2009) and so on.

Designing Main Category, Indicators and Items

The structure of ICT competency standard employed in this study follows the standard structure of ISTE National Educational Standards for Teachers (2000; 2008). It comprises the following sections:

1. Main Category – It encompasses general aspects of the teachers' knowledge and skills pertaining to the teachers' job spesifications.
2. Indicators – It illustrates the desired quality of a professional teacher.
3. Items – It is used as the assessemnt criteria to obtain evidence of applying the knowledge and skills in actual practice.

The Main Category of ICT Competency Standard

Referring to the structure of ICT competency standard, the first question "What are the main categories of ICT competencies to be included in the teachers' ICT competency standard?" was asked. Analysis was performed on eight sets of existing ICT competency standard guidelines for teachers. These include European Computer Driving Licence (ECDL) (ECDL, 2007), European Pedagogical ICT License (EPICT) (Hojsholt-Poulsen, 2005), Computer Proficiency for Teachers developed by the Ministerial Advisory Council on the Quality of Teaching (MACQT, 1997), Minimum Standards for Teachers-Learning Technology (Education Queensland, 1997), and Queensland ICT Continua (Education Queensland, 2003); International Society for Technology in Education (ISTE) National Educational Technology Standards for Teachers (ISTE NETS-T 2000; ISTE NETS-T 2008) and UNESCO ICT Competency for Teachers (UNESCO, 2008). Based on the results of comparing the eight sets of ICT competency guidelines, approximately ten main categories were listed (Ch'ng et al., 2008a).

Subsequently, document analysis was conducted as a step to determine the important categories in the context of a nation, and in this paper Malaysia is referred specifically. The documents that were investigated include Smart School Flagship Applications: The Malayisan Smart School A Conceptual Blueprint (Smart School Project Team, 1997), Education Development 2001-2010: Integrated Planning for Generating Education Excellence (Malaysian Ministry of Education, 2001), Formulation of the National Education Blueprint, 2006-2010 (Malaysian Ministry of Education, 2006), ICT Literacy for Secondary School Guideline (Malaysian Ministry of Education, 2007) and so on.

Therefore, the researcher decided to focus the scope of this study on six main categories in designing the draft of ICT competency standard for teachers, they include: (1) Knowledge in ICT Operation, (2) Planning and Designing Learning Environment, (3) Smart Pedagogy, (4) Assessment and Evaluation, (5) Lifelong Learning, Practice and Productivity, and (6) Social, Moral Values and Issues.

Important ICT Competency Indicators

The subsequent steps include performing literature review on the findings of local research, exploratory interview and comparing technique toward the ISTE 2000 standard guide to outline the statements for ICT competency indicator division.

Literature Review

Past research done in Malaysia such as Fong & Ng (2005), Toh et al. (2006), Chong, Sharaf, & Jacob (2005), Kamisah, Lilia & Subahan (2006), Mas Nida, Moses & Wong (2009), Fong et al. (2009) and so on, were studied to obtain ideas about the types of knowledge and ICT skills that are already mastered, yet to be mastered or needed to be mastered among the in-service teachers. These form an important benchmark for the teachers' ICT competencies.

Exploratory Interview

Exploratory interviews were conducted among school teachers to obtain information about the teachers' experiences in implementing ICT at school level, without the intention to make any comparison. The findings of the exploratory interviews (refer to Ch'ng et al., 2008b) are advantageous as they help in developing competency statements and important items which are used to reflect the actual needs, the barriers and the usage of ICT in schools among teachers.

Comparing The Standard Guides

Based on the information gathered from literature review and exploratory interviews, there are 24 subcategories suggested to be identified as the ICT competency indicators for this study. Comparing technique together with the existing ICT standard guidelines are used as the basis to classify subcategory group.

Then, the process of outlining specific statements for each competency indicator is initiated. The models of competency standards of ISTE NETS for Teachers (2000) and ISTE NETS for Teachers (2008) were selected to use as the fundamental framework to outline the statements of competency standard indicators. The formulation of the statement of competency indicators was administered using the methods of comparing and modifying upon the use of terminology, word or sentence structure to conform to the needs and suitability.

The Measurement Items of ICT Competency Standard

There were four workshops organised to write and classify items gathered from literature review. The research instrument was designed based on the constructs of ICT competencies (main category and competency indicator). There were 20 research assistants consisted of ICT experts, lecturers and Science and Mathematics teachers participated in these workshops. The research instrument referred were obtained from the past research such as Norizan (2003), Scheffler & Logan (1999), McCoy (2001), Dakich (2005), Fong & Ng (2005), Namlu & Odabasi (2007). With this method, different types of sample items were collected and reviewed for the development of ICT competency items. The outcomes of this series of workshops resulted in the drafting of a list of measurement items.

Pilot Study

Pilot study was carried out among school teachers. The objective of the pilot study is to identify the weaknesses of the instrument. Thirty Science and Mathematics teachers were selected randomly. A set of instrument for the pilot study was developed. The questionnaires prepared include open questions and likert scale questions. The questionnaires were printed and there were three sections in the questionnaires, which were:(1) 6 main categories, (2) competency indicators and (3) ICT competency items. Respondents were invited to assess the suitability of main categories and statements of ICT competency indicators to convert into ICT competency standard for teachers. The items were in the form of open questions whereby the respondents were required to write their views and comments about the statements contained in the questionnaires. The respondents' comments in the pilot study were taken into account for modifying and eliminating the list of items to ultimately develop the Delphi technique research instrument.

5. Validating Instrument

Subsequently, two sessions of round-table discussion were arranged to obtain validation from the experts in respect of determining categories, ICT competency indicators and items which were outlined earlier. The partcipants for the round-table discussion were invited using snowball sampling where all the participants were invited by the researcher's supervisor with reference to their expertise. The participants consisted of ten lecturers from local university with expertise in educational technology, Science education, Mathematics education, distance education and psychology education. Besides that, another four in-service secondary school teachers from the field of Information Technology, Science and Mathematics were invited for the round-table discussion. This process is important to confirm the validity of the items with regard to the constructs. At this stage, one set of the drafts of ICT competency was reviewed. It consisted of 6 main categories and 24 competency indicators.

6. Developing Round 1 Questionnaires

The content of the draft of ICT competency standard together with the measurement items produced through the qualitative research procedure were used to develop Round 1 questionnaires. This approach is regarded rational, intuitive or theory-based. Items used in Round 1 questionnaires were generated from the concepts of theory which were identified following several procedures discussed earlier.

7. Forming The Delphi Panel Group

According to Adler & Ziglio (1996), the members of the Delphi panel should meet four conditions as stated below:
        1. possess extensive knowledge and experience in the research problem,
        2. are committed to involve,
        3. have spare time to participate in the research process of the Delphi technique,
        4. possess effective communication skills.
For this study, the criteria set for selecting the Delphi panel were all local educators with extensive experience and expertise in using ICT in the classroom. The snowball sampling technique was used to identify individuals who were qualified to be invited and appointed as the Delphi panel of this study (Skulmoski, Hartman & Krahn, 2007).

In fact, there is flexibility in determining the sample size of the Delphi panel. According to Skulmoski, Hartman & Krahn (2007), the number of panel in the past research range from approximately 4 to 171 "experts". However, Dalkey (1975), finds that 15 experts and above can maximise reliability and minimise group error on the degree of consensus.

As exemplified in this study, there were 33 experts appointed as the Delphi panel. They were local university lecturers in the field of education and educational technology; university/college lecturers in the field of Science and Mathematics, university/college lecturers from other fields but with extensive experience in using ICT to execute professional tasks and they were ICT daily users to support teaching and learning practices; and also school teachers who used ICT in classroom at least three times per week. In addition, the selected candidates affirmed their full commitment to this study using the Delphi technique.

Procedure of Modified Delphi Technique

Immediately after forming the Delphi panel, every member of the Delphi panel was contacted whether face-to-face, or via telephone and email. The panelists were given brief explanation regarding the research objectives and the expectation from them. This included giving access link to the research instrument website. In actuality, the expert panel has the flexibility to give their responses online or using printed questionnaires or using questionnaires in the form of MSWord attached in the email. The Delphi panel was given seven days to answer the questionnaires for Round 1. Two days before the due date of giving Round 1 response, a reminder email was sent by the researcher to remind the panel members about their incomplete tasks. However, the duration was extended for another three days to wait for the responses from the panel members who were unable to return the questionnaires in time.

All the data collected in Round 1, was analysed and adopted to develop questionnaires for Round 2. New items were included in the Round 2 questionnaires based on the suggestions given by the experts in Round 1. Face validity and content validity were checked by the researcher's supervisor.

Delphi Round 2 questionnaires were prepared in two forms: in MS Word file and printed questionnaires. Delphi panel individual feedback together with the data analysis of group feedback were prepared by the researcher in Round 2 questionnaires. They were then printed and distributed or emailed. Panel could refer to the comments of other panel, and the group median value, inter quartile range and personal rating in Round 1. They then justified whether the values in the earlier round were significant or some modification needed to be made upon their respective ratings in this Delphi round. All the panel members were given five days to respond. Two days before the due date of giving Round 2 response, a reminder email was sent by the researcher to remind the panel members about their incomplete tasks. However, the duration was extended for another three days to wait for the responses from the panel members who were unable to return the questionnaires in time.

Delphi Round 3 questionnaires were prepared in two forms: in MS Word file and printed questionnaires. The format was similar to Round 2 questionnaires, except the number of items in this round was limited to only eight items. Face validity and content validity were checked by the researcher's supervisor. All the panel members were given seven days to respond in view of three public holidays fell within the period.

As the example of this study, three rounds of the Delphi technique were practised. Round 1 was performed to collect additional input and comments from the expert panel about the initial list of ICT competencies compiled through qualitative research method such as document analysis results, literature review, exploratory interview, pilot study and round-table discussion. Round 2 was executed to obtain validation for items in Round 1 and to obtain consensus from the experts, and to distribute new items and suggested ideas from the panel in Round 1 for the first time. Considering all the items in Round 2 had reached consensus, the implementation of Round 3 was merely to validate the panel's responses on the additional items (contained in Round 2 questionnaires). In Round 3, it was found that consensus from the experts was achieved for all the items and hence the Delphi round stopped (Delbecq, Van de Ven, & Gustafson, 1975).

Delphi Data Analysis

Immediately after forming the Delphi panel, every member of the Delphi panel was contacted whether face-to-face, or via telephone and email. The panelists were given brief explanation regarding the research objectives and the expectation from them. This included giving access link to the research instrument website. In actuality, the expert panel has the flexibility to give their responses online or using printed questionnaires or using questionnaires in the form of MSWord attached in the email. The Delphi panel was given seven days to answer the questionnaires for Round 1. Two days before the due date of giving Round 1 response, a reminder email was sent by the researcher to remind the panel members about their incomplete tasks. However, the duration was extended for another three days to wait for the responses from the panel members who were unable to return the questionnaires in time. All the feedback and comments collected in three Delphi rounds were recorded. The quantitaive data was analysed using Statistical Package for Social Sciences (SPSS) v. 16 and MS Excel.

The degree of importance and consensus are justified after each Delphi round before making interpretaion. The group response median value and the inter quartile range distribution are usually referred as the reference for the degree of importance and consensus in the past research (Norizan, 2003; Saedah & Azdalida, 2008; Ahmad Sobri, 2009). For the example of this study, the analysis of consensus data of the experts was done based on median, inter quartile range and quartile deviation on Round 1 data, Round 2 data and Round 3 data.

After the median value, inter quartile range and quartile deviation are identified, the subsequent analysis technique is classifying items according to the consensus level and importance level. For this study, the concensus level is divided into three levels (high, medium and no consensus) and importance level is divided into two levels (very high and low). To determine the consensus level which are: high (if quartile deviation is less than or equal to 0.5), medium (if quartile deviation is in between 0.5 and 1) and no consensus (if quartile deviation is more than 1); and the importance level which are: very high (in which the median value is 4 and above) and low (in which the median value is less than 3.5). For this study, items which obtained very high importance level and also high consensus level were used to develop ICT competency standard and ICT competency assessment criteria.

Reliability and Consistency of Experts' Responses

Young (2007) suggests that researcher can evaluate the consensus obtained in Round 1 and Round 2 to present to the panel as a measurement of reliability. If after Round 2, it is found that consensus has been achieved, it can then be assumed that researcher has done well on the summary of panel's feedback gathered in Round 1.   With this method, researcher has concrete reason to support the assumption that the acceptable one reliability degree is fulfilled (Fish & Busby, 2005).

Consistency refers to the stability of response. For this study, the response pattern of local Delphi experts was observed in the perspective of response consistency between rounds. This is important for acceptable data reference quality or reliability. In the research of Ahmad Sobri (2009), the Wilcoxon Match-pairs Signed-ranks test was used to identify the consistency of experts' responses between rounds. This test was also used in this study for data between Rounds 1 and 2, Rounds 2 and 3.

Results and Discussion

The Delphi results of the study are presented in Table 1 and Table 2. Table 1 presents indicator statements found to be rated high importance and achieved high consensus level. These are items that achieved quartile deviation (Q.D) value of less or equal to 0.5 with median of 4 and above.

Table 1. Delphi Results: Indicators with High Importance Rating and High Consensus Level

Indicator	Median	Q1	Q3	IQR	QD
1: KNOWLEDGE IN ICT OPERATIONS					
1A – Show understanding and application basic ICT-related concepts and skills.	4	4	5	1	0.5
1B - Demonstrate constant development and enhancement in the latest ICT-related knowledge and skills.	4	4	4	0	0
2: PLANNING AND DESIGNING LEARNING ENVIRONMENT					
2A - Design and prepare suitable and relevant ICT-integrated lessons to cater to students' diverse needs.	4	4	5	1	0.5
2C - Select and evaluate appropriate curriculum materials.	4	4	5	1	0.5
2D - Plan the usage and management of curriculum materials in lesson activities.	4	4	5	1	0.5
2E - Plan strategies to integrate ICT in lesson activities and manage student learning.	4	4	5	1	0.5
3: SMART PEDAGOGY					
3A - Use ICT assisted instruction to enhance students' meaningful learning.	4	4	5	1	0.5
4: ASSESSMENT AND EVALUATION					
4A – Apply ICT in assessing student learning of subject matter using a variety of assessment techniques.	4	3	4	1	0.5

4C – Apply evaluation criteria to assess students learning, communication, and productivity.	4	3	4	1	0.5
5: LIFELONG PROFESSIONAL LEARNING, PRACTICE AND PRODUCTIVITY					
5A - Use ICT to engage in ongoing professional development and lifelong learning.	4	4	5	1	0.5
5B - Continuous evaluation and reflection on the use of ICT that supports meaningful learning.	4	3.5	4.5	1	0.5
5C – Apply ICT for "just in-time learning" (JIT) to enhance productivity.	4	3	4	1	0.5
5D - Use ICT to communicate and collaborate with colleagues, parents, and other communities to nurture student learning.	4	4	5	1	0.5
6: SOCIAL AND MORAL VALUES AND ISSUES					
6A - Understand the moral and ethical issues concerning the usage of ICT.	4	4	5	1	0.5
6B - Inculcate and practice moral values regarding ICT application.	4	4	5	1	0.5
6D - Promote and support safe and healthy use of ICT tools.	4	4	5	1	0.5
6E - Provide all students with fair equitable access to ICT resources.	4	4	5	1	0.5

A total of 17 indicators achieved high importance rating and high consensus level. It was found that all indicators that were proposed under 2 main categories: (i) knowledge in ICT operations, and (ii) Lifelong Professional Learning, Practice, and Productivity are regarded as important competencies for Science and Mathematics teachers.

Based on the number of indicators listed according to each main category in Table 1, the findings show that the emphasis is toward competencies related to the three main categories such as Planning and Designing Learning Environment (4 indicators), Lifelong Professional Learning, Practice, and Productivity (4 indicators), and Social, Moral Values and Issues (4 indicators). This followed by main category related to Assess*ment and Evaluation* (2 indicators)*,* except for category *Smart Pedagogy* which was rated 1 indicator for high importance and high consensus level.

Table 2 presents the items that achieved high importance rating with moderate consensus level. These items achieved quartile deviation values of more than 0.5 and equal to 1 with a median of 4 and above.

Table 2. Delphi Results: Items with High Importance Rating and Moderate Consensus Level

Indicator	Median	Q1	Q3	IQR	QD
2: PLANNING AND DESIGNING LEARNING ENVIRONMENT					
2B – Refer to contemporary ICT-related educational research in the preparation of lesson plans.	4	3	4.5	1.5	0.75
3: SMART PEDAGOGY					
3B - Employ ICT to support students' diverse needs in self-paced, self- assessed, and self-directed strategies.	4	3	5	2	1
3C – Apply ICT to develop critical and creative thinking skills.	4	3	5	2	1
3D - Manage student learning activities in an ICT instructed environment.	4	3	5	2	1
3E - Integrate ICT in various instructional strategies.	4	3	5	2	1
4: ASSESSMENT AND EVALUATION					
4B - Apply ICT to generate data on students' achievement, to interpret results and communicate findings; so as to improve instructional practice	4	3	5	2	1

and to maximize students' learning.					
6: SOCIAL AND MORAL VALUES AND ISSUES					
6C - Identify and discuss the impact of ICT on the society.	4	3	5	2	1

It was found that there are 7 indicators which achieved high importance rating with moderate consensus level. All these indicators are listed under 4 main categories such as Planning and Designing Learning Environment (1 indicator), Smart Pedagogy (4 indicators), Assessment and Evaluation (1 indicator), and Social and Moral Values and Issues (1 indicator).

The expert panel of this study agreed that teachers should be competent to refer to research in relation to ICT-based education for their lesson plan preparation, but this has only achieved moderate level of consensus based on the analysis report of the expert consensus views. It was explained that the reason behind this circumstance is due to this practice increases teachers' burdens when writing lesson plans. Nonetheless, the expert panel acknowledged that it is important for teachers to possess the competency as the research findings are a good source for innovative ideas to ease the process of integrating ICT in teaching and learning activities.

The expert panel of this study affirmed that teachers should be competent in using ICT to support self-paced, self-directed, self-assessed learning among students and to inculcate independent learning, but this has only achieved moderate level of consensus based on the analysis report of the expert consensus views. It was explained that the huge student number per class is an additional burden for teachers. Nonetheless, the expert panel acknowledged that it is important for teachers to possess this competency.

It is interesting to note that though the expert panel agreed "*Apply ICT to develop critical and creative thinking skills*" is an important competency indicator, this has only achieved moderate level of consensus based on the analysis report of the expert consensus views. To view from different perspective, the expert panel of this study has exhibited high level of consensus that this competency is very important to be considered as a criterion in assessing teachers' ICT competencies.

It is also interesting to note that though the expert panel agreed on the importance of teachers should be competent in using ICT to generate student performance data, interpret students' results, communicate analysis and findings to improve students' learning, this has only achieved moderate level of consensus based on the analysis report of the expert consensus views. There were opinions highlighted that the tasks should be taken over by Learning Management System (LMS), but the present system at school level is unable to generate student performance data automatically. Teachers still have to record the test marks by hand and prepare the report cards for parent signatures. Also, there were opinions indicated that this competency is only relevant if schools are equipped with LMS. Looking at the existing situation, this competency is not needed at present time.

From another aspect, the expert panel agreed that teachers should be competent in managing learning activities in ICT (3D) teaching environment and integrating ICT with different teaching strategies (3E). Teachers should also be competent in discussing the impacts of ICT toward society in the classroom (6C), but based on the analysis report of the expert consensus views all these three indicators have only achieved moderate level of consensus.

For the purpose of this study, these indicators were not considered in the development of ICT competency standard for Science and Mathematics teachers.

Based on the findings of this study, there was no item that achieved quartile deviation of more than 1 or the value of median which is less than 4. In other words, no items was rated not important or no consensus.

Only statements which achieved high consensus level and high rating were used in the establishment of the ICT competency standard for this study. After analyzing all the 24 indicators proposed in the preliminary research, the researchers are able to identified high importance with high consensus statements to be used in developing the ICT competency standard.

Limitations of the Study

The appointed Delphi panel experts for this study comprised of local Malaysian academics only. The number of Delphi rounds used for this study is only three rounds. Every round of the Delphi strategy is limited to only seven to ten days duration for responses from the experts. The results of this study cannot be generalized among all Science and Mathematics teachers in other nations.

Conclusion

This paper presents the research method from preparing the initial draft of ICT competency standard for Science and Mathematics teachers to the development process of the Delphi research technique instrument. It includes competency statements such as main category, competency indicators and items represent skills and competencies. Document analysis, exploratory interview, literature review and pilot study are all done for the purpose. Modification of the initial draft of competency statements is completed based on the round-table discussion. The draft of ICT competency standard and measurement items are finalized and the validity is obtained through the Delphi technique. Data is then analyzed to check for the consistency of experts' responses between rounds. Instrument developed from the Delphi technique research findings is also examined and it obtains validation from the experts in educational technology for the content validity and construct validity. The research procedure using the Delphi technique is rigorous and hence the developed research product is valid and reliable. This paper has provided a clear discussion on all aspects such as selection of expert panel, development of Delphi questionnaires and data analysis technique used to identify types of important ICT competencies to be mastered by school teachers. After the analysis of data using the Delphi technique, a set of ICT competency standard for teachers is developed together with a list of ICT competency assessment criteria for the Ministry of Education, organizers of ICT training programs and Science and Mathematics teachers.

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Development of Instructional Model Based on Connectivism Learning Theory to Enhance Problem-solving Skill in ICT for Daily Life of Higher Education Students

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Abstract

This research explores that the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of university students as well as its impact in the classroom on learning and teaching, especially in student's problem-solving skill and practices that refer to awareness, connection, and contribution process as part of the learning efficacy improvements. In this process, web technology particular social networking site has a necessary role to engage and integrate knowledge and learning activities within the problem based learning (PBL) process. In this respect, this research aims to study and develop the appropriate instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life by the 10 experts' opinion. The research results exhibited that the instructional model based on connectivism learning theory via web-based learning was appropriated and raised the level of problem-solving skill among students.
Keywords: Connectivism, Information and communications technology (ICT), Problem-solving.

	Nomenclature
Nomenclature	
A	Connectivism Learning Theory
B	Connectivism Taxonomy
C	Information and communications technology (ICT)
D	Problem-solving

Introduction

There is a need for students to learn these important learning and innovation skills in order to be successful in the work and life. For the 21st century skills, the students need to be taught to facilitate their success in the future. Students need to attain the "3R's & 4C's"—Reading, Writing, Arithmetic, Critical thinking and problem solving, Creativity and Innovation, Communication, Collaboration —which are the most important and necessary 21st century skills as defined by businesses, economists, and education experts (Partnership for 21st Century Skills, 2011).

In Thailand, education reform for the 21st century that will lead to a unity of purpose and action among Thai and international educators to realize the goals set forth in the National Education Act (NEA) of B.E. 2542 (1999). This education reform is a move toward student-centered learning and a student-centered classroom. The intentions of NEA aim to improve education on the basis of lifelong learning, social contribution in education, and the development of new content and learning processes. According to Fry (2002), the issues of quality standards, learner-centered approaches, the role of the private sector, and structural reform in decentralization of education to local organizations are significant in this Act. Four new factors have been added to streamline education reform,

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including (a) quality of the new generation of Thais; (b) new generation of teachers; (c) new generation of educational facilities and centers; (d) new educational administration system which aims at decentralization. Specifically, Section 24 of the Education Act outlines what must be done to improve education performance: (a) arranging learning in line with the students' interests, aptitudes and individual differences; (b) training students in thinking abilities, especially critical thinking; (c) organizing learning activities that draw from authentic experiences; and (d) promoting situations where learners and teachers learn together.

An aspect of student-centered learning involves questions learners themselves generate from direct experiences. In student-centered learning, the teacher has a number of roles, including scaffolding questions of students when needed in order to make the initial questions more accessible to answering and anticipating sufficient time and tools that help learners pursue their own questions.

In addition to addressing these key issues of education reform in Thailand, indeed in international education, we also focus our attention and resources on the goal of promoting Thai teachers to reach their potential as skilled teachers using teaching methods that engage their students with the result that students love to learn through self discovery. The goal of the education reform is to instill learners with skills that are compatible with the changing economic landscape in the 21st century skills (e.g., critical thinking and problem solving, communication, collaboration, and creativity).

ICT has become an indispensable part of the 21st century. Having basic ICT skills is now seen as an important attribute that students should possess in order to be successful in life. Because of the digital age, there is new learning theory which related ICT workplace and the 21st century skill. It is the connectivism learning theory.

Connectivism learning theory (Siemens, 2005, 2006) and connective knowledge (Downes, 2006) as ways to understand and explore learning in the digital age are timely and particularly useful, both in what they offer and what they question. The idea of organizations as cognitive systems where knowledge is distributed across nodes traces back to the perceptron and is directly borrowed from connectionism, "a paradigm in cognitive sciences that sees mental or behavioral phenomena as the emergent processes of interconnected networks of simple units". The network metaphor allows a notion of "know-where" (the understanding of where to find the knowledge when it is needed) to supplement to the ones of "know-how" and "know-what" that make the cornerstones of many theories of learning.

Siemens (2005) states the eight principles of connectivism, which are also currently through Siemens' writings in Wikipedia.

  1. Learning and knowledge rests in diversity of opinions.
  2. Learning is a process of connecting specialized nodes or information sources.
  3. Learning may reside in non-human appliances.
  4. Learning is more critical than knowing.
  5. Maintaining and nurturing connections is needed to facilitate continual learning.
  6. Perceiving connections between fields, ideas and concepts is a core skill.
  7. Currency (accurate, up-to-date knowledge) is the intent of learning activities.
  8. Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Siemens (2006) proposed connectivism taxonomy that a staged view of how learners encounter and explore learning in an ecological leaning community or networked manner. The taxonomy begins with the basic and moves to the more complex:

1. **Awareness and receptivity** – at this level learners acquire basic skills for handling information abundance, have access to resources and tools. (e.g., internet, blogs, wikis, aggregators)

2. **Connection-forming** – at this level learners begin to use tools and understanding acquired during level 1 to create and form a personal network. Learners are active in the learning ecology/space in terms of consuming or acquiring new resources and tools. Selection (information filtering) skills are important. Affective/emotive factors play a prominent role in deciding which resources to add to the personal learning network.

3. **Contribution and involvement** – at this level learners are fairly comfortable within their self-created network (though instructors or teachers may continue to guide and direct their access to particularly valuable resources toward intended educational competencies or outcomes). The learner begins to actively contribute to the network/ecology – essentially, becoming a 'visible node'. The learner's active contribution and involvement allows other nodes on the network to acknowledge his/her resources, contributions, and ideas – creating reciprocal relationships and shared understandings (or, if wikis or social bookmarking is used, collaboratively-created understanding). The learner should also be capable of choosing the right tool for the right learning task. For example, the learner may opt to take a course, attend a conference, solicit a mentor, or subscribe to blog feeds – all based on what the learner needs to know, do, or believe. Selecting the right element within the learning ecology is valuable in ensuring the efficiency and effectiveness of the learning process.

4. **Pattern recognition** – at this level the learner is "network aware" and competent. As a dynamic participant in the ecology, the learner has moved from passive content consumption to active contribution. Time in the network has resulted in the learner developing an increased sense of what is happening in the network/ecology as a whole. Having mastered the basics of being a participant, the learner is now capable to recognize emerging patterns and trends. Experience within the network has resulted in the learner understanding the nuances of the space (online or physical). The longer the learner spends in the learning space, the more adept she/he will become at recognizing new patterns or "changing winds" of information and knowledge.

5. **Meaning-making** – at this level the learner is capable of understanding meaning. What do the emerging patterns mean? What do changes and shifts in trends mean? How should the learner, adjust, adapt, and respond? Meaning-making is the foundation of action and reformation of viewpoints, perspectives, and opinions.

6. **Praxis** – at this level, the learner is actively involved in tweaking, building, and recreating their own learning network. Metacognition (thinking about thinking) plays a prominent role as the learner evaluates which elements in the network serve useful purposes and which elements need to be eliminated. The learner is also focused on active reflection of the shape of the ecology itself. The learner may engage in attempts to transform the ecology beyond his/her own network. Praxis, as a cyclical process of reflection, experimentation, and action, allows the learner to critically evaluate the tools, processes, and elements of an ecology or network.

Connectivism is a theoretical framework for understanding learning. In connectivism, the starting point for learning occurs when knowledge is actuated through the process of a learner connecting to and feeding information into a learning community (Kob and Hill, 2008).

The problem solving skill as an individual thought process because the previously learned law can be applied in solving problems in any situations (Jonassen, 2003). It is also deemed to be a new type of learning and is the result of application of knowledge and procedures of the problems (Mc Gregor, 2007). Generally, each individual requires knowledge and skills to solve problems (Taconis et al., 2000). Halakova and Proksa (2007) stated that the solution of problems in any subject area is a highly complex human behavior. This matter is documented in a large number of studies and articles which have appeared in journals of research and teaching. It has reflected a new interest regarding how students solve problems. Problem solving has always been a stumbling block for students who are studying chemistry, and most of the teachers in the field of chemistry are aware of this. According to Jawhara (1995), problem solving activities can open opportunities for students to learn freely. In their own ways, students will be encouraged to investigate, seek for the truth, develop ideas, and explore the problem. Students are also trained not to be afraid to try various ways to solve problems, as well as having the courage to make decisions, act on the decisions and be responsible for the products of the action. The experiences gained through problem solving will help our students to become progressive, creative and ambitious. These features are necessary in order to face the challenges of becoming a developed country based on science and technology (Lim et al., 1999). Problem solving is also deemed to be what is done by an individual when faced with a question or situation where the solution is not available. In seeking a way out from any obstacle, students should think, make decisions and use specific strategies. Therefore, to achieve this, the activity of thinking and skills to rationalize a solution plays an important role. It will require students to generate and induce a systematic and logical thinking. This ability requires students to follow certain steps and logic because it requires a revision to determine the reasonableness of a settlement. Thus, any successful attempt will encourage a students' positive attitude towards problem-solving skill.

According to Reid and Yang (2002), a problem exists when a person feels the gap between where it is and where it should be but do not know how to cross the gap. This broad definition also covers social issues and what might be stereotyped exercises by problem-solving trainers. Students' problem solving abilities is the desired result after

going through the process of continuous education as emphasized in the National Education Philosophy and Philosophy of Science Education. Troubleshooting is also the highest hierarchy of learning by Gagne (1985) and problem solving ability reflects the level of student learning. According to Robinson (2003) the ability to solve problems is being considered as an integral part of each science course. In addition to strengthening and clarifying the principles taught in each lesson, systematic approach to problem solving enable students to learn better.

Furthermore, they will have to explain their thoughts and thus promote intellectual development. This ability enhances students' opportunities when they are faced with daily lives problems. Although the benefits of problem solving as an educational tool has long been known, appreciating the skills, techniques and procedures required for effective problem solving have not been adequately taught specifically. This teaching method is significant in order to address and solve problems involving new situations.

Concurrently, application of knowledge and skills which are based on connectivism learning theory and ICT will enable students to make decisions and solve problems in life more effectively. As a result, they will be able to explore the treasures of nature, adapt to the environment, make innovative creations, and even manage to overcome problems and difficulties. Hence, these visions become one of the goals emphasized in the national curriculum, especially in science education.

Interest in this approach to learning has been maintained because fundamental ideas underlying PBL have related directly to connectivism taxonomy concepts about teaching and learning in ICT, and to ongoing debate about the nature of professional practice. By framing courses around "real" problems in the context of "real" practice, PBL has presented a coherent and practical approach to learning which incorporates "active" rather than "passive" approaches to the development of critical thinking skills, problem-solving skills, experiential and social learning in the form of collaborative inquiry based on engaging with authentic problems, and more dynamic interactions between teachers and learners based on respect for students prior learning and experience (Hendry, Frommer, & Walker, 1999; McPhee, 2002)

Thus, the main purpose of this study is to analysis and design learning activities styles to be appropriate with the learners that integrated with the concept of connectivism learning theory and problem based learning. The question then becomes, "How to develop the appropriate instructional model based on connectivism learning theory; and to what extent the online learning environments were associated with certain learner characteristics". The expected benefits are the appropriate model that is the systematic approach to enhance university student's problem-solving skill. More over the results of quality assessment of instructional model that is body of knowledge to develop the problem-solving skill of students. In addition the results can be the information to support the higher education systems policy.

Objective

This exploratory sought to study, develop, utilize, and evaluate the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students.

Methodology

The research procedure includes three phases:
The first phase: Studying the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students (Rampai and Sopeerak, 2011).
 1. Analyzing the elements of connectivism learning theory are included the elements of the connectivism taxonomy states (Awareness & receptivity, Connection-forming, Contribution & involvement, Pattern recognition, Meaning-making, Praxis).
2. Analyzing the elements of social networking are included the elements of web-based learning, learning management system (LMS) with social media, m-learning (tablet & smart phone).
3. Analyzing the elements of ICT for daily life are included ICT competency- the body of knowledge and skills an individual must possess at a recognized level of competence in specific ICT for daily life.
4. Analyzing the elements of the 21st century skills: problem-solving skill by using problem-based learning (PBL) process.
5. Integrating the elements of connectivism taxonomy, social networking, ICT competency for daily life, and problem-solving skill.

The second phase: Developing the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students.

The third phase: Evaluating the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students by using focus group discussion method. The participants of this study were specialists who were involved in curriculum and instruction, instructional design, information and communication technologies from universities in Thailand. There were ten experts focus group discussion in accreditation the developed instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students.

Results

After the ten experts' focus group had evaluated the developed instructional model, they suggested the opinion that the design instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students is developed to be in the high level of appropriateness. The instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life was appropriated with the quality of learning, as called "pbCONNEC model", detail are as follow:

1. The learning input is including the Conceptual framework and Motivation.

2. The online learning processes are driven connectivism (Awareness, Connection, and Contribution) within the problem-based learning or PBL approach (Problem assigned, Identify what we need to know, Learn what we don't know, and Apply it to solve the problem).

3. The learning outcomes consist of Knowledge, Attitude, and Skill (Figure 1).
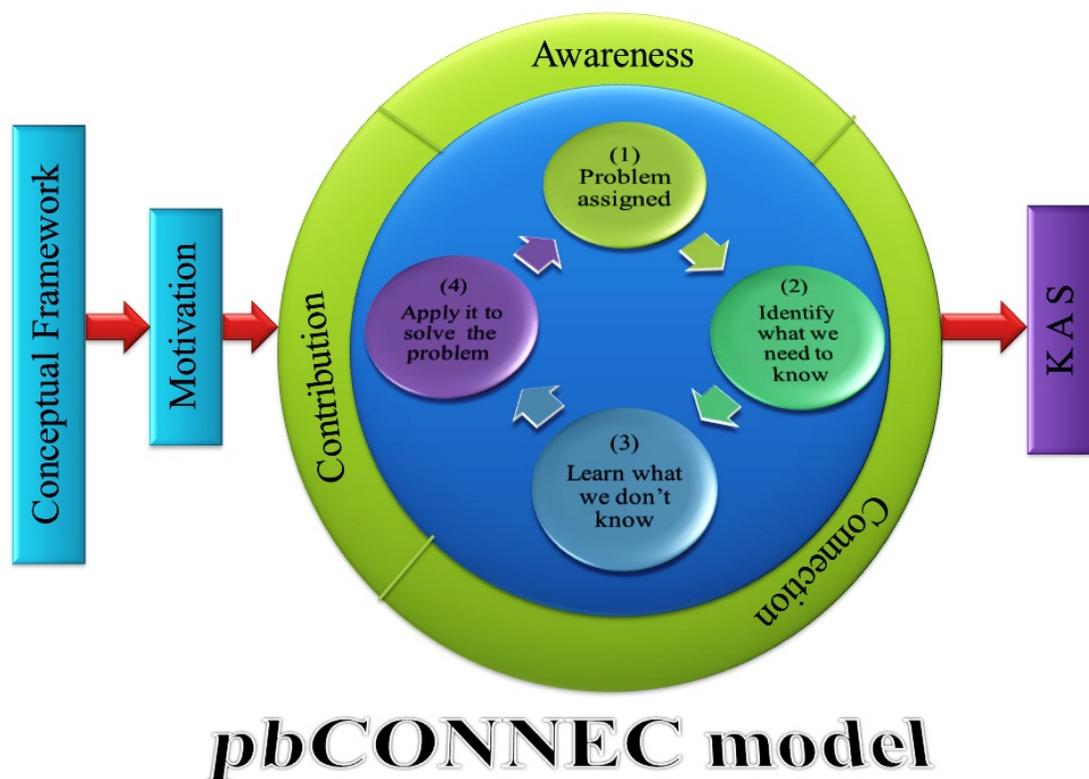
Figure 1: pbCONNEC model, the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students.

Conclusions

The research results exhibited that the instructional model based on connectivism learning theory to enhance problem-solving skill in ICT for daily life of higher education students was appropriated and fit to the quality of education. The study was successful in connectivism learning theory the importance of incorporating problem-solving skill

approaches in order to enable learners to acquire the 21st century skills, and create a learning environment where they are engaged in the dynamic contents and process. Here the results provide very suitable and encouraging results for using ICT for daily of higher education student.

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Development of Malaysia Skills Certificate E-Portfolio: A Conceptual Framework

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Abstract

The objective of this paper is to discuss the framework and the conceptual model in the development of an E-portfolio system for Malaysia Skills Certificate (MSC). The framework and conceptual model presented in this paper are based on readings and literature review undertaken by evaluating and re-arranging the facts from the previous studies. There are five concepts to be discussed: (a) element of MSC E-portfolio, (b) model of MSC E-portfolio, (c) system development life cycle (SDLC) model, (d) open source software Mahoodle, and (e) virtual learning space (VLS). In the vocational education system of Malaysia, the portfolio is used as a document to evaluate the level of students' knowledge and achievement, where it still uses paper based portfolio. Paper based portfolio is static and limited in sharing information with others. Process management, evaluation and updating materials are also difficult. It is hoped that this framework and conceptual model will contribute towards the development of an appropriate an E-portfolio system to be applied in the vocational education system of Malaysia.

Keywords: E-portfolio, Malaysia Skills Certificate, vocational education

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Introduction

A variety of teaching and learning concepts that integrate ICT had been introduced in recent times such as e-learning, multimedia aided training, blended learning and more. E-portfolio is a instructional product that uses ICT-based e-learning. It can store all kinds of information in digital form, it is flexible and can be accessed at anytime and anywhere (DiMarco, 2006; Ku & Chang, 2011; Montgomery & Wiley, 2008; Stefani et al., 2007). E-portfolio is the result of the transformation of a previously written portfolio which has long been used in assessing the activities of one's personal and professional evaluation. The difference is that E-portfolio are easier to use in publishing information and it can also be used as a learning tool where users can share ideas and information with other users via online (Bullock & Hawk, 2005; Handa et al., 2011; Kilbane & Milman, 2005).

The use of a printed portfolio is seen as not relevant to be applied in the current education. This is because the printed portfolios are static, are limited in sharing information with others, the management, evaluation and updating process of the materials are difficult and unable to improve the professional skills (McAllister & Hauville, 2010; Stefani et al., 2007). On the other hand, the electronic portfolio has many advantages compared to the printed portfolio such as, the ability to save and organize material more easily, sharing of information, enhances the professional skills, enhances the generic skills of graduates and facilitates the search for information (Bhattacharya & Hartnett, 2007; Halstead & Sutherland, 2006; McAllister & Hauville , 2010).

In the vocational education system in Malaysia, the portfolio is used as a document to evaluate the level of knowledge and performance of students, where the use is still in the traditional way which is paper-based and this limits the storage to mere artifacts. According to the Ministry of Education, improving the delivery of existing vocational education should be done by expanding the online implementation (Ministry of Education Malaysia, 2011). As such, one way is to use E-portfolio in teaching and learning programs (Boyle, 2011; Cameron, 2011; Carroll et al., 2007; Handa et al., 2011; Mcallister & Hauville, 2010; Rodriguez-Donaire et al., 2010). It aims to improve the quality and innovation in vocational education system through the use of ICT to create an interactive education system. In facing the challenges of globalization, the vocational education system must be open and flexible, where it should focus on the use of technology in teaching and learning process (Neal, 2011).

However, the development of E-portfolio requires an appropriate framework to meet the needs of the education system (Albert, 2006; DiMarco, 2006; Young & Morriss, 2007). A detailed study should be done to produce an E-portfolio system which is compatible, easy to use, user-friendly, attracts the interest of teachers and students as well as meeting the standard of the vocational education system. Therefore, this study was conducted to produce an appropriate E-portfolio system for MSC to be applied in the vocational education in Malaysia. It is done to upgrade the existing skills training system, in order to enable the country to produce skilled work force that have more quality, highly knowledgeable, innovative and competitive.

Methodology

In designing the E-portfolio system, the researchers need to understand the concepts and basic design of the E-portfolio (Ku & Chang, 2011). Thus, researchers need to have a framework that can be used as a guideline in developing the E-portfolio system. For this study, researchers focused on the formation of the MSC E-portfolio model and then develop the E-portfolio system MSC. The researchers combined the two phases in a single framework.

In the first phase, the modified Delphi study approach was used in the production of E-portfolio system elements. The modified Delphi technique is a procedure of finding consensus among experts using questionnaires in anon-face-to-face manner (Wiersma & Jurs, 2009). The modified Delphi technique proposed by Wiersma and Jurs (2009),was applied in this study, where the process begins with questionnaire of survey subjects' exploration. This is because the issues in the first round of the Delphi method were sufficiently defined by the researchers. Next, a survey was done to produce a MSC E-portfolio model. The survey instrument developed through the modified Delphi study was used and distributed to MSC trainers. This study is important in creating an E-portfolio model that is appropriate and can be applied in the skills certification system in Malaysia.

The second phase involves the development of the MSC E-portfolio system using the system development life cycle model of Dennis et al. (2008). The main goal is focused on producing an E-portfolio system that serves as the learning management system, APEL and students' competency assessment. Here are the five processes involved in

the development of MSCE-portfolio system adapted from the system development life cycle model of Dennis et al. (2008), namely:

Process 1: Analysis

In this phase, the analysis is performed to determine the needs of the generated system. The analysis is performed on the user criteria, software and hardware. The user criteria analysis is done to identify specific requirements, user interface, performance benchmarking of software and system features required by the user. The software analysis is conducted to determine the hardware and software specifications requirements that are used in developing the system. Further analysis is done to determine the required hardware equipment in the development of E-portfolio system.

Process 2: The Design of the System

The process of designing the system is divided into three main divisions which are designing the information, interaction, interface and presentation. The designing process begins with identifying available information content, and how to implement the content and information that needs to be conveyed. The process of interaction design refers to the process of designing software in terms of structure or pattern of travel of the software. Next is the interface design and presentation which emphasize the needs of the users because the production of displays is for users' view. The main elements in the interface are the background of the screen, control buttons and icons, text, graphics, audio, video and animation.

Process 3: The Design and Development of Database

Database is the part where users store, modify and delete data. A good database is the one that is easily accessible and manageable (Newman &Landay, 2000; Sklar, 2011). This phase describes how data storage is done on the computer using the software. Then, the storage structures and access paths for database files are determined to get the best data presentation.

Process 4: The Development of Application

This phase begins only when the system design has been completed. This involves the production of a real system based on the system design by performing the coding of system using the software. At the level of application development, the planning done previously are turned into programming and able to test it. At this stage a lot of things need to be taken into account to ensure that the aspects of the developed system are accurate. The topics highlighted in this phase are: (i) the application of behaviorist theory, (ii) the application of cognitive theory, (iii) the application of constructivist theory, (iv) setting the main menu, (v) determining the navigation, (vi) determining and loading the content (vii) developing the arrangements and links, (viii) developing interactive features, (ix) determining the programming applications, (x) setting the authoring tools (xii) determining the graphics / audio and (xiii) preparing the user guide.

Process 5: The Evaluation of the System

The system evaluation is done to test the feasibility of the technical aspects of the system, the content and the use of learning theories. The evaluation is a formative evaluation. Formative assessment is done to collect data that can be used to improve the system so that it meets the requirements of teaching and learning. A software that has been built, have to go through the testing process and it is essential to ensure that the software meets the specifications set (Allen, 2007; Reigeluth & Carr-Chellman, 2012). Once the data from the formative evaluation is obtained, it is analyzed to identify existing problems in the developed E-portfolio system. The findings will be used to improve and make changes on the system.

A conceptual framework of E-portfolio system

The conceptual framework set out in Figure 1 comprises five elements: (i) the elements of MSC E-portfolio (ii) MSC E-portfolio model, (iii) the system development life cycle model of Dennis et al. 2008, (iv) Mahoodle open source software and (v) the virtual learning space Nunez et al. (1988).
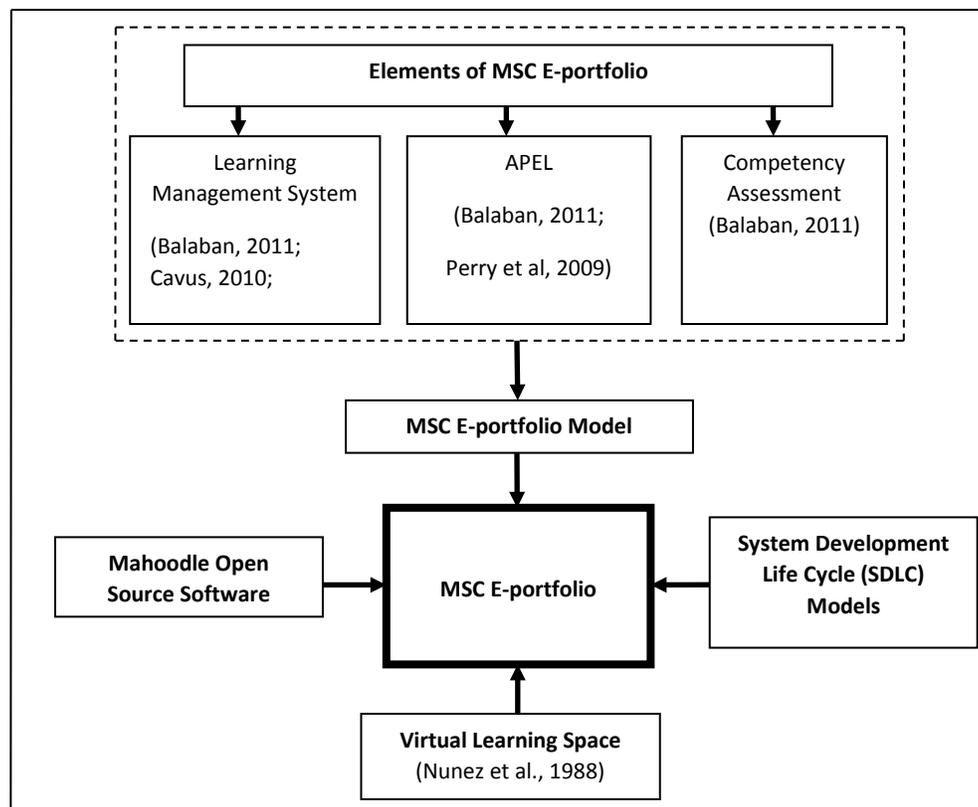
Fig. 1. The conceptual framework of MSC E-portfolio

- **The elements of MSCE-portfolio.** The elements of MSC E-portfolio are formed by the literature reviews of: (i) E-portfolio model of Balaban et al. (2011), (ii) the E-portfolio model of Ku and Chang (2011), (iii) the APEL model of Perry et al. (2009), (iv) the LMS model of Cavus (2010) and (v) the MSC document portfolio. The analysis of literature review found that E-portfolio can be used as a learning management system (LMS), accreditation of prior experiential learning and competency assessment. The important elements contained in the LMS are: (i) self-reflection, (ii) interaction, (iii) the project / assignment, (iv) the communication space, (v) the online and offline learning material, (vi) planning and (vii) evaluation. APEL contains nine elements which are: (i) the accreditation process, (ii) personal information, (iii) academic information, (iv) the information on skills, (v) the information on experience, (vi) verification of evidence, (vii) the communication space, (viii) the progress update, and (ix) verification. While the important elements in the assessment of competency are: (i) the artifacts storage space, (ii) applications for employment, (iii) the progress update, (iv) verification and (v) evaluation**.**

- **The MSC E-portfolio Model.** The E-portfolio should be developed according to the needs of the education system (Bhattacharya & Hartnett, 2007; Balaban et al., 2011; Handa et al., 2011). The MSC E-portfolio model is produced after the modified Delphi study is conducted in which the elements that have been verified by experts are used in the formulation of the questionnaire. A survey is done in order to produce a MSC E-portfolio model. The MSC E-portfolio model must be produced as a confirmation of the new system to meet the needs of users (Ku& Chang, 2011). The model is then applied in the development of MSC E-portfolio system.

- **The model of system development life cycle (SDLC).** This SDLC model helps in standardizing the process of software system development so that important steps are not missed (Dennis et al., 2008; Kocherla, 2012; Royce, 1970). The model consists of phases and useful information in the development of a system. In designing MSC E-portfolio system, SDLC model by Dennis et al. (2008) is used. The process begins with analysis, system design, design and database development, development of system and testing and evaluation of the system.

- **Mahoodle open source software.** Mahoodle open software is a combination of Mahara and Moodle software. The Mahara software is the best E-portfolio software compared to other software (Himpsl & Baumgartner, 2009; Toro-Troconis & Hemani, 2009). Among them are that the Mahara software:
  - (i) is the most balanced software and easy to handle compared to Drupel-Ed, Elgg, Factline, Fronter, Sakai, Taskstream, PebblePad, ePET, Premier IT, Giunti Labs, NES and Wordpress.
  - (ii) have the best efficiency in choosing, collecting, organising, presenting and publishing data compared to Drupel-Ed, Elgg, Factline, Fronter, Sakai, Taskstream, PebblePad, ePET, Premier IT, Giunti Labs, NES and Wordpress.
  - (iii) can be diectly used after the first installation. Other software such as Drupel-Ed, Elgg, Factline, Fronter, Sakai, Taskstream and Wordpress requires additional installation in order to provide complete functioning of E-portfolio software.

Meanwhile, the Moodle software is the best LMS software compared to other LMS software (Al-Sharif & Zedan, 2008). The Moodle software:
  - (i) has the best capability and meets the characteristics of a learning tool compared to Desire2 Learn 8.1, KEWL, ANGEL Learning Management Suite (7.1), eCollege, The Blackboard Learning System, Claroline 1.6, Dokeos 2.1.1, OLAT, Sakai 2.3.1, A Tutor and Boddington.
  - (ii) has the strongest support for aid tools such as administration tools, course delivery tools and content development tools compared to Desire2Learn 8.1, KEWL, ANGEL Learning Management Suite (7.1), eCollege, The Blackboard Learning System, Claroline 1.6, Dokeos 2.1.1, OLAT and Sakai 2.3.1.

The combination of both these software is done to create an E-portfolio system that is more comprehensive and multi-purpose.

- **Virtual learning space (VLS) Nunez et al. (1988).** The VLS model by Nunez et al. (1988) serve as the basis for the development of E-portfolio, which are divided into four main elements: (i) knowledge space (the information needed to learn), (ii) collaboration space (working together to learn with others), (iii) consulting space (teachers provide tutoring for learning and if there are doubts) and (iv) experiment space (practical work for students to acquire knowledge and skills). The objective of VLS is to develop a learning system that can provide support, where students can learn with each other, share resources and ideas.

Conclusion

The use of existing E-portfolio at this time seems to work only as a repository of artifacts without connecting to the actual learning process (Ku & Chang, 2011). As a result, although the created E-portfolio can provide convenience and comfort to the users, but it still cannot achieve the actual goal behind the use of E-portfolio. Zeichner and Wray (2001) described seven questions that must be asked before building E-portfolio which are: (i) what is the purpose of the E-portfolio?, (ii) who makes the decision, what should be included in the portfolio?, (iii) how the evidence in the portfolio will be managed?, (iv) what are the types of artifacts that can be stored in the E-portfolio?, (v) what kind of info can be placed by the teachers during the teaching and learning process?, (vi) how the portfolio should be evaluated? and (vii) what should happen to the portfolio once it is completed? While Lorenzo and Ittelson (2005) stated that the questions that should be considered by any institution in using E-portfolio in teaching and learning are: (i) should the E-portfolio need to be a platform to record the students' work?, (ii) how long should the E-portfolio be kept in an institution after graduation of the students?, (iii) who should have E-portfolio?, (iv) how an institution promote and support the use of E-portfolio?, (v) how the E-portfolio are evaluated and is it valid and reliable? and (vi) how an institution encourages the reflection on the use of E-portfolio? When an institution chooses to use E-portfolio system for teaching and learning, it is important to understand and define the concepts and elements of E-portfolio required to meet the needs of an institution (Jafari, 2004; Sweat-Guy, & Buzzetto-More, 2007). To produce a system that integrates technology, it requires meticulous planning. Due to that reason, a framework and a detailed model of development is required to ensure that the E-portfolio produced to meet the needs of consumers and educational institutions.

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Digital Citizenship

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Abstract

Era in which we live is known and referred as digital age.In this age technology is rapidly changed and developed. In light of these technological advances in 21th century, schools have the responsibility of training "digital citizen" as well as a good citizen. Digital citizens must have extensive skills, knowledge, Internet and technology access and schools must guide the students to be a digital citizens. Ribble and Bailey (2007) described the digital citizens features in schools that need to have in nine touchpoints. Based on these points, this research is aimed to develop a scale about digital citizenship.

Keywords: digital age, digital citizen, digital citizenship

INTRODUCTION

Strongly expanded information and communication technology (ICT) has changed life, people and era. Anymore, ICT has become the sine qua non of our lives. Upon this change, using digital tools is increased, primary requirement for individuals is being to use ICT effectively not only for entertainment but also searching for and sharing information, communication, access, law and consumption.

The changing era with ICT has led to the exchange the characteristics of individuals and upon this the characteristics of   the community. Digital era that digital tools are widely used is endeavoring to create digital citizens from the digital society. Schuler(2002) defined digital citizens as "the characteristic of a genuine digital city". Digital citizen is generally identified as "those who use the Internet regularly and effectively" (Mossberger, Tolbert & McNeal, 2011).

Digital citizen must have some characteristics such as understand human, cultural, and societal issues related to technology and practice legal and ethical behavior; advocate and practice safe, legal, and responsible use of information and technology; exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity; demonstrate personal responsibility for lifelong learning; and exhibit leadership for digital citizenship (Ribble, 2008). A Common Sense Media White Paper(2011) explained that digital citizenship means the ability to use technology competently; interpret and understand digital content and assess its credibility; create, research, and communicate with appropriate tools; think critically about the ethical opportunities and challenges of the digital world; make safe, responsible, respectful choices online To understand the characteristics of digital citizens and digital citizenship clearly, based on previous works (Ribble, Bailey & Ross, 2004, Ribble & Bailey, 2004a, Ribble & Bailey, 2004b, Ribble & Bailey, 2004c, Ribble & Bailey, 2005), Ribble & Bailey(2007) described nine areas of behavior that digital citizenship must have: access, commerce, communication, literacy, etiquette, law, rights and responsibilities, health and wellness, security(self-protection).

Digital citizenship goals for the 21st century are educate, empower and protect (Common Sense Media White Paper, 2011). Ribble & Bailey(2007) explained these three as respect(etiquette, access, law), educate(communication, literacy, commerce) and protect(rights and responsibility, safety/security, health and welfare).

Being digital citizen is more important thing in nowadays. Therefore in education there are some key features to make the students digital citizens for looking at the 21st century digital citizenship goals. These key factors are student learning and academic performance, student environment and student behavior, student life outside the

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school environment. Ribble & Bailey(2007) sorted the nine areas of behavior for making up digital citizenship under these three keys.
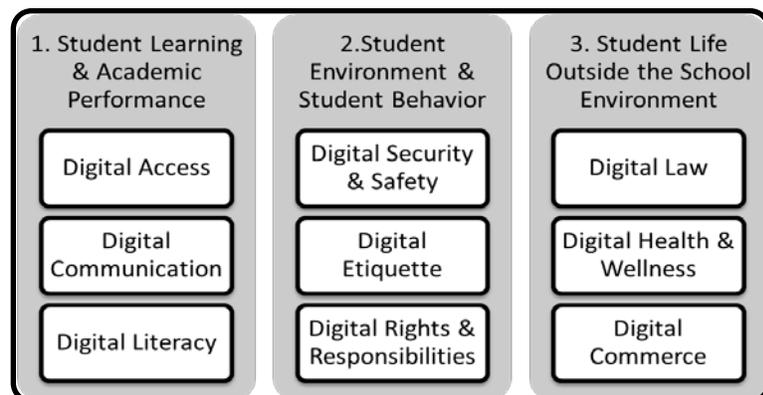
Appendix A. Fig. 1. Digital Citizenship Touchpoints (Ribble & Bailey, 2007)

Appendix A. Student Learning & Academic Performance
1. Digital Access: full electronic participation in society.
2. Digital Communication: electronic exchange of information.
3. Digital Literacy: process of teaching and learning about technology and the use of technology.

Appendix B. Student Environment & Student Behavior
4. Digital Security (self-protection):   electronic precautions to guarantee safety.
5. Digital Etiquette: electronic standards of conduct or procedure.
6. Digital Rights & Responsibilities: those freedoms extended to everyone in a digital world.

Appendix C. Student Life Outside the School Environment
7. Digital Law: electronic responsibility for actions and deeds
8. Digital Health & Wellness: physical and psychological well-being in a digital technology world.
9. Digital Commerce: electronic buying and selling of goods.

This era which people must have digital citizenship features, education and students are important for doing this. Hence the aim of the research is to develop a scale about digital citizenship based on Ribble & Bailey(2007)' s digital citizenship nine touchpoints for analyzing students.

Method

Population

   The population of this study constitute of students of the Faculty of Education of Sakarya University in the 2012-2013 academic year. The population consists of a total of 4395 students. Participation in the study was on a voluntary basis. Convenience sampling method was used in the study. Totally 229 students from the undergraduate

program in Elementary Teaching, Pre-school Teaching, Turkish Teaching, Religion and Ethics Education filled out the questionnaires.

Data Gathering Tool

Developing a scale is the aim of this study. For developing the Digital Citizenship Scale (DCS), first literature was reviewed and item pool was created based on Ribble & Bailey(2007)' s digital citizenship nine touchpoints. Four experts evaluated these items and accordance with the experts' recommendations, the scale was created as 34 items. This scale was applied to the participants and reliability and validity analyses were performed.

The 34-item scale was developed as five-point Likert-type scale. The students answered the items by selecting one of the "Strongly Agree", "Agree", "Neutral", "Disagree", "Strongly Disagree" options.

Data Analysis

SPSS 21 statistical software was used for performing construct validity and reliability analyses. For analyzing construct validity, exploratory factor analysis was used. Nine factors were found in the exploratory factor analysis. Moreover internal consistency coefficients were used for examining the reliability of the scale. After validity and reliability analysis the scale has 33 items.

Findings

Validity

For analyzing construct validity of DCS, exploratory factor analysis was used. Stevens(1996) explained "the purpose of exploratory factor analysis is to identify the factor structure or model for a set of variables.". According to this purpose, first, Kaiser-Mayer-Olkin (KMO) coefficient and Bartlett sphericity test were used for analyzing suitability of the data for factor analysis by exploratory factor analysis (EFA). KMO coefficient gives the information about the suitability of the the data matrix for the factor analysis, the suitability of the data structure for factor extraction and this coefficient is expected to be higher than .60 (Büyüköztürk, 2007). In the analysis the KMO value for the DCS was found .75. Also the Bartlett test determines the relationship between the variables on the basis of partial correlations, and the calculated chi-square statistic is expected to be significant (Büyüköztürk, 2007). The calculated chi square statistic was $\chi2 = 3336, 213, p. = .000$ in the Bartlett sphericity test. KMO coefficient and Bartlett sphericity test indicate that the collected data are suitable for the factor analysis.

Firstly, items are categorized under nine factors with eigenvalues over 1 and the communalities of the items varied between .541 and .907 in the results of exploratory factor analysis (EFA).
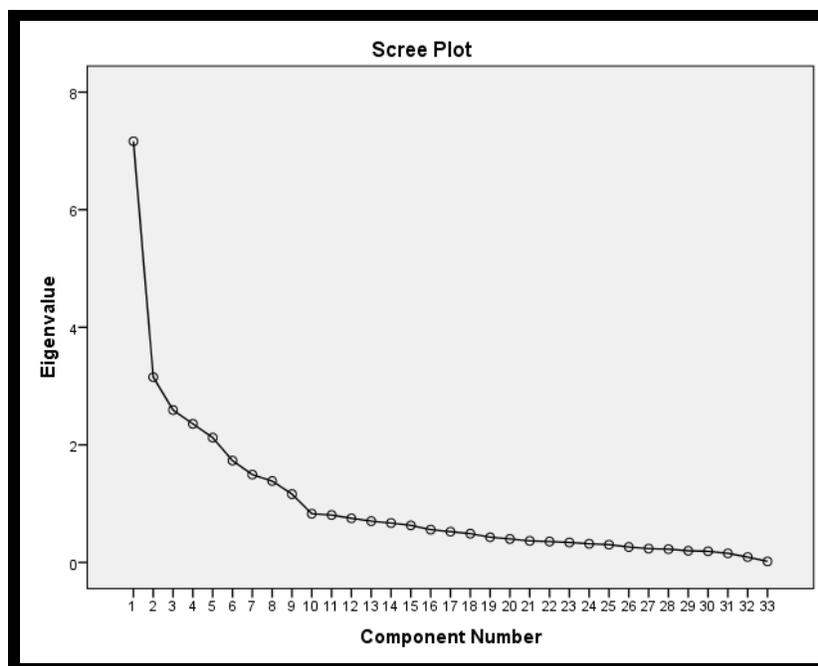
Appendix B. Fig. 2. Scree Plot

As a result of the EFA, scree plot showed that the scale has nine factors. Eigenvalue of the factors and the total variance explained supported this structure.

Appendix C. Table 1. Eigenvalue of the factors and the explained variance

Factors		Items	Eigenvalue	% of Variance
Factor 1	Digital Literacy	8,9,10,11,12,13	7.163	21.707
Factor 2	Digital Law	25,26,27,28	3.151	9.548
Factor 3	Digital Rights & Responsibilities	21,22,23,24	2.593	7.856
Factor 4	Digital Communication	1,2,3,4	2.357	7.142
Factor 5	Digital Security	14,15,16	2.123	6.432
Factor 6	Digital Commerce	32,33,34	1.732	5.247
Factor 7	Digital Access	5,6,7	1.494	4.527
Factor 8	Digital Etiquette	17,18,20	1.384	4.195
Factor 9	Digital Health & Wellness	29,30,31	1.163	3.523

Eigenvalue of the first factor is 7.163, eigenvalue of the second factor is 3.151, eigenvalue of the third factor is 2.593, eigenvalue of the fourth factor is 2.357, eigenvalue of the fifth factor is 2.123, eigenvalue of the sixth factor is 1.732, eigenvalue of the seventh factor is 1.494, eigenvalue of the eighth factor is 1.384, eigenvalue of the ninth factor is 1.163. Moreover the first factor explains 21.707% of the total variance, the second factor explains 9.548% of the total variance, the third factor explains 7.856% of the total variance, the fourth factor explains 7.142% of the total variance, the fifth factor explains 6.432% of the total variance, the sixth factor explains 5.247% of the total variance, the seventh factor explains 4.527% of the total variance, the eighth factor explains 4.195% of the total variance and the ninth factor explains 3.523% of the total variance. The total explained variance of the scsle is 70.178%.

Second, varimax rotation technique was used in order to facilitate the disclosure of important factors. Item 19 was removed from the scale because item's factor loading showed that it was also under the two factors. The factor

loadings are between the lowest .558 and the highest .889. The total explained variance values of the scale and factor loadings show that the scale is successful in explaining digital citizenship.

Appendix D. Table 2. Results of the exploratory factor analysis

Item	Communalities	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
i13	,703	,731								,306
i9	,577	,667								
i8	,556	,603								
i12	,534	,587								
i11	,545	,559								
i10	,527	,558								
i27	,786		,868							
i26	,750		,823							
i28	,630		,773							
i25	,656		,701	,335						
i22	,810			,795						
i21	,659			,761						
i24	,647			,740						
i23	,688		,366	,653						
i2	,751				,849					
i1	,600				,749					
i4	,567				,674					
i3	,667	,346			,636					
i16	,885					,897				
i14	,839					,885				
i15	,634					,770				
i32	,812						,880			
i34	,715						,828			
i33	,728						,820			
i5	,908							,852		
i6	,896							,843		
i7	,694							,665		
i18	,771								,853	
i17	,695								,760	
i20	,659								,736	
i31	,794									,856
i30	,738									,739
i29	,693									,738

Appendix E. *Loadings are values above .30.

Appendix F.

Reliability

For the reliability of the DCS, Cronbach's Alpha internal consistency coefficient was calculated. As a result of the analysis, the Cronbach's Alpha value of the scale is .85. According to the factors, the Cronbach's Alpha value of the Factor 1 is .78, the Cronbach's Alpha value of the Factor 2 is .84, the Cronbach's Alpha value of the Factor 3 is .80, the Cronbach's Alpha value of the Factor 4 is .79, the Cronbach's Alpha value of the Factor 5 is .85, the Cronbach's Alpha value of the Factor 6 is .84, the Cronbach's Alpha value of the Factor 7 is .90, the Cronbach's Alpha value of the Factor 8 is .70 and the Cronbach's Alpha value of the Factor 9 is .70. The .70 or higher calculated reliability coefficient for psychological scales is considered sufficient in terms of the reliability of the scale (Büyüköztürk, 2007). Thus, the Digital Citizenship Scale and its factors developed have a high reliability level. This finding indicates that the scale is able to distinguish between students' digital citizenship or not.

Conclusion

In this study, a scale was developed to measure the digital citizenship levels of students of a faculty of education. First, item pool was created after reviewing the literature and receiving expert opinion. Then the 34-item scale was applied to students of the Faculty of Education of Sakarya University in the 2012-2013 academic year. Reliability and validity analyses were conducted on the data collected from 229 students from the undergraduate program in Elementary Teaching, Pre-school Teaching, Turkish Teaching, Religion and Ethics Education.

For examining validity of DCS, exploratory factor analysis was used. The EFA showed that all the items had high factor loadings and items are categorized under nine factors. The nine factors in the DCS explained 70.178% of the total variance. The total variance explained and the factor loadings show that the scale is successful in capturing digital citizenship level. Thus, it can be safely argued that the scale provides a valid measure of digital citizenship.

To examine the reliability of the scale, the Cronbach's Alpha value was calculated. The value calculated was high (.85), which showed that the scale has high reliability.

In conclusion, the reliability and validity analyses conducted show that the DCS developed is an effective measurement tool that can be used to study about digital citizenship. The scale can be used in future studies.

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13th International Educational Technology Conference

Do undergraduates use their personal computers to support learning?

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Abstract

Computer activity data was extracted from the personal laptops of eighteen third-year students who self-reported as being skilled computer users. The analysis of the data revealed that non-academic use of students' personal computers was significantly higher compared with academic use. This was the case concerning the discrepancies between what students' self-reported as their level of use compared with their actual use. The findings illustrate that personal computers were not as crucial to undergraduate academic study as expected. In addition, the findings offer important insights into the benefits—in understanding actual practice—of using data-capturing techniques aimed at gathering naturally-occurring data.

Keywords: academic work; actual practice; e-learning; higher education; non-academic work; personal computer; self-report of practice; study habit

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Introduction

The use of Information and Communications Technology (ICT) has grown enormously in the last 10 years with computers and smart devices becoming indispensable to our daily lives. Personal computers are seen as vital for those wishing to engage in higher education (Charter Colleges and Universities Participating in the National Higher Education ICT Initiative, 2003). While this is a claim that few of us would refute, we have very little research on how students are using their personal computer devices to support their academic practice (Sharpe,

Benfield, Lessner & DeCicco, 2005). Furthermore, much of the research pertaining to student learning is based on perception data rather than data concerning their actual practice. This scoping study thus sought to address this gap by exploring the possibility of capturing naturally occurring data from students' personal computers through installing software that tracked predefined aspects of use (e.g. Library database, Learning Management System, Word, etc).

Method

Participants were selected based on a set of criteria. Approval was then gained from the participants regarding the installation of the software on their personal computers, and data was extracted at the completion of the first quarter of the semester. The idea of naturally-occurring data, gathered as a result of students using their computers, was seen as an accurate method of revealing application types used and their computer technology engagement when studying over the first six weeks of the fieldwork period. In this way we were able to focus on the context(s), the extent to which software applications and web services were used to support undergraduate academic practice with personal computers - at what times and for how long. This approach offered what appeared to be an ideal way to capture students' actual use of their personal computers, as opposed to the traditional approach of soliciting post-event recollections through surveys and interviews.

Participants and Recruitment

Forty third-year students enrolled in undergraduate degree programmes were randomly selected for participation. Thirty students who showed their interest were invited to undertake a short questionnaire to gain some understanding of their perceived use of, and abilities with, computer technology. The questions appear in Table 1.

8. Table 1. The five questions in the questionnaire

1	Is access to a computer really important for your university study?
2	Which of the following best describes you?
	a. I love technologies and am among the first to experiment with as well as use them before most people I know.
	b. I usually use new technologies when most people I know do and sometimes I will be one of them.
	c. I am sceptical of new technologies and use them only when I have to.
3	Please indicate the ratio (within 10) of how much you use computers in your studies compared to other aspects of your life.
4	How do you rate your ability to use computers?
5	What is your skill level for the following?
	- using the university library website - computer maintainese
	- spread sheets - internet information searching
	- presentation software - evaluating the reliability and credibility of online sources
	- graphics software - using digital information from various access

Question one sought the participants' views on the importance of computer access for their university study, while question two asked how proficient participants were in the use of technology in their daily lives. These two questions were necessary to indicate the participants' views on the importance of personal computer use in their undergraduate lives. Question three invited the participants to self-rate on the extent of computer usage between study and non-study. This question was important to compare the students' self-reported practice and provide data against which to compare their actual practice that gathered through the extracted computer activity logs. Question four requested a more general rating of participants' overall perception of their computer skills. Question five required the participants to rate their abilities in different aspects of computer usage. These last two questions

determined the participants' computer 'savvy-ness'. In addition, the results of these two questions were used for final selection of participants for this dataset in this study.

Of the 30 who replied, 25 self-reported as average or expert computer users to question four. 18 (male-9 and female-9) with the highest scores (average or expert in at least four specific computer usages in question five) were recruited. All 18 participants' questionnaire replies were summarised and the data was assembled in the format of tables. Any remark provided by any participant was noted down for analysis reference. The questionnaire replies were kept as a preliminary dataset to compare participants' self-reports and their actual use of personal computers in academic practice.

Computer Activity Data

The Computer Activity Data was a core dataset. These data were gathered using a free software programme, ManicTime, which is known as "Personal time management software for logging and tracking work hours" (Mininday, 2009). ManicTime resides in the background of the computer reducing its intrusion on users' normal computer use. The core benefit of using ManicTime for this study was its function as a personal, time-tracking tool, thus providing monitoring at a rudimentary level. ManicTime only tracks the software programmes that are being used, the websites visited (through capturing the Uniform Resource Locators - URLs) and the documents that are accessed (for example "Assignment_1.doc"). At the same time, it records the duration of time the students engaged in these activities. The data gathered in this way was not reliant on the students keeping records and thus yielded more authentic information than could be gained from asking students about their computer usage.

ManicTime was downloaded onto each participant's computer and configured to record the programmes or websites used, as well as documents accessed, at what dates/times and for how long, over the first six weeks in semester one. All the participants were invited to attend a briefing session where the software was explained and training was given on software functions; this included the ability to turn it on/off and delete any record. All those who were invited, attended the briefing session. The software captured the programmes and web services that students were using on a regular basis. The information was calculated "on the fly" and available for viewing by the student by clicking on an icon on the task bar. ManicTime is a detailed computer activity tracking application. At the click of an icon situated in the task bar, live data is presented in both tabular and graphical forms. These displays include the top applications used, top documents accessed, and computer usage within a certain duration. An example of the displays is shown in Figure 1.
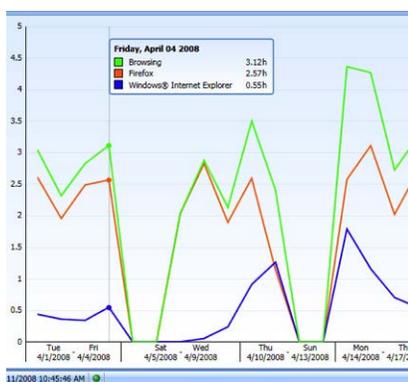
Fig. 1. Computer usages by duration and top applications used within duration (Mininday, 2009)

Computer Activity Data Analysis

At the end of the first six weeks of semester one, the lead researcher (the first author) met with each of the 18 participants to extract their computer activity dataset. This included figures and tables of Day, Duration, Top Applications, Top Documents, Top Computer Usage and some Custom fields.

The extracted computer activity data was then imported to Microsoft Excel for calculation and generation of more targeted tables and figures according to categories. This involved reducing the dataset to the top three software applications and web services used. Categories were generated based on the data captured.

A summary of the categories is shown in Figure 2.
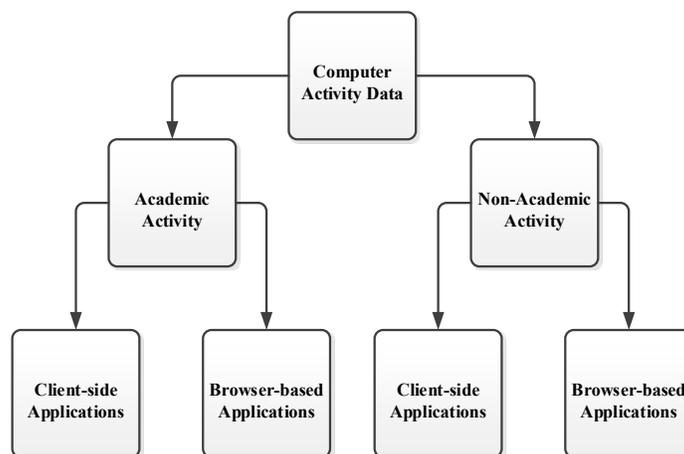
9. Fig. 2. Generation of categories from the computer activities

As shown in Figure 2, the filtered dataset was divided into two categories titled Academic Activity and Non-Academic Activity. Academic Activity refers to software, documents or web services that were related to the participants' academic study. Non-Academic Activity includes all other uses, such as banking, entertainment sites, Facebook groups, etc. The distribution of the categories was not difficult given that all the URLs and file names accessed were recorded in the computer activities list.

The Academic Activity and Non-Academic Activity categories were then divided into Client-side Applications (e.g., Microsoft Office) and Browser-based Applications. Client-side Applications refers to all the built-in application programmes on personal computers used for different purposes. Browser-based Applications include website services (e.g., Blackboard) and website pages (e.g., Wikipedia).

In summary, this dataset traced the students' actual use of personal computers (software applications, web-based services/pages and documents) for their daily undergraduate academic practice as documented by the software programme.

Findings

Participant Selection Data

The participants were selected based on self-reports of their degree of computer literacy. This was measured using the responses to the five questions relating to computer use and perceived aptitude with computer technology listed in section *2.1* above. Of the 25 students who rated their computer use/aptitude as average to expert, 18 with the top highest scores were selected to undertake the study.

In question one, students were asked to state whether they agreed, were neutral or disagreed with the claim 'Access to a computer for university study is important'; all but one of the participants selected the 'Agree' option. The one participant who did not make a selection chose instead to make a comment: "A computer is important when you have poor teachers. You will have to teach yourself to learn." - An interesting comment from a person who had reported being an expert computer user.

The second question aimed at ascertaining the students' overall confidence and interest in adopting new technologies. Of the 18 students, only five regarded themselves as early adopters, with the majority (n=10) stating they saw themselves more as followers than as early adopters when it came to using new technologies. The remaining three, while comfortable with technology, considered they were sceptical when it came to new technologies.

Question three explored how the students used their personal computers for both academic (study) and non-academic use (other aspects of life). Nine of the 18 felt they had a balanced approach to computer use for academic and non-academic purposes with the other nine stating they were more likely to use their personal computer for academic than non-academic purposes (see Table 2).

Table 2. Student self-perception measure of their academic and non-academic computer use (Q3)

Participants	Percentage (%)	
	Academic Use	Non Academic Use
1	60	40
2	60	40
3	70	30
4	50	50
5	50	50
6	50	50
7	50	50
8	50	50
9	50	50
10	40	60
11	40	60
12	40	60
13	40	60
14	40	60
15	40	60
16	40	60
17	30	70
18	20	80

Question four asked students to self-rate their ability in using computers. All 18 reported their ability as average to expert. As for their ability in using specific computer applications (question five), all 18 students rated themselves as average to expert users against a list of common software programmes and web services.

Computer Activity Data

As shown in Figure 2 above, the computer activities list was divided into client-side applications (e.g., Microsoft Word or Windows Media Player) and browser-based services (e.g., Blackboard or Facebook). At the level of application use, the computer activities revealed the most popular application was the browser, with browser-based use considerably higher than client-side software programmes (average = 96.59%). The top three browser-based services were Facebook and YouTube which accounted for about 52.74% of students' overall computer usage, with Google (average = 2.92%) the next on the list. As for client-side applications, Microsoft Office was ranked the highest (average = 7.18%) followed by the file management application, Windows Explorer (average = 4.92%), and Adobe/Foxit Reader (average = 3.48%). Table 3 below shows the total use of client-side software and browser-based services retrieved from every participant's computer activity data.

Table 3. Student use of client-side software and browser-based services

	Percentage (%)	
	Client-side Software	**Browser-based Services**
1	13.42	86.58
2	98.86	1.14
3	12.25	87.75
4	19.05	80.95
5	17.53	82.47
6	12.05	87.95
7	14.21	85.79
8	13.93	86.07
9	3.87	96.13
10	26.25	73.75
11	24.70	75.30
12	21.00	79.00
13	14.31	85.69
14	27.95	72.05
15	47.15	52.85
16	44.72	55.28
17	17.65	82.35
18	22.03	77.97

The computer activities were then divided into two main categories: Academic and Non-Academic Work (this includes both client-side software and browser-based services). Table 4 below shows the actual practice of how participants used computers in their studies compared with how they used them in other aspects of their life.

10. Table 4. Computer activities for comparison of academic vs non-academic use

	Percentage (%)	
Participants	**Academic**	**Non-academic**
1	10	90
2	90	10
3	10	90
4	10	90
5	20	80
6	10	90
7	10	90
8	10	90
9	10	90
10	10	90
11	20	80
12	10	90
13	10	90
14	10	90
15	10	90
16	10	90
17	10	90
18	10	90

The problem of using self-reports to express practice in regard to computer use is highlighted by the discrepancy found between the self-perception questionnaire data (Table 2) and computer activity data (Table 4). From the questionnaire data, students perceived that they either struck a balance in the use of computer technology between study and other aspects of life or had a higher computer technology usage for study. The actual practice (computer

activities), however, revealed the opposite. Seventeen out of 18 of the students used computer technology 80%-90% more in other aspects of life (non-academic use) than in academic work (compare Table 2 and Table 4).

In summary, Computer Activity Data revealed:

11. the difference in usage between the top-ranked client-side software programmes (Microsoft Office 7.18% and Window Explorer 4.92%) and browser-based services (YouTube and Facebook 52.74%).
12. the high percentage of browser-based services use among undergraduate students (average of 96.59% among 18 participants).
13. the high non-academic use of personal computers in undergraduate students' actual practice compared with their academic use (average of five times more on non-academic use).

Discussion

The findings showed that while most of the participants reported that their use of computers was predominately for academic purposes, the computer activity data of actual use revealed the reverse. This highlights the considerable disparity between what students think they are doing and what they are actually doing when it comes to computer usage.

The difference between the students' use of client-side software applications (low use) and browser-based services (high use) as shown in Table 3, would suggest that undergraduates are less reliant on the various software applications installed on their laptops than they are on the browser to access the World Wide Web. The data also showed that daily, non-academic use of their personal computers was significantly higher compared with their academic use (Table 4). Given the high level of belief and confidence expressed by the participants regarding the importance of computer technology in higher education, it might be logical to assume that they would be avid users of both client-side software and web-based services for academic use. Instead, the data showed that a dominant use of personal computers by these undergraduate students is for socialising (social networks, such as, Facebook, and email), personal web services (Trading sites and online banking) and entertainment (YouTube, music and movies). The low level use of academic-related software/web services compared with non-academic use sends a clear message that for these 'computer savvy' third year students, personal computers were not as crucial to their academic study as was expected or as current research has argued (Aspden & Thorpe, 2009; Dahlstrom, 2011; Guidry & BrckaLorenz, 2010; Smith & Caruso, 2010).

This study suggests that for these participants there appears to be something about academic practice that is not conducive to technology use. Given that the predominate use of apps by these students outside of their academic practice is 'social', could it then be assumed that the 'social' is missing from academic practice? These findings are somewhat perplexing given that much of the literature regarding students' use of personal computers highlights the prominence of these devices for academic use with a number of these studies claiming that personal computers now play a significant role in supporting undergraduate study (Aspden & Thorpe, 2009; Dahlstrom, 2011; Guidry & BrckaLorenz, 2010; Smith & Caruso, 2010). So why did the findings from this study differ significantly from previous studies? Most studies on student use of computers in higher education rely on perception data, often gathered via surveys and questionnaires. The perception data gathered from students in the current study - questionnaire data - were similar to the findings presented in the literature. However, the data gathered from student's actual practice – computer activity data - showed something very different.

The difference between the students' beliefs about their personal computer use and their actual computer use highlights that self-report data reliant on post-event recollections should not be relied on to represent actual practice. Studies employing perception data might have led to the assumption that the extent of computer use to support higher education study was high. However, the naturally-occurring data captured in this study revealed computer use for academic purposes was very low.

Limitation

It must be acknowledged that some participants viewing the computer activity data that was being captured were surprised (e.g., duration of time on Facebook) and did state they were going to change their behaviour as a result. Such behaviour awareness was not expected at the beginning of the study. The awareness, however, did not appear to change behaviour dramatically, but it did provide a degree of self-awareness regarding their computer usage

which could have resulted in minor change. Students also had the ability to turn the software application on or off, as well as the ability to delete activities. We were not sure to what degree students actually employed these options.

Conclusion

Drawing on actual practice data, this study was an initial attempt to understand the role personal computers play in supporting undergraduate students' academic practice. The aim was to discover the manner in which undergraduate students integrate technology into their learning, and the ways they use technology to support and develop autonomous learning. This study explored the potential of methods focused on capturing naturally occurring behaviour in comparison with gathering post-event recollections through student self-reporting. It is hoped that the findings generated from this study will help inform the growing literature on undergraduate student use of computer technology. The findings are relevant to the broader tertiary population in that they will help to engender awareness of a different way to understanding research into student behaviour. Further, the study adds another voice or aspect to the growing interest in the role and impact that computer devices are playing in education.

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E-Learning Environment for Hearing Impaired Students

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Abstract

14. The usage of technology within the educational department has become more vital by each year passing. One of the most popular technological approaches used is the e-learning environment. The usage of e-learning environment in education involves a wide range of types of students, and this includes the hearing impaired ones. Some adjustment or enhancement needs to be implemented within the e-learning environment, based on the needs or the adaptability of the hearing impaired students accordingly. This paper reviews some of the past researches on the usage of the e-learning environment for hearing impaired students for the past decade or so.

Keywords: E-learning, hearing impaired

INTRODUCTION

There are a lot of disabled individuals who have the right to get the best education as they can get, just like their normal peers. Hearing impaired (HI) individuals are among those of people with disabilities that deserve the same rights. Hearing impaired individuals, particularly hearing impaired students, usually acquire the same level of mental capability as the normal hearing students in terms of studying. The term *'deaf and dumb'* is not practically to be used since the hearing impaired students are only lacking of their hearing capability not their intelligence level (Schwartz, 2002). Therefore, they will be undertaking the same subjects or courses in any education departments or institutions as those taught to the normal hearing students of the same age. However, a problem could occur for the hearing impaired students if the technique used by the teachers or instructors in teaching them is as the same used for normal hearing students. Therefore, the usage of technology is vital in preparing the HI students with appropriate learning environment, since by using technology, the HI students could access sound in their own suitable way (Berndsen & Luckner, 2010).

E-learning environment is one of the most used technique for educational purpose and this includes the education for HI students. However, most e-learning environment available does not particularly can be useful to the HI students due to its feature which is lacking in terms of adaptability to the HI students. They often encounter problem in accessing the information available in terms of understanding it and using it in a proper manner (Fichten, Ferraro, Asuncion, Chwojka, Nguyen, Klomp & Wolforth, 2009). Therefore, in order to assist these HI students in accessing the information correctly, the e-learning environment needs to be developed and designed according to the needs of the HI students by adding or enhancing some features within the e-learning environment.

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Discussion on Selected Papers

In this section, we present the review of past researches on the usage of the e-learning environment for hearing impaired students starting from the year 2005 until the year of 2012. Table 1 below shows the list of the studies related to the issue concerned. We begin the review with the brief explanation on the each study, followed by the approaches, limitations and also some valuable directions for future studies.

14.1.1. Table 1. List of studies that focused on the hearing impaired e-learning environment

Author(s)	Year	Participants	Contents	Approach Techniques
A.S. Drigas, D. Kouremenos	2005	Deaf adults	E-commerce and Technologies of Internet	Virtual classroom, Animation, Video streaming (sign language) and conference, Chat rooms
Katja Straetz, Andreas Kaibel, Vivian Raithel, Marcus Specht, Kaludia Grote, Florian Kramer	2005	Deaf adults	Mathematics and Reading / Writing	Video streaming (sign language) and conference, Chat rooms, Enhanced visualization, Template Block
Javier Bueno, Soldedad Garcia, Reca Borego, Raul Fernandez	2007	10 profound prelingual deafness, 1 severe prelingual deafness, 1 HOH (all secondary school level)	Basic Computing	Knowledge database, Text adaptation, Image, Video streaming (sign language)
Ng Chee Kyun, Liew Yeong Tat, Iqbal Saripan, Ahamad Fauzi Abas	2007	Blind and deaf students	General Education	Video conference, Voice-to-text
S. Khwaldeh, N. Matar, Z. Hunaiti	2007	Deaf students	Mathematics	Virtual classroom, Video conference, Image, Subtitles, Chat rooms
Asma Al-Osaimi, Hadla Alfedaghi, Asmaa Alsumait	2009	42 deaf and HOH students	Kids Education	Enhanced user interface
Maha Al Bayati, Karim Hussein	2009	HI students	General Science Topic	Video streaming (sign language and finger spelling), Image
Mona Nasr	2010	Deaf / HOH students	Chinese Sign Language	Virtual classroom, Interactive and social tools, Video conference, Chat rooms
Megan Hastie, Dimity Dornan, Nian Chen, Richard Smith	2011	HI children fitted with hearing technology	Language (listening and speaking)	Auditory-Verbal Therapy (A-VTs)
Matjaz Debevc, Zoran Stjepanovic, Andreas Holzinger	2012	22 deaf and HOH people	Computer Literacy	Video streaming (sign language and subtitles), Animations

Brief explanations of each study

Generally, all the studies stated in Table 1 cover a wide range of educations or subjects taught for different types of hearing impaired students and how well the approaches used to design the e-learning platform changed according to the needs, usability and adaptability of these special students. The first study conducted by Drigas and

Kouremenos (2005), concerns about a learning management system (LMS) which offers the Greek Sign Language videos for each text block in the learning environment. The system satisfied the deaf learners' needs by providing the bilingual information (text and sign language), high level of visualization and learning with peers through the video conferencing. Next, is about the study done by Straetz, Kaibel, Raithel, Specht, Grote and Kramer (2005) which using the same approaches as in previous study. In this article, the authors made an effort to explain in details about the supposed-to-be-content template in order to convey the knowledge efficiently to the deaf students. An intensive research on e-learning content adaptation for deaf students has been studied by Bueno, Fernandez del Castillo, Garcia and Borrego (2007). The problems faced by deaf students when reading text are compiled and tested with several recommendations to adapt text in an e-learning Computing course which later shows a promising result on the level of understanding among those students. Kyun, Tat, Saripan and Abas (2007) have come out with friendly flexi e-learning system which enables both blind and deaf students to study together with the normal ones to support the "Education for All" objective. The system also can assist the bidirectional communications among user. Furthermore, there is also a research in Jordan where, this is the first time the system for deaf ever implemented in that country and it focusing on how the ICT technologies can assists in bringing the interactivity to the deaf classroom (Khwaldeh, Matar & Hunaiti, 2007).

Next, Al-Osaimi, AlFedaghi and Alsumait (2009) report some guideline for designing e-learning programs for deaf children aged between seven to thirteen years old, which based on deaf children and their teachers' feedbacks. There is a need for this guideline since the existing e-learning programs were not age-appropriate and cause difficulties for children to interact with. Instead of focusing on the e-learning tools alone, Al-Bayati and Hussein (2009) have studied about the impact of e-learning modules of tutorial lessons for HI students towards their motivation in learning the subject. Seven experimental tutorial e-lessons were developed and tested which resulting some positive outcomes towards enhancing HI students' motivation. Next, Nasr (2010) has concerned about enhancing the e-learning environment for deaf and HOH pupils by steering many learning facilities like interactive and social set of tools. The proposed paradigm is hoped to increase the usability and interactivity within virtual learning environment for disabled users. Hastie, Dornan, Chen and Smith (2011) have taken the technology a step further by inventing an e-learning system which able to train children with cochlear implant to listen and speak due to the chronic shortage of Auditory-Verbal Therapists world-wide. Last but not least, Debevc, Stjepanovic and Holzinger (2012) have developed an adapted e-learning environment for people with disabilities and the usability and pedagogical effectiveness of the e-learning course are evaluated using a Software Usability Measurement Inventory and Adapted Pedagogical Index method.

Approaches

The needs, usability, and adaptability always take presidency every time a researcher wants to develop an appropriate e-learning platform for HI students to learn efficiently. The technologies and techniques used must in line with these three aspects and among the popular approach used in all ten studies mentioned above are video streaming, chat rooms, video conference, text adaptation, voice-to-text, and interactive and social tools.

The video streaming application is the core medium for knowledge transfer to happen, mainly by using the sign language. Hence, several specifications like the resolution, frame format, file format, and frame bit rate must be taken into account in ensuring the quality of the sign language video presented to the HI students are clear enough to be recognized by them (Khwaldeh, Matar & Hunaiti, 2007). The accessibility of e-learning also found to be increased when spoken text and other sound information are presented together inside the video. Besides its potential in improving the reading skills among deaf students, it will also enable them to learn more independently (Debevc, Stjepanovic & Holzinger, 2012).

An integrated communication component consisting of chat and video conference enables the HI students to communicate and involve in the collaborative task (Drigas & Kouremenos, 2005; Straetz et. al; 2005). This is the medium where HI students can clarify their ideas and share information (Khwaldeh, Matar & Hunaiti, 2007). The interface of the e-learning environment itself plays a vital role in shaping the contents to be easily understood by the HI students. A familiar and interactive yet effective interface of the e-learning environment could boost up the learning experience of the HI students hence their performance (Al-Osaimi, Alfedaghi & Alsumait, 2009). Straetz et al (2005) used a designed templates block for different parts of each page included in their developed e-learning environment. The parts of the page are for example the header or the content layout. The template blocks used are fixed throughout the e-learning environment so that the users will be familiar with the environment

A knowledge database system is an approach proposed by Bueno et al (2007) in their e-learning. Knowledge database can be described as a dictionary mainly focusing on translating any difficult terms to be understood by the HI students to the more easier form to be understood by them. Finally, a rather unorthodox approach used by Hastie et al (2011) by using an auditory verbal therapy (A-VT) to be cooperated within an e-learning environment was found to be worked out well especially in terms of helping children who used to have knowledge of language they used to use during their lives before the loss of their hearing.

Limitations

There are several limitations allocated in terms of the usage of e-learning environment for HI students. First of all, it involves the teachers or instructors knowledge regarding the e-learning technology itself. During this modern times, most of them are probably adequate with the knowledge however there are several group who might not acquire this kind of knowledge. Secondly, in terms of the necessary infrastructure needed in making sure the usage of e-learning environment for HI students to be succeeded. Certain schools or institutions might not be enriched with all the infrastructure needed in developing the e-learning environment. Finally, in terms of the users itself, the HI students would probably find it difficult to cope with a new learning environment since they are very used to the usage of conventional classroom learning environment. They will have to be taught first on how to use technology generally in their daily learning activities so that it can be effective.

Future Directions

The implementation of e-learning within the HI learning environment is hopefully to be broaden up by years not only in terms of the technology itself but also in terms of the awareness level of how this approach could be very effective and useful to the HI students generally. E-learning designers should be aware of the existence of the users with hearing impairment and will try to develop an e-learning environment which will be effective to both normal hearing users and hearing impaired users. Finally, the usage of technology for HI students in terms of learning should be widen up not only by using an e-learning environment but also other available technology that is seemed appropriate to be used according to their disability.

Conclusion

The usage of technology should be capitalized especially for educational purposes, not only for normal students but for the disabled students as well, particularly the HI students. Their difficulties in using the conventional learning method should be taken as an opportunity for the e-learning developers and researchers in helping them by creating a learning environment that could help them in a variety ways. The development of any e-learning environment should help them in boosting their motivation level and at the same time enhancing their performance in learning any subjects or courses available in schools or learning institutions.

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Educational Implication of Reflection Activities Using SNS in Cooperative Learning

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Abstract

This study aims to verify educational effects through students' reflection activities by applying Social Network Service(SNS), recently started to be used as one of teaching-learning methods to cooperative learning situations. Specifically, for cooperative learning, it proposes to figure out how reflection activities including sharing, conversations and discussions about prompt and ongoing learning contents in virtual space of SNS affect on students' learning and to explore educational availability and methods of SNS. For subjects of the study, 6th grade students of elementary school in Icheon, South Korea were selected and both experimental group and control group consist of 20 students, respectively. Reflection activities using SNS were conducted in the experimental group for 6 weeks in total. Classting, an aspiring educational SNS tool was used as the instrument for the study and students' impressions were qualitatively analyzed during the research. As the result of the study, the effect of academic achievement in cooperative learning became higher through reflection activities, there was positive effect by applying SNS to learning situations and educational implications and possibilities of SNS were suggestible.

Keywords: Reflective Activity, Collaborative Learning, Social Network Service(SNS), Classting Application

Introduction

Cooperative learning is a teaching-learning method to learn through interactions between members by consisting a small group with collective purpose. Especially, based on collaboration, it alleviates undesirable educational effects in over competitive situation and attempts emotional and cognitive interaction between students. Cooperative learning is a teaching-learning method to foster students' learning and socialization(Cohen, 1994) and emphasizes student-student interactions(Johnson & Johnson, 1994).

Cooperative learning, unlike traditional teaching method led by teacher, a collective student working which learners directly participated in learning with active interaction and have interdependences in learning(Cohen, 1994). Accordingly, cooperative learning aims to improve both students' learning and socialization at same time and effects of social elements for it should be greater.

And if Social Network Service(SNS) is applied to cooperative learning in order to apply its social interaction element and to improve effectiveness in learning, it will be helpful for better collaborative problem-solution ability. SNS plays a role of the space of communications and thinking activities facilitation by free sharing and discussion between users(Lim, 2010) and its educational application can be very potential because it is an 'interactive communication using collective intelligence'.

In this context, the study conducted reflection activities using SNS with cooperative learning for improving students' reflective thinking ability. Because SNS focuses on relationship-oriented communication and is available for sharing information and communication, it can be greatly applicable to cooperative learning which learners continue to participate in learning situations and solve problems through communications between them. And reflection starts from inconsistence between existing knowledge and new information and this inconsistence is from

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social contexts of interactions with others (Lee, 2003), reflection activities using SNS may prompt interests for learning and its continuance.

Reflection means looking back to what was done by an individual and thinking of it in depth. A learner experiences a process to interpret and to organize new contents for integrating it to his/her knowledge structure in learning situation and then continuous reflection is required for it(von Glasefeld, 1996). That is, learner modifies his or her wrong thoughts and beliefs through reflection in learning process and transforms cognitive structure by including newly acquired information to it. Since these reflective thinking and reflection of learner are generated from interaction process of sharing opinions with colleague members(Lin, 2001; Silvers, 1998) and students justify or modify their own thoughts through collaborative reflections in social communications of sharing and negotiating thoughts and opinions with others and achieve learning experiences, web-based learning environment should offer strategies and instruments to support learners' collaborative reflections(Lee & Kim, 2003). For this, the study selects SNS as an instrument to facilitate collaborative reflections and reflective thoughts in cooperative learning. SNS provides opportunities to know quickly others' written thoughts and opinions based on relationship-oriented interaction and the contents can be available for checking in real time. These characteristics of SNS keep naturally contexts of learning and support learner's collaborative reflection with others.

The study aims to figure out, for cooperative learning, how reflection activities including sharing, conversations and discussions about prompt and ongoing learning contents in virtual space of SNS affect on students' learning and to explore educational availability and methods of SNS.

Theoretical Backgrounds

Cooperative learning and educational application of SNS

Johnson and Johnson (1994) defines cooperative learning is a learning method through interactions including sharing learning experiences between learners from setting goals for learning to evaluation on it. To induce successful cooperative learning, teaching-learning method with consideration of characteristics of cooperative learning is required and Jefferies (2003) emphasizes roles of teacher and technologies for factors to facilitate cooperative learning. In relating to this, concerns for application of SNS in the educational field haven increased with discussion on learning process focusing on social relations and technologies (Greenhow & Robelia 2009; Selwyn, 2009). SNS is an online community to share various thoughts and experiences based on relationships between users and a system to support cooperative learning in social factors of interaction and interdependence. Studies on educational application of SNS have been increasingly trends and according to Yue et al.(2009), learners can form online community using SNS and achieve given goals for learning through this. Usefulness, entertainment and interaction of characteristics of SNS induce users' participation activities and contribute to continuous and normative immersion to SNS, as a result. If these participant characteristics are applied to cooperative learning, it may be effective to reflection activities and learning. When students build a communication system, reflection activities to modify their own wrong thoughts and beliefs and to integrate newly acquired knowledge to their cognitional structure may be available for focus, control and participation on learning, induce naturally immersion to learning process and increase satisfaction and accomplishment for it.

Cooperative learning and reflection activities

Cress and Kimmerle(2008) explains a process that individual learner shares and learns his or her and other's own knowledge and expands collaborative knowledge in cooperative learning environment using wiki. In this environment, learner experiences cognitional conflicts in the process of arranging his or her knowledge and accepting and internalizing others' knowledge and experiences and maintain cognitive equilibration through Paget's 'assimilation' and 'accommodation'(Cress & Kimmerle, 2008).

Reflection activity is a process of self-examination and assessment on knowledge and information critical to making a decision by learner (Meziorw, 1990). Learner can understand and apply learning contents in depth through broader understanding and critical thinking on knowledge by reflection activities. Nowadays, reflection activity is considered as a process that learner shares and negotiates his or her learning experiences and knowledge with others and assesses and modifies them unlike the conventional concept of reflection focusing on learner's inner self-reflection and critical thinking(Richards, 2001). The scholars also point out that reflection activities are generated during cooperative learning process of interaction with others (Lin, 2001).

Research Methods

The subjects of the study

The study conducted reflection activities using SNS on 6th grade students of elementary school in Icheon, Korea. A cooperative learning group is defined as a learning community autonomously consisting of four students with purposes of deep understanding on curriculums, deep learning and effective achievement of goals of learning. The experimental group consists of 20 students for using SNS. The members had offline meeting and posted the studied contents on Classting group note and had reflection activities on them. On the other hand, the control group randomly consisted of 20 students who did not use SNS in their daily life and had offline study group activities. Among them, students who did not participate faithfully in reflection activities using SNS were excluded. In total, 40 students (20 students for the experimental group and 20 students for the control group) participated in this study.

The instrument for the study

The study used Classting, a class SNS for reflection activities using SNS. Classting is a class SNS to support teaching and learning and it is available for sharing various information including writings, photos and videos with classmates by using smart phones and computers. Services provided by Classting consist of 'Wall' for sharing opinions or thoughts, 'News Board' for noticing class news or messages to students, 'Photo Album' and 'Video Room' for sharing photos and videos, respectively.

In this study, reflection activities using Classting were suggested gradually with motivation sources, learning sources and reflection activities suitable for class subjects. Students engage in learning activities using smart phones and compose reflection diaries. Videos shared on Youtube and related to the class were used for motivation. Students can watch directly the videos on their smart phones by clicking links. Learning sources were suggested as short and interesting video to help student study intensively for short time. After the activities, students composed reflection diaries and these diaries are available for communications with others in form of comment. Teachers may provide feedbacks using the form of comment, as well.

Analysis of a teaching-learning case using SNS

Class activities announcements

Currently, most elementary school websites offer notice board and announcements and messages are usually posted. However, the platform is usually based on PC and difficult for application on a daily basis. However, this function is more efficient and easier for students and their parents using SNS in smart phone environment.

Fig. 1. Class activities announcements case

FAQs

Even though it always happens, there are students who call for questions via cellular phone once or twice a week. Teachers may miss calls from students because of meetings and other assignments. In that case, if students post questions on SNS, teachers can comment on it and provide answers when they are available. And it may lead improvement of satisfaction on school education.
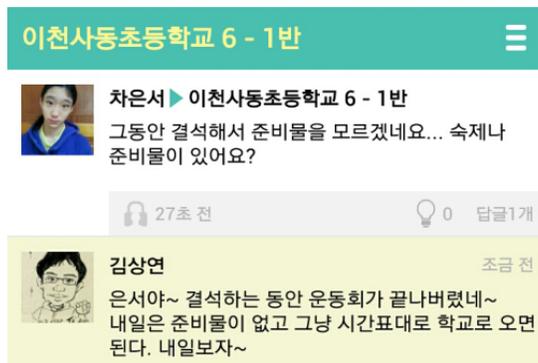
Fig. 2. FAQ case

Life counseling

Some students have things not to share with anybody in their school lives. A student may want an individual counseling but school activities are based on collective ones and then SNS can be used for individual counseling with students.

Fig. 3. Life counseling case

Review activities

It is to summarize the progress of class work of the day in 150 characters by subject. It offers an opportunity for reviewing studies of the day in their own simple methods to students. Because the knowledge can be composed in student's own way, it can be excellent review activity.
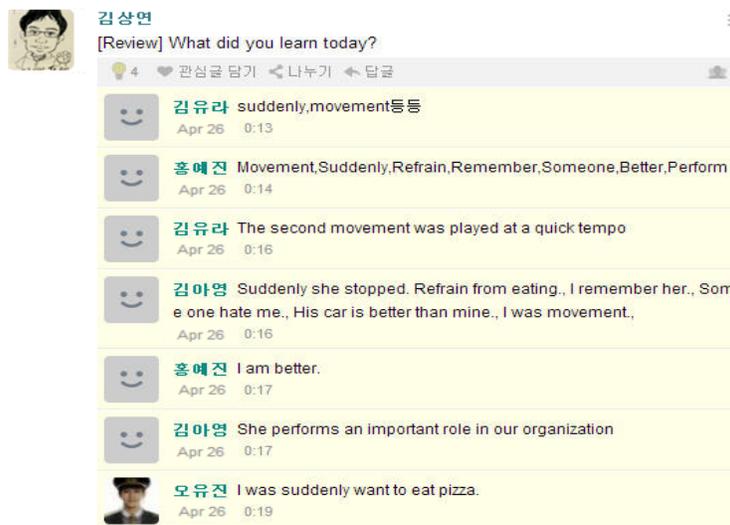
Fig. 4. Review activities case

Reflection activities after assessment

It is about impressions and thoughts about difficulties on team problem-solving activities, their improvements, difficulties and improvements on self-directed learning process, other comprehensive learning activities.

Fig. 5. Reflection activities after assessment case

The Results of the Study

Students' impressions on using SNS with real-time feedback such as Classting for their studies were collected and analyzed by subjective questionnaires. As a result, students were very satisfied with easy access to class information and counseling for studies and school life which were unavailable in face-to-face situations. They also expressed satisfaction in use of new lecture instrument such as Classting. It seems to show educational availability of SNS as

an instrument of participation, communication and collaboration. As the results of analysis of reflection activities using SNS in cooperative learning, students' impressions and opinions are as follows:

"It was fun to see various sources such as videos and I could have a chance to think of my study habit again, posting the relevant contents. The best thing was to share my idea with my classmates"

"I had doubt on Classting at first: 'What is it and how can it be used efficiently?' But it was very impressive that I can post my opinions regardless of space and time if I can use smart phone or internet. It was also great that my value changed through this experience."

"The most impressive thing was to exchange one's opinions by comments on one theme. And video was best because it was made for easier understanding."

However, there were some students' concerns and complains about class management using SNS.

"I prefer class with paper notebooks and textbooks. To use computer is too difficult for me. So it is a burden to study via Classting..."

"Choi Sang-Min, who is next to me, didn't reflection activity. He did something else. I wanted it but I could stand the temptation."

These students felt difficulties in using SNS because they were familiar with conventional class with paper notebooks and textbooks and suggested their relative sense of alienation compared to those who used SNS actively. It is a significant consideration to use SNS for education in future. And side-effects including engaging in games, cacao talk, and internet surfing or calling during the class due to increase in students' use of smart phones should be carefully studied.

Discussions and Conclusion

This study reviewed effects of reflection activities using SNS on students' learning activities. Classting application was selected to support cooperative learning reflection activities and availability of SNS as a support instrument of reflection activities were examined by applying it to cooperative learning in the experimental group for 6 weeks in total.

As the results of analysis of reflection activities by students who used SNS, it has differential characteristics compared to the existing web-based environment for cooperative learning and learners reached to learning based on social factor of 'relationship'. That is, SNS is a facilitating instrument not only for learning activities but also social relationships such as friendships and encouragements between members. These results are consistent with study results by Greenhow and Robelia(2009) and Selwyn that SNS induces both formal and informal learning based on social relations between learners.

Accordingly, by summarizing results of the study, conclusion makes the following suggestions.

First, SNS has potential to explore collaboratively solutions of tasks by members and to provide cooperative learning environment for accomplishing collective goals of learning. Learners examined their learning experiences critically through reflection activities using SNS and performed cooperative learning to achieve collective goals of learning through discussions with others. Second, SNS seems to have positive affects on cooperative learning as an instrument to support reflection activities. Learners reminded their learning experiences through reflection, recomposed past experiences related to learning and then reassessed and internalized lessons. In this process, SNS supported cooperative learning focusing on social factor of 'relationship'.

The study has its own limits as follows: First, due to data from few participants, the results of the study are not easily generalized. Second, external variants on instrument to support cooperative learning, SNS were not considered. There were barely considerations and analysis on the instrument and environment including level of students' SNS use, methods to approach to SNS such as smart phone and PC and frequency of SNS participations. For future studies, these factors should be supplemented and considered to conduct positive research to prove educational effectiveness of SNS as learning support instrument and learning environment. Third, learners' diverse

cognitive and emotional variants should be considered, as well. And, finally, to apply cooperative learning in class, closeness, friendship and relationships between students should be figured out and adjusted.

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Effect of English Short Sentences Memorization on the Speaking Skill and the E-learning of English

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Abstract

The paper discusses an effect of English short sentence memorization on the speaking skill using an e-learning then suggests to implement the method when making an e-learning of English. In the e-learning discussed in the paper, the system selects a learning task among the learning task set at random then present to the student on the PC display. The student memorizes the English short sentence shown there. The procedure is done consecutively. We conducted a pre/post test measuring the speaking skill before/after the learning task. As a result, we discovered that the improvement was observed in nearly seventy-five percent of cases.

Keywords: English speaking skill; learning effect; educational evaluation

Introduction

We have developed an English e-learning system aiming the enhancement of the speaking skill. The main feature of the system consists of three steps: English short sentence memorization, practice of pronunciation and prompt oral translation.

The first step is the most important thus it is discussed in this material. Although the learning procedure is detailed in the next section, if the procedure is repeated, it may be possible for the student to do the prompt oral translation easier for the given Japanese.

This paper reviews the previous experiment relating the e-learning of English implemented for the enhancement of the speaking skill(Kitagaki, 2009). Then we conducted an experiment on how much memorization of English short sentences is effective on the enhancement of English speaking skill. We here show the effectiveness of the method proposed here.

There are supposed to be two methods for enhancing the English speaking skill: social interaction and memorization(Ma and Kelly, 2006; Nakamura, 1993). We here regard the memorization as its methodology.

Methodology Comparison

The detail procedure of proposed method is shown in Figure 1 and explained below:

(1) The computer displays a Japanese short sentence as a learning task on the computer screen as shown in Figure 2.
(2) The student orally translates it into English.
(3) The student operates the computer to display the correct answer.
(4) The student memorizes the correct answer.

These four steps are repeated. Because the number of the learning tasks in the task set are limited to around sixty, one task will be selected several times in a long
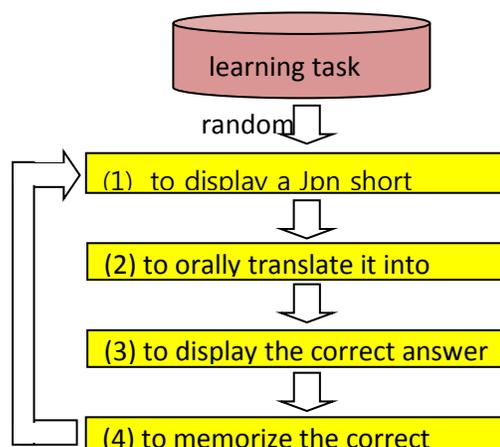
Figure 1 Random selection of a task

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run. As a result, with the repetitive task learning, the student will be able to memorize all the English sentence then to do the prompt translation for the prepared task.

For the learning method mentioned above, we have conducted the experiments on methodology comparisons in our previous researches.

As to the educational evaluation, two aspects are discussed in general: competency and emotion.

As to competency aspect, it is possible for students to memorize the relevant short sentences only with a paper without a computer. We have experimented the effect in the two case: proposed computer method and the paper method for the same learning contents. The effect of English short sentences memorization on the enhancement of speaking skill has been found in both methods. From the comparison, we found no significant difference in them.

Figure 2 Learning task displayed

As to emotion aspect, on the other hand, two methods have been compared: randomly selected task and sequentially selected task. From the questionnaire survey among eleven students, eight students have answered that random method had the preference on sequential method.

Experiment planning and the evaluation

The experiment follows the procedure shown in Figure 3:

We have prepared two kinds of task set A and task set B for each of level 1 and 2. Only task set A served as the object of memorization. On the other hand, task set B served as the pre/post test, which means that the tasks for pre-test are the same as the one for post-test. Task set A for each of level 1 and level 2 includes sixty-five tasks and fifty-five tasks, respectively, and task set B for each of level 1 and 2 includes ten tasks, where level 1 is easier than level 2.

Figure 3 Proposed

Here show the example of the short sentence.

Level 1: *This house is designed solid. It will hold up well against earthquakes.*

Level 2: *Smoke not only disrupts your vision, it can prevent you from normal breathing. In case of fire, you must escape promptly without getting caught up in smoke.*

Seven students served as subject. Six students among them practiced the task set A for level 1 and 2. One student practiced the task set for level 1 only. In the pre-test administration, we presented each task in Japanese to them one by one and let them orally translate it into English. All the answers were recorded in the digital.

In the practice of memorization, thirty minutes were used in a day. We set the accumulative learning time to 300 minutes which took nearly two weeks. The procedure in the pre-test administration is the same as in the pre-test. As a result, we obtained seven ten-responses for level 1 and six ten-responses for level 2 in the total.

In the evaluation, three English natives A(Female), B(Male) and C(Male) served as the
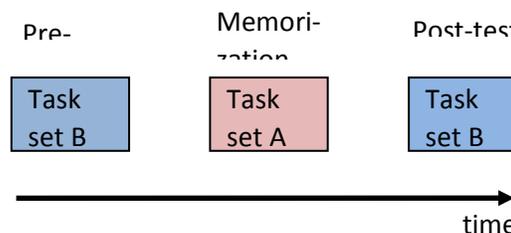
Table 1 Comparative evaluation-frequency-

Level	Evaluator	X>Y	X~Y, X<Y
1	A	52	18
	B	53	17
	C	51	19

(b) similarity

Level	Evaluator	X>Y	X~Y, X<Y
1	A	56	14
	B	48	22
	C	50	20
2	A	47	13
	B	42	18

evaluator. They listened to each responses for pre/post-test in pair then evaluated them in terms of which is better in *fluency* and *similarity*.

Fluency: How much fluent is the oral response?

Similarity: To what degree is the response similar with the correct answer in their contents?

Table 1 shows the result of *fluency* and *similarity* for each of three evaluators. From Table 1, it was discovered that nearly seventy-five percent of the case got the improvement in its frequency.

And the hypothesis that the frequency of "post-test response is better than pre-test response" is the same as that of the other cannot be adopted statistically in all cases($p<0.05$, df=1).

Conclusion

From the experiment proposed here, we got a significant information suggesting that English sentence memorization has an effect on the enhancement of the speaking skill, which may give a user of the proposed e-learning the educational hint/motivation. When the feature of an English e-learning is designed, it ought to be considered that memorization as an educational methodology is efficient in order to enhance the speaking skill.

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13th International Educational Technology Conference

Effective Factors for Accomplishment in Training Teacher Profession Experience of Faculty of Education Students Rajabhat Maha-Sarakham University Thailand

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15.

Abstract

Objectives of the research are 1) studying effective factors for accomplishment in training teacher profession experience of faculty of education students. 2) studying accomplishment in training teacher profession experience of students and population target that is teacher supervision faculty of education Rajabhat Maha-Sarakham. 85 peoples from target group by random methods. Research questionnaire was an equipment collected the data. Research results that teacher supervision agrees with all factors in high level $\bar{X}$=4.23.Mostly factor which teacher supervision agrees with is provide factor for accomplishment in training teacher profession experience ($\bar{X}$=4.35). 2nd is supplement effective factors for accomplishment in training teacher profession experience ($\bar{X}$=4.28). 3rd is inputs effective factors for accomplishment in training teacher profession experience ($\bar{X}$=4.21) and achievement in training teacher profession experience that is agreed by teacher supervision in high level ($\bar{X}$= 4.098).

Keywords: Effective factors, Training teacher profession experience.

Nomenclature

A   Effective Factors for Accomplishment

B   Training Teacher Profession Experience

C   Graduated student

Introduction

There are many problems of Thailand education management that are causing of heavy education reform. An important problem is trouble with teacher and educational personnel that came from the manufacturing, the development and maintenance of standards of teaching constitution of Kingdom of Thailand of B.E.2540 section 81 so the government determined provision for teacher professional development and National Education Act of B.E. 2542 section 9(4) had established provisions for the support to teacher profession standards, lecturers, educational personnel as teacher-lecturers- education personnel continuing development that are principles and rationales for specification method, teacher profession development which are a part of educational reform. (http://www.moe.go.th/wijai/teacher.htm, 14/03/2556). Assessment of teacher capacity must be operated access to teacher professional or development from the beginning. For example, in other country determined a new teacher must passed teacher evaluation test that could be tough in school.(Pimpun Dechakupata and Pornthip Keangkhun,2551) In addition Bandhij Chudwiroj (2550) researched about capacity building of teaching of students. The study result, that found teaching capacity of students in preparation and planning for teaching, the teaching and learning that focuses on students, and the evaluation of teaching is only moderate level by the teacher manufacture course.(Reference by Nuttapon Rumphai,2554)). From reasons and importance of the issues which lead to the concept in the study of factors that affected to the achievement in training teacher profession experience of student Faculty of education Rajabhat Maha-Sarakham University are a way into questions that are the method

of Research for the Foundation. Information for develop education management system of teaching profession students of government agencies and institutions that was consistent with the policy.

Objectives

1. Study the effective factors for accomplishment of training teacher profession experience of students.
2. Studying the accomplishment of training teacher profession experience of student.

Methodology

1. Population and sample. Audience demographics for studying the effective factors to accomplishment of training teacher profession experience is the university supervisor of faculty of education Rajabhat Maha-Sarakham University total = 85 people.

2. Instruments used to collect data. Tools used in this study was a questionnaire created by the researcher which were submitted by to the university supervisor to get some information that affected to accomplishment of training teacher profession experience. The questionnaire consists of 5 procedures.

Section1:Personal data. Section2:Effective factors for accomplishment of training teacher profession experience. Section3:Other related factors about the field work experience of student teacher. Section4: Reinforcing factors about the field work experience of student teacher. Section5:Accomplishment of the field work experience of student teacher.

3. Data Analysis. This research has analyzed data using the computer program package to determine the mean and standard deviations.

Results

Section1 : Effective factors for accomplishment of training teacher profession experience. 1)Professional Teaching Standards : The university supervisor agrees with leading factors influencing with accomplishment of training teacher profession experience in highest level. ($\bar{X}$=3.93 and S.D.= 0.90) 2)Teaching practices curriculum : The university supervisor agrees with leading factors of teaching practices curriculum influencing training teacher profession experience in high level. ($\bar{X}$=3.93 and S.D.=0.90) 3)Processes of teacher profession experience training : The university supervisor agrees with leading factors of processes of teacher profession experience training influencing training teacher profession experience in high level. ($\bar{X}$=3.84 and S.D. = 0.82)

Section2 : Other related factors about the field work experience of student teacher.1)Institutions target : The university supervisor agrees with Conductive factors of Institutions target influencing training teacher profession experience in high level. ($\bar{X}$=4.20 and S.D.=0.85) 2)Aspects of learning environment: The university supervisor agrees with Conductive factors of aspects of learning environment influencing training teacher profession experience in high level. ($\bar{X}$=4.30 and S.D.=0.88) 3)Cost : The university supervisor agrees with cost conductive factors influencing training teacher profession experience in high level. ($\bar{X}$=4.31 and S.D.=0.79)

Section3 : Reinforcing factors about the field work experience of student teacher. 1)Information and communication technologies for learning :The university supervisor agrees with Information and communication technologies for learning-reinforcing factors influencing with training teacher profession experience in high level. ($\bar{X}$=4.35 and S.D.=0.72) 2)System for the field work experience of student teacher: The university supervisor agrees with System for the field work experience of student teacher- Reinforcing factors influencing with training teacher profession experience in high level. ($\bar{X}$=421 and S.D.=0.85)

Section 4 : Accomplishment of the field work experience of student teacher. 1)Learning Management : The university supervisor agrees with Learning Management-Reinforcing factors influencing with training teacher profession experience in high level. ($\bar{X}$=4.11 and S.D.=0.82) 2)Teaching practices : The university supervisor agrees with Teaching practices -Reinforcing factors influencing with training teacher profession experience in high level. ($\bar{X}$=3.93 and S.D.=0.812) 3)Features of a teacher : The university supervisor agrees with Features of a teacher-Reinforcing factors influencing with training teacher profession experience in high level. ($\bar{X}$=4.05 and S.D.=0.776) 4)To accept of the Academies: The university supervisor agrees with to accept of the Academies - Reinforcing factors influencing with training teacher profession experience in high level. ($\bar{X}$=3.94 and S.D.=0.92)

Recommendations

1. Faculty of education Rajabhat Maha-Sarakham University has to studied the opinion from student for information, problem and method to resolve it for student.

2. Faculty of education Rajabhat Maha-Sarakham University has to studied the opinion from personnel's Institutions are target for considered desire – objectives - basis problems to student's preparation.

Acknowledgements

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EĞİTİMDE BİLGİSAYAR ETİĞİNİN İNCELENMESİ

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Özet

Eğitimde teknoloji kullanımının hızla yaygınlaştığı günümüz dünyasında teknolojiden elde edilen yararların yanı sıra ortaya çıkan risklerin artması da kaçınılmaz olmuştur. Bu risklerden biri etik sorunudur. Etik, doğru ve yanlış insan davranışlarını kapsar ve bu davranışları bir disiplin içerisinde inceler. Yaşamın her alanında olduğu gibi bilgisayar teknolojisinde de belli etik kurallar bulunmaktadır. Bu kurallar insanların teknolojik haklarını ve bu hakların sınırlarını belirleyen fikri mülkiyet, erişim, gizlilik ve doğruluk gibi unsurlardır. Ancak günümüzde bu durum insanlar tarafından yeterince anlaşılmamıştır ya da bilinçli olarak etik kuralların dışına çıkılmaktadır. Bunun sonucunda masum insanlar zarar görmekte ve bazen zarar gördüğünü bile anlamamaktadır. Eğitim sistemi içerisinde de öğrenciler kendi haklarının nerede sonlanıp diğer insanların haklarının nerede başladığı konusunu anlamayabilmektedirler. Bu yüzden küçük yaşlarda olumsuz durumlar içerisine girebilmektedirler. Bu konuya açıklık getirmek amacıyla bu çalışmada etik kavramının anlaşılması, sınırlarının belirlenmesi, bilgisayar etiğinin ne olduğu açıklanmış, alanyazında yer alan çalışmalar da incelenerek eğitimde bilgisayar etiğinin ne derece anlaşıldığı ve bu konuda hangi çalışmaların yapıldığı tespit edilmiş ve bu duruma yönelik öneriler getirilmiştir.

Anahtar Kelimeler: Etik, Bilişim Etiği, Bilgisayar Etiği.

INVESTIGATION OF THE COMPUTER ETHICS IN EDUCATION

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Abstract

The use of technology in education rapidly spreading in today's world. Therefore the risks about technology was inevitable. This is one of the risks that of ethics. Ethics covers the right and wrong of human behavior and examines the human behaviors in a discipline. As in all areas of life, there are certain ethical rules in computer technology. In order to clarify this issue, what computer ethics is, understanding of ethical concept, determination of boundaries was explained and by examining the studies in

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the literature, it was revealed what means computer ethics education for students. Finally some suggestions have been made for the findings.

Keywords: Ethics, Information Ethics, Computer Ethics.

1.GİRİŞ

Günümüzde teknolojide meydana gelen gelişim ve yayılım hızının artmasıyla birlikte toplumun bu değişime uyum sağlaması gitgide zorlaşmaktadır. Bu konuda bireyleri koruyan kanun ve yönetmeliklerin oluşturulması ise zaman almaktadır (Özpınar, Kazaskeroğlu ve Öz, 2010). Bilişim teknolojilerini kullanarak diğer insanların haklarını ihlal eden bireyler henüz yeni çıkan kanunlardan haberdar olamamakta ve yaptıklarının yanlışlığının yeterince farkında varamamaktadır. Böyle bir durumda etik kavramının ve bilgisayar teknolojilerinde etik kuralların bireylere öğretilmesi daha büyük bir ihtiyaç haline gelmekte ve bu konuda eğitim kurumlarına önemli görevler düşmektedir. Bilgisayar etiğinin anlaşılabilmesi için öncelikle etik kavramının tanımlanması, bu konuda ileri sürülen kuramların ortaya çıkarılması ve bilgisayar teknolojileri etiğinin ayrıntılarına inilmesi gerekmektedir.

1.1 Etik

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Bireylerin olay ve durumlar karşısında gösterdikleri tepkiler toplumdan topluma ve kültürden kültüre değişkenlik göstermektedir. Çünkü bir toplumda kötü olarak algılanan bir olay başka bir toplumda kabul görüyor olabilir. Yine de bu durum diğer insanları rahatsız edebilir. Bu yüzden etik kavramının sınırları tüm toplumlarca çizilmeli (Kuzu ve Becit, 2008) ve ortak etik kurallar belirlenmelidir

Literatüre bakıldığında etik kavramı ile ilgili birçok tanımlamalara rastlanmaktadır.
"Yunanca ethos sözcüğünden türetilen etik (töre) insanın toplumsal ölçekle geçekleştirdiği ve başkalarını etkileyen sonuçları olan davranışları/eylemleri/yapıp etmeleri ve bunları biçimlendiren düşünme süreçleri ile ilgilidir" (Büyüköztürk ve diğerleri, 2012:26). Bir başka deyişle etik, bireyin neyin doğru ya da yanlış olduğunu ayırt etmesini sağlayan davranış kurallarıdır. Etiğin sahip olduğu ilkeler bireyin tüm hayatı boyunca etkileşim içinde bulunduğu aile, okul ve dini kurumlar gibi birçok yerde bireye öğretilir. Kişi etik kurallara uygun davrandığı zaman olumlu duygular hisseder. Aksi halde yaptığı iş kişiye rahatsızlık verir (Aypay, 2009). Etiğin amacı kişiyi eğiterek toplumda kendine uygun bir yer bulmasını ve ahlaklı, bilinçli, üretken ve mutlu olmasını sağlamaktır. Etiğin başka bir amacı ise toplum içerisindeki bireylerin karşılıklı anlayış ve güven ilişkisi içerisinde olması ve sosyal ve ekonomik dengenin sağlanmasıdır. Eğitim kurumları ise etik kuralları merkeze alan adil ve dürüst yapısı ile öğrencilerin güvenini kazanan örgütlerdir (Marşap, 2006).

1.2 Etik ve Ahlak arasındaki farklılıklar nelerdir?

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Toplum içerisinde günlük konuşmalarda etik ve ahlak kavramları aynı anlamda kullanılabilmektedir. Ancak aslında ahlak ve etik arasında bir takım farklılıklar bulunduğu düşünülmektedir.

"Günlük dilde ahlak (moralite), sıklıkla kişisel yaşamla, özellikle cinsel alışkanlıklar ve kurallarla ilişkilendirilir. Çoğu filozof "etik" sözcüğünü ahlakın felsefi olarak incelenmesi anlamında kullanarak etiği daha üst düzey bir felsefi düşünce haline getirir. Genellikle etiği uygulamaya yönelik "Burada ve şimdi ne yapmalıyım?" gibi ahlaki soruları daha geniş, şematik ya da kuramsal bir bakış açısında incelemek üzere, bunları sormanın ötesine geçmesi bakımından ahlaktan farklı olduğu düşünülür. Ve bu, etik ile ahlakı birbirinden ayırmanın bir yoludur" (Haynes, 2002:19). Yine bir başka ifade ile etik , "ahlak üzerine söz söyleme etkinliği" olarak tanımlanmıştır. (Aydın, 2006). Etik ile ilgili olarak bilgisayar teknolojilerinde üç türlü kavramla sıklıkla karşılaşmaktayız. Bunlar bilgisayar etiği, internet etiği ve bu iki kavramı kapsayan bilişim etiğidir.

1.3 Bilişim Etiği

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Bilgisayar, iletişim ve ağ / internet ortamlarında uyulması gereken kuralları tanımlayan normlar ve kodlar kısaca bilişim etiğini ifade eder. Bu norm ve kodların temel amacı, kişilerin maksimum fayda ve minimum zarar ile bu ortamları kullanmasını güvence altına almaktır. Buna göre bilişim etiği, tüm "bilişim toplumunu" ele aldığı gibi, bireysel olarak da kişisel bilgisayarların kullanımı esnasında uyulması gereken kuralları düzenler (URL1). Bilişim teknolojileri ile toplumda meydana gelen değişim ve geçiş dönemlerinde, etik kuralların eğitimde yer alması toplumun değişen dünyaya uyum sağlama ve düzenini korumasında yardımcı olacaktır (Aksal, 2011).

Bilişim etiği başlığı altında yer alan bir takım alt boyutlar bulunmaktadır. Bunlar Fikri Mülkiyet, Bilişim Teknolojilerinin Toplumsal Etkileri, Güvenlik ve Kalite ile Doğruluktur Bunlardan Fikri Mülkiyet kavramına aynı zamanda Telif Hakkı denilmektedir (Erdem, 2008). Telif hakkı üretilen bilgi veya düşüncenin kullanımı ve dağıtım haklarının belli bir kişi ya da kuruma verilmesidir (Erdem, 2008). Telif hakkı mülkiyet kavramını temel alan bir kavramdır (Atabek, 2006). Bu yüzden bu kavram sadece etikle değil aynı zamanda hukukla da ilgili bir konudur. Ancak bazı durumlarda bu konu yasaların ötesinde kalmakta ve etik dışı davranışların önüne geçilmesi daha da zorlaşabilmektedir (Uysal ve Odabaşı, 2006).

Bilişim Teknolojilerinin Toplumsal Etkileri, bilişim etiğinin toplumda ne kadar uygulanabildiği ve topluma nasıl bir etkisinin olduğu ile ilgilidir. Toplumda yaygın olarak kullanılan teknolojinin etik dışı kullanımının çok ciddi sonuçlar doğurabileceğinin farkındalığının artırılma ihtiyacı her geçen gün daha da artmakta ve toplum düzeninin bozulmaması için insanların eğitilmesi gerekmektedir. Bu konuda okulda ya da halka açık olarak verilen seminerler büyük yararlar sağlayabilir.

Güvenlik ve Kalite konusu kişilerin bilişim teknolojileri kullanımında güvenliğinin ve gizliliğinin sağlanması ile ilgilidir. Özellikle web üzerinden yapılan tüm işlemlerin izlenebilmesi ve bu durumun insanlar aleyhinde kullanılması büyük huzursuzluklara sebebiyet vermektedir. Bu durum ise özel hayatın gizliliğinin sağlanmasını engellemektedir (Erdem, 2008).

Doğruluk ise veri girişi hatalarından kaynaklanan yanlış bilgilerle ilgili olduğu gibi bireylerin kendileriyle ilgili bilgilerinin doğruluğunu kontrol etme hakkıyla da ilgilidir. Yanlış veri girişi kasten yapılmış olabileceği gibi yanlışlıkla da yapılmış olabilir (Mollavelioğlu, 2003, s.21:akt Uysal ve Odabaşı, 2006).

1.4 Bilgisayar Etiği

Bilgisayarın doğru amaçlar doğrultusunda kullanımının sağlanarak bu konuda yaşanan olumsuzlukları gidermek için etik kurallar ve ilkeler bu konuda insanlara rehberlik etmektedir (Aksal, 2011). Bu amaç doğrultusunda Uluslar arası Bilgisayar Etik Enstitüsü, Bilişim teknolojilerinin uygun kullanımı amacıyla, "Bilgisayar Etiğinin 10 Emri"ni yayınlamıştır (URL2):

1. "Bilgisayarı başkalarına zarar vermek için kullanmamalısınız.
2. Başkalarının bilgisayar çalışmalarına burnunuzu sokmamalısınız.
3. Size ait olmayan bilgisayar dosyalarını incelememeli/karıştırmamalısınız.
4. Bilgisayarı hırsızlık yapmak için kullanmamalısınız.
5. Bilgisayarı yalancı şahitlik yapmak için kullanmamalısınız. (örneğin, sahte log dosyaları)
6. Ücretini ödemediğiniz lisanslı bilgisayar programlarını kullanmayınız ve/veya kopyalamayınız.
7. Başkalarının bilgisayar kaynaklarını izinsiz ya da karşılıksız kullanmamalısınız.
8. Başkalarının bilgisayar çıktılarını kendinize mal etmemelisiniz.
9. Yazdığınız programların ya da dizaynını yaptığınız sistemlerin toplumsal sonuçlarını göz önünde bulundurmalısınız.
10. Bilgisayarınızı her zaman saygı kuralları çerçevesinde kullanmalı ve diğer insanlara saygı duymalısınız."

-

1.4 Eğitimde etik

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Teknolojinin insan hayatına girmesi her ne kadar teknolojiden yararlanma amacıyla gerçekleşmişse de kötü amaçlar için kullanımı toplum düzenini bozucu sonuçlar doğurmaktadır. Bu yüzden bilgisayar etiğinin öncelikle eğitim sisteminde daha fazla yer alması ve öğrencilerin bu konuyu etkili bir şekilde öğrenmeleri sağlanmalıdır (Odabaşı ve Uysal, 2006). Bu eğitimi verirken bilgisayar etiği ile bilişim etiği ve internet etiği gibi ilgili kavramların öğretilmesi ve etik ihlalini oluşturan durumlara yönelik farkındalığın sağlanması ve etik dışı davranışların önüne geçilmesi gerekmektedir (Odabaşı ve Uysal, 2007).

Ben-Jacob (2005) Amerika Birleşik Devletleri'nde üniversite öğrencileri ile yaptığı araştırma sonuçlarına göre bilgisayar etiğine yönelik tutum ve bilgi ile ilgili ihtiyaç duyulan bazı durumlar belirlenmiştir. Bu durumlar aşağıda sıralanmıştır;

1. Etiği kavrama ve ilgili bilgisayar ve bilgisayarla iletişim sistemlerini kapsayan tüm sosyal ve yasal konuları bilme.
2. Bilgisayar etiğinin bilgisayar bilimleri, genel eğitim bilimleri ve üniversite öncesi eğitim müfredatlarına entegre edilmesi.
3. Online eğitime katılmadan önce etik konularını bilme.

Literatür incelendiğinde eğitimde bilgisayar etiğinin ne derece anlaşıldığı ile ilgili bir takım veriler bulunmaktadır. Kaya ve Durmuş (2011) araştırmalarında kızların erkeklere göre 1. sınıfların ise 4. sınıflara göre bilgisayar kullanımında daha etik davrandıkları bulgusuna erişilmiştir. Bu durumun daha fazla bilgisayar ve internet kullanımından kaynaklandığı düşünülmüştür.

Erdem (2008) ve Uysal (2006)'ın araştırmalarında da bilgisayar etiğinin bayanlarda erkeklere göre daha fazla olduğu bulgusuna ulaşılmıştır. Gezgin ve Çuhadar (2012) ise benzer olarak internet etiği konusunda bayanların daha fazla farkındalık gösterdiği bulgusuna ulaşmıştır.

Başka bir araştırmaya göre ise öğrencileri etik dışı davranışlara iten en büyük sebep çevre ve arkadaşların etkisidir. Birilerinin zarar görmeyeceğine ve yakalanmayacağına olan inanç ise başka bir sebeptir. Çalışmada etik dışı davranışların eğitimli ailelerin çocuklarında daha az görüldüğü bulgusuna ulaşılmıştır. Yine çalışmada etik konularında eğitim almış olan kişilerin eğitim almamış olanlara nazaran daha etkin ve bilinçli cevaplar verdiği görülmüş ve etikle ilgili eğitim verilmesinin etik davranışlar sergileme eğiliminde artış sağladığını göstermektedir (Özpınar, Kazaskeroğlu ve Öz, 2010).

Ülkemizde bilgisayar etiği konusunda geleceğin bilgisayar öğretmenleri olan Bilgisayar ve Öğretim Teknolojileri Öğretmenliği Bölümünde yapılan araştırma sonuçlarına göre ise etiğin eğitimde yeterince yer almadığı görülmüştür. Araştırma kapsamında ulaşılabilen 21 üniversiteden sadece ikisinde seçmeli olarak Bilgisayar Etiği dersi verilmektedir. (Kuzu ve Becit, 2008).

2. Sonuç

Yapılan araştırmalarda görülüyor ki günlük hayatta bilgisayar kullanımının her geçen gün daha da artması bilgisayar etiğinin ihlalini de artırmaktadır. Çünkü bilgisayar teknolojisi, onun kullanımıyla ilgili verilen eğitimden daha hızlı bir şekilde bireylerin hayatına girmektedir. Bu yüzden bilgisayar etiği ile ilgili bireylerin bilinçlendirme çalışmaları daha geniş kitlelere yayılmalı, bu konuda sadece resmi kurumlardan değil, diğer resmi olmayan kuruluşlardan da yararlanılması gerekmektedir. Eğitimin temelinin ailede atıldığı göz önünde bulundurulursa etik konusunda en önemli görevin ise ailelere düştüğü ve bireylerin etik konusunda bilinçlenmelerinin daha etkili bir şekilde gerçekleşmesi için ailelerinde bu konuda farkındalığının artırılması ve eğitilmesi önerilmektedir.

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13th International Educational Technology Conference

Electronic Portfolio Increases Both Validating Skills and Employability

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Abstract

E-portfolios have a greater potential to alter higher education at its very core than any other technology. E-portfolios serve as an alternative evaluation of the learners' educational improvements. Universities would favor better information about what employers' thoughts about e-portfolios, what they would like as evidence about students skills, how employers think they should be structured and the formats they would prefer. E-portfolios can also be helpful in searching for jobs and employees. Since an e-portfolio includes information about the learner professional skills. With the cooperation between universities and other formal recruitments, human resources can be managed through easy tools for seeking and employing youth

Key words: Electronic Portfolio; Higher Education; Arab Universities; Employability

Introduction:

The use of electronic portfolios in higher education has begun to receive increasing attention. Institutions such as the American Association of Colleges and Universities have focused on Portfolios in courses, programs, learning outcomes, and student evaluation. Colleges of Education, have a long history of accreditation reviews and standards for content areas as well as professional standards for teachers. Funding issues and competition in the college market are driving Colleges of Education to gather data in large quantities that showcase their graduates for future employment opportunities (Franklin, 2005). Electronic Portfolios serve as a mean of authentic assessment to demonstrate a teacher's proficiency as well as students.

In the Arab world, unfortunately, educational institutions still lack some of the basic skills and knowledge needed to work with technology in their classrooms, to model the effective use of technology, and give opportunities to their students to show and gain skills that qualified them to increase their employability, while electronic portfolio with its different types allow flexibility so that the teacher can measure a specific skill of his own students. The portfolio assessment is the systematic collection of the student's work measured against predetermined scoring criteria. These criteria may include scoring guides, rubrics, or rating scales (O'Mailley & Pierce in Gomez, 2000).

Some emerging research suggests that electronic portfolios can help students learn how to develop their identities as being professionals (Alvarez & Moxley, 2004; Schatz & Simon, 1999; Schatz, 2004). Thus portfolios can be applied in the educational settings for a variety of purposes such as evaluation and assessment, career development, and for demonstrating students' learning experience and growth over time.

2. Definition of Electronic Portfolio:

Electronic portfolio can be: digital presentations of skills and competences, online records of achievement, and action plans with opportunities for reflection; all these have been in use in education for nearly a decade. Tools and systems built for these purposes are now numerous. Many institutions view the electronic portfolio as a replacement for traditional high stake assessment, the object of the exercise being coverage of all standards and criteria. In some institutions, the emphasis on enhancing online résumés, really misses out being on major benefits of the electronic portfolio such as, 'power in the process' and reflective thought leading to deep learning. You do

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obtain tangible products throughout the '*process*,' examples include online résumés; however intangible products are arguably more important in a system designed to facilitate learning (Tosh & Werdmuller. 2004).

Electronic portfolio can be used more than an assessment or learning tool, it can be used as a life-long learning and collaborating tool. In this point of view, many definitions take place in the literature. However, there is a distinction between electronic and digital portfolio: an Electronic Portfolio contains artifacts that may be in analog form, such as a video tape, or may be in computer-readable form; in a Digital Portfolio, all artifacts have been transformed into computer-readable form. An electronic portfolio is not a haphazard collection of artifacts (i.e., a digital scrapbook or a multimedia presentation) but rather a reflective tool that demonstrates growth over time (Barrett, 2000). The National Learning Infrastructure Initiative (NLII, 2004) defined electronic portfolio as: a collection of authentic and diverse evidence, drawn from a larger archive representing what a person or organization has learned over time on which the person or organization has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose.

Cooper & Love (2001) defined portfolio in general as an organized compilation of artifacts that demonstrates learning and achievement and includes exegesis that articulates relevance and meaning. While Barrett (2005) defined electronic portfolio as the uses of electronic technologies as a container, allowing students/teachers to collect and organize portfolio artifacts in many media types (audio, video, graphics, text); and using hypertext links to organize the material, connecting evidence to appropriate outcomes, goals or standards.

In overall, types of information might be stored in electronic portfolio, may shape its definition, Banks (2004) stated types of information that electronic portfolio can contain:

Table 1: Electronic portfolio content (Banks, 2004. P. 6)

Type	Examples
Coursework	Ranging from brief notes to extensive assignments. May be in any medium, for example, text, images, sound, video. May be school homework, college assignments.
Assessment work	May include diagnostic, formative and summative assessments.
Other pieces of work or 'artifacts'	For example, presentations, job or course applications, CVs.
Achievement of individual learning outcomes	May be formally or informally recorded
Aggregated records of achievement, accreditation and credit towards awards	Qualifications, awards (and credits towards awards), certificates, completion of courses.
Evidence for assessment	Including evidence for assessment of prior learning
Planning and reflection	Journal entries, learning agreements, personal development plans, individual learning plans.
Notes and annotations on other entries.	Formal or informal: made by the learner, or by teachers, mentors. Including verification of entries. .
Skills and competencies	Taken from to a particular framework, for example, for a job, or informally recorded
Outcomes of appraisals, interviews, etc.	With tutor, employer, for example. Self-assessments and appraisals. Peer-assessments and appraisals

Images captured on the move	Mobile devices, such as phones, can be used to capture and annotate images for an e-portfolio.
Links between entries	Pieces of work contributing to an award: planning to achieve particular skills, etc.
Entries shared with peers	E-portfolios can support peer group earning, with shared assignments, and commentary on each other's work and ideas.

The definition most likely for what the researcher finds out is that electronic portfolio is a web-based container which allows archiving, linking, collaborating, storing, and publishing student's work.

3. Purposes of electronic portfolio:

Types of electronic portfolios are different mainly in the area to which they are related according to the purposes of it. Electronic portfolios can be: as an assessment tool, for marketing or employment, and to document the growth for learners. Figure 1 presents Barrett (2005) representation for an assessment for learning continuum.
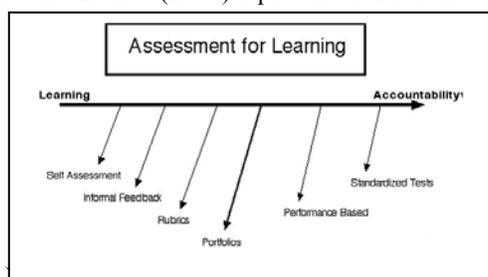
Figure (1) assessment for learning continuum Barrett (2005) P. 6

The main purposes of electronic portfolio are to serve as a container for the artifacts, selected for representing the learners' growth, skills and products. Wolf & Dietz (1998) stated three purposes for portfolio according to its models: 1) Learner Portfolio 2) Assessment Portfolio, and 3) Employment Portfolio. Where Learner portfolios are personalized collection of teachers work and the main purpose is to advance teachers' learning and setting a reflection and variety of information that reflect the development of their work and their learning. Assessment portfolios are selective collection of teacher work and standardized assessments containing samples of teacher work. The primary purpose of this type of portfolio is to evaluate teacher performance. Employment portfolios are customized and attractive collection of information given by teachers to prospective employers; these portfolios contain generally a résumé and certificates.

4. Types of electronic portfolio:

There are different types of portfolio including assessment, employment, learning, and teaching portfolios, the formats depend on the purpose for which it is developed (Bhattacharya and Hartnett. 2007), three types of portfolio are often described: a 'learning' portfolio which documents a student's learning over time, a 'credentials' portfolio for registration/certification purposes, and 'showcase portfolio' for applying for jobs. (Duffy, Anthony, and Vickers, 2010), while Duffy et al (2010) mentioned that Nairn *et al*. (2006, p.1520) identify nine different types of portfolio based on the definition of a portfolio as 'a record of learning that focuses on a student's work and his/her reflection on that work'. But the most commonly electronic portfolios created by students, mentioned in Chang, Tseng, Yueh, and Lin (2011), are combination-based, content item-based, work-based, course unit-based, and time-based. The combination-based type incorporates the advantages of other tabulation types, while the content item-based and work-based types are better for clearly classifying data and step-by-step organization of it.

When determining the type of portfolio to be purchased, adapted, or developed, the institution must question the very nature of their electronic portfolio and can be an individualized self-assessment tool that is not constrained by student learning outcomes or, rather, a powerful piece of the assessment equation that links artifacts and reflections to learning goals and objectives. (Buzzetto-More & Alade. 2008)

Portfolios are useful in educational contexts for both *summative* and *formative* purposes (Cooper & Love, 2001): 1) Summative portfolios focus on learning outcomes and contain evidence that shows the range and extent of a student's skills. A summative portfolio demonstrates learning outcomes rather than the process of learning. If the intention is to assess a student's skills or knowledge then the assessment is summative, and 2) The main role of a formative portfolio is to show the processes of learning in which a student has engaged. If assessment is concerned with learning process, the assessment should be formative.

Summative portfolio-based assessment has three main distinct forms; the competency based portfolio, the negotiated learning portfolio, and the biographic profile, or record of achievement. The main forms of portfolio are: 1) The competency-based or outcomes-based portfolio, 2) The negotiated learning portfolio, 3) The biographic portfolio as a record of achievement, and 4) The formative portfolio.

5. Electronic Portfolio Components:

An electronic portfolio is seen as comprehensive enough to include any piece of information about the student. Therefore there are many types of information components that could be included in an e-portfolio reflecting the person's accomplishments. For instance, work achievements might be included like; letters of recognition, awards, and certificates. Others could be concerned with professional and academic accomplishments, such as journal entries, articles, manuals, projects, courses descriptions, samples of effective and reflective writing, and significant papers. E-portfolios can also include artistic professions like artistic performances and writing stories. Research record is significant as well to be mentioned in e-portfolios, for example: case studies, evidence of data collected and evaluation form all practicum/field experiences. Resumes, professional correspondence and letters of reference add more specific details about the person's career.

6. Electronic portfolio advantages and disadvantages:

The advantages of electronic portfolio are beyond educational use, it can be selectively accessed by other interested parties like employers for instant. McNaught, Lam, & Chan, present the strengths and weaknesses of electronic portfolio according to its types, but it can be concluded that most of e-portfolio are relevant to how the students can access through Learning Management Systems or Web 2.0, while they still in general more effective than other assessing tools.

Electronic portfolios focus more on 'authentic learning experiences' that reflect real-world's overall life. It help students document their work, electronic portfolios help provide better way of measuring students learning that would be more accurate and electronic portfolios help educational institutions communicate with 'today's undergraduates' whose life is based more on technology and internet. (Reese and Levy. 2009)

Duffy, Anthony and Vickers (2010) summarized those advantages and disadvantages of Electronic portfolios, some of these advantages are:
1. The links are an advantage in a range of materials, with ease of access to the linked resources and the richness of the resulting student portfolio, but the student focus group was not convinced of the added value to what might be termed 'hypertext learning style'.
2. Specific e-portfolio packages provide template tools that may encourage a better output; for example, a CV builder. There are also tools and templates that may aid reflective practice; for example, the templates for skills analysis and training needs
3. E-portfolio tools and the capacity of some packages to produce different portfolios may be an advantage in meeting various distinct objectives of portfolio production, including evidence of achievement and of reflection and of progress.
4. Specific e-portfolio packages may have an additional advantage in the generation of web folios (portfolios on the web) and different versions of portfolios for different audiences; however, students have to be persuaded these are necessary.
5. Some PDP e-portfolio packages also support placement management but only one e-portfolio package we found was specifically designed both for placement management and placement portfolio building.

While the disadvantages where:

1) There may be cost, buy-in and take-up problems of e-portfolios for placement where they are not in widespread and successful use in a university before their introduction to portfolio assessment in placement.

2) E-portfolios may have practical problems for some placements, owing to remote access to network drives and employer 'buy-in'.

3) Template-based e-portfolios may become too restrictive for many students as they get more skilled at writing reflectively and at constructing portfolios. I

4) Students may find it unwieldy to use the e-portfolio package for placement if it gets heavily populated with 'assets' as part of a progress file from school through university to the workplace. Generic e-portfolios have to be populated with assets or attributes that have to be drawn down in different combinations on different forms for different purposes and there is some evidence that students do not find this sufficiently flexible. They prefer to use common tools to construct what they want when they want it. These tools are easier to use remotely and where no local area networks are accessible. The materials produced by common tools may be easier for the author to retain ownership of, post-university.

5) If the institution has decided to implement a system to support PDP, then it is sensible to consider using it in placement; however, students appear to value the paper product, and some employers will only look at a paper version, or at least one that can be simply emailed.

7. Tools and Open sources for electronic portfolios:

Open sources may give a solution; they can be integrated in Learning Management Systems (LMS), some of these open sources are worldwide adopted by universities, such as:

Sakai: The Sakai Project began in 2004 when Stanford, Michigan, Indiana, MIT and Berkeley, US, began building a common Courseware Management System and now it is the choice of over 160 educational institutions. The software enables users to design, publish, share and view portfolios of work. It can create structures to help users reflect on their learning and development. Summative feedback and export report facilities are also included in the system (http://sakaiproject.org)

Mahara: Funded by New Zealand's Tertiary Education Commission's e-learning Collaborative Development Fund, Mahara was a collaborative venture in 2006, involving Massey University, Auckland University of Technology, The Open Polytechnic of New Zealand, and Victoria University of Wellington. It enables users to collect, reflect on and share achievements and development online. It features a weblog, résumé builder and social networking system, connecting users and creating online learner communities. The system can be used with Moodle. The software was the winner of New Zealand Open Source Awards 2008 (http://mahara.org/)

Elgg: is an award-winning open source social networking engine that provides a robust framework on which to build all kinds of social environments, from a campus wide social network for your university, school or college or an internal collaborative platform for your organization through to a brand-building communications tool for your company and its clients (http://elgg.org)

The table below, shows the most recommended products that help in creating electronic portfolios (Himpsl and Baumgartner. 2009)

Table 3: The most recommendable products

Product	Provider	Type	license
Drupal ED	Funnymonkey	I	OS
Elgg	Curverider	A	OS
Epsilen	BehNeem LLC	M	PU
Exabis	Exabis Internet Solutions	L	OS
Factline	Factline Webservices GmbH	I	P
Fronter	Fronter International	L, I	U
Mahara	eCDF New Zealand	M	OS
Movable Type	Six Apart	I	OS
PebblePad	Pebble Learning Ltd	M	PU
Sakai	The Sakai Foundation	L, I	OS
Taskstream	Taskstream Inc	M, I	PU
Wordpress	Aoutomattic	A	OS

Key to column "type": • M: E-Portfolio-Management-Software products deliberately offered to institutions as E-Portfolio software) • L: LMS/LCMS with integrated E-Portfolio functions ("learning platform" with E-Portfolio elements) • I: integrated systems respectively software families
(various CMS with rather "indirectly" possible Portfolio functions) • A: other systems, respectively kinds of software
Key to column "license": • OS: open-source • P: commercial with all-inclusive offer • U: commercial with licenses per user • PU: commercial with a combination of P and U

8. Electronic Portfolio and Employability:

Employers seeks the most convenient manpower, electronic portfolio can represents what the graduates' skills are. In Canada and the USA, individual student portfolios are the preferred methods for recording employability skills (Little, 2003). Universities would favour better information about what employers' thoughts about electronic portfolios, what they would like as evidence about the students skills, how employers think they should be structured and the formats they would prefer. Some universities offer web-based portfolios to students so they can manage their own portfolios, but to be effective students need guidance from careers services and/or academic staff to complete these (Precision Consultancy, 2007).

9. Conclusions:

By way of concluding, it can be said that e-portfolios serve as an alternative evaluation of the learners' educational improvements. In other words, they include learners' academic accomplishments and learning achievements; which, on their turn, reflect the kind of skills that have been acquired by the learner throughout the educational process. Thus, educators will be able to evaluate their students and come up with an almost detailed documentary' of the learner's outcomes.

E-portfolios can also be helpful in searching for jobs and even in looking for employees. Since an e-portfolio includes information about the professional skills of the learner, it would work as a representative summary of the job seeker. However, there must be a sense of cooperation between the learning management systems and employers, in the sense that e-portfolios will be used as web-based sources through the open sources; and then employers will have the opportunity to search the web looking for their man power.

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Employing Microsoft Live@edu Cloud Platform to Assist in Teaching Chinese Reading for Junior High School Students

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Abstract

This study aimed to explore junior high school students' learning attitudes and effectiveness through employing Microsoft Live@edu to assist in teaching Chinese reading. Quasi-experimental approach was used and a total of 63 8th grade students were divided into the experimental group (N=32) and control group (N=31). The collected data were analyzed with descriptive statistics, paired t-test, one-sample t-test, multiple regression, and ANCOVA. The results of the study show that the students' reading attitude was enhanced in terms of cognition, affection, behavior, interaction, and reflection through using Microsoft Live@edu to assist in teaching Chinese reading. Regarding the reading learning effectiveness, the scores of the post-test are higher than the pre-test for both groups. The scores of the students in the experimental group are higher than of the control group. Finally, the students in the experimental group show greater progress in discussions and feedback and analysis of Chinese readings.

Keywords: Live@edu cloud platform, learning effectiveness, reading instruction, web-based assisted learning

Introduction

In early December 2010, the PISA Programme for International Student Assessment) reading assessment report was released, 15-year-old boys' reading literacy in Taiwan ranked the last among the three Chinese-Mandarin speaking countries and regions. This result not only alerts reading education in Taiwan but also dropped a shocker showing the reading education between Taiwan junior high school students and International reading literacy has a massive gap. At the teaching site, the researchers observed that most of the students like surfing the Internet, the computer seems to have become an indispensable tool in the student's life. Thus, the researchers believe that if the Internet can be used to carry out the teaching of reading and enhance students reading motivation, attitude, and effectiveness, Internet will become the key of the auxiliary reading education. In order to explore the influence and effectiveness of implementing the online teaching platform on reading Instruction, the Microsoft Live@edu platform was used to assist in reading instruction, and PISA tests were used as teaching contents. Thus, the purposes of the study are to explore the teaching process of using Microsoft Live@edu platform, to analyze its influence on junior high school students' reading attitude and learning effectiveness and to compare the students' learning effectiveness of Microsoft Live@edu platform instruction and traditional reading instruction, as well as to investigate the relationship between learning attitude and learning effectiveness through using Microsoft Live@edu platform.

Literature Review

In 2006, the International Reading Literacy Study (progress in international reading literacy study, PIRLS) defined reading literacy as cultivating reading understanding and mastering written language ability, being able to construct meanings from a wide range of articles, learning from reading, participating in school reading community activities and obtaining joy from reading. Pan (2008) also proposed culture, creativity, and communication, as the 3 core values for reading. As a result, reading should enable students to read various types of materials, in accordance with the order of reading comprehension process and use their own life experiences to cultivate basic reading literacy and problem-solving skills, thereby enhancing their interest in reading and to build their own reading values.

Regarding studies on exploring reading learning attitudes and reading learning effectiveness, Brown (2011), Burrows (2012) and Rojas-Drummond (2012) found there was a significant increase on students' reading effectiveness through different reading instructions. Chang (2004) pointed out that attitude is an individual holds a persistent and consistent behavior tendency toward people and things, including behavioral, emotional and cognitive

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tendency. Wigfield & Guthrie (1997) suggested that there was a link between reading attitude and reading motivation. Students' positive learning attitude can be increased through assisting them to obtain the sense of achievements and satisfaction of reading learning (Hsu, Hsu, &Wang, 2008). Sun & Lin (2007) state that Internet learning is based on learning theory with emphasis on the use of information and communication technology, eliminating the learning time and space constraints, and providing learners situational teaching. Online learning can construct a digital scenario to improve learning motivation and effectiveness through autonomous learning, interactive and innovative learning, simulative learning, and accumulative learning. Therefore, internet-assisted instruction can provide students with vivid teaching contents, shared teaching resources, and various learning styles.

In our study, reading effectiveness refers to students can accurately understand the meanings of the articles and link their prior knowledge to generate additional understanding through reading teaching activities. Some previous studies indicate that students' reading learning effectiveness can be significantly enhanced through internet-assisted learning (Zorigian, 2009; Ismail et al, 2011; Ivory, 2011; Zaid, 2011). Thus, this study aims to explore the effects of integrating Microsoft Live@edu cloud platform with cooperative learning for assisting in teaching Chinese reading for junior high school students.

Methods

This study adopts quasi-experimental design with purposive sampling. A total of 63 8th grade students participated in the study and were divided into the experimental group (n=32) and the control group (n=31). The Microsoft Live@edu cloud platform was used in the experimental group and traditional in-class reading instruction was used in the control group. The Reading Attitude Learning Scale contains cognitive, affective, behavioural, and overall domains. The learning satisfaction questionnaire contains teaching method, quality of learning, learning interaction, learning assessment, learning reflection, and overall performance. The 5-point Likert scale was used in both scale and questionnaire. The content validity of the both scale and questionnaire were established by two experts in the related fields. PISA 2006 reading test questions were modified by the researchers and then used as the pre- and post-tests in this study. The content validity of the modified PISA reading tests was also verified by four senior Chinese teachers. Live@edu cloud platform provides learners an online space for storing and retrieving information and data freely through SkyDrive, Office, Messenger, Hotmail, and so on. The SkyDrive of Microsoft@edu cloud platform was used to conduct reading instruction in this study. Figure 1 shows the entry page of SkyDrive of Live@edu cloud platform.

Fig. 1 The entry page of SkyDrive of Live@edu cloud platform

Collected quantitative data were analysed by descriptive statistics, one-sample t-test, paired sample t-test, multiple regression, and ANCOVA. Qualitative data includes teaching reflection, students' reflections, group discussions, and abstracts of reading assignments.

Results and Discussions

The result of the pre-test and post-test scores of the experimental group analyzed by paired-sample t-test reached the significant level, p=.000<.05, indicating the students of the experimental group have made significant progress on reading through the Live@edu cloud platform learning and instruction. In addition, the pre-test scores of the PISA reading test questions were treated as covariates, the post-test scores of the PISA reading test questions were treated as the dependent variable, and groups were treated as the independent variables in the ANOCVA. The results of ANCOVA show that the learning effectiveness of the experimental group is better than the control group (p=.027<.05), indicating Live@edu cloud platform can effectively provide the experimental group students a communication platform to share and discuss ideas, questions, thoughts, and reflections and thus to enhance their abilities in obtaining useful information to improve their reading effectiveness.

Table 1: Results of one-sample t test of the students' reading attitude scale

Domain	Test value=3		
	t	df	Sig. (two-tailed)
Cognitive	9.16***	31	.000
Affective	5.73***	31	.000
Behavioral	6.37***	31	.000
Overall	8.31***	31	.000

***p<.001

Table 1 shows the results of one-sample t test of the students' reading attitude scale. The four domains of the reading attitude scale obtained p=.000<.05, indicating the experimental group students have made a significant progress on cognitive, affective, behavioral, and overall performance.

Table 2: Results of one-sample t test of the students' learning satisfaction

Domain	Test value=3		
	t	df	Sig. (two-tailed)
Teaching Method	10.17***	31	.000
Quality of Learning	8.11***	31	.000
Learning Interaction	6.65***	31	.000
Learning Assessment	5.58***	31	.000
Learning Reflection	6.68***	31	.000
Overall performance	8.45***	31	.000

***p<.001

Table 2 shows the results of one-sample t test of the experimental group students' learning satisfaction for the five domains. All the five domains obtained p value of .000<.05, indicating the students have made a significant progress in areas of teaching method, quality of learning, learning interaction, learning assessment, learning reflection, and overall performance.

Table 3: Results of Pearson product-moment correlation coefficient on the four factors

	Learning Effectiveness of Reading	Reading Attitude
Reading Attitude	.473**	-
Learning Satisfaction	.435*	.649***

*p<.05 **p<.01 ***p<.001

Table 3 shows the results of Pearson product-moment correlation coefficient on the four factors of reading, including learning satisfaction, learning effectiveness of reading, and reading attitude. The results show that there are significantly positive correlations among reading attitude, learning satisfaction, and learning effectiveness of reading, suggesting that the higher the students' reading attitude, learning, the higher the learning effectiveness. Also, the results of multiple regression analysis show that reading attitude obtained positive value of β, indicating learning effectiveness of reading can be positively predicted by the reading attitude.

Additionally, the results of teaching reflections show that there are more errors on the abstracts and contents of reflection writing in the early stage of the experiment. After providing writing guidance to the students, the students have made significant progress on both the abstract and content of reflection writing. After the three rounds of experimental teaching, the students' reading comprehension ability and effectiveness are significantly progressed through online reading learning. Finally, compared to the tradition reading instruction, the results of Live@edu cloud platform learning show the students have learned more and learned efficiently through student-teacher discussions and interactions and peer feedback on the platform. The students also pointed out that their reading ability has been improved and the frequencies of interacting with classmates have been increased as well, indicating implementing the Live@edu cloud platform to reading instruction is interesting and successful.

Conclusion & Suggestions

(1) Conclusion

The results of this study show that the students had significant progress on their reading scores through Live@edu cloud platform assisted learning, which is in accordance with findings of studies by Zorigian, 2009, Ismail, 2011, Ivory, 2011, and Zaid, 2011. Compared with the traditional instruction of Chinese reading, the students' learning effectiveness of the Live@edu cloud platform group is significantly higher than the traditional reading instruction group. In terms of reading learning attitude, the experimental group students show significant positive reading attitude and learning satisfaction after the experimental teaching. That is, Live@edu cloud platform assisted Chinese reading learning can effectively enhance the students' reading attitude and learning satisfaction. Additionally, the experimental group students show a significantly positive correlation between reading learning attitude and reading achievement, indicating the more positive the learning attitude, the higher the reading learning outcomes. Finally, the contents of the reading summaries of the students in the Live@edu cloud platform-assisted group are more substantial than the traditional teaching group.

(2) Suggestions

In order to reduce the instructor's teaching load, a reading teaching social network can be established to provide a forum for teaching related subjects discussion, modification, and thus to construct an ideal reading teaching model to enhance students' learning interest in Chinese reading. In addition, the instructor should strengthen the group discussions and feedback, so that the students can obtain feedback and suggestions to increase their reading comprehension. Finally, when errors of the Live@edu cloud platform occur, the instructor should make a quick report to Microsoft in Taiwan, so that network administrators can provide immediate assistance and to improve the function of the platform and thus the students can obtain better learning outcomes.

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Enhancement of the 21st Century Skills for Thai Higher Education by Integration of ICT in Classroom

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Abstract

This research studied the effect of integration of information and communication technology (ICT) in classroom for enhancing 21st century learning skills which included collaboration, communication, information literacy, media literacy, and ICT literacy. In this study, based on learning theories and student-centered approach, integration of ICT included four effective functions; dynamic content presentation, information access, creation and sharing, interaction and reflection. Seven educational technology experts evaluated these functions by an assessment tool. The evaluation showed that the integration was appropriated. The integration was then applied into teaching and learning process throughout the course to study the effect. 69 undergraduate students and 22 graduate students in two different 4-months courses were target studied. The students were assessed themselves by a 21st century learning skill assessment tool before and after courses. The results showed that integration of ICT in classroom could enhance the 21st century learning skills for both undergraduate and graduate levels significantly with high effect size.

Keywords: 21st century learning skills; ICT integration; Higher education

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Introduction

In the 21st century, Information and Communication Technology (ICT) accelerates global competition and collaboration. Information, knowledge and innovation drive and reshape the industrial economy, businesses and workplaces. Advanced economies need people who can adapt and contribute to organizations, products, and processes and also have skills to keep learning and adjusting to change (Kay, 2010). The Partnership for the 21st century skills (2009) also proposed that the students in today's world must have the essential skills to be successful in the 21st century life and workplace, such as information, media and technology skills, communication and collaboration skills, and critical thinking and problem solving skills.

Thailand also recognized the importance of the above subject. Therefore, the reform of education was enacted by The National Education Act issued in 1999. The Act provided principles and challenging guidelines for the provision and development of Thai education in order to prepare all Thai students for a learning society, leading to advanced economies. The educational reform thus focused on learning process and utilization of technologies in education essentially to improve quality of teaching and learning (Office of the National Education Commission, 2004). After this Act, many organizations and institutes have ICT master plans for reforming learning process and utilization of technologies for education. Effective ICT is very necessary to be successful not only in studying but also in careers and lifelong learning (Stacey, Smith, & Barty, 2004). A great number of researches also confirmed that the usage of ICT in teaching and learning could enhance student skills in many ways, for example thinking ability, self-direction, self-regulation, communication and collaboration skills (Yang, 2009; Jou & Lin, 2012; Sitzmann, Bell, Kraiger, & Kanar, 2009; Enriquez, 2010; Ian, 2010; Li, 2010; Irwin, Ball, Desbrow & Leveritt, 2012; Punya, Chris & Danah, 2013). With ICT, students are able to access, share, analyze, and present information gained from a variety of sources and in many different ways. The use of ICT provides opportunities for students to work both collaboratively and independently. Therefore, the role of ICT within the curriculum is not only to enhance the learning experiences of students but also to help them develop the skills essentially to participate effectively for working in group, and developing team spirit, cohesion, and social values.

Nevertheless, the report from Office of the Education Council (2011) showed that the skills of university graduates weren't suitable for the workplace and the changing of ICT organization even though the latest survey in 2008 about the use of ICT in academic from National Statistical Office (2009) found that percentage of using ICT in higher education was really high compared with other academic levels. The survey also stated that only 26.9% of teachers used ICT in the classroom and used ICT just 9.6 hour/weeks for presenting contents. Moreover, the result from synthesis of online learning research in Thai's higher education between 1999 to 2009 (Pheeraphan & Sompong, 2011) also found that researches mainly focused on the development of learning outcomes through learning achievement (89.47%), and slightly focused on critical thinking and problem solving (12.28%), self-directed learning (4.38%) and collaboration (1.75), respectively.

Therefore, enhancement of the 21st century learning skills for Thai higher education by integration of ICT in classroom is necessary and important to be investigated.

Objective

The research was to study the effect of integration of information and communication technology in classroom for enhancing the 21st century learning skills which included collaboration, communication, information literacy, media literacy, and ICT literacy.

Literature review

In the 21st century, an ICT-driven age, students are expected to become productive digital people, to effectively learn for a lifetime, to have higher order thinking skills, to have collaboration and communication skills with others, and to become competent in technology use (information literacy, media literacy, and ICT literacy) (Kay, 2010).

ICT is one of powerful tools to utilize 21st century skills (Pearlman, 2010). However, providing available technologies does not help to change teaching methods or the level of learning outcomes. Effective use of ICT

integration in classroom requires appropriate pedagogies. Pedagogies of ICT integration not only can enhance learning but also can have the potential to transform learning. Effective integration of ICT provide tools and environments that support active learning, exploring and experimenting, thinking and working creatively, constructing and creating new knowledge, reflecting and planning, using feedback and self-assessment, communicating with others, supporting and developing collaborative projects, working interactively in classroom and public. Therefore, integration of ICT into teaching and learning process will empower teachers to focus on (1) student-centered approach, (2) active and interactive learning, (3) connecting with learner experiences and needs, and (4) development of critical and ethical understandings of the value of the use of ICT (Ministerial Council on Education, Employment, Training and Youth Affairs, 2005). Researches also showed that learning theories (behavior, cognition, constructivist, and socially situated learning) and student-centered methods (active learning, project-based learning, and collaborative learning) can be a catalyst to incorporate digital literacy in an effective way (McDougall & Boyle, 2004; Watson, 2006; Woollard, 2005, Holmes & Gardner, 2006). Therefore, approaches to ICT integration in teaching and learning were subsequently described of different ways with varying degrees of success. Therefore, integrating ICT approach in a particular subject can assist pedagogy on types of objectives set for teaching-learning and evaluation. This approach is useful to enhance ICT literacy skills and the underlying pedagogy allows students to further develop essential skills based on learning environment (Khirwadkar, 2007), see Fig. 1.
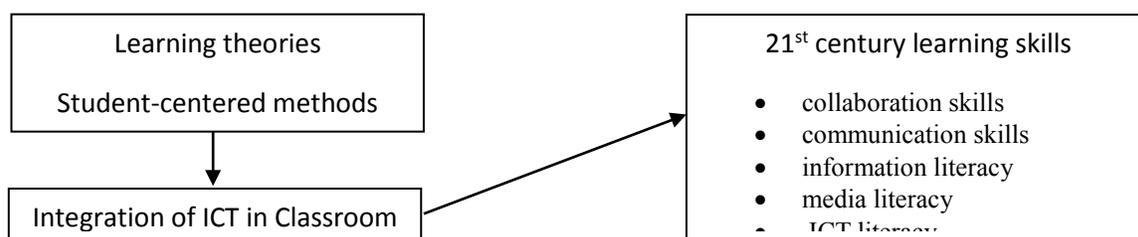
Fig. 1 Research Framework

However, when teachers have to integrate ICT in classroom, some teachers may feel stressed trying to keep up with ICT and also struggle in using ICT. They have had neither the preparation nor the support that enables them to stay out of the trap. It's just because that they think of ICT in terms of nouns (PowerPoint, Youtube, or Facebook), not in terms of verbs (presenting, sharing, and communicating) (Fisher & Frey, 2010). Therefore, in this research, functions of technology were focused on for integration of ICT in classroom more rather than just the tools or forms of technology.

Research methodology

This study was divided into 2 phases as shown below.

Phase I: Studying the integration of ICT into classroom on the 21st century learner skills for higher education. The tasks could be listed as follows.
1. Analyzing the learning theories and the student-centered methods to be used for integration of ICT in classroom.
2. Analyzing the ICT pedagogical principles and the characteristics of contemporary technology that teachers and students familiar with.
3. Defining the scope of the 21st century skills.
4. Developing the integration of ICT into the classroom.
5. Assessing the integration of ICT by the ICT experts via assessment tool.
Determining Index of Consistency (IOC) used to evaluate the consensus of the experts' opinion

Phase II: Studying the effect of integration of ICT into classroom for enhancing the 21st century learning skills for higher education. The tasks could be listed as follows.
1. Integrating ICT into course design and learning activities in two courses:

Group1: For undergraduate students in Media Innovation and Information Technology for Educational Communication course.

Group2: For graduate students in Technology and Research for Knowledge Construction and Communication course.

2. Performing quasi-experimental study using one group pre-posttest design.

The target studies included:

Group1: 69 undergraduate students of the third year pre-service teachers in general science and social science major who registered in Media Innovation and Information Technology for Educational Communication course of the 1st semester, 2012 academic year at faculty of Education, Srinakharinwirot University, Thailand.

Group2: 22 graduate students of the first year educators in evaluation and research major who registered in Technology and Research for Knowledge Construction and Communication course of 1st semester, 2012 academic year at faculty of Education, Srinakharinwirot University, Thailand.

3. The first day of the course activity, the target studies were self assessed their 21st century skills by the 21st century skills assessment tool.

4. Conducting activities that integrate ICT into teaching and learning process throughout the semester.

5. The last day of the course activity, the target studies were self assessed their 21st century skills again by the 21st century skills assessment tool.

6. Inferential statistics by t-test paired for each group was used to compare the data between before and after the course activity.

7. Calculating the effect size (d) to determine the power of effected. The criterion and interpretation (Cohen, 1988 see in Libsey & Wilson, 2001) was as follows.

$$d \leq .20 \qquad \text{small effect}$$
$$.21 \geq d \leq .79 \qquad \text{medium effect}$$
$$d \geq .80 \qquad \text{large effect}$$

Results

Phase I: The results of studying the integration of ICT into classroom on the 21st century learner skills for higher education can be described as follows.

Based on the 7 experts' consensus, the integration of ICT in the classroom on the 21st century learning skills for Thai higher education including 4 associated functions was appropriated, see Fig. 2.

Function I: *Dynamic content presentation* is the usage of ICT for delivering knowledge and experience via presentation program with multimedia (text, picture, animation, sound, and video) such as Microsoft PowerPoint or Keynote together with various activities such as classroom discussion, think-pair-share, demonstrations, simulations, reaction to video, individual assignments, and group works.

This function can respond to individual learner perception and can engage students to be more active learners. In this way, students will learn how to present their works powerfully.
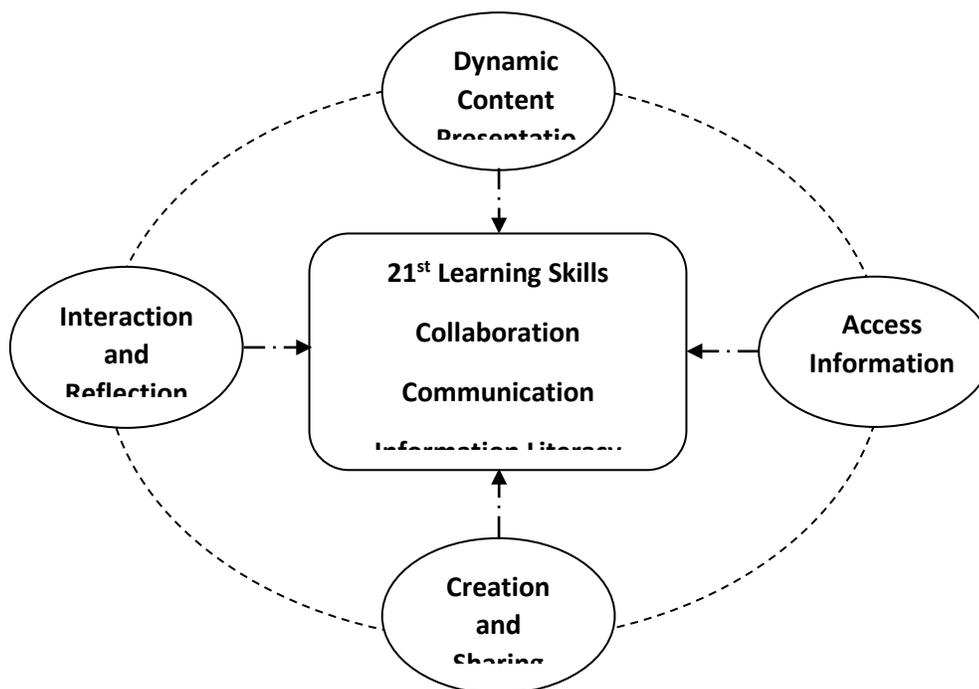
Fig. 2 Four associated functions of ICT integration

Function II: Access Information is the usage of ICT for accessing the information by exploring, searching, understanding, analyzing, and synthesizing the information from resources around the world via search engines such as Google, Yahoo Search, AltaVista, and etc.

When students explore of ideas, select the useful information, evaluate and construct knowledge, these ICT activities enable students to develop the type of cognitive processes and help teachers to use ICT to foster significant learning experiences. Moreover, students can realize understanding and appropriate usage of information based on law and ethic.

Function III: Creation and Sharing is the usage of ICT for creating and distributing students' projects not only in the classroom but also in public. Some types of product can be a research paper

or a presentation, or a video clip, or a blog, or a portfolio. The examples of using ICT are journal writing for individual activity via Blog, sharing group project on Dropbox, publishing slide presentation on 4share or creating movie clip published on YouTube.

The significance is that students will learn to be good audiences and good peer reviewers because they learn to comment and assess their friends' projects. They will get advice and feedback from audiences inside and outside classroom. It will also encourage student to be more competitive on their group projects. For example by journaling in Blog, the students will learn how to be a producer. They have to synthesize the information that they grab from the Internet. In this way, it will change the role of students from users to become creators in cyber world with responsibility and ethics.

Function IV: Interaction and Reflection is the usage of ICT for encouraging the relationship between teachers and students. ICT nowadays has various formats (text, voice, and face), times (asynchronous and synchronous), forms (private contact and public contract) and relationship (one to one, one to many, and many to many). ICT also provides powerful tools for teachers to know the students as an individual person and get some advice for them personally. Moreover, the more interaction between the teacher and the student is, the more student engagement with their learning will be. Likewise, the more they get feedback fast, the more they become active.

FaceBook, Skype, and Email are examples of some powerful ways to help teacher to know individual student even in overcrowded classroom. Students can easily exchange the personal opinion, knowledge, and group activity without barrier in times and places. Also, students can communicate with their team members on their group projects with respect. Blog is another example that can help teachers to know and understand what are inside the ideas of their students. By using Blog, the students will know each other through reading and interacting with their friends.

Integration of 4 associated Functions:

When teachers integrate these four associate functions of ICT in their teaching and learning throughout the semester, it can enhance the 21st century learning skills as follows.
- Collaboration skill is the ability to work effectively with others, to be respectful for the value of the member, and also to be responsible on the group works.
- Communication skill is the ability to compose, view and communicate the ideas to others in order to understand via oral or written.
- Information literacy is the ability to access, use, analyze, and evaluate of information appropriately with responsibility and ethics.
- Media literacy is the ability to access, use, analyze, evaluate and create media in different forms with responsibility and ethics.
- ICT Literacy is the ability to use digital technology, communication tools to locate, evaluate, use and create information.

Phase II: The result of the effect of integration of ICT in classroom for enhancing the 21st century learning skills can be described as follows.

- Group1: Undergraduate students
  After integration 4 associated functions on Media Innovation and Information Technology for Educational Communication course, the result showed that 64 undergraduate students were enhanced the skills at the .01 level of significance with large effect (d=1.36), see Table 1.

Table 1. Comparison of the 21st century learning skills assessment of undergraduate students

Self-assessment	n	$\bar{x}$	S.D.	t	p	d
Before semester	69	92.23	12.29	9.75**	.00	1.36
After semester	69	107.94	10.71			

**p < .01, d= effect size

Table 2 shows that when considering each skill for undergraduate students separately, it was obvious that integration of ICT could enhance ICT Literacy (d =1.56), Media literacy (d =1.26), and Information literacy (d =1.11) at the .01 level of significance with large effect. The students also were enhanced at the .01 level of significance with medium effect on Communication skill (d =0.77) and Collaboration skill (d =0.58) respectively.

Table 2. Comparison each 21st century learning skills by self-assessment of undergraduate students

21st century skills	n	Before semester		After semester		t	p	d
		$\mathcal{X}$	S.D.	$\mathcal{X}$	S.D.			
Collaboration skill	69	23.85	2.72	25.35	2.46	4.21**	.00	0.58
Communication skill	69	16.07	2.92	18.25	2.76	5.73**	.00	0.77
Information literacy	69	17.18	2.90	20.20	2.54	8.01**	.00	1.11
Media literacy	69	16.81	2.94	20.25	2.51	8.65**	.00	1.26
ICT Literacy	69	18.30	3.87	23.89	3.27	9.89**	.00	1.56

**p < .01, d= effect size

- Group2: Graduate students
  After integration 4 associate functions on Technology and Research for Knowledge Construction and Communication course, the result showed that 22 undergraduate students were enhanced the 21st century learning skills at the .01 level of significance with large effect (d =1.78), see Table 3.

Table 3. Comparison of 21st century skills assessment of graduate students

Times assessment	n	$\mathcal{X}$	S.D.	t	p	d
Before semester	22	94.50	6.89	6.98**	.00	1.78
After semester	22	109.81	10.01			

**p < .01, d= effect size

Table 4 shows that when considering each skill for graduate students separately, it was obvious that integration of ICT could enhance on ICT Literacy (d =1.60), Information literacy (d =1.55), Media literacy (d =1.38), Collaboration skill (d =0.95), and Communication skill (d =0.94) at the .01 level of significance with large effect respectively.

Table 4 Comparison each 21st century learning skills by self-assessment of graduate students

21st century skills	n	Before semester		After semester		t	p	d
		$\bar{X}$	S.D.	$\bar{X}$	S.D.			
Collaboration skill	22	24.36	1.46	26.00	1.95	3.17**	.00	0.95
Communication skill	22	16.51	1.73	18.54	2.50	3.18**	.00	0.94
Information literacy	22	17.22	1.87	20.22	1.99	4.53**	.00	1.55
Media literacy	22	17.22	1.90	20.68	2.98	5.05**	.00	1.38
ICT Literacy	22	19.13	2.88	24.36	3.61	6.24**	.00	1.60

**$p < .01$, d= effect size

Conclusion

Four associated functions of ICT in teaching and learning were appropriated and could enhance the 21st Century learning skills. It was designed underlying pedagogical methods which were led to become mastery in knowledge and skills in the same frame faster (Dede, 2010). Therefore, the students not only mastered in subject matter knowledge but also enhanced the 21st century learning skills at the same time. The results from two groups showed that there is significant difference between self-assessment skills before and after semester. Moreover, the effect sizes from two groups showed that integration of ICT in classroom through 4 associated functions affected not only the digital literacy (information literacy, media literacy, and ICT literacy) but also collaboration and communication skill as well.

It should be noted that the effectiveness of ICT integration collaboration and communication skill possibly depended on learning activities that students encountered. In this study, both groups were assigned only one group project. If the students get involved in more group activities, the collaboration and communication skill should be improved accordingly. It is therefore suggested that every subject should integrate four associated ICT to enhance the 21st century learning skills continuously to prepare the students to meet the needs in careers and lifelong learning for advanced economies.

For future study, another important 21st century learning skills such as creativity and innovation skill, critical thinking and problem solving skill should be investigated on how integration of ICT can enhance them.

Acknowledgement

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Expectation towards Cooperative Education Management of Rajamangala University of Technology Isan Thailand

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16.

Abstract

The purposes of this research were to find 1)the expectation of cooperative education management of Rajamangala University of Technology Isan. 2)the opinion toward factor in cooperative education management of Rajamangala University of Technology Isan. 3)the comparative analysis of cooperative education management of Rajamangala University of Technology Isan by using qualitative research with technique EFR(Ethnographic Futures Research). The 20 samples consisted of educational institution group, enterprise group, Cooperative Education Associate group, parent group by purposive selection. The data collected by using semi-structured interview of expectation of cooperative education management of Rajamangala University of Technology Isan by principle, concept and theory of attitudes, expectations and cooperative education management. The data was analyzed by using content analysis. The research findings revealed that **:** 1)the samples expect to the cooperative education system and believe that a good opportunities to use cooperative education system in educational management of Rajamangala University of Technology Isan, it is useful to create learning opportunities for students and employment of graduates who graduated from. University have to define standard educational management, curriculum standard and cooperative education system in accord with cooperative education management 2)the samples criticize that the budget factor, to develop system of Information and Communication Technology for learning and measurement and evaluation of various cooperative education for learning are factor in promoting the success of cooperative educational management of Rajamangala University of Technology Isan. 3)the comparative result of cooperative education between Rajamangala University of Technology Isan and Suranaree University of Technology show that Rajamangala University of Technology Isan must prepare to enter in cooperative education management; the education policy, the standard and process of cooperative education, the implement of cooperative education, the cooperation with enterprises, the success factors in cooperative education management, the future direction and trends and the risks and challenges of current and new power. In addition to university administrator, cooperative education program, effective management, to prepare student before the establishment of cooperative education process and to prepare international cooperative education.

Keywords: Keywords:, Expectation, Cooperative Education .

Nomenclature

A   Expectation

B   Cooperative Education

C   Cooperative Education Management System

Introduction

Rajamangala University of Technology Isan (RMUTI) is one among them which focuses on developing occupations and technology with purposes of promoting academic and professions emphasizing practice, research, producing industrial/technical education instructors, giving academic services in science and technology, maintaining arts and culture, and providing opportunities for students who finish vocational education to continue their study at degree levels. Rajamangala University of Technology Isan comprises 5 campuses with 12 faculties. Main campus located in Nakhon Ratchasima Province with 4 faculties; Faculty of Business Administration, Faculty of Engineering and Architecture, Faculty of Fine Arts and Industrial Design, Faculty of Sciences and Liberal Arts. Work Based

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Learning with enterprise group, is a way to the learning management of the Faculty of Science and Arts, is suitable field experience for professional graduates, create and support learning for hands-on graduates. Cooperative education is a part of the learning management for create and develop student to be hands-on graduates. Therefore, to create of learning model under work-based learning with enterprise group to be suitable field experience for professional graduates, according to the concept of cooperative education management with the determination of Rajamangala University of Technology Isan, that produce practical or hands-on graduates based on the need of the local area and the country of Thailand. For this reason, researcher require to study the expectation towards cooperative education management of Rajamangala University of Technology Isan.

Objectives
    1. The expectation of cooperative education management of Rajamangala University of Technology Isan.
    2. The opinion toward factor in cooperative education management of Rajamangala University of Technology Isan.
    3. The comparative analysis of cooperative education management of Rajamangala University of Technology Isan.

Methodology
    1. Population and sample. The population in this research is a specialist or stakeholders, who manage cooperative learning of faculty of science and liberal arts. The sample by purposive selection are 20 people to 7 groups of specialist or stakeholders, who manage cooperative learning of faculty of science and liberal arts, group1 : educational institution(administrators), group2 : educational institution (operator), group3 : educational institution(learning management undertaker), group4 : enterprise (administrators), group5 : cooperative education associate(cluster), group6 : student (professional experienced student) and group7 : parent (parent of professional experienced student).
    2. Instruments used to collect data. Cooperative learning management related research were adapted to develop the study of the expectation of towards cooperative education management of Rajamangala University of Technology Isan. 1)Data collection of activity and coordination. 2)Related data. 3)Voice and audio recording devices, such as camera. 4)A semi-structured interview, divided into 3 parts; part1 : principle concept and management of cooperative education. Part2 : standards curriculum and process of cooperative education. Part3 : success factor of cooperative education. 5)The questions of the in-depth interview.
    3. Data Analysis. This research has analyzed data using semi-structured interview technique EFR (Ethnographic Futures Research), Benchmark's comparison in-depth interview and present a descriptive essay.

Results
    1. The result of the expectation towards cooperative education management of Rajamangala University of Technology Isan. 1.1 Expectation towards cooperative education management of Rajamangala University of Technology Isan; 1)Curriculum : The sample expect to have cooperative education in the curriculum along to philosophy of the university, that is to produce practical graduates. 2)Student : The sample expect hands-on graduates based on the need of the labour market under the determination, that is to create manpower with technology expertise for occupations and professions. 3)Educational institution : The sample expect supported student to cooperative education, such as educational system, scholarship and job opportunity after school education. 4)Enterprise : The sample expect, that the enterprise is able to create learning efficiently and to get more opportunity than field experience program. 5)Enterprise administration : the sample expect obviously policy and emphasized cooperative education, especially encouraged and supported manpower and budget. 6)Supervisor : The sample expect, that student is followed up and evaluated and create outer community cluster. 1.2 Expectation towards standards curriculum and process of cooperative education; 1)Cooperative education standard : The sample expect, even though cooperative education standard is able to process in educational institution and enterprise, the minimum standard is not able to process in a short time. Furthermore educational institution will drive educational institution standard in the enterprise. 2)Curriculum standard : The sample expect, that the university is having cooperative education in the curriculum of a university by assigned policy of the develop and improve curriculum to be in accord with cooperative education. 3)Cooperative education process : The sample expect, that pre-cooperative education process encourage and support professional student and administrator to learn and understand the cooperative education. In addition to, the measuring and evaluating of cooperative education are assigned clearly, distribute and present later.
    2. The result of the factor towards cooperative education management of Rajamangala University of Technology Isan. 1.1 Success in cooperative education management : the sample agree with 5 factors : 1)The main factor of

success, the university and the enterprise become "cooperative education partnership" clearly and continually with policy and plan, that they reflect mission and task. 2)The factor of cooperative education concept is main element of university curriculum and cooperative education standard. 3)The factor of job and personnel determination take responsibilities for cooperative education. 4)The factor create cooperative education process efficiently. 5)The factor of the measuring and evaluating between educational institution and enterprise for the measuring and evaluating, so it was estimated problem and obstacle and develop.

   3. The result of comparative research in cooperative education management of Rajamangala University of Technology Isan. The result showed, that Rajamangala University of Technology Isan should be developed cooperative education management guideline; 3.1 Cooperative education policy : 1)Laying the foundation and continuous improvement. 2)The educational philosophy of the University. 3)The vision, mission, objectives, regulations, declared and allocated budget. 3.2 The standard and process of cooperative education : 1)The cooperative education standard. 2)The cooperative education process. 3.3 The cooperative education operation : 1)The structure of cooperative education organization. 2)The management of cooperative education organization. 3)The clearly purpose of cooperative education operation. 4)The educational quality assurance of cooperative education. 5)The system of cooperative education administration. 6)The operation of cooperative education standard. 7)The evaluation of cooperative education learning. 3.4 Cooperation with the enterprise : 1)Promotion to the enterprise of the cooperative education operation. 2)Creating the enterprise cluster. 3)Communication for collaborative learning. 4)Benefit of the enterprise. 3.5 The success factors of cooperative education management : 1)The university and the enterprise become "cooperative education partnership", that it is a mission and task with clearly and continually policy and plan. 2)As a main part of the educational system operate along cooperative education standard and educational standard of the university. 3)To be determined the division and personnel of the cooperative education administration and management for university and enterprise. 4)To create readiness of the cooperative education management. 5)To follow the evaluation with the cooperative education management for solution and improvement. 6)To bring information and communication technology for cooperative education operation completely. 3.6 The expected direction and future prospects : 1)Expanding network of partners developed through cooperative education. 2)Expanding cooperative education in the establishment. 3)Creating a cluster of partners to ensure the cooperative education success. 4)Promoting and support international cooperative education. 3.7 The risks and the challenges of current and new power : 1)Prepare for change in various contexts.2)Educational policy of the cooperative education. 3)Change the style of learning. 4)Labor market, monopoly and the specific needs of the labor market. 5)The employment of graduates. 6)Strengthening of the cooperative education cluster. 6)Cooperative education standards and operation (minimum standards and promoting standards). 7)Educational quality assurance. 8)The quality of graduates along to higher education of TQF (Thailand Qualifications for Higher Education).

Recommendations

   1. Recommendation policy : 1)The clearly policy of cooperative education management include in every dimension of the management, base on cooperation of all sectors in the university, such as faculty and department, and get ready for international-cooperative education management in ASEAN. 2)Creating cooperation cluster for the cooperative education management of Rajamangala University of Technology Isan in the beginning, that it have to combine with high administration of the university to extend cooperation, support and encouragement the enterprise network in both formal and informal of academic and vocational cooperative network for cooperation in the cooperative education management. 3)Cooperative education learning become a part of educational curriculum of Rajamangala University of Technology Isan.

   2. Recommendation : 1)To operate the responsible organization, education management and education coordination according to cooperative education management of Rajamangala University of Technology Isan, such as policy, structure, management, budget, place and staff, for the effectiveness and efficiency operation. 2)To operate the enterprise network, that it have to combine with administrative, council committee, teacher, alumni, expert, honorary graduate, etc. 3)To promote and support the creation of knowledge, understanding and guideline cooperative education management according to staff in educational institution and enterprise, teacher, student and parents include educational curriculum, cooperative education standard, cooperative education process, cooperative education measure and evaluation, presentation and exhibition later.

   3. Recommendation for further research : 1)Research should be a model for the cooperative education management of Rajamangala University of Technology Isan and covered in terms of management structure, operations, budget etc. 2)To study cooperative learning of educational institution, enterprise, cooperative educational cluster, supervisor, student and parent to develop the effectiveness and efficiency learning model later. 3)To study research for creating new knowledge, applying and integrating guideline, principle, concept and new

theory with structure of work based learning or cooperative learning according with context of Thai-learning context, such as the research of the developed cooperative learning model along Buddhism to cooperative education management of Rajamangala University of Technology Isan.

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Exploring attitudes and achievement of web-based homework in developmental algebra

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Abstract
The goal of this study is to understand how students' attitudes are connected to their mathematics learning. This investigation was specific to web-based homework in developmental courses in the community college environment. The mixed-methods approach was used to analyze the relationship between students' attitudes and mathematical achievement. The findings from the survey questionnaire showed mixed responses from the students on the benefits and disadvantages of the web-based homework. Additionally, cluster analysis results showed the relationship between the three groups of students and their differences in mathematics attitude. The results suggest that students with lower and average mathematics achievement had a more positive in attitude towards using the web-based homework system compared to the high achieving students. Based on the results, it can be noted that web-based homework plays an important role in students' attitude possibly because of the immediate feedback that improves understanding.

Keywords: Web-based homework; Attitude; Achievement University; Developmental algebra

1. Introduction

Students who enrolled in college level mathematic courses seem unprepared to complete the courses especially college algebra (Hodges & Kennedy, 2004). This is based on their high school grades and college placement examination scores. Colleges help these underprepared students with the developmental or remedial mathematics courses. After completing these compulsory developmental courses with satisfactory grades, students are then allowed to enrolled in their college mathematics classes.

A study done by Hoyt and Sorensen (2001) , reported that between 30- 90% of in-coming college students require developmental mathematics classes before they begin college level mathematics classes. Even with extensive developmental mathematical courses, a large number of students were unable to succeed in college algebra by getting the D, W or F grades known as the DWF rate (Brewer, 2009). The average passing rate for college algebra in the United States is between 40- 50 % (Herriott, 2006).

To address this issue, reforms in college algebra should be given priority. Nonetheless, large scale reforms in these mathematics courses face difficulty as colleges and universities structure these programs based on certain theoretical and practical considerations (Baxter Hastings et. al., 2006). In most college algebra classes, the pedagogical framework are lectures given by instructors and homework assigned to students. If these effective pedagogical strategies can fit within the traditional lecture based classes, the college mathematics community would

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support this change (Brewer, 2009). This study intends to blend the intervention called web based homework within the traditional framework and explore students' attitudes and achievement in developmental algebra. .

2. Web based homework

Homework is assigned to students by instructors to be completed at home. This is particularly relevant in mathematics classes. Students require the opportunity to practice the skills they have just learned. Observing examples provided by instructors in mathematics classes are insufficient to help students acquire the necessary procedures in solving a mathematical question. Students require feedback from instructors after completing their homework. This step is important in knowing whether the students understanding is correct when solving problems. Students are then able to adjust their approach after realizing their errors from the feedback obtained. This is known in the mathematics education field as the attempt-feedback-reattempt cycle (Zerr, 2007).

However, at the college level some students do not attempt the homework problems given by their instructors. This causes the students to miss the opportunity to solve the homework questions on their own. Without this important component, students would not know the correctness of their solutions and obtain the necessary feedback from their instructors. In addition, some instructors might not be able to collect their students' homework and grade them due to time constraint (Brewer, 2009). Finally, even though the first attempt have been graded, students might not receive the feedback in a timely fashion and students fail to re-adjust their understanding of the concept (Jacobson, 2006). In short, the students do not obtain the maximum benefits of completing the homework in an algebra class.

One way to improve the attempt-feedback-reattempt cycle in a traditional homework is by using the web-based homework. The web-based homework or online homework, in general refers to a system of computerized homework problems that is available online with the capability to automatically grade answers and provide immediate feedback on the correctness of the solutions (Jacobson, 2006; Kinney, 2001). In this study, the web-based homework used follows closely the aspect of this definition. The homework system contains similar questions that are available in an algebra textbook and also questions with different degree of difficulty. Questions vary in different forms of true or false, open ended questions, regular exercises and challenging questions. Completed solutions would be automatically graded by the homework system once the answers are submitted. Students have the option to save the answers and complete one whole section of an exercise before submitting them. To assist students having problems solving the homework, a few examples similar to the question asked are shown. This helps the student understand the steps involved in answering the questions. Short video lectures are also provided for students to revise the algebra concepts. The online homework system is able to generate similar questions of a particular concept from the large database of questions.

3. Objectives and research questions

The aim of this study was grounded in our goal to understand how students' attitudes are connected to their mathematics learning and performance. This investigation was specific to web-based homework in developmental courses (i.e. remedial) in the community college environment. Some of our initial questions, answered using mixed-methods, centred on gaining a better understanding of how mathematics attitudes of community college students

impeded their progress in developmental mathematics courses (Author & Author, 2011). Findings from this study suggest that attitudes about web-based homework have significant implications on how students engage with and use web-based homework in online learning environments, thus the re-development of positive attitudes about mathematics at this late stage is essential.

Empirical and critical perspectives are applied in this research study based on factors surrounding lower income, immigrant, and racial/ethnic minority student success in community colleges. In general, students' difficult and often ill-equipped transition from high school to community college (Conley, 2007, 2010), especially lower-income students and urban students of colour (Roderick, Nagaoka, and Coca, 2009), positions them on a track for failure. With the advent of advanced web-based technology to track and aid students in mathematics, we are required to persistently investigate the usefulness of such platforms in developmental mathematics contexts. The present investigation was situated along three primary areas: (1) examining associations between attitudes and achievement, (2) understanding students' attitudes about web-based homework, and (3) increasing student outcomes. In a larger context, this study also seeks to add to discourses about developmental education in community colleges (Bailey, 2009).

The purpose of this study was to understand how students' attitudes are connected to their mathematics achievement. The study focuses specifically on the web-based homework in developmental algebra courses at the community college level. This study sought to answer the following research questions:

1. What are the benefits and disadvantages of web-based homework programs in developmental algebra, specifically as they relate to student learning?

2. What associations exist between students' attitudes and beliefs about web-based homework and their achievement in developmental algebra?

3. What differences exist between high achieving, "middle" achieving, and low achieving students in regard to their attitudes?

4. Theoretical Perspectives

The perspectives and ideas presented here allowed us to utilize former research as a means to contextualize and outline the modes of inquiry applied in this study. One additional goal of this study focused on continually challenging notions of "what works" in diverse mathematics classrooms and generating more active discussions about student experiences, their attitudes, behaviours, and their resulting achievement in developmental mathematics courses. Cooper (2007) noted that opinions about homework, not necessarily web-based homework, and the positive effects on their achievement were varied. Brewer & Becker (2010) conducted a quasi-experimental, post-test design study to examine the effectiveness of online homework(OHW) versus traditional-textbook based homework(THW). The results showed that low-skilled students who utilized OHW exhibited higher mathematical achievement that the low-skilled students who utilized THW.

Within the mission to advance the mathematics learning and increase mathematics achievement of lower income students and students of colour enrolled in community colleges (Zimmerman et al, 2011), more research

focused on supporting beneficial and positive experiences is needed. Given that the use of web-based homework platforms is becoming a standard practice in developmental algebra courses in community colleges, the research described in this study is both important and appropriate.

5. Research Methodology

This study used the mixed-methods research; phase 1 focused on quantitative component, phase 2 focused on qualitative component. A survey questionnaire was utilized to inform the researchers about the attitudes and beliefs of students on the web-based homework in the developmental algebra classes. The survey instrument consists of a 40 items questionnaire using a five point Likert scale. Items 1 to 15 focuses on mathematics beliefs, items 16 to 30 concentrates on attitudes towards web-based honework and items 31 to 40 couses on the usefulness of the web-based homework. Qualitative component (phase 2) asks for individual student thoughts about web-based platform from the open ended responses in the survey instrument.

To ensure the reliability of the survey questionnaire, a pilot test was conducted to obtain the reliability coefficient. The reliability coefficient method used was the Cronbach's alpha. The Cronbach's alpha coefficient value of the survey items was 0.76.

To answer the first reseach question, data from the open-ended responses in the survey instrument were analyzed. Students shared the benefits they obtained while using this web based homework system. The disadvantages of the homework system was also obtained from the students in the developmenal algebra classes.

For the second research question, quantitative methods such as cluster analysis and analysis of variance (ANOVA) were used to analyze the data. Cluster analysis identifies groups of samples that behave similarly or show similar characteristics. In this study, cluster analysis was used to explore the number of student groups from the sample. The ANOVA technique was used to determine whether there were any significant differences among the clusters. ANOVA investigated the relationship between students' mathematics attitudes and beliefs and mathematical achievements (as measured by a standardized examination). If the ANOVA analysis was significant among the clusters, the researcher also conducted a Tukey post-hoc test to determine where the differences existed.

For the third research question, quantitative methods such as discriminant analysis and analysis of variance (ANOVA) were applied . Discriminant analysis is the reverse process of the multivariate analysis of variance (MANOVA). The purpose is to determine variables that would "discriminate" the groups. In this study the independent variables are the survey items while the dependent variable are the clusters/groups.

The web-based homework used in this study is WebAssign. It is an online homework and management system that delivers an automatic grading solution.

5.1. Participants

Participants of this study are from a community college in an eastern state in the United States. Students are mostly Black and Latin. In this study, data was collected from 78 participants. The majority of the students are taking this mathematics course as a requirement for their graduation and usually as a pre-requisite for other courses. Most of the students are full time students but some of them work outside class time to pay for their college fees. Data collected from students in a developmental algebra course.

6. Results

The first research question in this study states: What are the benefits and disadvantages of web-based homework programs in developmental algebra, specifically as they relate to student learning? The results from the survey questionnaire indicated mixed responses from the students on the benefits and disadvantages of the web-based homework. Students who liked the web-based homework generally mentioned the easy accessibility. In addition, the convenient of accessing the homework online and they could attempt the questions wherever they are. Some students preferred to attempt the questions late in the night or early in the morning depending on the available time. Many students mentioned that the instant feedback received from the homework system on the correctness of the answer was beneficial. The step by step solution provided for certain questions was very helpful in students finding their mistakes. This helps students who get frustrated easily when they are unable to spot the errors they made while attempting the question. One student even said that "This online homework system gave me a great study guide for questions and a way to work on them to perfection." A few students also praised the tab buttons in the homework system that was useful such as the "Practice It" and "Master It". Furthermore, what the students liked was the many features in the program that includes some video lectures and the how the program helped them in learning.

Some of the disadvantages mentioned by the respondents include the emphasis not on the working but just the final answer and how to get the right solution after trying a few times. The homework system only gives a feedback of right or wrong for most of the questions attempted. One common feature of this program that frustrate students especially when the error exists in their solution or when inputting mathematical symbols in the answer column. One student even mentioned about the difficulty of inserting the answers in the fraction form. Furthermore, the program does not provide sufficient feedback on what parts of the answer were incorrect in a specific problem. Citing one very specific example in the graphing of points, one student mentioned that the program is very rigid and does not let you plot the points easily.

Now we move on to the second research question: What associations exist between students' attitudes and beliefs about web-based homework and their achievement in developmental algebra? To answer this research question, quantitative methods that include cluster analysis and ANOVA was utilized. Cluster analysis results showed the relationship between the group of students and their mathematics attitude. From the analysis, there were 3 groups of students. Students in Cluster 1 rate survey items on attitudes and beliefs on the web based homework highly. Students in Cluster 2 and Cluster 3 had rated more items on attitudes and usefulness of web based homework system highly. Cluster 1 consists of 12 students. Cluster 2 had 29 students while Cluster 3 had 37 participants. The ANOVA analysis utilized the Tukey post-hoc test to compare the mean differences between the clusters. Using the Tukey post hoc test, the result showed that Cluster 1 students had high mathematics score, Cluster 2 students had average mathematics score while Cluster 3 students had a low mathematics score.

The third research question of this study was "What differences exist between high achieving, "middle" achieving, and low achieving students in regard to their attitudes and outcomes?" From the discriminant analysis, Cluster 1 students rate item Q2,Q17,Q21,Q29 and Q31 highly while Cluster 2 and 3 students rate Q6, Q16, Q22, Q24, Q26, Q36, Q38, Q39, Q40 highly. Results from the post-hoc test indicated that Item 16   discriminates "middle" achieving students (Cluster 2) and low achieving students (Cluster 3) while Item 28 discriminates

"middle" achieving students (Cluster 2) and low achieving students (Cluster 3), also discriminates high achieving students(Cluster 1) and low achieving students (Cluster 3).

7.   Discussion

This study investigates how students' attitudes are connected to their mathematics learning. Specifically, it examined learners' attitudes and beliefs about web-based homework in one developmental algebra course at the community college setting. It probed certain student demographics and whether the mathematics achievement had any relationship with the attitude towards the web-based homework tool. This study also explored the benefits and disadvantages of using the web based homework platform from the students' perspective in learning algebra.

The first research question comprised of the usefulness of the web based homework system. Results from the survey questionnaire showed mixed responses from the students on the benefits and disadvantages of the web-based homework. Students who liked the web-based homework generally mentioned the convenience, the many features in the program that includes some video lectures and the how the program helped them in learning. Some of the disadvantages mentioned including the emphasis not on the working but just the final answer , how to get the right solution after trying a few times and just getting a feedback of right or wrong.

The results suggest that students with lower and average mathematics achievement had a more positive in attitude towards using the web-based homework system compared to the high achieving students. These findings are similar with the notion that low-skilled students who obtains more benefits than high-performing students from the usage of web based homework (Wooten, 2013). Based on the results, it can be noted that web-based homework plays an important role in students attitude possibly because of the immediate feedback that improves understanding.

This study provided some evidence that web-based homework such as Web Assign used in developmental algebra class maybe more beneficial to the students to receive immediate feedback through the automatic grading system. Furthermore, this study indicated that the use of the web-based homework provides more opportunities and motivates lower performing students in learning algebra. This is consistent with the findings of the study of the usage of the web-based homework in the first semester calculus class (Zeer, 2007).

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Exploring E-Decision Making Competence through Online Self Determination Platform

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Abstract

Based on the self-determination theory, we can promote the learner self- determination ability to affect their learning achievement. This research is different than the traditional on-line platform designed; we used self- determination theory as a learning approach, and design the online platform for students' self determination. According that, the online-self determination platform has the characteristics, such as: having a learning path for self-determination, strengthening the sense of independence, providing a diagram for cognitive loading theory (CLT), promoting abilities of self-assessment, diagnosing learning situation, using online discussion and interaction to construct a social group.

Keywords: self-determination, e-decision making, cognitive load

Introduction

As a result of information communication science and technology progress, learning levels have reached to a boarder content, learners' decision making and abilities to implement their informative professional skills is very important for nowadays. Enterprise's managerial talents need the professional faculty who is specialized for decision-making. Therefore, the most important goal of online education is to promote learners independent decision making in this fast changing information communication science and technology evolution.

Self-determination theory is gradually internalizing and conforming into one kind self-motivated or self-determination in action and value, and it will affect the students' learning achievement by promoting learners' abilities on self-determination. Therefore, this research is different than the traditional on-line platform designed; we used self- determination theory as a learning approach, and design the online platform for students' self determination to promote students' ability into the positive learning achievement. For the future plans, we decide to implement situational questions, which can determine students' abilities of e-decision-making, into the platform, and exam students' e-determine abilities.

Literature Review

This research is going to discuss self-determine theory, the e-decision making competence, as following:

Self-Determination Theory

The self-determination theory is the organized by a motivation (Deci & Ryan, 1985) which emphasis:
1. The importance of human development and self regulation with human's inner resources;
2. The transfer progress of the non-inner motivation into self-determination;
3. The transfer progress of how the social environment gets influenced.
Deci and Ryan (1985, 1991, 2000) extended traditional motivation theory into inner and outer perspectives, which implement three psychological needs, such as, autonomy, competence, and relatedness. These three

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psychological needs emphasis the idea where human will use their self-determination to make different regulation. Motivation regulation is a continuous concept, which is from non- and outer- motivation transfer into the inner motivation. This progress represents our self determination level, which could affect our individual's behavior into a group's behaviors.

The internalized motivation refers to the progress of transferring non- and outer- motivation into inner motivation (Deci & Ryan, 2000). The internalized only happens when individual accept and transfer other different values and approach, and the individual can assimilate these differences into his/her own use (Ryan, Connell, & Grolnick, 1992). According to the level of internalized, it will turn to the different characteristic of behavior (Ryan, Connell, & Grolnick, 1992; D'Ailly, 2003). If we can apply self-determination theory into educational situation, it will emphasize the influences of individual's self-determination behavior from the social and environment content. Individual's self determination theory focus on the learner's inner resources to promote his/her motivation and enhance the learning achievement.

According to the self-determination theory, we can expect the inner motivation influence learners' continued positive behavior (Deci & Ryan, 1985). If we can satisfy individual's autonomy, competence, and relatedness, the fountain of self-determination will be continued through inner motivation and even outer motivation (Deci & Ryan, 1985).

If the three psychological needs can be satisfied, learners' self regulation will be enhanced, and it will cause learning positive outcomes. Otherwise, the teachers will need to control students' learning, control regulation will be enhanced, and it may cause the negative learning outcomes. Therefore, the research implements self-determination theory as learning approach in the online platform, and we wish to use this platform design to promote students' learning outcomes and their e-determine competences.

E-decision making

E-decision competences refers to have the critique thinking, the problem analysis and the solution, and students can make good use of the information, the e-system, technology or tool to assist decision-making ability. E-decision making competences include the ability of information processing and problem thinking, and the ability of problem thinking includes critique thinking and mental training.

To develop students' e-decision making in e-information technology environment, we can use context cognition technique to assist problem thinking and decision making (Weill & Ross, 2004; Clark, 2005; Albitz, 2007) . The e-decision-making refers to the situation when the challenge comes, people will know how to think, how to use logic reasoning and manage all of the questions, and this can be used in e-information processing by definition, deposit, apraisal, management, conformity, innovation and communication. If this match user's mental training in the standardized work, we can see the best decision outcomes.

Method

This research is trying to develop self-determination online platform, and the situational questions, which implement in platform, are designed to evaluate e-decision making. In order to develop the indicators of e-decision making, the research use hermeneutics approach. Hermeneutics approach focus on the concept where researchers continue reasoning and constructing the important and reprehensive indicators (Hong, 1997).

However, the construction of e-decision-making indicators does not elaborate in this research category, this research focuses to conform "the self-determination theory" in the development of online platform designed.

SDT On-Line Learning Platform Construction

The purpose of developing SDT online learning platform is to evaluate learners' learning achievement on e-decision making. The content of this research platform is constructed by situational questions, which will guide learners to make correct decision from their information ability. The interface of this platform re based on the self-determination theory. Learners will use self-determination learning approach to promote their e-decision competences.

The self-determination on-line platform includes three big page functions: Learning Progressing Page, Research Managing page, and Systematic Page. The self-determination online learning platform construction shown as Fig. 1:
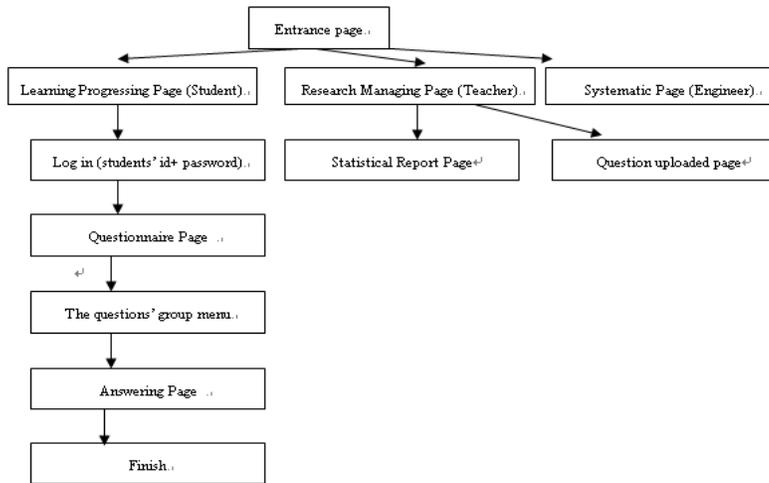
Fig.1 SDT on-line learning platform construction

Learning Progressing Page (Student).

The learners used their student number and the password to enter the system, and they will follow the steps to choose their questions to answers. All of the responds will be recorded in the system. The questions are based on situational context, learners will be given a situation question, and we expect learners will choose the way to solve the problems. Each situation may have at least 7-8 questions. Each question matches one indicator of e-decision making. After learners finish the test, we will know their ability level on e-decision making.

Research Managing Page (Teacher).

The basic purpose of research managing page is for teacher to upload the questions, and for researchers to search learners' grades. All of the grades will be settled into Statistical Report Page, and it will analyze students' grading and cognitive loading theory.

Systematic Page (Engineer).

The purpose of systematic page is for engineer to write the platform, because the SDT platform is using the system developmental approach, where the system will be adjusted during the study time. The engineer will provide the system draft, and after testing the draft, the engineer will adjust the platform until the system meets the requirement.

Self-determination should include three psychological needs: autonomy, competence, and relatedness, the theory construction shown as Fig. 2:
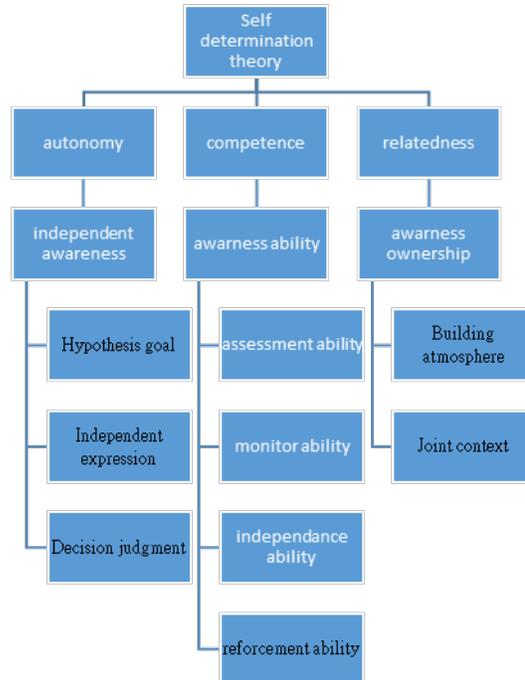
Fig. 2 Self-determination theory construction

Based on Fig. 2 construction, the ideas of designing of self-determination theory on SDT platform as following:

In order to strengthen the learner the independent feeling, system's design will mainly enable the learner to aim at study condition. Learners will decide their own study way, and by using the platform, the learners can strengthen ability of the setting their hypothesis goal, the independent expression, the decision judgment.

In order to satisfy learner's competences feeling, system's design will mainly give a chart for the learner learning effort curve. This chart enables the learner diagnose their study condition.

In order to meet the relatedness demand, the system has joined the discussion area. Participants can use the discussion area to build the social group atmosphere. The teacher and the learner by the discussion area can create relatedness demand.

According to the above statement, the research's platform design need contain the following several functions:

Function of the self-choice.

The research uses the multi-layered type structure to construct the study (Hsu, Chang, & Wu, 2009; Hsu, & Chang, 2011). The system will provide a hint if students continue answer two questions. Every question provides students options, and students can choose the option by knowing him/herself needs. The questions flow chart can see as Fig. 3.
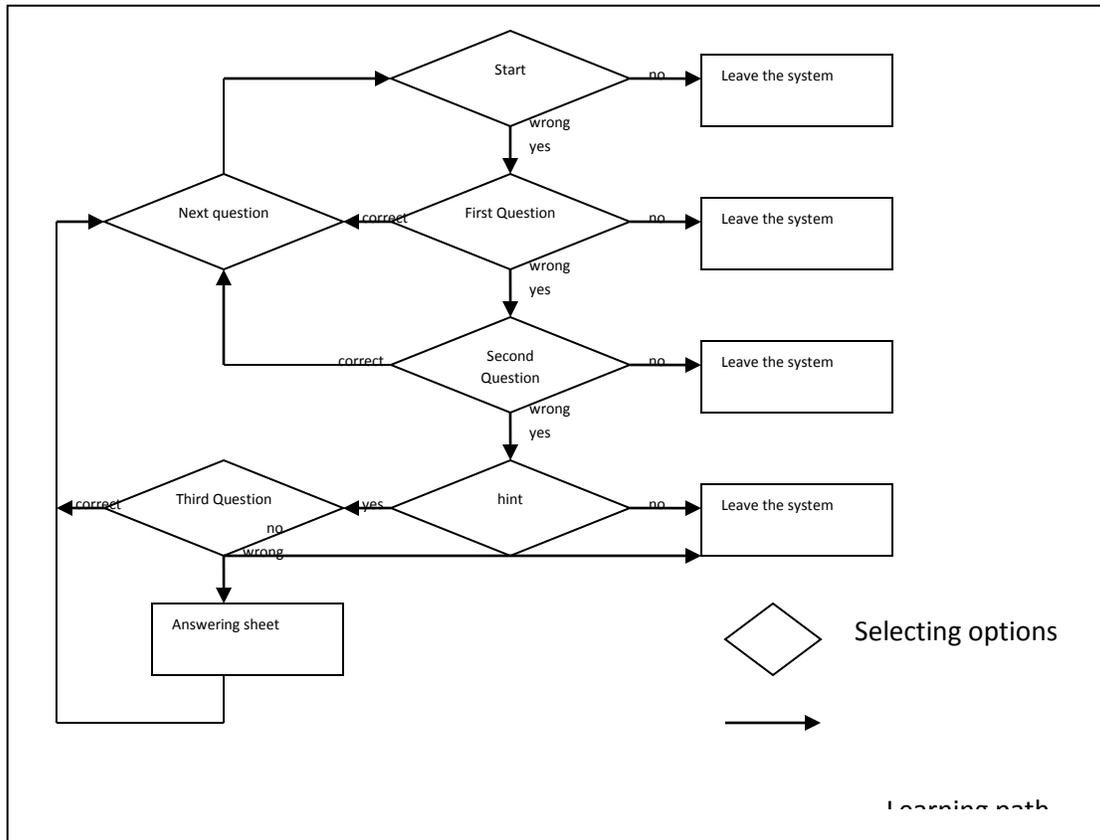
Fig. 3 The questions flow chart

Functions of Learning Effort Curve.

This research used the learning effort curve (Hsu, Chang, & Wu, 2009; Hsu, & Chang, 2011), as the Fig. 5 shown. The system can analyze learners' dynamic and real time learning effort curve and the system use the user-friendly interface to let students understand their learning effort curve. We hope we can use this chart to provide a view for students to understand their own learning ability and situation, and students can adjust their learning path to enhance their learning ability.

Function of on-line immediate discussion area.

Learners use the online immediate discussion area to interact with other and group, and it can cause group's relatedness. This research used system developmental approach. The research will first provide the system draft, and after testing the draft, the research will adjust the platform until the system meets the requirement. By using the discussion area, the participants will have feedback of the system-uses, and it will provide information for engineer to adjust the platform.

Conclusions

This research used the self-determination approach to design an online learning platform. With the comparison of other learning platform, the characteristic of this platform are as following:

This is a blended learning platform with learning and evaluation functions. The platform used multi-layered type structured to provide students' feeling of independence while students can choose their own learning path from the platform.

11.2. Within the students' learning progress, platform can provide the learning effort curve, which can promote students to evaluate their own learning ability, and students can diagnose their learning situation in order to provide the appropriated adjustment for their own learning ability.

11.3. The platform provides the online immediate discussion area where participants (learners, teachers) can use the online discussion area to interact and to construct a social context of relatedness.

For the future plan, we will use the hermeneutics approach to develop the indicators of e-decision making. The indicators will be implemented into the situational questions which will be applied into the learning platform.

Acknowledgements

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Factor Influencing the Critical Thinking of Teacher Students Studying at the Faculty of Education in Suratthani Rajabhat University

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Abstract

The objectives of this research aims to study. 1) To study the level of critical thinking teacher students and 2) To study the relationship between the key factors contributing factors to the critical thinking of student teachers. The target of this research in Suratthani Rajabhat University of Faculty of Education. Given the size of the sample using a table of Krejcie and Morgan (1970) had a sample of 348 people with a simple random sampling Proportion of students choosing to study the 7 program in 1-5 curriculum teaching regular tool used to collect data. The questionnaire scale. Independent variables include factor contributing factors. Variables such as critical thinking, confidence coefficient alpha of the scale was the order. The statistics used to analyze the data for the IOC (Index of Congruence: IOC) is an analytical test percentage. To the difficulty (p) and discrimination (r) of the test for the reliability of the test by means of a ditch rider - Richard Anderson, using the formula. The quality of the query using the t-test (Sombut Taikumrear 2546: 95) and for the reliability of the questionnaire. The scale using the method of coefficient alpha Cronbach (Boonchom Srisaart 2545: 99). The statistics used in hypothesis testing. By using SPSS programs to calculate the correlation coefficient of Pearson (Pearson Product Correlation Coefficient) (Sutthiwan Peerasaksophon. 2548-156) for the correlation coefficient (Kerlinger and Pedhazur. 1973: 75), and the significance of the correlation coefficient using F-test (Kerlinger and Pedhazur. 1973: 73)

Keywords: Silence • Multicultural Classrooms•Young Malaysian Children•Identity•Ethnographic Case Study

This study revealed that mean score on the critical thinking of every group were at moderate level. The mean scores of the fifth-year students was higher than that for fourth-year students. In addition, the mean scores of fifth-year students in the Bachelor of student teacher Program was the highest among the five group. The relationship between the key factors contributing to teaching and learning policy and management course teaching. And reinforcing factors. Environment in the classroom. Social media and learning resources, culture, family and community traditions. That affect the critical thinking of students, teachers. Analysis of the relationship between variables. (Correlation) found that the main factor in the teaching. Factors associated with media and learning resources. Significant at 0.01 and is associated with Factors contributing to the policies / programs, cultural traditions, and community factors. Significant contributing factor to 0.05, Policy / Program. Factors associated with media and learning resources. Significant at the .05 and family factors. Factors associated with cultural traditions and community significance of the correlation coefficient was 0.01 with a .400 .432 .502 .312 and .444, respectively.

Principle

Thinking is the brain processes the human potential is very high, and is the cause of man different from animals other from the past, humans have an interest in the idea and was trying find explanations about. The underlying idea. In regard to a variety of human learning (Tiasana Khaemmani and others 2544: 5) that are essential to human life greatly. A normal, happy and successful life as a result of effective thinking the same failure. Damage and mistakes that occur as a result of one of them. Thinking it was the best way to solve human problems. Therefore strongly advised to turn their attention seriously. To develop and strengthen their ability to think, particularly children and youth. (Prapansiri Susaorat 2551: 1) The ability to think is a skill that the students would need to have. Because the broader perspective of looking realistic. Can decide accordingly. Adapt to the changing social conditions and maintain the quality of life and happiness in the world. Globalization (Surang Kotrakul 2550: 316), in

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line with the National Economic and Social Development Plan No. 10 (BE 2550-2554) in the strategic development and social reintegration of wisdom and Thailand. learning The main idea is based on people-centered development. Because the final goal is to get the benefits and impacts of the development. Meanwhile, it has driven the development. Towards the desired goal. Need to improve the quality of people in all dimensions to balance the mind, body, ability, knowledge and skills. Equipped to provide both moral and knowledge that lead to critical thinking rationally. (Office of the National Economic and Social Development. 2551: website) The learning process, according to the National Education Act 2542 (Revised 2545) is considered the most important lessons. To encourage students to develop their natural and full of potential. All learners. Have the ability to learn and develop themselves. It is important to promote the idea. By providing education and relevant agencies to take action. Cognitive coping skills to handle the situation and the application of knowledge to solve problems. (Ministry of Education 2545: 8) and Basic Education Curriculum 2544 also requires that all students who graduate each student must pass a knowledge based group learning and group 8 also. provide an assessment of critical thinking, reading and writing. To desirable learning and development activities in accordance with the Education (Department. 2545: 143), the National Education Act 2542 (Revised 2545) also provided. A system for quality assurance. To improve the quality and standards of education at all levels. Which standards the students have four clearly defined standards that provide students with the ability to think critically. Critical thinking is a creative synthesis. Thinking and visionary. (Commission of National Education. 2544: 18).

External quality assessment results across the nation. By the Office of Basic Education Standards and Quality Assessment. (ITD), the evaluation found that the quality was good. But there are certain standards that are lower than the estimated 50 percent improvement in the standard or the standard class 4 learners capable of critical thinking. Critical thinking is a creative synthesis. Thinking and visionary. (Secretary of Education. 2548: 122-125) the results of the assessment to reflect that. To the students at all levels of education. In particular, critical thinking (Analytical Thinking), which is the basis of higher-order thinking (Higher - Ordered Complicate Thinking) on children's development and training as well as expertise and would be able to develop advanced ideas effectively. quality and performance (Suwit Mulka. 2550: 108), critical thinking (Analytical Thinking) is the foundation of learning and living. Individuals with the ability to think critically. Have different capabilities than others. Both the intelligence and the conduct of life. Critical thinking is the basis of this ensemble. Is thought to classified information. Elements of things. Whether it is the story of the various divisions to find out the truth, the essence of the story elements or principles that may be latent in all things, or appears clearly. Including correlation and Linkages of things that relate to how Principle have any ideas as to lead to the conclusion. Application. The predicted or predicted things correctly. Criteria used to judge a reason. It is a skill that anyone can develop. The important skill is to observe the comparison. Prediction and application of assessment classified category. Classification Assumptions and logical conclusion. (Prapansiri Susaorat 2551: 48), the ability to think critically (Analytical Thinking Ability) is to promote and develop the thinking skills of several factors such as learning. Atmosphere of shared learning of the students. All the teacher to the learner. Which is in the form of questioning, observation, inquiry and factors within the age range of learners. (Prapansiri Susaorat 2551: 53), consistent with Levin (Lewin) to explain that learning involves "Life Space" of the individual, which includes the physical environment, such as people, animals, objects, locations, and environmental psychology such as Propulsion (Drive) motivation (Motivation) goal (Goal) and interest (Interest) The behavior of the energy and direction. What is in their interests and their needs to be a positive force. While attention to what is beyond the power is removed. Learning occurs when individuals are motivated or driven to act toward their desired destination (Tiasana Khaemmani and others 2544: 10-11; According to Gestalt. 1912) corresponds to Piaget (Piaget), which explains the development of the children in each phase occurs continuously from lower to higher levels without skipping competition. However, some development may occur faster or slower. These developments occur naturally, but the environment. Culture and traditions as well as how to maintain life may contribute to the development of different children. Thought processes of the individual behaviors associated with intelligence. In particular, the ability to reason. Which is the ability to think. To a conclusion or what the rules of (Sangduean Thaweesin. 2545: 102-103; According to Sternberg. 1985).

The critical thinking. Already Production student teachers is the same. Laying the basis for a student teacher. It is a very important part. Because the teachers develop a cause linked to student results in the next great idea. Because of the above. Researchers are interested in the factors that affect the critical thinking of students, teachers, Faculty of Education, York University. Because these students will be prepared to leave the teaching profession. And to encourage students to engage in learning. This will give the students the critical thinking. This is to help teachers plan instruction accordingly. And efficiency in learning. And is another reason for the study population was a group of student teachers. Because they are consistent with the National Economic and Social Development Plan No. 10 (BE 2550-2554) focused on the development of a high quality. The development of

critical thinking. Information and support to educational institutions. Should any curriculum activities to promote And develop basic skills in the trade. To develop the ability to think critically. And more efficient.

Purpose of the research.
1. Study to investigate the level of critical thinking. Of teacher students.
2. To study the relationship between the key factors contributing factors to the critical thinking of student teachers.

The importance of research.
The knowledge gained from this research can be used as a guide in developing a learning management. Media management teaching. Classroom teachers to use in teaching proper. Of issues. And the factors influencing critical thinking. Faculty of Education, University of London student teachers.

The scope of the research.
This research is a study of the factors influencing critical thinking. Of teacher students. By a study of the factors influencing critical thinking. In teaching and learning in the classroom is comprised of three key elements and factors contributing factors. The framework follows.
1. Population used in the study.
This research study has selected lowland population including students, teaching courses 5 year 2nd semester 2555 academic year Faculty of Education, York University.

2. Samples used in the research.
The researcher of this study include sample student teacher semester course of 5 years to 2 years in 2555 the Faculty of Education, York University 1-5 years 348 people.

The variables studied.
The variables studied. Variables used in this research.
Variables include the factors influencing critical thinking.
Variables including achievement, critical thinking.

Variable definitions
1. Factor refers to the teaching and learning in the classroom, the curriculum, course syllabus and lesson plans. By instructors. Undergraduate. Program teacher for 5 years.
2. Factors contributing to development plan policy program at the Faculty of Education. Or university prepared for student development. Instructor
3. Factors mean media education. Facilities. Atmosphere of learning. Environment for teaching and learning in the classroom. And learning resources both inside and outside the classroom.
4. Teacher students means students enrolled in undergraduate courses. Faculty teaching courses for 5 years Suratthani Rajabhat University.
5. Their critical thinking refers to the ability to think like a target. Judgment and self-directed. Is thought to result from the fact that there is reason As well as the context in which the prudent foresight thinking skills by focusing on what I believe should include the following six elements.
5.1 Defining the problem means to define and understand the problem, consider the problem to determine disputes or ambiguities. Including the definition of a word or message. The problem is we as a starting point for critical thinking.
5.2 Data collection refers to the collection of data related to the problem. Arguments or vague information from various sources. Including information retrieval or knowledge of existing user experience. So, how to gather the information needed for critical thinking and self-observation and observation and data collection necessary to report the observation of others.
5.3 The information system refers to the reliability of sources of information and consider the adequacy of the information system. Meanwhile, it must evaluate the accuracy and adequacy of the information gathered will lead to a reference or not. The information gathered by the system to distinguish the data. Distinguish. Between clear and vague information. Information related to the data that is not relevant to the issue. Identifying assumptions. To be grouped. And prioritization of data to use as a guide in setting assumptions.

5.4 refers to the assumptions underlying the conclusion of the arguments by which the data are organized and linked into consideration. Relationship. In order to determine inference seems to be that. Of the data appears to be possible in any direction. In order to select the most feasible approach.

5.5 The principal logic inference by means of choosing the most reasonable means of information and evidence available. Logic way of thinking is a skill needed for summary judgment. And critical thinking skills of critical thinking.

5.6 assessing rater means to assess the reasonableness of the inference to the conclusion, by using logic. Conclusions must be evaluated according to whether or not reasonable and the conclusions that can be applied or not. The consequences will be. If the data has been changed and need to go back and discover more information. Existing data again. According to new hypotheses and conclusions. Concluded that the process of critical thinking is a process that combines the different aspects together to understand the problem by considering to make clear what. Is the real problem. Arguments or vague information for the compilation issues. Make clear what is the real problem. The sequencing problem. To eliminate the problem, the real issue may not go out. Separation issues. Including the definition of a word or message. Defining the problem is a process that is the beginning of critical thinking. Encourage people to start thinking, realizing that there was a problem or dispute or vague information. Trying to find the right answer. Reasonable to understand the problem.

Conclude

Conclusions presentation factors that affect the critical thinking. Of teacher students. The researchers will present the aims of the research. Summarized as follows. The relationship between the key factors contributing to teaching and learning policy and management course teaching. And reinforcing factors. Environment in the classroom. Social media and learning resources, culture, family and community traditions. That affect the critical thinking of students, teachers. Analysis of the relationship between variables. (Correlation) found that the main factor in the teaching. Factors associated with media and learning resources. Significant at 0.01 and is associated with Factors contributing to the policies / programs, cultural traditions, and community factors. Significant contributing factor to 0.05, Policy / Program. Factors associated with media and learning resources. Significant at the .05 and family factors. Factors associated with cultural traditions and community significance of the correlation coefficient was 0.01 with a .400 .432 .502 .312 and .444, respectively.

Discussion.

Of this research. To the purposes of the following discussion.

1. The correlation coefficient between the criterion variable is of critical thinking on key variables and factors contributing factors showed a positive correlation with the assumption set. And statistically significant at the .01 level.

2. Considering predictors into the equation to predict the critical thinking that. Factors in the classroom environment. As a result, most predictors. Predictors is a minor factor in the culture and community. Predictors and the third is the main factor in the teaching. This is consistent with other findings as follows.

Considering the sample into the equation to predict the thinking huff perception found to comply with the findings of Duangkamon Phonak (2545: 98-99) studied the variables affecting critical thinking. three years of secondary school students in Bangkok. The results showed that: 1) the correlation between the independent variables, including the level of student locus. And reasoning ability and classroom level variables Siraya including teaching quality of teachers. And qualifications of teachers with the critical thinking of students is between .344 to .822, with all the values of the correlations between the independent variables and the classroom level critical thinking of students are statistically significant. And confidence, critical thinking, students with the highest value is 0.822 and is statistically significant at the .01 level, the relationship between teacher education and critical thinking are minimum. 344 and is statistically significant at the .05 level, 2) the independent variable is the level of confidence in their students. Reasoning ability and critical thinking affect the statistical significance level of 0.01 and a regression coefficient is 0.750 and 1.033, respectively, and the prediction was 72.02 percent, 3) independent variables. classroom teaching quality of teachers is affecting critical thinking statistically significant at the .01 level, and also affect the regression coefficients of the locus of control of students' level of statistical significance. 0.05 and the regression coefficient is 2.135, and -0.045, respectively, with the predicted performance of 15.51 percent and 20.55 percent respectively of the teacher education does not affect the critical thinking. Regression coefficient of the locus of control of students. And the regression coefficient of a locus affecting critical thinking statistically significant at the .01 level, and findings may Pensiri CU (2546: 125-127) studied patterns. causal relationship of the factors that affect the critical thinking of students at three major findings was that The causal relationship of the factors that affect the critical thinking of students, 3 are consistent with empirical data. Model created to explain the

variance in the dependent variable for critical thinking has 8 percent of monitoring blend of fit, and (AGE1) was 0.94, the chi-square value of 130.89 with the Freedom 129 at significance level 0.44. variables that directly affect the students' critical thinking and reasoning ability. Personality Science. Apply. Variables that affect both directly and indirectly with the student's critical thinking and classroom atmosphere. Democratic parenting. Teaching behaviors of teachers. Including the findings of the Vedic Nan Brave (2548: Abstract) studied the factors that influence the ability of critical thinking of the students in the first class area office of education. And vocational students. Office of Vocational Education. Tuesday: A multiple group analysis. The results show that Variable with a direct effect on the ability of critical thinking of students at key stage 4 and Diploma students, including parenting style democracy. Ability of critical thinking of students at key stage 4 and Diploma students including teaching behaviors of teachers. The third prediction is a key factor in the teaching. This is consistent with the findings of McCrink (1999: 3420-A) to study the effects of teaching and learning styles of learners affect critical thinking. Sample is. Senior students beginning in Miami, United States 79 of the instruments used to measure critical thinking is a test of critical thinking of Watson and Gesser results showed that the method of teachers affect teachers who teach critical thinking than usual. And is consistent with the findings of Marra (1997: 1215-B) to study the relationship between the ability to think critically. Apply. And authority within the faith - their external locus of control were found to be positively correlated with the ability to think critically. They also found that Study mode used to think and try to give the students practice their critical thinking and high achievement.

Suggestion

1. Feedback on the findings to use.

The results of the analysis of the factors that affect the critical thinking of students, teachers, Faculty of Education, York University found that the variables that affect the critical thinking. Therefore, it could be variations. The results of the research to develop the student as a person known to the students critical thinking. In addition to critical thinking. It is also a valuable and legitimate rights of the students that have been developed. Considered a necessary condition for the provision of education and as a sign of the party receiving the education or learning it.

2. Suggestions for further research.

2.1 There should be a study of factors affecting critical thinking. In other tertiary institution. To see if students in tertiary institutions. That there are factors that affect the critical thinking. Different or not.

2.2 Other factors should be studied as a form of learning that is appropriate. Family environment factors. The actual situation. Problems that are associated with critical thinking or not.

2.3 should be the other way around. In addition to the tests and quizzes to accompany the study to obtain more extensive data such as observation, interview, interrogation and trial individually.

2.4 Should the analysis method (Path Analysis) in relation to indirect factors. That affect the critical thinking to know what factors are related and indirect impact on critical thinking.

13th International Educational Technology Conference

Factors Affecting the Behaviors of Yasothon Community Leaders in Receiving Information and News.

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Abstract

The objectives of this research are to study factors affecting the behaviors of Yasothon community leaders in receiving information and news and to study the possibility in receiving news of community leaders in Yasothon Thailand. The studying factors in promoting news, and knowledge, communication, and attitude, the researcher wants to know if all are related to at least one behavior of perceiving data or not. The sample of the study is community leaders in Yasothon Thailand who work for 60 subdistrict administrative organizations for 120 people. In obtaining the sample group.Data is analyzed by descriptive statistics, analyze the correlation by using Pearson and Chi-Square and prediction by using regression means.

The study, it is shown that 1. The studying factors result in promoting news and knowledge. As of knowledge, communication, and attitude, the researcher finds that all are related to at least one behavior of perceiving data by Sig = .00 It is revealed that there is at least one independent variable which is significantly correlated to dependent variable prediction. From examining, it can be concluded that an independent variable which is a main factor results in promoting news, knowledge. As of knowledge, communication, all are predictably related to at the behavior of perceiving data by Sig = .05.

2. The studying factors result in promoting news and knowledge of community leaders in Yasothon and are linked with at least one behavior of perceiving data by Sig = .00. It is shown

that there is at least one independent variable which is significantly correlated to dependent variable prediction. From examining, it can be summarized that an independent variable which affects the behavior of receiving news from various media is predictably related to the behavior of perceiving data by Sig = .05.

3. The studying factors result in promoting news and knowledge of community leaders in Yasothon. As of knowledge, communication, and attitude, the researcher finds that all are related to at least one behavior of perceiving data by Sig = .00. It is revealed that there is at least one independent variable which is significantly correlated to dependent variable prediction. From examining, it can be concluded that an independent variable which affects news promoting and knowledge of community leaders in Yasothon is predictably related to the behavior of perceiving data by Sig = .05.

Keywords: receiving information, information and news.

Introduction

In present days, the progress of technology has important role in human's life regardless of age and gender. Radio/television, newspaper, internet, billboard, and bulletin are used widely for the purpose of

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inter-communication. Receiving and promoting the information bring about the development-- economic, societal, political and governmental --which is necessary to consider various factors. All of 20 community colleges are the institutions which provide higher education below bachelor degree, and also organize the vocational training courses, according to ministerial regulations 2003. Each community college, therefore, performs a duty which is in accordance with the educational development plan about expanding the educational institutions and enhancing the quality of education. This will lead to the enhancement of the quality of life and of national security under multi-culture, including teaching and learning participation of all sectors and educational system management in the effort to make an effectiveness of education and to create an employment.The researcher has realized the importance of this issue. Therefore, the study will contribute to the benefit and be the guideline for promoting information, and for encouraging people in community to learn more from information and news in the near future.

Objectives/purposes

To study the factors which affect the behavior of Yasothon community leaders in receiving information and news.

To study the possibility of receiving information of Yasothon community leaders.

Hypothesis

The studying factors result in promoting news and knowledge. In terms of knowledge, communication, and attitude, the research is to find if all are related to at least one behavior of perceiving data.

The studying factors result in promoting information and knowledge of community leaders in Yasothon province. The research is to find if these factors are related to at least one behavior of perceiving data.

The studying factors result in promoting information and knowledge of community leaders in Yasothon province. The research is to find if these factors are related to at least one behavior of perceiving data.

Methods

The research " Factors Affecting the Behaviors of Yasothon Community Leaders in Receiving Information and News" is conducted by the following process

1. The sample are 120 community leaders in Yasothon province, who are the members of 60 subdistrict administrative organizations.
2. Tools in this study is questionnaire that created by the researcher. Some parts are from the other research but are adapted to be more suitable for the sample, and to cover variables and objectives of the study. By doing this, the researcher studied from many texts, documents and related research. The questionnaire consists of 6 parts, which the reliabilities is by 0.86
3. Data collection by the questionnaire which has been send to the samples and returning to the researcher. The number of questionnaire is equal to the amount of the sample.
4. Data analysis
   - The analysis by descriptive statistics, such as percentage, arithmetic mean, and standard deviation to describe the features of the data.
   - The analysis of correlation coefficient in examining the correlation
   - The analysis of data statistics of behavioral prediction by using regression means.

Results

Part 1 The main factors resulting in promoting information, news, and knowledge of the community leaders in Yasothon province in Thailand.

The main factors resulting in promoting information, news, and knowledge of the community leaders in Yasothon province, in the aspect of knowledge, the highest average score is the number 4. You have the capacity to exchange the knowledge, with the answer: high level (= 3.91). The second highest average is the number 2. You have the capacity to search for knowledge from learning sources, with the answer: high level   (= 3.86

Part 2 The contributing factors resulting in behavior of receiving information from various channels

The study finds that among various channels of information, highest average score is the number 4. Internet, with the answer: highest level (= 4.70). The second highest average is the number 1. Television/radio, with the answer: the highest level (= 4.56).

Part 3 The additional factors resulting in promoting information and knowledge of community leaders in Yasothon province

The study shows that the additional factors which result in promoting news and knowledge of community leaders in Yasothon province, in terms of organization's policy, the highest average score is the factor number 4. Monitoring and evaluation for the outcome of promoting news and knowledge, with the answer: high level (= 3.92). The second average is the factor number 3. Support and encouragement to promote the news and knowledge, with the answer: high level (= 3.88). In terms of policy, the highest average score is the number 1. There is an acceptance of news and knowledge promoting, with the answer: high level   (= 3.99). The second highest is the number 2. There is a support and participation in promoting news and knowledge, with the answer: high level (= 3.96).

Part 4 The outcomes of promoting information and knowledge of the community leaders in Yasothon province.

It is shown that in terms of acceptance, the highest average score is the number1. I am informed about the news and events, and always adapt the knowledge to use in my every life, with the answer high level (= 4.08). The second highest is the number 4. I am enthusiastic to know the new information and knowledge from the institutions or organizations, with the answer: high level (= 4.03).

Part 5 The results of the analysis from the data statistics of behavioral prediction by using regression means.

From the analysis of the main factors which affect the promoting of information and knowledge by regression means, in terms of knowledge, communication and attitude, it shows that all are predictably correlated to the behavior of perceiving data. The Sig = .00 is found in the study, which means that there is at least one independent factor which is significantly related to dependent variable prediction. From examining all cases, it can be concluded that the independent variables of the main factors result in

promoting news and knowledge. In terms of knowledge and communication, all are predictably related to the behavior of perceiving data by Sig. at.05.

From the analysis of the contributing factors which affect the behavior in receiving information from various channels by regression means, all are correlated to the behavior of perceiving data. There is at least one independent factor which is significantly related to dependent variable prediction. From examining all cases, it can be concluded that the independent variables of contributing factors result in the behavior of receiving information from various channels. All are predictably related to the behavior of perceiving data by Sig.at.05.

From the analysis of the additional factors resulting in promoting information and knowledge of community leaders in Yasothon province by regression means, the additional factors are correlated to the behavior of perceiving data. From examining all cases, it can be concluded that the independent variables of additional factors which result in promoting information and knowledge of community leaders in Yasothon province are predictably related to the behavior of perceiving data by Sig.at.05.

From the analysis of the outcomes of promoting information and knowledge of community leaders in Yasothon province by regression means, the factors are correlated to the behavior of perceiving data. There is at least one independent factor which is significantly related to dependent variable prediction. From examining all cases, it can be concluded that the independent variables of the outcomes which result in promoting information and knowledge of community leaders in Yasothon province are predictably related to the behavior of perceiving data sig. at. 05.

SUGGESTIONS

1. For the future study, it should be a comparative work between each group of fundamental variables in order to know if the factors are significantly related to each one or not.

2. Apart from the factors in this study, the other factors should be considered as well such as the external factors of individual who will promote the information and knowledge, for example, the content, the channels and media for promoting the knowledge

3.The study should be conducted in the other provinces to see if the results are the same.

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Factors Influencing the Development in English Pronunciation Skills Training in Primary Students of Schools in the Primary Education Services Area Office in Bangkok.

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Abstract

This research is conducted for the purpose of; 1) Studying the factors which influences the development in English pronunciation skills training in primary students of schools in the Primary Education Services Area Office in Bangkok 2) Studying the possibilities of the development in English pronunciation skills in primary students of schools in the Primary Education Services Area Office in Bangkok. The cross section in this research includes 200 primary education level English language instructors from 37 schools in the Primary Education Services Area Office in Bangkok. This research was conducted from February-March 2013, using 5 point rating scale questionnaire as research methodology, and using Percentage, Average, Standard Deviation, and Regression

The research results are;

1) Most of the Primary education level English language instructors in the Primary Education Services Area Office in Bangkok are ready for the usage of new technologies as the instruction media and most students prefer and ready to make use of electronics devices in learning English language.

2) Factors which influences the development in English pronunciation skills training in this study; 1) The main factors which are instructors, students, and teaching method 2) The influential factors which are duration and frequency of learning and teaching 3) The environmental supportive factors which are the equipment from all of the tests. It can be concluded that independent variable influences English pronunciation skills training in primary students with a predictive correlation at 0.05 level of statistical significance.

Keywords: English pronunciation skills

Introduction

Nowadays, there have been English programs in various levels of schools in Thailand; primary, secondary and higher education levels. The purposes of doing that are to improve 4 skills in learners: listening, speaking, reading and writing. Particularly, speaking skill is the most essential talent to be used for effective communicating with other fellows on earth. Basically, this can influence the country development and academic institutions need to manage learning programs according to the Basic Education Curriculum of 2551 B.E. and it has to include all the 5 significant capabilities of learners in it. The most significant skill is communication skill which is composed of listening, speaking, reading and writing of foreign languages. However, Thailand education system managed nowadays is not in accordance with personal and social requirements. The more expectation required by all levels in society that education needs to play major roles in preparing Thai people to be able to compete with people in other countries, the bigger problem in education circle can be obviously seen. The most frequent argument made in all levels is why learners graduating each level even primary, secondary or higher education cannot speak fluent English. This major problem can be caused from many factors such as instructors, learners, learning atmosphere and other factors influencing the English speaking.

The researcher has realized importance of such matter and has therefore studied those factors affecting the improving skill in English pronouncing skills of students in primary schools of the Primary Education Service Area

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in Bangkok. It is expected that the study results can be advantageous and be further approach of English teaching improvement in Thailand.

Objective

To study those factors affecting the improvement of English pronouncing skills of primary students in Primary Education Service Area Office in Bangkok.

Methodology

Population
Total 200 English instructors in elementary schools administrated by Primary Education Service Area Office in Bangkok have been used as population in this study.

Research Instruments
Two types of questionnaires were designed for collecting data from the respondents: the first type was checklist questionnaire concerning demographic data and another one was 5-point Likert type scales to study factors influencing the improvement of English pronunciation. The questionnaires were tried out to find reliabilities of them and the reliable values of all questions made in questionnaires were 0.789.

Data Collection and Analysis
The researcher collected data information from the inspected and approved questionnaires from all kinds of population which was 200 English teachers in 37 primary schools of the Primary Education Service Area Office in Bangkok. The duration between propagating questionnaires and collecting back was 3 weeks in February and the data was analyzed in March 2013. Upon collection and inspection of all collected questionnaires, the data were analyzed through descriptive statistics which were composed of percentage, mean and standard deviation that were used to explain the data characteristics. The correlation of data was analyzed to find correlation coefficient by using statistics designed by Pearson Chi-Square and the data Regression were used to forecast behaviors of data.

Results

General Information of the Respondents
From all 200 population used in this study, 26 per cent of it are male and 74 of it are female with age ranges 20-39 years as highest at 30 per cent and the less is 38.50 per cent is the range between 30-49 years. The population with ages between 40-49 years estimated at 11 per cent and the population with ages above 50 years estimated at 20.50 per cent. Of all population, 44 per cent directly graduated English teaching and 56 per cent of them graduated other subjects. Average 73 per cent of all population had their own electronic media in the form of smart phones, 86.5 per cent of population had their own electronic media in the form of computer tablets and average 79 per cent of population had their own electronic media in the form of computer laptops. Average 81 per cent of all population knew the software programs assisting in English pronunciation; 19 per cent of all population did not know the software programs assisting in English pronunciation. Average 80.5 of all population used to use software programs assisting English pronunciation and 19.5 per cent of all population have never used software programs assisting English pronunciation.

Factors influencing English pronunciation skills of primary students in primary schools of the Primary Education Service Area Office in Bangkok
The overall means showing at 4.21 (S.D. = 0.56) of which individual factor was clarified and it was found that students talked English during the class hours showing highest means which were 4.65 (S.D. = 0.47). The second values were from students enjoying English pronunciation in classes as high means which were 4.43 (S.D. = 0.49). The students' attitude towards modern technology used in classes showed high means which were 4.42 (S.D. = 0.49). Students whose grades were better than ever showed high means which were 4.28 (S.D. = 0.63). Students' abilities in using modern technology showed high means which were 4.14 (S.D. = 0.55). Students presenting their courage in pronouncing English showed high means which were 4.08 (S.D. = 0.72). Students' cooperation in class activities and homework showed high means which were 3.98 (S.D. = 0.61). And the least mean values were from students' pronouncing English fluently which showed means of 3.77 (S.D. = 0.59)

Conclusion and Discussion

From this study, it is found that primary students of primary schools of the Primary Education Service Area Office in Bangkok have high level of readiness for learning modern technology. Therefore, English teachers have to be prepared for using modern technology, electronic media and updating their education all the time and they need to realize the importance and advantages of the usage of electronic media in teaching English including selecting appropriate electronic media for their students. Hopefully, further comparative studies of each variable, factor, and background will be performed to get the correlation of each one. Moreover, other factors above this research such as families and students' parents should be studied. Also the same kind of this study should be done with other groups of schools such as bi-lingual schools or schools in other provinces to get comparison results to this research.

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Factors Influencing the Success of Rajamangala University of Technology Thanyaburi's Ubiquitous Learning

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Abstract

The purposes of this descriptive research were to explore factors influencing the success of Rajamangala University of Technology Thanyaburi's Ubiquitous Learning. Participants in this study were 556 Bachelor's degrees of Rajamangala University of Technology Thanyaburi (RMUTT) students' from 11 faculties and stratified random sampling method were used to select the subjects. Data were collected from online questionnaires. The descriptive statistics used to analyse data were frequency, percentage, mean, and standard deviation. The test of assumptions used linear multiple regression equation at the statistically significant level 0.05. The results revealed that the predisposing factors Influencing the success of RMUTT's Ubiquitous Learning was knowledge (X_1), enabling factors were infrastructures (X_4) and learning equipment (X_6) and reinforcing factors were electronics learning policy (X_8) and stakeholders (X_9). The multiple correlation coefficient (R) was 0.73 with 53% of ability to predict the factors influencing the success of RMUTT's Ubiquitous Learning and formed the forecasting equation as follows: $\hat{Y} = 0.31 + 0.21X_1 + 0.11X_4 + 0.08X_6 + 0.28X_8 + 0.25X_9$

Keywords: U-Learning ; Ubiquitous Learning; Active Learning

Introduction

The world is changing rapidly from as an industrial to an information and media-driven economy. As the world around us becomes smaller, and communication and media become more global and more diffuse, the very nature of society and of who we are as human being is quickly being defined by our ability to be both consumer and producer of knowledge. (Bill Cope and Mary Kalantizs, 2009)

Our society is in the midst of paradigm shift from mass media-based society to personal media-based society, driven by the digital revolution. Mass media and communication media are converging to form massively connected personal and everywhere media. In the personal and everywhere media, the interaction of people, artifacts, and the environment contributes to the emotional and entertaining experience in the daily life. (Masa Inakage, 2007)

Ubiquitous learning or u-learning is a new learning paradigm, anywhere and anytime learning referring to any environment that allows any mobile learning devices to access the learning and teaching contents via wireless networks in any location at anytime. (Saadiah Yahya et al.,2010) The portability of computers and computing devices has blurred the traditional lines between formal and informal learning. (Bill Cope and Mary Kalantizs, 2009) Rajamangala University of Technology Thanyaburi (RMUTT) is focused on science and technology curriculum. Teaching and learning literates with technology changes that the one of policies of the RMUTT's strategic plan. (RMUTT, 2009) RMUTT supports teachers and students using instructional media for teaching and learning through intranet and internet. To provide infrastructures, wireless network, around RMUTT for support Ubiquitous Learning in the future.

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Objective

The purposes of this descriptive research were to explore factors influencing the success of Rajamangala University of Technology Thanyaburi's Ubiquitous Learning.

Methodology

Sample of the Study

The sample of this study were 556 Bachelor's degrees of Rajamangala University of Technology Thanyaburi (RMUTT) students' from 11 faculties and stratified random sampling method were used to select the subjects.

Research Instruments

Online questionnaires were developed for collected data from the respondents which 2 types; the first was checklist about demographic data and the second was 5 point Likert type scale about the factors influencing the success of Rajamangala University of Technology Thanyaburi's Ubiquitous Learning. The internal consistency (alpha) coefficient regarding the reliability of the scale has been calculated as 0.97.

Data collection and analysis

The study took online questionnaires as a research instrument during February 4 -25, 2013. The descriptive statistics used to analyse data were frequency, percentage, mean, and standard deviation. The test of assumptions used linear multiple regression equation at the statistically significant level 0.05.

Results

Demographic data

The findings reveal that majority of participants were Faculty of Business Administration students' (27.21 %) and freshmen (29.68 %). Almost of the respondents were females (70.49 %). The most frequently used internet average about 4-7 hours/week (33.57 %) and using internet more than 7 years (64.84%). The purposes of using were to connect the social network (92.23%) and to learn online (56.71%). The participants' belonged laptop (88.16 %) and smart phone (69.26 %). They preferred blended learning (62.37%) and connect with teachers via social media (57.24 %)

Factors Influencing the Success of RMUTT's Ubiquitous Learning

The findings of predisposing factors influenced the success of RMUTT's Ubiquitous Learning were: the attitude factor was the most at high level ($\bar{x}$ = 3.81,S.D = 0.55), the knowledge factor was same at the high level ($\bar{x}$ = 3.73,S.D = 0.55) and economics factor was natural level($\bar{x}$ = 3.39,S.D = 0.72). The enabling factors were found; instructor factor was the most at high level($\bar{x}$ = 3.66,S.D = 0.65), the learning environment factor was at high level($\bar{x}$ = 3.61,S.D = 0.62), the learning equipment factor was at high level ($\bar{x}$ = 3.57,S.D = 0.76), and the infrastructure factor was at natural level ($\bar{x}$ = 3.30,S.D = 0.76). The reinforcing factors were found; stakeholder factor was the most at high level ($\bar{x}$ = 3.64,S.D = 0.66), and electronics learning policy factor was at high level ($\bar{x}$ = 3.57,S.D = 0.64).

The test of assumptions that the predisposing factors, enabling factors and reinforcing factors influenced the success of RMUTT's Ubiquitous Learning.

Table 1. Simple linear regression analyses correlation of factors that influenced the success of RMUTT's Ubiquitous Learning.

	R	R Square	Adjusted R Square	Std.Error Of the Estimate
Success of RMUTT's U-Learning	0.73	0.53	0.53	0.46

As depicted in table 1, the value of R square was 0.53 which indicates the correlation 53% of the predisposing factors, enabling factors and reinforcing factors influenced the success of RMUTT's Ubiquitous Learning

Table 2. Multiple regression coefficients of the factors influenced the success of RMUTT's Ubiquitous Learning.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Bata		
(Constant)	0.31	0.15	-	2.12	0.034
Knowledge factor (X_1)	0.21	0.04	0.18	5.13	0.000**
Infrastructure factor (X_4)	0.11	0.03	0.13	3.72	0.000**
Learning equipment factor (X_6)	0.08	0.03	0.10	2.64	0.000**
electronics learning policy factor (X_8)	0.28	0.05	0.27	5.61	0.000**
Stakeholder factor (X_9)	0.25	0.04	0.25	5.74	0.000**

* $p \leq 0.05$, ** $p \leq 0.01$

As depicted in table 2, the multiple regression coefficients indicates that the predisposing factors influenced the success of RMUTT's Ubiquitous Learning at the statistically significant level at .01 was knowledge factor (X_1) , infrastructure factor (X_4), learning equipment factor (X_6), electronics learning policy factor (X_8) and stakeholder factor (X_9), that formed the forecasting equation as follows: $\hat{Y} = 0.31 + 0.21X_1 + 0.11X_4 + 0.08X_6 + 0.28X_8 + 0.25X_9$.

Conclusions and Discussion

The predisposing factors Influencing the success of RMUTT's Ubiquitous Learning was knowledge , enabling factors were infrastructures and learning equipment, and reinforcing factors were electronics learning policy and stakeholders that related Danail Dochev and Ivo Hristov (2006) suggest that e-Learning demands high bandwidth broadband, new high quality graphical environments, the introduction of new and innovative services in handling digital content. e-Learning services also require interoperable networks, such that the content could be accessed through different channels in a seamless fashion by the end users. The participants suggest how to success in online learning the learner should plan and continue self-discipline of learning.

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Factors Influencing the Success of Web-based Training for Teachers of The Secondary Educational Service Area Office 30.

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Abstract

The purposes of this descriptive research were to explore Factors Influencing the Success Web-based Training for Teachers of The Secondary Educational Service Area Office 30.. Participants in this study were 315 teachers of The Secondary Educational Service Area Office 30 from 2,398 teachers and stratified random sampling method were used to select the subjects. Data were collected from questionnaires. The descriptive statistics used to analyse data were frequency, percentage, mean, and standard deviation. The test of assumptions used linear multiple regression equation at the statistically significant level 0.05. The multiple correlation coefficient (R) was 0.921

Keywords: Web-based training ; e-Learning; Active Learning

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Introduction

Education is the most important basis for developing countries. Hence educational institutions have to emphasize on improving teachers' skills of creating teaching media for their teaching methods which are the main keys for educational development. Nowadays, educational institutions, which are responsible for Thai educational management, have increasingly encouraged teachers to create their own teaching media. It is recommended that the most effective personnel development is training as it takes minimal time and it answers the problems and requirement of both personnel and organization.

The Secondary Educational Service Area Office 30 is one educational agency which has been assigned to monitor 37 schools in Chaiyaphum Province area. Although the distance between schools is quite far away and the transportation is inconvenient, there has always been training activities have always been provided to support and promote improvement of teachers' knowledge. Therefore the researcher is interested in studying factors affecting the Web-based training for teachers under the Office of Secondary Education Service Area 30 with an objective to further improve teaching competency of teachers of The Secondary Educational Service Area Office 30.

Objective

The purposes of this descriptive research were to explore factors influencing the success of web-based training for teachers of The Secondary Educational Service Area Office 30.

Methodology

Sample of the Study

The sample of this study were 315 for Teachers of The Secondary Educational Service Area Office 30 from 2,398 teachers and stratified random sampling method were used to select.

Research Instruments

Tools used in this research are questionnaires created by the researcher with 5 parts and they consist of 68 items with 0.921 of reliance.

Data collection and analysis

The study took questionnaires as a research instrument during February 10 -20, 2013. The descriptive statistics used to analyse data were frequency, percentage, mean, and standard deviation. The test of assumptions used linear multiple regression equation at the statistically significant level 0.05.

Results

Demographic data

General information of all samplers used in this study: 200 female equal 63.5 %; 88 samplers with average ages = 35-44 years estimating 27.39 %; 140 samplers with their monthly income above 40,001 Baht estimating 44.4%; 233 samplers with bachelor degree as highest level of education estimating 74 %; 156 samplers holding the position of teachers of special expertise estimating 49.5 %; 73 samplers have been working as civil officers for 11-15 years estimating 23.2 %; 121 samplers have used computers for 6-10 years estimating 38.4 %; 121 samplers have used the Internet for 6-10 years estimating 34.8 %t; 124 samplers use the Internet at least 3 hours a day estimating 39.4 %; and 288 samplers have their own personal computer (at home) estimating 91.4 %.

Factors Influencing the Success of Web-based Training for Teachers of The Secondary Educational Service Area Office 30

1.   Searching the reliance of the questionnaires studying factors affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30, the reliance of 0.921 was found.

2.   Knowledge information resulting Web-based training achievement of teachers under the Office of Secondary Education Service Area 30, it results high value with the mean of 3.60 (S.D. = 0.65). After considering individual item, it was found that teachers' abilities in searching the learning resource reflect the highest value with the mean of 3.87 (S.D. = 0.83). The second highest value is obtained from the ability of collecting information and summarize knowledge management with mean of 3.74 (S.D. = 0.77) and the lowest value is from languate skills with average mean value of 3.26 (S.D. = 0.82).

3.   Attitude information influencing the Web-based training achievement of the teachers under the Office of Secondary Education Service Area 30 was found the high value of mean 3.9 (S.D. =0.73). Individual item was considered and it was found that computer sets could provide teachers with comfortibility at the high level of value with mean of 4.22 (S.D. = 0.82). The second highest value was represented that more advantages gained by teachers who could use computer with its mean value of 4.14 (S.D. = 0.71). The lowest value was gained from the using of computer which was considered easy with the average mean value of 3.37 (S.D. = 0.85).

4.   Skill information affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found that it reflected high mean value of 3.77 (S.D. =0.78). Individual item was analyzed and it was found the using Excel program for calculating reflected the high mean value of 4.38 (S.D. =0.82). The second mean value was found from using Power Point Program in presentation with high mean value of 3.83 (S.D. = 1.10) and the minimal mean value was found from using Microsoft Word in typing with average mean value of 3.35 (S.D. = 1.07).

5.   Input information affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found high with average mean of 3.60 (S.D. =0.61). The highest value concerned attitude which reflected high value of average mean 3.93 (S.D. =0.73). The second was skill with its high value of average mean 3.77 (S.D. = 0.78) and knowledge with its high value of average mean 3.60 (S.D. = 0.65) respectively.

6.   Age information affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found high with average mean of 3.56 (S.D. = 0.85). Individual item was clarified and it was found that ages resulted training, developing and using information technology with its high mean value of 3.62 (S.D. = 0.92). The second value was found from studying ages effecting searching information and its procedure with its average mean value of 3.59 (S.D. = 0.94). The minimal value was obtained from styding on ages resulting stability in working by using information technology with its average mean value of 3.56 (S.D. = 0.85).

7.   Gender information affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 resulted the medium value with average mean of 2.87 (S.D. = 0.98). Individual items were analyzed and it was found that gender resulted in attitude, preference, and popularity in Web-based training with the medium average mean of 3.04 (S.D. = 1.12). The second was found on gender resulting in adapting themselves to the Web-based training with aveage mean value of 2.89 (S.D. = 1.09) and the minimal value was obtained from gender resulting stability in working using information technology with average mean value of 2.77 (S.D. =1.00).

8.   Education information resulting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found with high value of 3.55 mean (S.D. = 0.86). Individual item was clarified and it was found that the educational background resulting the Web-based training and developing of information technology with high mean value of 3.61 (S.D. = 0.87). The second value was derived from studying the educational background resulting leaning and traning activities with its high mean value of 3.58 (S.D = 0.92). The minimal value was obtained from studying oneducation levels resulting searching and collecting data information and its procedure with high mean value of 3.50 (S.D. = 0.91).

9.   Experience information resulting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found that experiences affected highly with the mean value of 4.12 (S.D. = 0.76). Individual items were studied and it was found that the highest value was from studying experiences resulting learning management through Web-based training which reflected high mean value of 4.15 (S.D. = 0.79). The second value was from studying experiences resulting abilities in adapting themselves for Web-based training with mean value of 4.14 (S.D. = 0.78). And the minimal value was from studying experiences resulting the leaning and training activities with high mean value of 4.09 (S.D. = 0.83).

10.	Information of numeric factors influencing the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found high mean value of 3.53 (S.D. = 0.65) and was found that experiences resulted highest mean value of 4.12 (S.D. = 0.76), ages reflected the second highest mean value of 3.56 (S.D. = 0.85) and gender affecting the minimal mean value of 2.87 (S.D. = 0.98).

11.	Structural factor information affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found high with its mean value of 3.93 (S.D. = 0.91). The result was found that there was Internet system installed in schools with high mean value of 4.14 (S.D. = 0.89). The second highest value was found on Information Technology Center provided in schools for Web-based training facilities with its mean value of 3.98 (S.D. = 0.93) and the minimal mean value was found on adequate computer sets provided in schools with its mean value of 3.79 (S.D. = 1.11).

12.	Policy factor affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 was found high with its mean value of 4.02 (S.D. = 0.83) and it was found that there was good support and promotion given by management levels for Web-based training with its high mean value of 4.14 (S.D. = 0.89). The second item was found on policy given by management levels to encourage participation in Web-based training with its high mean value of 4.09 (S.D. = 0.83) and the minimal mean value was found on budget allocated by schools for Web-based training with its mean value of 3.90 (S.D. = 0.99).

13.	Training result through Web-based training done by teachers under the Office of Secondary Education Service Area 30 was found high with its mean value of 4.03 (S.D. = 0.76). Individual items were clarified and were found that saving of time on travelling showed the highest value of its mean 4.26 (S.D. = 0.79). The second mean value was found on incomplexity in training because reviewing could be done as many times as required with its mean value of 4.21 (S.D. = 0.88). The minimal value was derived from studying the factor of imlimitation on time and place with its mean value of 3.81 (S.D. = 0.8).

14.	Results derived from analyzing relationship among important factors affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 were found that following variations reflected the results of Web-based training of teachers under the Office of Secondary Education Service Area 30 which had positive relationship with primary variations that could be imputs such as knowledge, attitude and skills and it had coefficient linear multiple regression = 0.633.

15.	Results derived from analyzing relationship between important factors affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 were found that the important factors affecting directly the Web-based training of teachers under the Office of Secondary Education Service Area 30 with its statistic variation at 0.05 which are knowledge (k) had Sig. value = 0.003; attitude (a) had Sig. value = 0.000 and skill (s) had Sig. value = 0.094. This could be concluded that 2 important factors which are knowledge and attitude result entirely the Web-based training of teachers under the Office of Secondary Education Service Area 30.

16.	Results derived from analyzing relationship between numeric factors affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 were found that following variation was the result of Web-based training of teachers under the Office of Secondary Education Service Area 30 with its positive relationship with primary factors that became numeric factors which were ages (ag), gender (sx), education (e) and experiences (ep) with its coefficient linear multiple regression of 0.343.

17.	Results derived from analyzing relationship between numeric factors affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 were found that there was statistic result shown at 0.05 of the numeric results of Web-based training of teachers under the Office of Secondary Education Service Area 30 and the statistic result was the numeric factors affecting the Web-based training of teachers under the Office of Secondary Education service are 30 with its Sig. value = 0.000; ages had its Sig. value = 0.042; gender (sx) had its Sig. value = 0.502; education (e) had its Sig. value = 0.409; and experience had its Sig. value = 0.000. It could be concluded that 2 numberic factors which were ages and experiences resulted the Web-based training of teachers under the Office of Secondary Education Service Area 30.

18.	Results derived from testing relationship between supportive factors affecting the Web-based training of teachers under the Office of Secondary Education Service Area 30 were found that following variations were the supportive factors which resulted the Web-based training of teachers under the Office of Secondary Education Service Area 30 and had its positive relationship with the primary variations which are supportive factors such as structural and policy factors and with its coefficient linear multiple regression of 0.58.Results derived from analyzing relationship between supportive factors affecting Web-based training of teachers under the Office of Secondary Education Service Area 30 were found that supportive factors resulted the Web-based training of teachers under the Office of Secondary Education Service Area 30 with its statistic value at 0.05 that could be allocated on

Structure (st) with its Sig. value = 0.957; and Policy (po) with its Sig. value = 0.000. This could be concluded that supportive factor based on policy affected directly the Web-based training of teachers under the Office of Secondary Education Service Area 30.

Conclusions and Discussion

From the study of factors affecting the Web-based training for teachers working for the Office of Secondary Education Service Area 30, these following results can be discussed: the achievement expected from the Web-based training of teachers under the Office of Secondary Education Service Area 30 has been in high level or at the mean level 4.03 (S.D. = 0.76). Because of this Web-based training, teachers who have been trained can freely learn things themselves everywhere all the time according to the statements made by Pratchayanan Nilsuk (2542: 84) and Sanrat Horpaisarn (2544: 95) that in each training, trainees have to be centralized to get new things directly. Trainees can also choose things to learn as flexibly and comfortably as they can with no limitation on time and location. They can review lessons and contents all the time and that can make trainees feel free and comfortable to learn.

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Factors related the Utilization of Instructional Media and Innovation of Nursing Instructors at Boromarajonani College of Nursing, Suphanburi, Thailand

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Abstract

Educational technology has been benefits for both educators and university students. However, most educators are lack of knowledge to utilize an instructional media and to produce innovation as instructional tools. In this research was aimed to explore the utilization of instructional media and innovation and to describe the factors related to the usage of instructional media and innovation of nursing instructors in Boromarajonani College of nursing, Suphanburi, Thailand. The purposive of 40 subjects were included in this study. The research shows that nursing instruction produced the instructional media and innovation once a year. Picture, graphics and multimedia projectors were the most often used by nursing instructors. There was a significant difference between the factors related to the utilization of instructional media and innovation. It was included the policy, resources (r= .335) and knowledge to produce instructional media and innovation   (r= .315). The recommendation of future research will be specifically focus on the appropriated technological model usage in nursing education.

Keywords: instructional media utilization, diffusion of innovation in nursing

Introduction

The rapid growth in educational and communication technology becomes one of ours instructional tools for educators. Back to the last ten decade, the overhead projector, transparency, CD-ROM and others Medias were used as instructional tools. Some technologies are still using in the university while some tools are obsolete. Because the changing in teaching method, most educators need to enhance their skills for the best effective teaching style to benefit students. Technologies are the potential tools for instructors to motivate and to engage their students in learning. For instance, it will help students improve their learning skills such as drills and practices, information inquiry, participatory learning, and enhancing their responsibilities. This is why educators need to know how to adapt the effective teaching tools for using in classroom. However, there are many factors influent the adoption and implementation of educational technology in nursing college because most nursing educators have least knowledge in educational and communication technology. They may think in different perspective than people who are in the education technology field. In addition, most educators need to develop the innovation to improve the effectiveness of teaching method in their area, instead of the only use instructional media. In order to success to adopt instructional media and to produce the innovation in nursing colleges, most nursing instructors need to accept the technology and innovation.

A review literature has been found the factors effected the instructors' usage of innovation in Kalasin province are knowledge, type of innovation, attitude and need toward innovation, and budget. Nongluk (1996) found the factors that affect the motivation of the instructional media production in English teachers are attitude. Also, Suvaree (2000) claimed that the effectiveness of instruction, convenient usage and producing, responsibilities and knowledge were effected the usage of media. In addition, Thitiya (2003) found that the factors affect the acceptance of instructional media usage are workload, need of training, supported materials, and guideline. In contrast, Woranat (2004) found that age and education level related to the usage of instructional media. Then, the main factors of his study were knowledge and the availability of media. Factors related the usage of instructional media usage in

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vocational education, Bangkok province were teaching experiences and supported materials. On the contrary, sex, age, education, knowledge of media usage, and attitude weren't related to the usage of media, Hathaichanok (2005).

Much research in recent year has focused on what factors effected the usage of instructional media and the results are inconsistent (Teerapong(1991); Patchamon(2003); Saroch(2004); Sudarut(2005); Orawan(2007); Atcharaporn (2008)). Also, most research has explored in different level of education such as the primary school, secondary school, vocational school, and university. In contrast, there is less research has been identified what factors related to utilization of instructional media and innovation in nursing education. Then, research need to be explored the limitations factors as barriers for adopting educational technology in nursing organization.

Methods

The purpose of this research study were to determine the factors related to the utilization of instructional media and innovation of nursing instructors at Boromarajonani college of nursing, Suphanburi, Thailand. The Independent variables were included three domains; the basics factors, the associated factors, the supported factors. The basics factors were sex, age, teaching experiences, workload and education. Also, the associated factors were knowledge to produce instructional media and innovation, attitude toward the production and usage of instructional media and innovation, the barrier to produce the instructional media. In addition, the supported factors were the policy and the supported material to produce the instructional media and innovation. Finally, the dependent variables were the utilization and usage of instructional media and innovation.

Setting and population
The target population of this study were 40 nursing instructors recruited from Suphanburi Nursing College in Thailand. Most of them are willing to participate in the study.

Instruments
The online questionnaires of the factors related the utilization of instructional media and innovation adopted in this study were included 6 sections; the basics information, Knowledge in producing and using of instructional media and innovation, attitude toward the utilization of instructional media and innovation, the barrier toward the utilization of instructional media and innovation, the policy and supported material to produce the instructional media and innovation, and the utilization of instructional media and innovation. The content validity was done by three experts in educational technology. Cronbach's reliability coefficient of this instrument was 0.79 when it was examined from several subjects who work in the related fields.

Procedure
Once the project was approved, the investigator asked the permission from the director of the Nursing College to collect data. Then the investigator coordinated with the faculty at the school of nursing to ask nursing instructors if they were interested in being research subjects. Once nursing instructors who were interested in this study were selected, the investigator sent information to participants to show them how to participate in this study. Before participate in this study, subjects have to agree term and condition as part of the research agreement.

Analysis
Data analysis was consisted of descriptive and inferential statistics. Descriptive statistics included the mean of the information on the questionnaire. To answer research question on what factors related the unitization of instructional media and innovation, the Pearson correlation was analysed.

Human subjects
Risk/Benefits
There are minimal risks related to completing the study. However, there were no unpleasant consequences to subjects. Subjects may find some questions distressing, but they can stop participating at any time. The benefits of this study are that nursing instructors can be able to identify factors related to the usage of educational technology in nursing.

Disclosure/Consent Process
When nursing instructors agree to be subjects, they can read the agreement of this study via an online instructional Web site. This study is voluntary, and there are no negative effects for the subjects if they decide not to participate in this study.

Confidentiality Assurances

All information on the research subjects are kept in a secure place. Data records of this study are kept until investigators finish data analysis.

Results

The results in this study are presented into seven sections; 1) Basics information, 2) Knowledge of innovation and instructional media production, 3) Attitude toward producing and using instructional media and innovation, 4) The barrier toward the instructional media and innovation production and usage, 5) The policy and supported materials to producing instructional media and innovation, 6) The instructional media and innovation usage, and 7) Factors related the utilization of instructional media and innovation. The details in each section can be described below.

1) Section 1 Basics information
   The age average of population is 37.70 years. The youngest and the oldest people are 23 and 68 years old in order. People who have the longest teaching experience are 34 years and the shortest of teaching experience is only one year. The mean of workload per week is 6.18 hours.

Table 1 Basics information by age, teaching experience and workload per week

Type of information	Mean	S.D	Min	Max
Age	37.70	8.77	23	68
Teaching experience	10.50	7.60	1	34
Workload (per week)	6.18	1.26	3	8

Table 2 Basics information by level of education and department

Type of information	Number(N)	Percentage (%)
Education level		
Bachelor Degree	6	15
Master Degree	32	80
Doctoral Degree	2	5
Type of Department		
Adult and aging	9	22.5
Community health nursing and	10	25
Community health nurse practitioner		
Basics Nursing	6	15
Obstetrics nursing	6	15
Pediatric nursing	5	12
Psychiatric and mental health nursing	4	10

The maximum number of education level are people who earn master degree (N=32) and the lowest level of education are doctoral degree (N=2). The community health nursing and health practitioner department are the highest number of people (N=10) and the lowest number of people is psychiatric and mental health nursing department (N=4).

2) Section 2 Knowledge of innovation and instructional media production
   The results show that the knowledge of usage instructional media innovation production in this setting is average. Most people have basics knowledge about what the instructional media and innovation are. However, most of them have less knowledge about how to evaluate the effectiveness of instructional media and innovation.

3) Attitude toward producing and using instructional media and innovation

The overall level of attitude toward producing and using instructional media and innovation in this study is high (Mean=4.30, SD=0.48). The instructional media and innovation can effectively help students learning (Mean=4.58, SD=0.50).The population perceive that instructional media and innovation make students understand what they teach (Mean=4.68, SD=0.47). In addition, it can be used as media to describe the difficulty contents. Moreover, the usage of instructional media and innovation makes classroom more interesting (Mean=4.63, SD=0.69)

4) The perceived barriers toward the instructional media and innovation production and usage
The results show that the overall score of the perceive barrier is average (Mean=3.05, 0.47). The population perceive that they don't even have more time to produce an innovation (Mean=3.88, SD=0.86) and they don't have professional staffs to guide them how to develop an instructional media and innovation (Mean=3.73, SD=0.96).

Table 3

Items	Mean	SD	Level
knowledge and experience	3.58	0.90	High
Staff	3.73	0.96	High
Budget	3.28	1.15	High
Supported materials	3.50	1.18	High
Motivation	3.45	0.85	High
time	3.88	0.76	High
Overall	3.45	0.85	High

5) The policy and supported materials to producing instructional media and innovation
The overall score of the policy and supported material to produce instructional media and innovation is high (Mean=3.78, SD=0.56). They perceive that nursing college has the policy to encourage instructors to develop instructional media and innovation because of its benefits for learning (Mean=4.25, SD=0.54).

6) The instructional media and innovation usage
The frequency of using instructional media for teaching is 1 to 5 times per week and nursing instructors develop an innovation one time a year. The overall score of using instructional media and innovation is high (Mean=3.90, SD=0.38). The types of instructional media usage are printed media and graphics, media projector, instructional media and innovation.

7) Factors related the utilization of instructional media and innovation

Table 4

Variable	2	3	4	5	6	7	8	9
1. Instructional media and innovation usage	-.94	-.147	-.217	-.007	.315*	.25	-.068	.335*
2. Age		.622*	-.153	.423**	.087	.125	.250	-.318*
3. Teaching experiences			-.435**	.528**	.075	.069	.036	-.204
4. Workload				-.017	.039	-.064	.079	-.132
5. Education level					.233	.005	.108	.082
6. Knowledge						.131	.040	.100
7. Attitude							0.54	.151
8. Perceived barriers								-.326*
9. Policy								

*p < .05, **p < .01

The table shows the results of factors related to the utilization of instructional media and innovation of nursing instructors in Boromarajonani College of nursing, Suphanburi, Thailand. The variable that has positive relation is the policy and supported materials ($r=.335$, $p < .05$). In addition, another variable that has a positive relation is knowledge to develop instructional media and innovation ($r=.315$, $p < .05$)

Conclusions and recommendations

The study shows the factors related the utilization of instructional media and innovation of nursing instructors at nursing college. The policy and supported materials, knowledge of instructional media and innovation are the positive relation to the media utilization. The organization policy is one of the factors that effected instructor's usage of instructional media (Warut, 2005). The results in this study are benefits for director of nursing college to encourage nursing instructors to develop innovation and instructional media using in classroom. Also, the executive directors may plan to employ professional staffs to adopt the innovation with nursing instructors. In addition, training nursing instructors how to develop and utilization of instructional media is very important for them to understand the advantage educational and communicational technology in nursing. The future research should explore the appropriated model using in nursing education and research should identify what kind of instructional media and innovation affected learning achievement in nursing students.

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Formation of Multilingual Educational System in Kazakhstan: Kazakh-Turkish High Schools

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Abstract

This paper investigates writing system reforms which occurred in Kazakhstan during the Soviet, Post Soviet periods and since the country gained independence. This paper will also focus on social and political factors of development and formation of current Kazakh writing system and will also deal with in-depth study of factual experience of Kazakh-Turkish High School system on providing education in four languages.

Keywords: multilingualism, trinity of languages, language policy,

INTRODUCTION

Kazakh (Қазақ тілі, Qazaq tili) is a language native to Kazakhstan, the Yili Kazakh Autonomous Prefecture in Western China, as well as Kazakh communities in Mongolia, Afghanistan, Tajikistan, Turkey, Turkmenistan, Uzbekistan, Iran, Russia, and the Ukraine. Kazakh is a member of Kipchack branch of Turkic languages, closely related to Tatar and Kyrgyz, and more distantly Modern Turkish, and has been influenced over centuries by Mongolian, Tajik-Persian, Arabic, and Russian.

Turkish is the most widely spoken and published on Turkic language and shares most of its grammar and base vocabulary with Kazakh. Establishing a working knowledge of Turkish will ease your transition into Kazakh, both in the sense of linguistic elements and better access to materials. It will also open you to the many bookshops across Turkey that carry a sizable array of books and resources on Turkic languages.

Russian, on the other hand, is the co-official language of Kazakhstan and is the inter-ethnic language of communication, education, and business throughout both Kazakhstan and the entire former Soviet Union where most Kazakh and other Turkic speakers live. Also, many Kazakh are more comfortable communicating in Russian in certain contexts (i.e. science, technology, news, etc.) and Kazakh in others (culture, music, daily life, etc.).

Moreover, Kazakh, like other Turkic languages has an extremely complex system of grammar and word formation:

- Kazakh has Subject Object Verb (SOV) sentence structure: Mary market-to went (Mary went to the market); John Frank-from old book bought. (John bought an old book from Frank).
- Kazakh observes agglutination: It strings suffixes together to form long words rich in meaning and syntax.

Kazakh observes vowel harmony: A system whereby vowels have to agree with one other based on complex sound/phonology rules.

After several alphabet and language reforms the Kazakh language has been modified both in terms of national writing system and phonologic rules.

Nomenclature

A   Chronological formation of Kazakh writing system

B   "Trinity of languages" state programme

C   Factual study of Kazakh-Turkish High School experience

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2. Chronological formation of Kazakh writing system

Kazakhstan is geographically located at the junction of European and Asian continents containing multiethnic and multicultural society respectively. It also possesses a peculiar place in Central Asia as being a host for a number of Turkic, Asian and European cultural and political organizations and events.

Historically, Kazakhs have changed the alphabet several times and used different types one after another, i.e., Old Turkic writing (VIII c. – XIII c.), Kazakh writing based on Arabic letters (XI c.), Proposals of Kazakh alphabet based on Russian graphics (XIX c.), (Arabic) alphabet designed by A. Baitursynuly (1912 - 1929), Latin alphabet (1930 - 1940) and Cyrillic based Kazakh writing (1940 -).

2.1   Old Turkic writing (VIII c. – XIII c.)

Memorials with Old Turkic writing have been found in several regions of Kazakhstan like Talas, Karakorym, Taraz, Pavlodar, Essyk, Shemonaikha, Ertys and were mostly used for grave stelae, border signs or graffiti of all sorts. Old Turkic writing is more-or-less alphabetic, and is inscribed from right to left in rows running from bottom to top (Amanzholov 1998).

2.2   Kazakh writing based on Arabic letters (XI c.)

This writing was adopted together with Islamic religion. People gained literacy in so called *madrassah* where religion-based teaching took place. Two types of writing were used later: Khadim (means *old*) – XVI-XVII, written literary works common for Turkic people, chronicles and documents with historical base belong to this type of writing. The second type of writing was called Jadid (means *new*) which was used in local newspapers of that period "Turkistan ualayati (means *Turkistan province*)" and "Dala ualayati (means *Steppe province*)" (Mamyrbekova 2001).

Kazakh was first written with the Arabic script during the 19th c. when a number of poets, educated in Islamic schools, incited revolt against Russia. Russia's response was to set up secular schools and devise a way of writing Kazakh with Cyrillic alphabet, which was not widely accepted. By 1917, the Arabic script was reintroduced, even in schools and local government. In 1927, Kazakh nationalist movement sprung up but was soon suppressed. At the same time the Arabic script was banned and the Latin alphabet was imposed for writing Kazakh. The Latin alphabet was in turn replaced by the Cyrillic alphabet in 1940 (Simon Ager, accessed March 14, 2013 at http://www.omniglot.com/writing/Kazakh.htm).

2.3   Proposals of Kazakh alphabet based on Russian graphics (XIX c.)

As the writing based on Arabic letters was used among Turkic people including Kazakh led to two different dimensions. Firstly, the Arabic letters represented Islamic religion; relatively it contradicted the *Tsarist* policy regime and later the Soviet regime consequently. Secondly, the Arabic letters were insufficient to represent some specific Kazakh sounds. This circumstance needed either further development of the current alphabet or alphabet change. The former was supported by some Russian linguists like: N.I. Ilminski (as in Table 1), V.V. Katarinski, A.E. Alektorov aiming at replacing the current alphabet by Cyrillic one with missionary purposes (Ilminski 1883). Relatively, the same idea was supported by Kazakh scholar Y. Altynsarin with educational purposes. The latter was supported by some of Kazakh scholars like A.Baitursynuly (1912-1929), who proposed the project of improved Kazakh writing based on Arabic letters.

Table 1. Kazakh alphabet based on Russian letters proposed by N.I. Ilminski (1876)

8 vowels	а (ä), é (е); ы, і; о, ö; у, ÿ,
19 consonants	п, б, м, w, т, д, н, ж, з, ш, с, р, л, j, ќ, ѓ, њ.

2.4   (Arabic) Alphabet designed by A. Baitursynuly (1912 - 1929)

A.Baitursynuly was the first Kazakh philologist who researched the sound system of Kazakh language and worked out his own alphabet on the basis of Arabic letters which had been used in Central Asia. He dedicated his valuable work to improve the Kazakh writing by means of clearing and protecting it from the influence of other

languages and designed synharmonic national alphabet as a result. At the same time A. Baitursynuly's writing was called Kazakh national writing as in Table 2. Later on, Arabic based letter was banned, even politically accused due to shift to Latin alphabet which impeded the progress of Kazakh national writing.

Table 2. A. Baitursynuly's alphabet (1912)

2.4 *Latin alphabet (1929 - 1940)*

All Central Asian countries including Kazakhstan used very similar languages using Arabic letters and the differences could be interpreted as language dialects rather than separate nationalities. Fierman (2009) claims that during the period of using Latin alphabet as the main writing system, Central Asian countries, including Azerbaijan but not Tajikistan had the tendency to replace Arabic and Persian borrowings by Turkic words.

New Kazakh Alphabet based on Latin alphabet was officially adopted in 1930 (Table 3).

Table 3. New Kazakh Alphabet based on Latin alphabet

Aa-ا	Bв-ب	Cc-ش	Çç-ج
Dd-د	Ee-ه	Əə-ٵ	Gg-گ
Ɋq-ع	Hh-ھ	Ii-ىٴ	Jj-ي
Kk-ك	Ll-ل	Mm-م	Nn-ن
Ŋŋ-ڭ	Oo-و	Өө-ٶو	Pp-پ
Qq-ق	Rr-ر	Ss-س	Tt-ت
Uu-ٷ	Vv-ۆ	Yy-ٸ	Zz-ز
Ьь-ى			

Year by year new words entered from Russian into Kazakh and initially all new words were spelled and pronounced according to Kazakh sound system, but then with the decision of Central Executive Committee the Russian words entered into Kazakh had to be spelled and pronounced genuinely as in Russian. This led to the entry of particular Cyrillic letters into writing system of Latin based Kazakh Alphabet. Additionally, (Sebba 2003) argues that

"trends toward closer relationships between the various Turkic-speaking groups - and particularly, links between the Turkic-speaking peoples of the USSR and Turkey itself – attracted suspicion in Moscow. The cultural link created by the simultaneous Latinisation of Turkey and Central Asian Communities of the USSR may have set alarm bells ringing in Moscow and turned the policy of the Communist Party in favour of Cyrillicisation, which followed almost as soon as Latinisation was complete." (page 4)

2.5   Cyrillic based Kazakh writing (1940 -)

Several reasons led to replacement of Latin alphabet by Cyrillic one:
- Prevent integration of the USSR Turkic people with the Republic of Turkey, which followed different ideology and policy;
- Accusation of the founders of Kazakh writings based on Arabic and Latin letters as the 'public enemy' (T. Shonanuly, K. Kemengerov, K. Zhubanov, E. Omarov, O. Zhandosuly, N. Torekulov);
- Necessity of forming one state (USSR), common state writing (Russian language and writing) of peoples under one capital city (Moscow);
- Mastery of new terms only through Russian language;
- Diversity of written orthography.

   Thus, Cyrillic based Kazakh writing was officially adopted upon improving its draft proposed by S. Amonzholov in 1940 (Table 4).

Table 4. Kazakh Cyrillic Alphabet.

Kazakh Cyrillic Alphabet					
А	Ә	Б	В	Г	Ғ	Д
Е	Ё	Ж	З	И	Й	К
Қ	Л	М	Н	Ң	О	Ө
П	Р	С	Т	У	Ұ	Ү
Ф	Х	Һ	Ц	Ч	Ш	Щ
Ъ	Ы	І	Ь	Э	Ю	Я

       Cyrillic alphabet has been used for more than 70 years in Kazakhstan. To certain extent the Kazakh language has been modified during this period with the impact of Russian language. Moreover, during the Soviet period the proportion of Kazakhs was not only less than a half of the overall population, but also the significant number of Kazakhs became Russian-speaking. As a result, the linguistic factor of the Cyrillic alphabet has led to weakening of the language and national identities of Kazakhs.

3. "Trinity of languages" state programme

   The number of native Kazakhs has increased significantly with the President Nursultan Nazarbayev's initiatives to encourage the return of Kazakhstanis living abroad to their home land since the country gained its independence (Smagulova 2008). The state language policy has also been discussed several times by the government and has been reflected in several state documents and papers. This has been considered separately in the national constitution and in the "Law on languages" (Smagulova 2008). Since 2007, a new dimension has taken its course in the state language policy which emphasizes "trinity in languages" issued as a project by Ministry of Culture, which considers using Kazakh, Russian and English languages as a medium of education in schools (Gaipov 2011). In this respect, 32 trial schools have been selected to adopt trilingual educational system. Since the adoption of "Trinity of languages" state program in 2007, it has widely been discussed in various domains like mass-media, conferences and other meetings of related experts. Respectively, though the system and strategy of tri-lingual education have not been specified in trial schools accurately, its framework has been proposed:
- The purpose is to form an individual who is able to communicate in Kazakh, Russian and English languages and is able to gain knowledge through these languages;
- Science subjects at trial schools have to be taught in English;
- Initially, the experienced science subject teachers from Kazakh-Turkish High Schools had to visit and cooperate with trial schools in order to share with their experiences;

- Kazakh, Russian and English languages are taught from the 1st Grade up to the 11th Grade in Kazakhstani Secondary Schools. Furthermore, Higher Education System is also considered to provide tri-lingual education, where students are given more opportunities to integrate with international educational institutions.

"Trinity of languages" state programme has been referred and emphasized in several official decrees and programmes. Particularly, "Functioning and developing languages in 2011-2020" state programme and the President Nursultan Nazarbayev's message to the people "Kazakhstan-2050" define the aims and goals of "Trinity of languages" state programme pragmatically.

4. Factual study of Kazakh-Turkish High School experience

Kazakh-Turkish High Schools (KTHSs) established in 1992 on the agreement of presidents of Turkish Republic Turgut Ozal and the Republic of Kazakhstan Nursultan Nazarbayev and consequently co-funded by Kazakhstani State and Turkish Foundation have been providing education in four languages: Kazakh, English, Russian and Turkish under the coordination of Kazakh-Turkish Educational Foundation (KATEV – Kazak-Türk Eğitim Vakfı). Currently, to the best of my knowledge 32 Kazakh-Turkish High Schools function in different regions of Kazakhstan. 19 of KTHSs are purely boys' classes, 7 KTHSs – purely for girls, 2 KTHSs – mixed (boys and girls together), 2 Nurorda International Schools (NISs) - mixed, 1 Kazakh-Turkish College of Economics (KTCE) - mixed and 1 Kazakh-Turkish Multi-profile College (KTMC) – mixed. 29 of KTHS educational establishments provide dormitories except for KTHS for girls in Astana and 2 NISs. Generally, pupils finishing the 6th Grade can apply to KTHSs and follow the admission procedure the rules of which was set by the Ministry of Education in 2010 (Ministry of Education order No: 399). Unlike standard KTHSs the primary school pupils can apply to NISs and can study for 11 years up to Higher Education level, whereas the former provide education from 7th to 11th Grades and takes 5 years. The KTCE and KTMC have different admission procedure from the other two types given that pupils who finished the 9th Grade can enter to this type of colleges.

4.1 Teaching process at Kazakh-Turkish High Schools

Due to its limited number of positions (places) pupils are selected on the basis of entrance examination's results, which is unusual occasion in terms of general secondary system of Kazakhstan. First of all, all applicants have to take examination which is consisted of 100 multiple-choice based questions which measure applicants' logical-thinking skills and language skills and abilities. The successful applicants are invited at the beginning of summer term vacation to stay at the dormitory of KTHS and study for a week. Math, Logics, Kazakh, English and Turkish are taught during the week, participants write daily quizzes and finally are interviewed by the admission board. In addition to classes, a monitor and group-advisor are appointed for each group in order to carry out social activities for participants, which give them opportunities to know more about participants' behaviour, skills, abilities and personal characteristic peculiarities. Depending on results of daily quizzes and the interview the successful pupils are selected. Afterwards, parents of successful applicants who were admitted are invited to KTHS to introduce them with its education system. The curriculum of KTHSs is prepared by KATEV and approved by Ministry of Education in the Republic of Kazakhstan. It is noticeable that there are two major languages distinguished in teaching two groups of subjects, i.e., science subjects are taught in English whereas social subjects are taught in Kazakh. Three significant points can be mentioned in this case, which are considered to be positive features of multilingual education:

1. Pupils acquaint with the second and third languages as medium of education at the age of twelve or thirteen where pupils build multilingual skills and knowledge on already formed first language identity;
2. The significant number of subjects are taught in the first language and provide the improvement of proficiency in first language which influence the positive development in second and third language acquisition (see Cummins, 1981);
3. The classification of subjects according to the language medium of instruction at KTHSs well matches with the '*content-driven language programmes*[1]' developed by Met (1998);

As far as pupils are admitted from different schools both Russian-medium and Kazakh-medium classes in the 7th Grade the classes are devoted to English, Turkish, Kazakh, Russian, and terminology studies on the second half

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[1] In these programmes, content is taught primarily or exclusively through the medium of the second language, and student mastery of content may share equal importance with the development of language proficiency (see Myriam Met - 1998).

of the year. The 7th Grade is likely the most important stage of education process both for pupils and their parents at KTHSs, because pupils have to stay in the dormitory and only at the weekends they go home as a rule. Moreover, 7-8 lessons are conducted a day, which seem to be a heavy load for pupils. However, if the education process taken as a whole and considered in details one may see how well the mental and physical development of pupils overlaps. Tutor and advisor appointed by the vice-principal for social affairs cooperatively provide guidance for pupils. Tutor is engaged mostly in dormitory and extra-curricular activities, and advisor deals with pupils' school achievements, meeting with parents, arranging additional lessons or office-hours in case pupils show low achievement.

As mentioned before, KATEV maintains a centralized coordination of educational process at all KTHSs. Textbooks are also selected by KATEV. Before the educational year starts either in June or August KATEV organizes training-educational seminar compulsory for all *rotation-based*[2] teachers for about 10 days. As a rule, the teachers are divided into groups due to the subjects they teach (E.g. Chemistry, Biology, English and others). The seminar programme is designed in a way that teachers exchange with their knowledge and experience, also professional teacher-trainers are invited for conducting sessions sometimes. Furthermore, all the teachers at KTHS take teachers' knowledge examination once a year which includes TKT (Teacher's knowledge test), Olympiad based questions, theory of education and the knowledge of English. During the educational process, 7th – 10th Grades pupils have to write *centralized test of knowledge (GDS)*[3] by the end of each quarter, as a result KATEV makes the list of GDS results and send it to KTHSs. By doing so, every KTHS compete with each other. The pupils who reach the absolute 1st place among all KTHSs in Republic are provided grants, and they are not charged the dormitory and meal fees. Similarly, the 11th Grade pupils have to write *Pre-Unified National Test (UHD)*[4] by the end of each quarter. The 7th-Grade pupils have to be successful in taking the *final test (baraj)*[5] in order to succeed to the 8th Grade, otherwise in case failure he / she has to retake the course in summer and test in its turn.

4.2 Scientific work at Kazakh-Turkish High Schools

Scientific Olympiads and projects gain high importance at KTHSs. A responsible Olympiad coordinator is appointed among teachers in every KTHS. Olympiad coordinator designs schedule for Olympiad preparation classes and self-study hours. KATEV sends *Pre-Olympiad Tests (ODS)*[6] in every two weeks and the Olympiad coordinator gives the exam to *Olympiad studying pupils*[7] . The results of Pre-Olympiad Tests are sent to KTHSs by KATEV in the form of charts listed from up to down based on results. The Olympiad studying pupils are motivated to complete both as among the peers in KTHS and among other KTHSs. Preparation programme for Olympiad is fixed in academic calendar of KTHSs and held all year round. Eventually, School subject Olympiads are organized by Regional Educational Departments throughout the secondary and high schools all over the Kazakhstan in the 3rd quarter. Pupils from KTHSs usually demonstrate high level of achievement. KATEV, in its turn uses the results of these Olympiads as one of the indicator of achievements among KTHSs.

The successful winners of regional Olympiad are promoted to the next stage of the Olympiad, which is called Republican Scientific Olympiad. In most cases among the participants, KTHSs' pupils contest with each other. The chart of Republican Scientific Olympiads are given from 1996 to 2009 in the *Figure 1*.

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[2] Rotation-based – those teachers who are employed by KATEV with terms of rotation and given position at KTHSs.
[3] GDS – (GenelDeneme Sınavı) from Turkish means 'General testing exam '.
[4] ÜHD – (ÜniversiteHazırlıkDeneme) from Turkish it means 'Preparation Test for University Entrance Examination'.
[5] Baraj – From Turkish means minimum required level of test.
[6] ODS (OlimpyatDenemeSınavı) – From Turkish means 'Pre-Olympiad Test'.
[7] Pupils selected for specific subject Olympiad due to his / her certain background, interests, skills and abilities.

Figure 1. Republican Scientific Olympiad Awards (1996-2009)
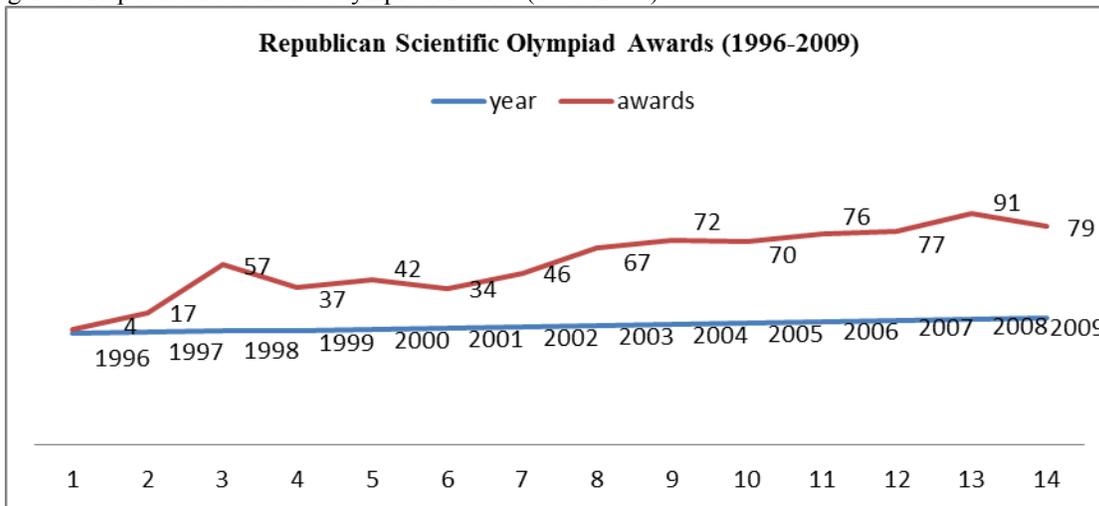
The above graphics shows the process of 14 years in which the success of KTHSs in Scientific Olympiads particularly organized by the Ministry of Education grows gradually with some ups and downs in short-term periods of timeline but it seems to maintain a stable progress in respect to long-term period. On the other hand, *Figure 2* shows the winners of World and International Scientific Olympiads from KTHSs.

Figure 2. KTHSs' International and World Scientific Olympiad Awards (1995-2009)
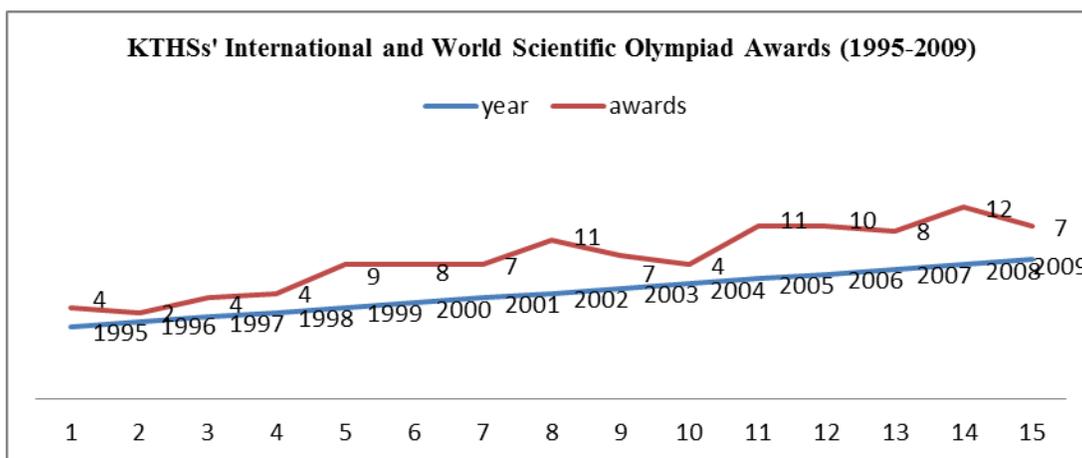
The given graphics above shows the achievements of KTHSs in International and World Scientific Olympiads representing the Republic of Kazakhstan in an international arena. Unlike the results of Republican Scientific Olympiads in the World and International Scientific Olympiads the process neither is more stable, which reflects nor decrease neither increase in terms of progress for the last 10 years period. This can be explained by the fact that the number of finalists promoted to participate the World and International Scientific Olympiads are both small and limited which may result in static range of insignificant changes in the process.

5. Conclusion

The goal of this paper has been to provide separate study of Kazakh alphabets used one after another at different periods of time. Social, political and linguistic factors of changing and using several alphabets have been discussed. As a result, Kazakh sound system has undergone significant modifications due to several changes of alphabets. Because, different types of letters have been insufficient to present Kazakh peculiar sounds. This paper has also focused on factual study of KTHSs, attempting to describe total educational process at KTHSs as a whole and with

some focus on its peculiar multilingual medium of instruction. Since, Kazakhstani Government has decided to develop multilingual educational system and set up multilingual schools the role of KTHSs needs consideration. However, this paper reflects more facts about peculiar features of KTHSs and it is essential to extend the scope of the research involving the pupils, parents and teachers at KTHSs in order to maintain more specific focuses on its characteristic points and aspects. Finally, the ideas discussed in this paper should serve as the initial step for further research of developing language and alphabet by improving state language policy and educational system in the context of globalization.

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Gender and cultural differences in attitudes toward Schooling usage and Personal usage of Computers: A study of Malaysia and Jordan

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17. Abstract

The present study aimed at exploring the overall Malaysian and Jordanian teachers attitudes toward schooling usage and personal usage of computers, and testing The following hypotheses: (1) Teachers attitudes toward schooling usage and personal usage of computers would not be significantly related to gender, (2) Teachers attitudes toward schooling usage and personal usage of computers would not be significantly related to the culture (country), and (3) Teachers attitudes toward schooling usage and personal usage of computers would not be significantly related to the interaction between gender and culture. A total of 369 Malaysian and 342 Jordanian English teachers were participated in the present study. Computer Attitude Scale (CAS) developed by Troutman (1991) was adapted and validated for both countries. The means suggest that participants have high level perceptions about the personal usage and schooling usage of computers. Furthermore, teachers in both sexes and from different countries have high levels of perceptions toward personal usage and schooling usage of computers. For Malaysian samples, MANOVA results indicated that: males and females are similar in their attitudes toward the personal usage and schooling usage of computers. For Jordanian samples, MANOVA results indicated that: males and females are similar in their attitudes toward the personal usage and schooling usage of computers. Finally, Malaysian and Jordanian teachers were similar in their attitudes toward schooling usage and personal usage of computers. In conclusion, attitudes toward computer usage are unrelated to culture and gender.
18.

Keywords: Attitudes, Jordanian teachers, Malaysian teachers, Personal usage, Schooling usage

Introduction

Cross-cultural comparisons are needed to give a better understanding of teacher's attitudes toward (Information and Communication Technology) ICT usage in different national cultural backgrounds. Despite the economic agenda driving the adoption of the ICT, little cross-cultural educational research has been done to explore attitudes toward ICT usage. Most research on gender differences in the Internet or ICT usage has been done in Western countries. But, if gender is a social construct one cannot presume that it will be express in the same way everywhere (Li & Kirkup, 2007, p. 302). The ICT may be a global technology but teachers work in local/national contexts, and have differences in other aspects of their identities; one of the most important of which is gender identity. Research with young adult's shows that information technology, as an activity, was found to be male stereotyped. Women are less likely to be attracted to computer courses and to a computer-related career (Li &Kirkup, 2007).

Earlier findings identify the symbiotic relationship of technology (ICTs) and society. The creation of a technology does not occur in a vacuum but instead encompasses social and cultural phenomena (Davies, 1988, p. 163). Collis (1999) argues that culture is a critical factor in influencing people's acceptance and use of Internet-based learning resources. The earlier findings suggest that, in different cultures, people might have different perceptions about ICT (Li & Kirkup, 2007; Brosnan & Lee, 1998; Makrakis, 1992; Martin, Heller, & Mahmoud, 1992; Omar, 1992). For instance, Li and Kirkup (2007) found that attitudes toward Internet usage between Chinese and British students were cultural and gender related. Brosnan and Lee (1998) indicated those students attitudes

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toward computers and their usage of them were cultural related. In another study, Makrakis (1992) confirmed that attitudes toward computers are cultural related. Furthermore, Omar (1992) found that students in the United States held more positive attitudes to computers than their Kuwait counterparts. Martin et al. (1992) found that children from American and Soviet had similar positive attitudes to computers.

Gender differences in attitudes toward computers usage have been well documented. Most research on gender differences of ICT usage has been done in Western countries (Li &Kirkup, 2007). But, if gender is a social construct one cannot presume that it will be expressed in the same way everywhere. Therefore studies of gender differences in attitudes toward ICT usage in different cultural contexts need to be carried out. This paper reports research carried out with Malaysian and Jordanian teachers, which investigated their attitudes toward computers, to explore what, if any, gender and culture differences were observed between the two countries/cultures. The teachers in these two countries have been taught in different educational systems, live in different political systems, speak different languages, and have different views on the value of ICTs. But how national cultures influence teacher attitudes toward computer usage needs to be explained theoretically and investigated systematically. In this paper, we hypnotized that:

1. Teacher's attitudes toward computer usage would not be related to gender.
2. Teacher's attitudes toward computer usage would not be related to culture.
3. Teacher's attitudes toward computer usage would not be related to the interaction between gender and culture.

2. Methodology
2.1 Samples
A total of 369 Malaysian English teachers and 342 Jordanian English teachers were participated in the present study. Jordanian sample includes 113 male and 229 female; primary teachers (46%) and secondary teachers (54%); bachelor holders (67%) and master degree holders (33%). Malaysian sample includes 114 male and 247 female; primary teachers (69%) and secondary teachers (31%); bachelor holders (59%) and master degree holders (41%). Table 1 shows samples distribution by country, gender, stage level, and qualification.

Table 1. Samples distribution by country, gender, stage, and qualification

			No. 0f students	Percentage
	Gender	Male	113	33
		Female	229	67
Jordanian	Stage	Primary	157	46
		Secondary	185	54
	Qualification	Bachelor	228	67
		Master	114	33
	Gender	Male	122	33
		Female	247	67
Malaysian	Stage	Primary	256	69
		Secondary	113	31
	Qualification	Bachelor	219	59
		Master	150	41
Total			**711**	**100**

2.2 Instruments

Computer Attitude Scale (CAS) developed by Troutman (1991) was adapted to Jordanian and Malaysian environments. The scale compressed 51 statements representing attitude towards computers usage. Participants responded to the CAS using a five-point scale of strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). Furthermore, the negative items were reversed coded. Computer Attitude Scale (CAS) includes two subscales**:**

2.2.1 Attitude toward Personal Use of Computers (ATPUC) Subscale

The ATPUC subscale to measure in-service teachers' attitudes toward personal usage of computers. This subscale compressed 19 items to measure in-service teachers' feelings towards computers, teachers' beliefs about the usefulness of computers in their life, perceived comfort level or difficulty of using computers, and behavioural intentions and actions with respect to computers. As such, the possible marks range is from 19 to 95 with a mean of 57. The reliability of this subscale is 0.79 as reported by its authors and calculated by split-half method and

corrected by Spearman Brown Prophecy Formula. The inner consistency coefficient determined by the alpha correlation is 0.89.

2.2.2 Attitudes toward Schooling Use of Computers (ATSUC) Subscale

The ATSUC subscale compressed 32 items to measure teachers' attitudes toward the usefulness of computers in school environments, the feasibility of using computers in instruction and management, affective outcomes of computers in schooling, and the dependence of society on a computer-literate citizenry. The possible marks range is 32 to 160 with a mean of 96. The reliability of this subscale is 0.92 as reported by its authors and calculated by split-half method and corrected by Spearman Brown Prophecy Formula. The inner consistency coefficient determined by the alpha correlation is 087. Also**,** the inner consistency coefficient of CAS determined by the alpha correlation is .91.

Thus, the results show that the alpha coefficients for all subscales were significantly high, suggesting that the internal reliability index of the two constructs and the entire scale is adequate. In addition, the results of inter correlations showed that each subscale correlates significantly with another subscale and the entire scale. According to Harrison, Seeman, and Behm (1991), this result provides at least further evidence for the consistency of the entire scale and for the convergent validity of each subscale. All subscales correlate significantly at the $p < .05$ level and the coefficients range from 0.39 to .59. This suggests that the two constructs (i.e. schooling use and personal use) were fairly independent to be used as independent variables. This allows us to examine the computer attitudes of students by each subscale.

3. Results

Overall profile of the Jordanian teachers attitudes towards computer were measured in terms of personal and schooling use. The mean scores and standard deviations were used to explain the participant's attitudes profile. As can be seen in Table 2, the results of the descriptive statistics indicated that Jordanian teachers attitudes towards computer as indicated by the mean scores is 3.74 for personal use and 3.70 for schooling use. The means suggest that participants have high level perceptions of the personal and schooling use of computer.

Overall profile of Malaysian teachers attitudes towards computer were measured in terms of the personal and schooling use. As can be seen in Table 3, the results of the descriptive statistics indicated that Malaysian teachers attitudes towards computer as indicated by the mean scores is 3.73 for personal use and 3.68 for schooling use. The means suggest that participants have high level perceptions of the personal and schooling use of computer.

Table 2. Descriptive statistics of Jordanian teacher's attitudes towards personal and schooling usage of computer

Gender			Schooling	Personal
	Male	Mean	3.75	3.79
		S.D	13.17	11.19
	Female	Mean	3.67	3.72
		S.D	16.41	11.27
Total		Mean	3.70	3.74
		S.D	15.44	11.25

Table 3. Descriptive statistics of Malaysian teacher's attitudes towards personal and schooling usage of computer

Gender			Schooling	Personal
Gender	Male	Mean	3.75	3.77
		S.D	13.59	10.99
	Female	Mean	3.64	3.73
		S.D	14.14	11.18
Total		Mean	3.68	3.73
		S.D	14.15	11.18

A multivariate analysis was conducted to investigate the effects of gender on Jordanian teacher's attitudes towards computer usage. In order to evaluate multivariate significance, Wilks Lambda statistic was used. The results indicated no statistically significant effect of gender on the combined dependent variables (F(4, 339)= .98, Wilks lambda= .99. p= .38).

In order to investigate on which dependent variables Jordanian participants in different group of gender differed in their attitudes towards computer use, multivariate analyses of variance between groups was conducted. Table 4 shows the summary results of MANOVA analysis. As we seen in table 4 males and females are similar in

their attitudes toward schooling usage of computer $F(1, 340)= 1.93$, $p>0.05$; and personal usage of computer $F(1, 340)= 1.08$, $p>0.05$.

Table 4. Summary Results of MANOVA analysis of Jordanian teachers attitudes toward computer usage by gender

Source	Component	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	Schooling	459.00	1	459.33	1.93	.17
	Personal	136.80	1	136.80	1.08	.30

A multivariate analysis was conducted to investigate the effects of gender on Malaysian teacher's attitudes towards computer usage. In order to evaluate multivariate significance, Wilks Lambda statistic was used. The results indicated no statistically significant effect of gender on the combined dependent variables ($F(2, 366)= 2.86$, Wilks lambda= .99. $p= .06$).

In order to investigate on which dependent variables Malaysian participants in different group of gender differed in their attitudes towards computer use, multivariate analyses of variance between groups was conducted. Table 5 shows the summary results of MANOVA analysis. As we seen in Table 5 males and females are similar in their attitudes toward schooling usage of computer $F(1, 366)= .88$, $p>0.05$, personal usage of computer $F(1, 366)= .87$, $p>0.05$).

Table 5. Summary Results of MANOVA analysis of Malaysian teachers attitudes toward computer usage by gender

Source	Component	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	Schooling	110.69	1	110.69	.88	.36
	Personal	108.51	1	108.51	.87	.35

A multivariate analysis was conducted to investigate the effect of teacher's culture (country) on their attitudes toward computer usage. The results indicated that males teachers in both countries are similar on computer usage *(F (2, 708) = .05$, Wilks lambda = 1.00, $p=.95$)*; females teachers in both countries are similar on computer usage ($F (2, 708) = 1.57$, Wilks lambda = 1.00, $p=.21$). Furthermore, the results indicated that no significant effect of the interaction between country and gender on teachers attitudes towards computer usage *(F (2, 708) = .24$, Wilks lambda = 1.00, $p=.79$)*.

In order to investigate on which dependent variables Malaysian and Jordanian teachers in different group of gender differed in their attitudes towards computer usage, multivariate analyses of variance was conducted. Table 6 shows the summary results of MANOVA analysis. As we seen in Table 6, males from both countries are similar on their attitudes toward schooling usage *(F (1, 709) = .00$, $p>.05$)* and personal usage *(F (1, 709) = .08$, $p>.05$)*; females from both countries are similar on their attitudes toward schooling usage *(F (1, 709) = 2.92$, $p>.05$)* and personal usage *(F (1, 709) = 2.28$, $p>.05$)*. Teachers from both countries are similar on their attitudes toward schooling usage *(F (1, 709) = .22$, $p>.05$)* and personal usage *(F (1, 709) = .12$, $p>.05$)*. Results revealed that no significant effect for the interaction between gender and country on teachers attitudes toward schooling usage *(F (1, 709) = .20$, $p>.05$)* and personal usage *(F (1, 709) = .01$, $p>.05$)*.

Table 6. Summary Results of MANOVA Analysis to compare between Malaysian and Jordanian teachers attitudes toward computer.

Source	Component	Type III Sum of Squares	df	Mean Square	F	Sig.
Male (both countries)	Schooling	.07	1	.07	.00	.99
	Personal	9.37	1	9.37	.08	.78
Female (both countries)	Schooling	720.42	1	720.42	2.92	.09
	Personal	313.62	1	313.62	2.28	.13
Country	Schooling	48.36	1	48.36	.22	.64
	Personal	14.49	1	14.49	.12	.73
Gender*Country	Schooling	42.71	1	42.71	.20	.66
	Personal	1.45	1	1.45	.01	.92

4. Discussion

In general, teachers from both countries hold positive attitudes toward personal and schooling usage of computers. The overall positive level of computer attitudes could be attributed to the availability and accessibility to ICT given to teachers in both countries. Moreover, the Ministry of Education (MOE) in both countries has given approval to implement ICT in education. Therefore, the two governments have facilitated computer integration in schools to improve the usefulness of the teacher's education on a personal and national level. Implementing ICT in ways that may have shaped their ICT attitudes in a positive direction, and contributed towards increasing home computer ownership among them, which could have promoted greater opportunities with ICT (Teo, 2008).

Moreover, the reason for these high attitudes toward computer usage can be attributed to high usage of the computer and its various applications in instruction and being assigned homework and various tasks requiring computer usage. The moderate emotional response mean scores for participants were indicative that they were likely to be less anxious about future usage of the Internet (Abedalaziz, Jamaluddin, & Chin, 2013).

Further, results revealed that Malaysian and Jordanian teacher's attitudes toward computer usage are unrelated to gender. These findings are consistent with the earlier studies (Abedalaziz, Jamaluddin, & Chin; Teo, 2008; Cavas et. al, 2009). Moreover, North and Noyes (2002) felt that increased usage of computers for teaching and learning in schools has worked against the development of gender differences. Contrary to the findings of these studies, previous studies reporting sex related differences in attitudes toward computer (Adebowale et. al., 2010; Sainz et. al., 2010; Avraham, 2005; Graff, 2003; Brosnan & Lee, 1998**;** Shashaani, 1993).

Further, results indicate that teacher's attitudes toward computer usage are unrelated to culture and to the interaction between gender and culture. This is expected as the respondents were teachers and their search in the Internet would have been related to the fulfilment of their educational tasks.

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13th International Educational Technology Conference

Gender Equality in Online Learning: The Case of UP Open University

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Abstract

In line with its mandate to provide wider access to quality higher education, the UP Open University takes full advantage of the use of web-based technologies as tools for teaching and learning. It introduced online tutorials in the delivery of content in 2001 as means of providing academic support to its students. In recent years, the UPOU utilizes the modular object oriented dynamic learning environment (MOODLE) as its learning management system thus making teaching and learning at UPOU fully online. This paper examined the gender equality among students enrolled in the UP Open University online vis-à-vis the introduction of online learning. A five-year enrolment trend (2006-2011) was analyzed and presented in graphs to compare the enrolment of male and female students. Results showed that there is a steady increase in enrolment in most UPOU programs which could be attributed to the growing popularity of online learning and distance education among Filipino students. Data further showed that female enrolment is greater than its male counterparts in the fields of education, communication, health and management sciences. Males, on the other hand, dominate in IT-related programs. This study concludes that whilst female constitutes greater share in the enrolment (63%), there is clear indication that online learning appeals to both genders. With the increasing literacy and access to web-based applications that are gender-neutral, online learning is expected to gain more recognition as an alternative mode of education in the years to come.

Keywords: online learning; gender equality; ICT

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1. INTRODUCTION

With the introduction of internet two decades ago, ICT-related activities were predominated by males. Not only are males more interested in ICT, numerous research findings likewise illustrated that males were heavier users of computers, had positive attitudes about computers and thus performed better than females in ICT literacy (Herring 2001 cited in Reinen and Plomp 1993; Volman and Eck, 2001). During those years, various studies further revealed that there was a significant disparity in terms of access and technology literacy in favor of males. In the 1990s, females were at first diffident about using the computer and they were reluctant to learn the use of the internet. However, the expansion and commercialization of internet made it possible for this technology to be less intimidating and easier to use for females Nevertheless, creation and administration of the web continued to be the male's dominion as they were the technically-inclined individuals whereas females as low-level users of technology (Herring, 2001).

The male's predominance over the computer and the internet had greatly declined in the recent years with more and more females gaining greater interest in ICT activities. Thus, gender inequality in terms of access and technology literacy had diminished to a great extent as these new technologies become an indispensable aspect of learning, work and everyday life. Over the years, these differences have slowly and entirely ceased to exist.

Herring (2001) noted that the internet promoted greater gender equality and became instrumental for bringing women online in the mid 1990s. She added that internet suits the female because it is "clean, safe and can be used indoors". With the emergence of the web and email technologies – the web as a source of information and email as a medium of communication, have captured the interest of women because of their increasing practical significance in computer supported learning (Gunn, 2003). Communicating online, Gunn observed that women tend to be more collaborative and intimate, while men are more of the confrontational type. Because of this inherent communication style of females, they are more likely to develop interpersonal relationship online.

Studies made by Markauskaite (2006) revealed that while males have more experience with ICT, there were no significant gender differences in terms of ICT literacy and there was no apparent disparity in students' participation in online learning for both genders. Evidently, the gap between male and female students was the level of

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confidence about their technical capability with males unsurprisingly more confident than their female counterparts. This could be attributed to the fact that females spent lesser time in computer activities than males did. In terms of time spent on the web and the computer, a case study conducted by Gunn (2003) reported that women did not have "priority access" to the computer at home. Further studies revealed that males spend more time in computer use and put study as one of their priorities.

More recent studies conveyed that the gap between the number of male and female online has greatly decreased with more women taking advantage the Internet as a mode of communication. Internet has been described as an electronic meeting place where individuals can meet equally regardless of gender (Monteith, 2002). As internet becomes a balanced and neutral environment, Herring (2001) projected that the number of females who goes online will continue to increase thus giving them more power not merely in terms of number but in technical facet as well that will shape the nature and uses of the internet with women not just users but as administrators as well.

To assume that the Internet has the ability to create gender equality is parallel to saying that men and women are equal offline (Herring, 2001). Monteith (2002) predicts that "gender issues in cyberspace are likely to persist as long as they also exist offline"

1.1 ONLINE LEARNING

Due to family and work commitments, students find it difficult to pursue a degree via the conventional mode of learning. Internet-based instruction is gaining recognition as an alternative mode of learning. Online learning addresses the demand to provide education to those who could no longer be accommodated in campus due to limited facilities and physical resources. There is a seemingly growing demand for online learning in the past years which was also brought about by the rising development in web-based technologies. Online learning also offers flexibility to students to study on their own pace and space as contrasted to the traditional classes.

More significantly, online learning provides equal opportunities to all students. Jolliffe, Ritter and Stevens (2001) described web-based learning as the "delivery of and access to a coordinated collection of learning materials over electronic medium". Online learning or web based learning makes use of a web-server to deliver the materials, a browser to access them and RP/IP and HTTP protocols to mediate the exchange.

Jolliffe, Ritter and Stevens (2001) also mentioned that online learning takes place in both synchronous and asynchronous environment. Communication between facilitator and learners happens at different times in asynchronous environment while synchronous communication takes place in real time such as video conferencing.

Recent studies showed a growing number of females participating in online learning. According to studies, females tend to approach learning in a more "connected ways" where collaboration is emphasized over competition. This connected learning style gives more importance to "relationships, empathy and careful listening" (Monteith, 2002). Whereas Grossman and Grossman (1994) noted that while females prefer directions and working with people, males prefer learning environment which allows them to work independently. This gives females the advantage to become more adept with online learning where collaborative learning is encouraged.

Further studies revealed that the evident gap between male and female students was the level of confidence about their technical capability with males unsurprisingly more confident than their female counterparts. Markauskaite (2006) observed that females manifested anxiety and less confidence about their ICT competencies. It is important to some extent that online learning institutions deal with this ICT –related gender inequality which is rooted basically from the difference in characteristics than the gender per se (Markauskaite, 2006). Aside from offering equal access to computer, it is essential for online learning institutions to provide both male and females students adequate and effective support mechanisms to assist both genders become successful online learners.

1.2 UP OPEN UNIVERSITY

The UP Open University is the fifth autonomous university of the University of the Philippines System. Established in 23 February 1995, it is mandated to provide wider access to quality higher education. UPOU offers baccalaureate and post-baccalaureate degree programs and non-formal courses by distance education. It contributes towards upgrading the quality of educational system of the country by developing, testing and utilizing innovative instructional materials and technology, and sharing these with other colleges and universities through cooperative programs.

As an open and distance learning institution UPOU have maximized the power of web-based technologies for teaching and learning, as significant tools for the teaching and learning process. In 2001, UPOU introduced the online tutorial in its course delivery as an alternative to face to face tutorials in the learning centers. Recently, UPOU makes use of a free source elearning software - the MOODLE (Modular Object-Oriented Dynamic Learning

Environment) as its learning management system. MyPortal is the university's virtual classroom which allows UPOU students and teachers to interact online through discussion boards and chat rooms and submit assignments online.

Although UPOU adopted the online mode of course delivery, the UPOU learning centers continue to provide administrative support to the learners. These centers, equipped with networked computers, serve the learners by providing them access to computers and web technologies.

2. METHODS

This paper examined the gender equality among students enrolled in the UP Open University online vis-à-vis the introduction of online learning. A five-year enrolment trend – First Semester AY 2006-2007 to Second Semester 2011-2012 was analyzed and presented in graphs to compare the enrolment of male and female students.

For easier reference, the UPOU programs were grouped into six academic fields: Liberal Arts, Communication, Teacher Education, Management Sciences, Information Technology and Health Sciences. The programs under each field are presented in Table 1. Enrolment in each field was also analyzed in relation to male-female ratio.

Liberal Arts	Communication	Teacher Education	Management Sciences	Information Technology	Health Sciences
Associate in Arts	Master of Development Communication	Diploma in Language and Literacy Education	Diploma in Research and Development Management	Bachelor of Arts in Multimedia Studies	Master of Arts in Nursing
	Doctor of Communication	Diploma in Mathematics	Diploma in Environment and Natural Resources Management	Diploma in Computer Science	Master of Hospital Administration
		Diploma in Social Studies Education	Master of Environment and Natural Resources Management	Master of Information Systems	Master of Public Health
		Diploma in Science Teaching	Master of Public Management		
		Master or Arts in Education			
		Master of Distance Education			
		PhD In Education			
		Professional Teaching Certification			

Table 1. UPOU Programs Under Each Field of Study

The only one program under the Liberal Arts, the Associate in Arts program is the first pre-baccalaureate degree offered by UPOU. AA prepares individuals to pursue a bachelor's degree, whether in the sciences or the arts. It was first offered in the First Semester AY 1998-1999.

There are eight teacher educations programs offered by the university. Since its founding in 1995, one of UPOU's main thrusts is to uplift the quality of education in the country by training elementary and secondary school teachers. UPOU has inked partnership with institutions and individuals to provide scholarship to those who are enrolled in these programs.

Both AA and teacher education programs are offered by the Faculty of Education.

The management and health science programs are offered by the Faculty of Management and Development Studies. The management sciences filed has four programs currently offered primarily focused on research, environment and public management disciplines while three are health sciences programs including the nursing program which is one of the programs of UPOU with high enrolment every term.

The Faculty of Information and Communication Studies, on the other hand, is responsible for the offering of communication and IT-related programs. As a cyber university, the UPOU takes in pride in offering IT related programs that cater to students who are in the undergraduate, diploma and master's levels.

3. RESULTS AND DISCUSSION
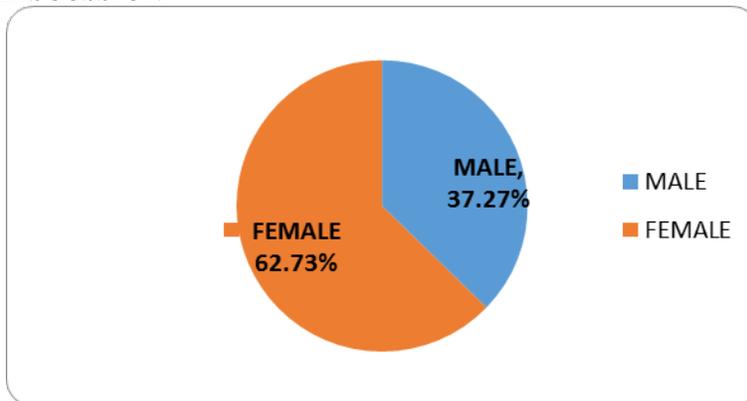
Figure 1: Enrolment Distribution by Gender, First Semester 2006-2007 to Second Semester 2011-2012

Figure 1 shows that more females (62.73%) had enrolled in various UPOU programs than males (37.27%). The results support the claims of Herring (2001) that the number of females online will continue to escalate. Another factor that could be attributed to this is the number of teacher education programs offered by the university. Currently there are eight programs under the teacher education category and majority of those enrolled in this field are females as shown in Figure 2.
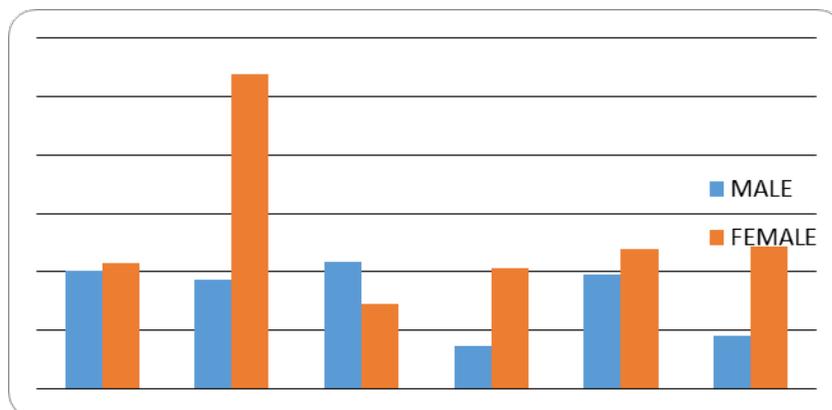
Figure 2: Enrolment by Field, First Semester AY 2006-2007 to Second Semester AY 2011-2012

It appears that in almost all UPOU programs, females are dominant both in terms of enrolment by field (Figure 2) and enrolment per term (Figure 3). With the exemption of information technology, females dominate in almost all fields of study. Recent researches reveal that there is an increasing number of females who are becoming interested in computer and internet. The results also validate the pioneering research on internet usage in the Philippines which reveals that there are more women online than men.
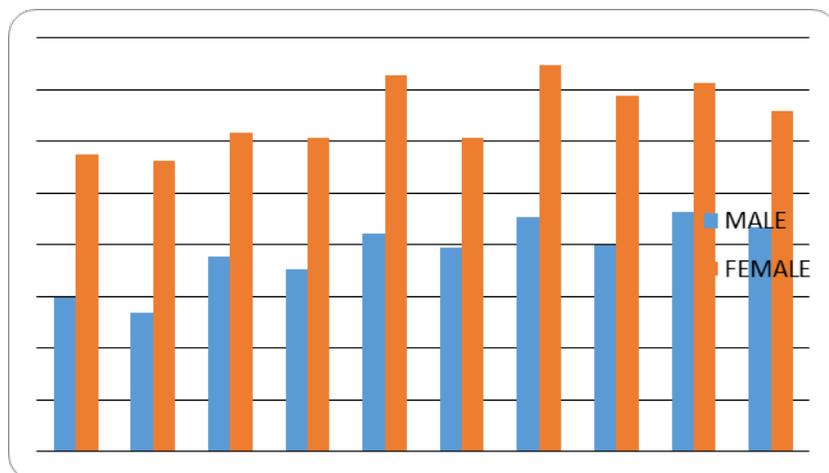
Figure 3. Five-year Enrolment Trend, First Semester AY 2006-2007 to Second Semester AY 2011-2012

Figure 3 further shows that female enrolment is consistently higher than male enrolment in the period of analysis though both genders showed an increasing trend throughout the five-year period. Female enrolment registered the 1,000 mark while male only reached the 600-800 mark in enrolment. The highest female enrolment of 1,498 is recorded in the First Semester AY 2009-2010.

The succeeding sections of this study present the analysis of the enrolment trend by gender through enrolment comparisons of the different programs offered by UPOU.
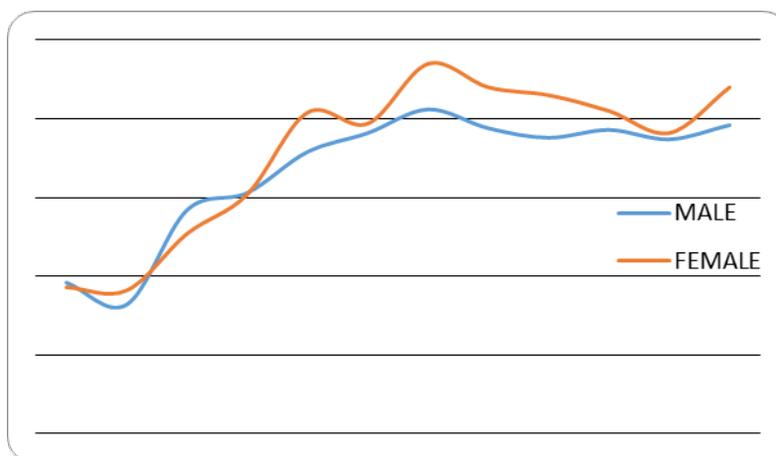
Figure 4. Enrolment Trend in Liberal Arts (AA) Program by Gender, First Semester AY 2006-2007 to Second Semester 2011-2012

Figure 4 shows that the AA program is slightly dominated by male students during the first semester, AY 2006-2007, and 2007-2008. However, it is dominated by females during the second semesters of the said period, and had been consistently dominated by females in the last four academic years. Interestingly, the program has shown as increasing enrolment for both male and female students throughout the period of analysis. This could be attributed to the growing popularity of distance education and online learning especially to individuals who have not yet completed an undergraduate degree but are already in the work place. During these years, AA is the only undergraduate program offered by UPOU.
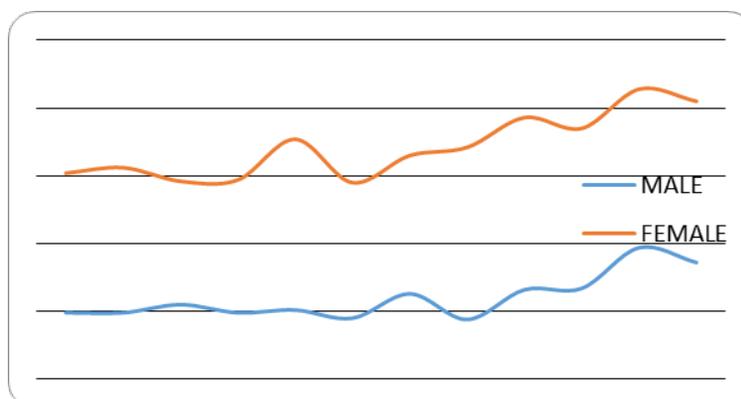
Figure 5. Enrolment Trend in Communication Programs by Gender, First Semester AY 2006-2007 to Second Semester 2011-2012

The graphs in Figure 5 reveals that there is a significant discrepancy in the enrolment of male and female in communication programs. Female are consistently dominating the student population from 2006-2011. The graphs also show a slightly increasing trend in the enrolment. The slight increase in 2011 enrolment was a result of the offering of the Doctor of Communication program, which further reinforces the enrolment in the communication field. It is interesting to note that there are recent studies conducted in the Philippines that show that females are getting more technologically-savvy by showcasing their communication skills through internet blogging. According to LiveJournal, 68% of the bloggers in the Philippine are females. The same journal notes that the Philippines ranks 7th among the top 15 countries where blog hosting is popularly used.
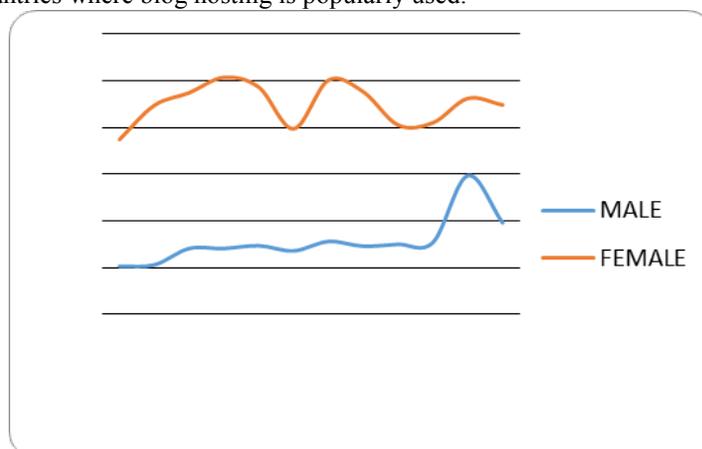
Figure 6. Enrolment Trend in Education Programs by Gender, First Semester AY 2006-2007 to Second Semester 2011-2012

Figure 6 shows that the teacher education programs enrolment are dominated by female students throughout the given period of analysis. The enrolment in teacher education programs in UPOU is largely influenced by the fact that majority of the teachers particularly in the basic and secondary schools are females in the Philippine educational systems. Notably, teacher education program has been one of the main priority programs of UPOU since its foundation in 1995.

Enrolment is likewise observed to increase when scholarship funds are available to students. UPOU has partnered with institutions and individuals to provide scholarships to teachers with the purpose of improving the quality of Philippine education.
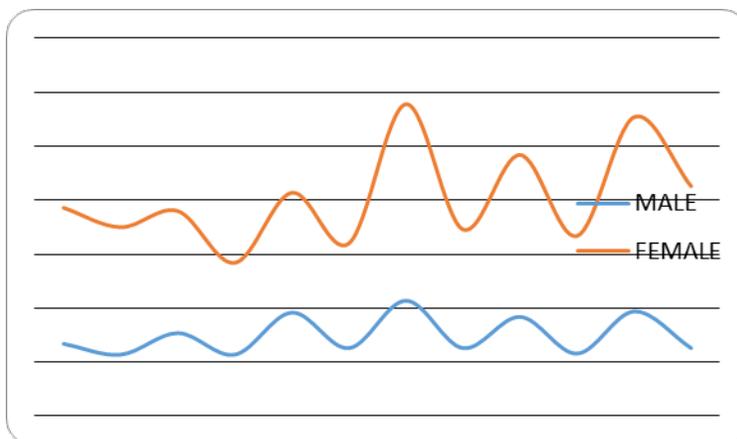
Figure 7. Enrolment Trend in Health Sciences Programs by Gender, First Semester AY 2006-2007 to Second Semester 2011-2012

Enrolment in health sciences programs are dominated by females. Figure 7 reveals that there is a relatively high attrition rate in the health sciences programs. There is seemingly higher enrolment in the first semester and enrolment gradually drops in the second semester. Moreover, health sciences programs do not accept new students during the second semester. In terms of enrolment distribution, female group takes the bigger share in the enrolment from 2006-2011.
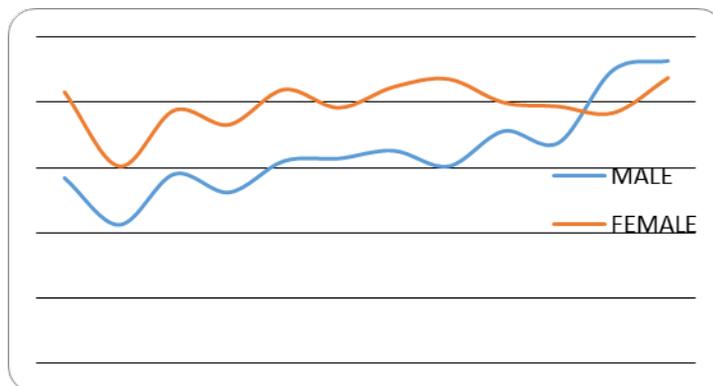
Figure 8. Enrolment Trend in Management Programs by Gender,First Semester AY 2006-2007 to Second Semester 2011-2012

Figure 8 shows that while academic years 2006-2007 to 2009-2010 reveal a greater share of the female enrollees, there is a gradual shift in the enrolment trend in AY 2011-2012, wherein the number of male enrollees surpassed the female enrollees. The shift in the enrolment trend is expected to persist with the offering of the Diploma in Land Valuation Management program in 2012, where more males are expected to enroll.
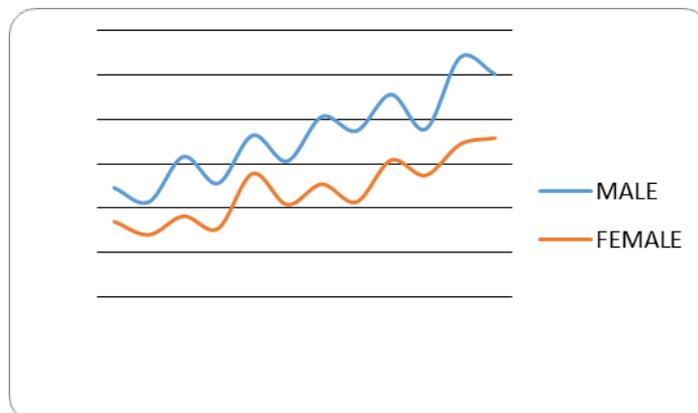
Figure 9. Enrolment Trend in IT-related Programs by Gender, First Semester AY 2006-2007 to Second Semester 2011-2012

While enrolment in most UPOU programs is greater in the female population, enrolment trend in IT programs shows otherwise (Figure 9). This is the only field where males dominate the enrolment. It is also significant to note that enrolment in IT programs have manifested consistent increase in enrolment over time. There is a clear indication that enrolment in this field will continue to increase in the future as more and more students are becoming more interested in the field of ICT.

4. CONCLUSION

Results of this study support the recent findings that there is an increasing number of females who are becoming interested in online learning. In fact, enrolment in UPOU shows that females take a greater share in the student population in almost all programs offered by the university. This study is likewise consistent with reports from previous studies which illustrated that males remain the technologically-inclined individuals and more interested in IT programs as shown in the enrolment trend in ICT-related programs. A study conducted in UK further revealed a decline in the number of women taking IT subjects, and the IT -industry remains dominated by men (Gunn, 2003).

Overall, results showed that there is a steady increase in enrolment in most UPOU programs which could be attributed to the growing popularity of online learning and distance education among Filipino students. Data further showed that while female enrolment is greater than its male counterparts in the fields of education, communication, management and health sciences, males, on the other hand, dominate in IT-related programs. This study concludes that whilst female constitutes greater share in the enrolment (63%), there is clear indication that online learning appeals to both genders. With the increasing literacy and access to web-based applications that are gender-neutral, online learning is expected to gain more recognition as an alternative mode of education in the years to come for both male and female learners.

As a final point, methodologies involved in online learning and teaching process should address the differences in terms of learning styles, communication skills and potentials and goals of both genders to ensure that they are both given the opportunity to learn and eventually achieve their educational goals. To acquire the full benefits of what online learning has to offer, the student's IT skills and literacy should be harnessed by providing sound and effective administrative support by online learning institutions.

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Global Citizenship in Technology Age from the Perspective of Social Sciences

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Abstract

Technological changes are considered as a significant factor for the development of societies. This change has led to society's going beyond in addition to pervasion of value judgments pertaining to cultural, political and especially economic aspects and formation of internationally shared and valid structures. The development of technology, world's being smaller and increasing of its population rises the mutual dependency of us with the people whom we may never see in life. In this process, which also affects the educational systems, "Global Citizenship" comes to the fore in accordance with these developments as a model dealing with the problems of not only his own nation but also those of the whole humanity.

In this study, which was carried out in literature review model, global citizen development ability of Social Sciences Instructional Programs through new communication media like social networks within the context of the relation between technology and society will be analyzed.

Keywords:Social Networks, Global Citizenship, Information Technologies,Globalisation, Social Sciences Programs

Introduction

Change is a continuous being stage that comes against us during the history of mankind whatever its quality, direction and effect may be. Change can also be defined as differentiations from a previous stage. However traditional and conservative they may be, all societies and cultures are in a continuous stage of change. Against many opinions, technology is a concept that showed itself with a rising acceleration from the very beginning of mankind rather than coming into being with the 21st century (Çalık and Çınar, 2009). Since the very beginning, mankind has tried to understand and ensure the conditions to survive, started to use their experiences to fight against nature and among themselves with the formation of groups which can be defined "social". The primitive life's getting free from this vicious circle which is in a way out of history has become with the invention of fire, wheel and the advancement of civilizations and etc., and all these actually have led us reach the contemporary technology age (Bulut, 2011: 1).

Technological change are seen as important effects in the development of mankind. The factor that puts a society in leading rows of civilization is mostly the high speed of technological change. The statement of "Technology is the pushing power of change." (Özkalp,2008: 315) shows the relationship between technology and change actually. Some philosophers state that the changes in technology are the sources of all social and cultural changes (Ergil, 2012: 264). Thanks to technological advancements, now, all kinds of information are being reached rapidly; new global economies are being formed with economical developments; all social systems are being

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changed with social changes in a way to form new social reactions (Çalık ve Sezgin, 2005: 57). New technological advancements form the basic concepts of globalization which can also be defined as the spreading of cultural, political and especially economical norms and states, and moral values and formation of international common and valid forms. That's why technology is one of the main tools for globalization.

Globalization is defined as some events happening in one place effecting the events in other places by these effects the social relations gaining density worldwide (Yılmaz ve Horzum, 2005:106). Technology has made the world smaller by making faster the distances and time. Communication and transportation technologies acquire new bounds and forms of expression and form new areas hard to be controlled by the states. As seen in recent events in middle east, named the "Arabian Spring", dictatorials of almost half a century long were ended by uprises and resistances of some dissidents organized via Facebook. For example social networks played an important role in the turnover of Husnu Mubarek in Egypt. Social networks getting more widespread thanks to technology has almost become the unseen place of political activists. Globalization as an interaction that is related with events, facts and societies in the world where technology is the main factor and accelerates it. This change, interaction provided the concept of globalization to start and accelerate since it became more widespread together with technological developments. Thomas Friedman who divided the globalization process into periods says that the first period of globalization starts with the dense relationships of European people with the new world in America and eastern societies (Aggarwal, 2011: 58). The concept of globalization was first used in in a manuscript in The American Journal of Sociology in 1966 (Kaya ve Kaya, 2012: 82). It is of course important how and when the concept of globalization started but the most important thing is the role of globalization in social interaction and change and the role modal the curricula offers in as our subject matter.

Changes in the form of the society, the differentiation of population, economical transformation, forms of family and the changing of lifestyles are just some of the important changes the globalization caused. Together with these developments globalization caused, there has been a need for changes and transformations in citizenship perceptions and a reformation in locality-universality, identity-diversity and similar relations. Therefore, the citizenship transformed into locally and universally activities. In globalization process, different perspectives in citizenship literature and a rise of cosmopolite ideas have emerged. Thus new concepts and understandings of citizenship emerged and a new area formed suitable for the discussions of new alternative concepts like European Citizenship, Urban Citizenship, Global Citizenship. In this process which also effects our education system, is the concept "Global Citizenship" our preference or is it a result put in front of us? Off course it is not easy for us to give a certain answer. However, there is the fact that today people cannot escape from global events and their results. Moreover, no society in the world can get back from the crossroads they turned before. However, societies and individuals have a problem or a homework of preserving their freedom and future from the power holders of modern world. As biologists state the semipermeable cell membrane the beginning of life, if the cell membrane was full-permeable, it would change and not be able to survive independently; if it wasn't permeable it would get rotten in itself and wouldn't be able to stay as it was. States must find ways of profiting these changes for their own societies and the world while compromising the changes in correctly and on time and preventing the raceless culture changes despoil themselves. Educational organizations and curricula are forming the basics for this in long terms. In primary

school level, very important duties are on the social sciences courses, which is responsible for growing good citizens, in growing global world citizens that enrich themselves with new views without losing their identity and are in harmony with global changes in a way special to themselves and their nations. Definitely, some changes must be made in both the teacher education institutes and primary school curricula. Social networks forming a global citizenship awareness in students who don't speak the same language is open to debates. Because of this, English Language literacy must be acquired to students. This also makes some serious changes in foreign language teaching and teaching design compulsory.

The development of technology, the world getting smaller and the rising of world population rises the boundedness between us and people we would never see. Over usage of aerosol in Europe may cause the ozone layer get thinner and rise cancer events in Chile. Destruction of rain forests in Brazil may cause global warming and some of touristic islands drained with sea water. A technological development in Switzerland effects the quality of life in Turkiye. 300 vote in America effects the process of peace in Middle East. The rising need for energy in China causes a rise in energy prices worldwide and even changes the consumption habits of people (Argüden, 2006). In this correlation atmosphere an individual who earns his life with the fishing has to deal with global events as he deals with the lake he fishes and his home near it and the events in his own country.

All these effects of globalization loads some responsibility to all people. We have to fulfill these responsibilities if we want a better future, a more livable world, and a more peaceful life. Actually this interaction, which makes all living things, events and phenomena correlated, is the proof of this must. Then, if the problems in the world has become global in the context of this responsibility, at least we must grow responsible citizens who would address collectively all these problems in the global context. All these factors brought out the model of "Global Citizen". Global citizenship emerges as the addressing to the common problems of humanity like mass poverty, hunger, and war and as a response for the search of identity that the globalization caused. In this context, a world citizen or a global citizen must be the one who thinks common problems must be in responsibility of all nations and all people (Alpaslan, 2008: 142). Global citizenship includes in the widest means all people in the world encountering difficulties mainly in trading, technology, and environment and the applications about how world citizens of the future will be prepared these encounters (Gibson et al., 2008: 11).

The concept of global citizen is used for someone who has knowledge, skill and understanding in global scale in his lifestyle and understanding of life while he has no belonging to a world in legal means(Kan, 2009: 896). Global citizenship has no relation with legal means according to the citizenship model of Preston also (Lagos, 2002). A sociological global citizenship and a lifestyle may be stated as a different perception and approach of the world and humanity. According to Stokes, the concept of global citizenship defines an identity and activity of citizenship that exceeds the citizenship of national states and boundaries of it.

The role of England in putting the global citizenship education into education curricula is significantly big. With this education, issues like especially cooperation among continents and countries, curing poverty in the world, cooperation between cosmopolity and multiculturalism, and human rights are emphasized. In developing the understanding of global citizenship especially the world famous center of England: Oxfam which is a worldwide

development and education organization has been effective (Schattle, 2008:77-78). In the curricula, a wide range of lessons like global citizenship, language learning, environmental awareness, intercultural responsibility, world history and literature, and technological literacy are present.

Oxfam defines global citizen as follows. A global citizen:

- Is aware of a large world and his role as a citizen of it.
- Values diversity and respects it.
- Understands the world, technologically, environmentally, economically, politically, socially, and culturally.
- Is furious about social injustice
- Participates in communities in local to global levels.
- Is ready for all activities to make the world a more just and sustainable place.
- Takes responsibility of his actions. (Oxfam, 2006).

The most important issue about global citizenship in educational curricula is social sciences curricula. With the effect of globalization, growing both national and global citizens is an important part of social sciences education. According to Erden, social sciences is a work area in which basic knowledge, skills, attitudes, and values are given (Erden, no date: 8). Then a good and responsible citizen must be equipped with knowledge, skills and behaviors for not only his society but also in a global scale. Social sciences education curricula is the discipline to fulfill this. Equipping new generations with attitudes and values necessary for global events will be done with this curricula. It is important in developing social sciences curricula to take into consideration the factors related with global education (Taş, 2004: 31-32). Attitudes and values needed for global developments must be formed without compromising self values and othering. Because belief and culture scheme of no society does accept this.

Today people talk about the cultural aspect of globalization also. The most important aspect of cultural dimension is education. The concept of "Globalization in education" refers to common qualities in education. An individual being in a globalizing ground brings out some problems with it. First of these problems is about how suitable is the attitudes and values acquired about global issues to the societies. It is off course impossible to produce a global view in all issues. For those who think the opposite, reminding Karl Poppers famous words will be nice: "Those who think they found the universal truth, desire that others also share this truth. This is the source of all totalitarisms and despotisms." "(Özlem,1999: 123). We won't be as generalizing as Popper. Definitely there are many areas where common responses and global behaviors can be developed. But, we mustn't forget that in many issues the societies have rights or truths of their own. Because, there is a social mechanism that shapes an individual's world of ideas and spiritual side and that himself belongs to. Then our self values must be in the center of the global citizenship model. Education of social sciences in our country is in an enough level to fulfill this model.

Now, citizenship education makes necessary the understanding of citizens sensitive to global issues and problems without limiting themselves to national scale. National Council of Social Sciences of the USA also emphasizes on global citizenship while stating the qualities of effective citizens. Among these qualities; the statement: "knows the history and traditions of his own nation and the people in the world and is aware of events

and problems effecting humanity" are the indicators of this (NCSS, 2013). Social sciences curricula in our country also have the responsibility to grow people who describe, understand and try to solve the developing and changing problems of the country and the world (Durlu, 2008: 501). The item in the general aims of social sciences curricula as: "shows sensitivity to issues that is related to his country and the world while knowing that he is a part of humanity" is an obvious indicator of this (MEB, 2005). All these as shown above is a result of social, psychological, and environmental events getting purged in to each other that surround people. Then, generally the whole education, specially the social sciences curriculum must attribute to the education of this global individual (Öztürk&Dilek,2005: 86).

Results

As seen above global citizenship education is suitable to the nature of social sciences. Man theme that will ensure the understanding of global citizenship is present in the aims of social sciences courses. Social sciences curricula helps individuals to put themselves aside and understand the world objectively, knowing himself as not only the citizen of his country but also the citizen of the world, and adding the universal responsibility to national responsibility. Thanks to this responsibility individuals acts for the common profit of the whole humanity and feels responsibility for all humanity.

Conditions, products and areas can be understood only by one side when they are evaluated by themselves only. However if they are taken together and for a social aim some issues that haven't been seen before may emerge. At this point, in the context of curricula, "Global Citizenship" education must be evaluated through social networks. In order to accomplish this individuals must be able to reach virtual communication grounds in schools and classes and these grounds must give the chance to reach a lot of different cultures and understandings. For this, technological literacy education must be taken seriously. Because, with this education, individuals and groups come together in new communication grounds, get awareness of the selves and evaluate the states and conditions they are in.

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How to say "hello" in indonesian language
(Teaching Indonesian Address Term)

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Abstract

This article aims to explain how is the address terms (how to say hello) in Indonesian language, and how to explain its use for students in schools. The use of address term is very important subject to discuss, due to the fact that many students' errors are still found in the use of address terms in schools ranging from elementary to college.
The data used in this article are address terms in Indonesian language (there are some address terms in Indonesian language). The analysis was done by describing the address terms in a dialogue, both in the planned meeting and unplanned. The uses of address terms are described in a context (the use of address terms may depend on the status of a person: age, social status, etc.). This description is expected to be a reference when the teacher explains the address terms in Indonesian language teaching. To achieve the maximum teaching Indonesian language, one that can be taken is to teach the intensive use of address terms in Indonesian sentences by using the mthode 'role play' and the media 'audio visuel'. Educating the student with address terms in schools, not only will create students who have the ability to speak Indonesian, but also create their attitudes to behave in the social life politely.

Keywords: Language. Address term. Teaching

1. INTRODUCTION

How important language for human is not to be doubted. This can not only be proved by pointing to the use of language in everyday life, but also by pointing to the high attention of scientists and practitioners to the language. Similarly, their attention to the matters related to the shape and forms of addressing. It means that the value and function of the use of the address terms in Indonesian language are those that needs to get attention. It needs to be understood by teachers in formal education. The students' understanding of the address term and its use in preparing Indonesian sentence are very important because they have a function within the framework of Indonesian grammar and social functions.

As stated by Edward Sapir (1884), that language is not only to determine the pattern of culture, but also to determine the manner and the way of the human mind. In relation with their statement, the Indonesian language is considered a major effect on culture and decisive thinking of individuals, and a great influence on culture and determining beings of culture. Cultural

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attitudes are closely related to language attitudes.The language attitudes will be reflected in cultural attitudes. Thus it can be said that the attitudes and behavior of Indonesia people, as well as the manner of address will appear in the address term being used. Based on this fact, I am interesting to discuss more about the form and the function of addressing in Indonesian language and how the students learn the address terms in Indonesian language teaching. .

2. FORM AND FUNCTION OF ADDRESS TERMS

Kridalaksana (2008), stated that address term is a word utterances used to address someone, address others as interlocutors. He say that address terms that the speakers use to designate the person they are talking to while they are talking to them. Addressing someone in a community depends on the relationship between them and it reflects the socio-cultural system which is based on indigenous communities.

In terms of function, Kramsch (1998) says that the address term is a way of referring to someone in linguistic interaction done directly. Forms of address analyzed by different speakers in different situations, as well as its maxims to explain the selection of terms made by speakers, such as the use of first name, title, the familiar (intimate). The forms of address used in a community are depending on the local cultural community, the term is known as address terms. In a society, when we are faced to a hierarchical structure, there are other forms of address that need to be understood. Each member of a group hierarchy uses certain address, such as a group at the bottom of the hierarchy prefers the term indicating familiarity, whereas the upper group prefers the use of formal terms. Someone who is at the bottom of the hierarchy will reduce the difference in status of those who are above, but people who are at the top of the hierarchy would keep enlarging the difference. This needs to be understood and explained to the Indonesian learners.

There is a specific rule in expressing address terms. Rule of addressing by Ervin Tripp (1972) is relating to the rules and principles of co-occurrences alternation. Alternation rule is about how to address relates to the selection of lexical elements that are tailored to the characteristics of the person addressed; the characteristics mark the relationship between the speaker and the nature of the underlying situation. This rule is paradigmatic. Alternation rule is used as a tool to determine the choices addressing used in verbal communication; it is also used

to control the selection of the linguistic elements of the whole speech. The use of the rule of alternation in choosing addressing by vertical kinship, is a way to see the lineage from bottom to top. Co-occurrences rules relating to the eligibility form addressing with other forms. The use of certain words adapted to the situation and status of the person addressed. This rule is syntagmatic. Alternation rule consists of a number of social conditions such as situations characterized by status, rank, and the identity of the situation i.e. a state court, a faculty meeting or congress, etc. In the institution of army, for example, the situation is characterized by rank, while the identity refers to honors such as doctors, judges, professors, and so on (Keraf, 1997).

3. TEACHING THE ADDRESS TERMS

Creative teacher would always use a variety of teaching technics that correspond to the teaching objectives. Similarly, in the Indonesian language learning which includes materials related to the address terms, one of teaching technic that can be used effectively is a role play. This technic can be used after the teacher show the subject that be taught in a video. By a role-play technic, the students are expected to develop skills and a good language attitude, be able to practice the forms of address terms in Indonesian according to the context of user. Teachers' role is to motivate, to facilitate, and to guide students in the activity of a role play in the dialogue materials which contains the address terms.

What we can do with the role play is as follows.

3.1   *Participation of The Student In Determining The Situation of The Role Play.*

On this occasion, the student can chose and determine the situation of role play, like   the role play that will be held between the teacher and student, doctor and patient, or an older person and a younger person. Thus the forms of address terms must also be adjusted. The general classification of the types of addressing include proper names, pronouns, kinship, title, rank and position (Wijana :1991, Kridalaksana: 1982) Teacher and student can chose the diction of the address terms, for example the use of 'kinship', as shown in the following discourse.

Ani   : *Jalan-jalan pagi **Pak*** ?
           (Go for a walk sir?)
Pak Ali   : *iya **(nak)***
           (Yes I do)

Forms of addressing 'pak' (father) spoken by Ani is addressed to Mr. Ali, suggesting that Ani is unrelated. This address term is undertaken by Ani because Ani meets Mr. Ali and she knows Mr. Ali. Ani uses the address term 'sir', because Ani is younger than Mr. Ali and Mr. Ali are married (and has children). Or it could be also Ali is a teacher or someone who has a position. Similarly, the use of the address term 'nak' (kids) used by Mr. Ali, Mr. Ali shows he is older than Ani, or the age of Ani is the same with Ali's child.

The other address terms that the student can use is the proper name i.e. the name of the person addressed. The form indicates that the address term addressed to the younger person or a person with an equal age with the speaker. As shown in the following speech.

Bu Nanik : *Teruru buru Nadia*
             (Are you in a hurry, Nadia?)
Nadia   : *Iya bu, terlambat….,sudah jam 7 pagi*
             (Yes Mrs. Nanik, I am late, it is 7 o'clock)
Nadia   : *Mari bu Nanik..*
             (See you Mrs. Nanik)

The other address terms is 'Nominal form' (noun or a noun equivalent) such as *tuan, nyonya, nona, encik, Yang Mulia*, that shows the distance between the addresser and addressed. It also shows the hierarchy of the addresser and addressed, it might be the addressing of the superiors to subordinates or in the contrarary from the bottom to the top. The address term is shown in the following discourse.

Pelayan : *Tuan mau minum teh atau kopi*?
             (What do you want sir?, tea or coffe)
Tuan   : *Kopi, jangan lupa gula sedikit*
             (Coffe, with a little sugar)
Pelayan : *Baik Tuan*
             (Yes sir)

In the discourse above, address term 'tuan' (master)' is used by a servant to address his master. It shows that the addresser (servant) has a lower status than the addressed. Furthermore, the master(addressed) answers without using a special address term, but

directly in terms of the core of the conversation

3.2 ***Participation of The Student In Determining The Sum of Students Involved In A Group of Role Play.***

The sum of the participant in the role play could be only two or more students. For example: for a dialogue with the topic in an hospital, between the doctor and the nurse, then engaged in role play only two students. In addition, the teacher facilitates the students to identify the address terms that are estimated to present in the conversation/role play, as shown in the following discourse.

Suster   : *Lelah dokter*?
     (Are you tired doctor?)
Dokter   : *Iya habis operasi dua pasien*
     (yeah, I've just finised operated two patiens)

A nurse (suster) addressed by using the title: doctor (dokter). It shows that address terms have addressed the profession as a doctor, in addition, the addressed answers without mentioning the title of addresser, it could also indicate that the addresser (doctor) has a higher degree than the addressed (nurse). Addressing by using this title is to show that people who accosted have a power or have a higher degree than the addresser.

The other role play that the students demonstrate is the address term using the name by people who has higher rank than the one who is addressed, as shown in the following discourse.

Pak guru   : *Nanik,* **kamu** *jangan terlambat ke sekolah besok pagi ya* ?
     (Don't be late to go to school, tomorrow morning)
Nanik   : *Baik pak (Guru)*
     (Yes sir)

The other address term that can be taught by teacher is zero characteristic, it is an address term without naming the names, titles, or other pronoun, but directly to the case or the activities

being carried out by the person who addressed. The address term is as shown in the following discourse.

> Mira   : *Mau ke mana*?
>   (Where are you going/)
> Nina   : *Ke kantor pos*
>   (Post office)

From the above discourse it appears that Mira addresses with '*Mau ke mana*? (where are you going). The address term used by Mira is anonymity. But Nina understands that the greeting is addressed to her. This could be happen, because at that time, which is in front of Mira is Nina, Mira look towards when Mira addresses Nina.

3.3   *Directing Students To Do Some Drilling To Identified Address Terms*

This step is to familiarize students with the use of forms such address terms. The teacher asks the student to make a repetition for a dialog that they see on video. The teacher separate students in several groups and make each group role the same dialog. For example, the class has 6 groups. After seeing the video, each group have to demonstrate the same dialog to see the comparison which group is the best (to motivate the students). Another way is by making the communication between the teacher and the student, as shown in the following discourse:

> Bu guru : *Sini, duduk sini aja gak usah di belakang, terlalu jauh*
>   (Sit down here, don't be in the back side, it's to far)
> Siswa   : *Baik bu*.
>   (Yes Mrs.)

The narration above explains that a teacher asks the student to sit in front. The teacher addressed the student with a starting point of speech with words 'here' (*sini*). The students understands what the teacher means due to the gesture of teacher by appointing the place to be occupied by the student. The words of deistic or pointer : ''s*ini'* here, '*situ'* there, '*Ini'* this. These addressing are often used in the speech without the subject. The sentence directly addressed to the speaker.

3.4   *The Teacher Facilitates The Students To Do Role-Play Performance In Front Of The Class.*

The teacher facilitates the student for making the class more lively and not monotonous. The teacher gives some differents dialog for every group and they play the dialog in front of the class.

3.5   *Teachers And Students Evaluate The Results Of Student Performance.*

At the end of the class, teacher and all of students discuss about what the students get after the class. It can be an input for the teacher for the next class.

4. CONCLUSION

From the form of addressing above, we can say that the address terms used in the Indonesian language is more variable. Many choices of words can be used as an addressing. In Indonesian language teaching, teachers should provide good examples and exercises to use many kinds of address term. A lot of words (dictions) can be choosen as address term.

Regarding to the importance of the meaning, value and function of the address term in Indonesian language, it is essencial to give more attention to the teaching process both by the Indonesian language teacher and the others who intend to develop the teaching of Indonesian language. One effort that can be done by teachers in propagating the correct use of address terms by the students is teaching in class by using the role play and audio visual. Language skills that can be developed with the role play is speaking, especially in interpersonal and transactional dialogues. For Indonesian teachers good luck and I hope that this article can inspire teachers in teaching the address terms in Indonesian language.

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Impact of Video on Learning in Students with Autism in Malaysia: Future Prospects

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Abstract

Use of video in Malaysia is seen as having a bright future because technology development is expanding even more now. Thirty articles related to use of video on students with autism have been investigated. Only 12 articles have been selected as appropriate for use as references for this study. This article looks at the future prospects of impact of video on learning of students with autism in Malaysia. The focus of this study is the use of video by experts, identifying behavior of students with autism in their use of video and determining the limitations of video and ways to overcome them. This study uses the Fuzzy Delphi approach to achieve consensus of experts on the focus of study. The findings show that usage of video is extremely effective on students with autism besides shaping the behavior desired. Although video has its limitations, these can be overcome in various ways as suggested by the experts and researchers.

Keywords: autism; video

1. Introduction

Autism in children is defined as children living in a world of their own. According to Leo Kanner (1943) autism refers to individuals who lack the capacity to adapt themselves to their environment in the normal way. Currently, one challenge in the Malaysian education system is to shift the paradigm toward change in approach to the latest learning using technology, ICT such Facebook, YouTube, video, Twitter and others as alternative approaches. Special needs teachers need to look for new ideas and teaching aids which are attractive and suitable such as video for teaching students with autism.

Video is a technology for capturing, recording, processing, transmitting and playback of moving pictures such as celluloid film, electronic signals or digital media. According to Banda (2009) video or video model refers to a recording of an individual who becomes a perfect behavior model for viewing and being followed by a student with autism to change the behavior of the student. The video model also is defined as change in behavior in the observer to fit the behavior displayed by the model in a video (Nikopoulos & Keenan, 2004).

Literature review and research on usage of video by special education teachers for students with autism in Malaysia still has not been done. Hence this study was carried out to identify the impact of video on learning of students with autism in Malaysia in future. Preliminary analysis carried out by the researchers through reviewing 30 articles from the Web of Science showed that all studies carried out overseas were focused on case studies on students with autism and not studies on teachers to obtain information on techniques for using video, impact of video usage and the strengths and weaknesses of using video in teaching students with autism.

Video model in general had been suggested as an effective strategy to teach various skills to students with autism (Delano, 2007). In Malaysia the use of video in learning by students with autism is still at low level. Hence it is timely for this study to be done especially to study the view and consensus of experts on the impact of video use by special needs teachers on learning of students with autism in Malaysia.

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Jowett (2012) supported the use of video for helping and facilitating the learning of students with autism. Kevin Michael (2005) also proved that researchers could use video to teach various social and functional skills. The majority of past studies indicate that video models have succeeded in being used for learning in children with autism for behavioral modification, including daily life skills, social skills and communication skills (Banda, 2009; Monica, 2007). According to Stephen (2010), video model is an approach based on observational learning which is an effective learning strategy for students with autism who are incapable of improving in certain skills.

Through teaching playing skills to students with autism via video modeling, small group and observational learning, Arzu Ozen and Sema Batu (2012) found that video modeling was effective in teaching sociodramatic playing skills. Through the video modeling approach the students were found to enjoy learninge, and were aided in better understanding the content of learning. Besides that, Hine and Wolery (2009) found that it was clear that following several exposures to video, students with autism developed capability in using toys to play properly and could adapt themselves to other children.

Hence, this study details the findings of a research study using interview and questionnaire as instruments on experts drawn from lecturers, and experienced special needs teachers to study the future impact of video usage as an approach for learning in students with autism. Besides that, the experts also identified that there was a lack of usage of video by experts as a strategy for teaching students with autism.

2. Purpose of Study

This study is aimed at obtaining the views and consensus of experts on the impact of video on the learning of students with autism in Malaysia.

3. Objectives of the Study

This study is aimed at:
1. Getting the opinion of experts on the use of video in teaching and learning of students with autism.
2. Obtaining the views of experts in identifying the behavior of students with autism toward learning through video.
3. Obtaining the views of experts regarding the limitations of video use for special needs learning and ways to overcome the limitations.

4. Research questions

This study was implemented in order to answer the following research questions:
1.   To what extent is video used in teaching students with autism?
2.   What is the behavior of students with autism when learning with video is being carried out?
3.   What are the limitations of video and how do we overcome them?

5. Methodology

This study uses the Fuzzy Delphi approach that is still new in the context of education in Malaysia. It was introduced by Kaufman and Gupta (1988). Fuzzy Delphi is a combination within the Delphi technique which contains several steps that must be followed to attain consensus from experts. Its process is fast and it reduces the number of cycles in the Delphi technique. Evaluation uses the value from 0 to 1 (Binary Terms).

The Fuzzy Delphi technique was chosen for this study because the validity of the Delphi approach is in doubt if researchers fail to select real experts. This results in boredom in experts who have to undergo repeated surveys. The number of experts is too small to evaluate/measure something big (Saedah Siraj, 2008).

Another factor that prevents the Delphi technique from being used is that the study is time consuming and requires repeated cycles, gives rise to inaccurate and incomplete data and the decision reached by experts depends on individual competency and is very subjective (Bojadziev & Bojadziev, 2007).

Implementation of the study was a two-step process; first, was a process of interviews involving 6 experts from Federal Territory, Penang, Malacca and Selangor aimed at developing the themes for the study. From the themes derived, a set of questionnaires was produced. The questionnaire was then distributed to 20 experts including the 6 experts interviewed earlier to identify the themes. Literature review showed that there was no study using Fuzzy Delphi approach in this field; existing studies were more focused on case studies and experimental studies.

6.   Findings

Data obtained from the first, second and third interviews were collected and then subjected to thematic analysis. Three themes were identified, namely:

1) Use of video in teaching students with autism.

2) Behavior of students with autism during video learning.

3) Limitations of video and ways to overcome them.

Each expert had teaching experience of more than 15 years besides having deep knowledge of special needs education and agreed to take part in in interviews and answer the questionnaire in this study. Twenty experts in special needs education were selected for this study; they were lecturers in public universities, officers from the Special Education Unit, Senior Assistant for Special Education, and Special Education teachers from Kuala Lumpur, Selangor, Malacca and Penang.

The questionnaire for the study had undergone one cycle of Fuzzy Delphi approach. All the data involved were analyzed based on Triangular Fuzzy Number and Defuzzification Process. The score for each question was arranged according to a hierarchy.

Table 1: Expert Agreement Scores for What Video Means

Item	Score	Ranking
1.1	15	1
1.2	14.599	2
1.3	13.667	4
1.4	13.466	5
1.5	13.833	3

Referring to Table 1, the majority of experts agreed with item 1.1 with a score (15) showing that video is appropriate as a technology for recording an event. The experts were less in agreement with item 1.4 with a slightly lower score (13.466); the item was on video as a recording of human action. This item was to elicit the view of experts on what video means.

Table 2: Use of video in teaching and learning

Item	Score	Ranking
2.1	12.166	2
2.2	8.366	4
2.3	12.466	1
2.4	10.666	3

Referring to Table 2, the majority of experts agreed with item 2.3 with a score (12.466) showing that they use video in teaching and learning for students with autism. Item 2.2 with a score of 8.366 earned the minimum score and was on "never before used video in teaching and learning". The researchers managed to answer the first research question by referring to Table 2.

This shows that the researchers have succeeded in obtaining high consensus on the use of video in teaching and learning for students with autism. It cannot be denied that video is a very useful communication tool and teaching aid for special needs teachers in this country.

Table 3:

Item	Score	Ranking
3.1	13.1	2
3.2	13	3
3.3	12.466	4
3.4	11.033	6
3.5	11.533	5
3.6	13.266	1

The findings of the study show that item 3.6 with a score of 13.266 clearly reflects that any topic to be taught depends on the interest of the student. A small number of experts responded to item 3.4 with a score of 11.033 showing the importance of documentaries.

Table 4: Behavior of students when learning with video

Item	Score	Ranking
4.1	12.466	1
4.2	12.166	2
4.3	9.6	4
4.4	11.866	3
4.5	12.166	2

With reference to Table 4, the majority of experts agreed with item 4.1 with a score of 12.466 showing that students are more active and exhibit interest during teaching and learning. Experts did not agree with the statement that students with autism did not give response when teaching and learning with video was carried out.

The behavior of students can be shaped by using video during teaching and learning. Students can give focus during the use of video technology.

Table 5: Emotions in learning with video

Item	Score	Ranking
5.1	13.3	1
5.2	10.566	3
5.3	12.1	2
5.4	8.966	4

Students with autism showed emotions of happiness when video was used in learning in item 5.1 with a score of 13.3. There were experts who still did not identify the students' emotion for item 5.4 with a score of 8.966.

Table 6: Helpfulness of video

Item	Score	Ranking
6.1	11.933	1
6.2	11	2
6.3	8.9	4

6.4	9.4	3

Referring to Table 6, the majority of experts agree with item 6.1 with a score of 11.933 that video is very helpful in the learning of students with autism. Not many experts agree that video was less helpful for item 6.3 with a score of 8.9.

Table 7: Limitations of video

Item	Score	Ranking
7.1	12.6	1
7.2	9.3	2
7.3	8.766	3

Table 7 shows expert findings for item 7.1 with a score of 12.6 indicating that the majority agree that video has its limitations. Students with autism need direct touch, they mimic or practice echolalia and are so involved in video that they refuse to follow writing activities.

Hence, in video usage, teachers need to plan the use of video in a scheduled manner to overcome such problems.

Table 8: Suggestions for using video in learning for students with autism

Item	Score	Ranking
8.1	14.4	1
8.2	10.566	8
8.3	11.166	7
8.4	11.166	7
8.5	11.766	5
8.6	10.433	9
8.7	13.3	2
8.8	12.9	3
8.9	11.433	6
8.10	12.566	4

Experts agreed with the suggestion in item 8.1 with a score of 14.4, that selection of video is important according to the student's level. A minority of experts somewhat disagreed with item 8.6 with a score of (10.433); the item related to building and recording the actions of a good student and displaying it for students with autism to follow.

The views of experts suggest that choosing and searching for videos suitable for the capability level of students with autism is the main factor in overcoming the limitations of video usage. Apart from that, other factors to take into account in overcoming the weaknesses of video include: the Special Education authorities must cooperate with the Autism Society of Malaysia to produce teaching and learning tools, increase the number of teaching aids in video form, increase the number of documentary stories because they reflect the reality of life, share with friends in other schools if they have video series suitable for use in T&L, TV / LCD screen must be big and easily viewed by all, the volume must be appropriate, and duration of viewing must not be too long, teacher must give explanation during the video screening and get ready real objects for the students during the video screening.

7.   Implications and Recommendations

In general the study shows that video usage has an impact on teaching and learning in students with autism. For the researchers, even though the Fuzzy Delphi technique is difficult to implement it gives a lot of inspiration and raises enthusiasm. The experience undergone and narrated by the experts was enough to make the researchers aware that care and gratefulness are the keys to effective teaching and learning through video.

The findings show that use of video among experts was encouraging although there existed limitations of resources, time and place. The preparation of place or location of video usage must suit the surroundings. The Ministry of Education and Teacher Training division should run courses and training sessions and provide materials in an intensive way to special education teachers who implement teaching through video by adapting the curriculum design in future.

Tips or suggestions from experts for teachers facing students with autism include: sharing of knowledge between NGOs and departments; for example, teachers attending seminars to unearth ideas for developing videos for students with autism. The approach of interactive video for special needs education for students with autism should be created in the state educational technology division with cooperation from lecturers and special education teachers. Traditional learning theories need to be adapted with the future curriculum because the pattern of learning to be used on students will change with time. It is undeniable that each approach has its strengths and weaknesses. Hence use of video for teaching and learning must be done in a structured, appropriate and objective manner.

According to the experts' view, the behavior of students with autism can be controlled while learning through video is in progress. Use of ICT on students with autism can help them develop understanding of teaching and learning and attract their attention, especially for videos containing positive and noble values. The teaching and learning process must be present during the viewing through question and answer sessions between teacher and student regarding what they have viewed. Indirectly this will create two-way communication that benefits the student in terms of language and social interaction.

When teachers use video, writing activities and sharing must be done in between viewing because this indirectly will encourage students with autism to cooperate with teachers in the hope that the students will continue watching the video and that the students' interest will be easily attracted. The likes of students with autism need to be widened; those who like only one activity should be encouraged to like varied activities in order to expand their minds. For example, the topic in a video should not just focus only on what interests them.

Teachers need to be aware and improve or make comments on improper behavior of the students during the video screening. The use of ICT has to be expanded to students with autism. Raising the motivation and interest of students will ensure attention on learning.

Any limitation can surely be overcome in some way. Findings of this study show that limitations exist in the usage of video in learning. Experts viewed that students with autism are easily influenced by mimicry and do not focus on other activities. Repeated exercises to develop focus and non-verbal responses should be encouraged. Use of video under teacher supervision and use of mind challenging videos so that they are not easily bored and do other activities during the viewing sessions will create an interesting learning environment. High functioning students with autism are given opportunity to make documentaries with guidance from teachers and their output will be shown in class.

Besides that, active involvement of parents in learning using video needs to be encouraged. Teachers need to exchange ideas with parents regarding this approach. Teachers should also be ready to answer if the students ask about what is being shown. Teachers need to share with parents any information or needs that must be fulfilled for their children.

Teachers need to plan the self-learning of students with autism to encourage the development of new ideas. Learning via video can lessen the mistakes in learning. The capability of students with autism to explore something being viewed is very encouraging and should be exploited for better outcomes.

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Implementation Review of Professional Education of Teachers (PPG) as the Implementation of Quality Management Function

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Abstract

The purpose of this study was to assess the input, process, and output implementation of PPG program in-service in Study Program of Teachers Education in Primary Schools as the evaluating action towards program implementation, as well as implementation of quality improvement management function. Best practices of execution of PPG Program in-service in PGSD Study Program that can be applied towards similar program execution and or next program is Classroom Action Research (CAR) proposal arrangement as part of workshop activity of learning tool development (Subject Specific Pedagogy) and as well as integrated part from PPL (internship at school) execution.

Keywords: PPG Program; Study of input, process, and output

1.   Introduction

Government Regulation number 74 Year 2008 about Teacher, stated that teacher must have academic qualification, competency, and educator certificate. In subsection 4 Government Regulation number 74 year 2008, it is strongly suggested that educator certificate for teacher is obtained through professional education of teacher that is carried out by college which has accredited education personnel procurement programs, both carried out by government and society, and established by government. Regarding to the issue, in accordance with regulation of Minister of National Education number 9 year 2010 that has been set about Program of Professional Education of Teachers for teachers in-service. From the execution of the program, it has been set an implementation guideline of PPG program for teachers in-service.

Semarang State University (UNNES) as one of LPTK that has been set as the program executor with 19 study programs and for 2011, UNNES has carried out the program with PGSD Study Program. To determine the quality of program implementation, it needs to be evaluated. Evaluations do not stop until the determination of program implementation result, but at the same time to identify problems or obstacles that arise in the process of program implementation. Evaluation results, the achievement of target program, the existing barriers, needs, and issues that arise in the stakeholders (students, professors, teachers, tutors, principals, and managers), according priority to be analyzed and studied further as program improvements / planning in the period / semester / next academic year. This evaluation is very essential, to improve the quality of national education through the provision of human resources (HR) that is a qualified teacher, and professional. Meanwhile, the condition of teachers is still alarming. Data from SIMPTK showed that 84% of primary school teachers in the state unqualified (Dharma, 2009:10).

Management is a series of events that point to the collaborative efforts between two or more people to achieve the goals set (Arikunto, 2008:3). According to Henry Fayol, a series of activities is a management function which includes planning, organizing, commanding, coordinating, and controlling, which further solidified these functions into the planning, organizing, leadership, and control (Robbins, 2003:4).

Quality improvement of an organization / unit which is ongoing or continuous is the application of the principles of total quality management. According to Sallis (2006), it is explained that in the operational quality management there are several factors that must be considered, namely: the existence of continuous improvement, setting standards of quality, cultural change (change of culture) to be creative and independent, that is organizational change bottom up, and approaches to the users themselves (keeping close to the customer). Implementation of total

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quality management does improvement continuously in order to achieve satisfaction or meet the needs of users (stakeholders).

Tampubolon (2000:66) explained that there are two levels of quality management, namely: strategic quality management and technical quality management. Strategic quality management is a top-level management that produces quality services that are strategic, long-term, and wide-ranging. Technical quality management is under the level of quality management that produces services that are technical. Levels of technical quality management is spearheading the success of an organization in achieving quality, because of the services or products produced acceptable final straight, felt, and utilized by users.

2. Method of the Study

Stages to be carried out in this study were (1) to develop a research instrument as program evaluation instrument includes input, process and output, (2) data collection, (3) data analysis, including data grouping based on variables and type of respondents, data tabulation based on variable of all respondents, present data, and calculations performance. A statistical technique in this research is descriptive statistics. Descriptive statistics were used to analyze statistical data in ways that describe or depict the data that has been collected as without intending to apply to the general conclusions or generalizations (Sugiyono, 2008:147). Instrument was developed based on standards applicable to the PPG program in-service (Rustad, 2011:40-43).

In analyzing the data, the researcher would also pay attention to the principles of quality management, a review of the planning, process, and evaluation, product evaluation and process evaluation. The referred analysis was evaluating evaluation (meta-evaluation) (Brinkerhoff, 1986:204-221). The instrument used to reveal the necessary data was a questionnaire to reveal research subject perception towards the program implementation.

3. Results and Discussion

Input components in the execution of PPG program in-service for PGSD Study Program include: curriculum, program participants, lecturers, teachers, guidance teacher, and school partners. Based on perceptions from participants program of curriculum component availability in the PPG program in-service of PGSD study program was indicated by the percentage of 100 (100%), but not so with the results shown on the perception of human resources involved in the program implementation (Guidance Lecturer, Instructor, Guidance Teacher, and Headmaster / Teacher). Availability of curriculum components in the PPG program in-service of PGSD Study Program according to non participant human resources was by 50%. While the assessment of curriculum quality (compliance standards) was better but has not reached the criteria very well (4.60 out of a maximum score of 5).

Quality of PPG program in-service participants of PGSD Study Program based on human resources evaluation involved in the implementation and assessment program by the participants themselves gave no different evaluation. Participants' perception gave an average score of 4.36, whereas human resources assessment by non-participants was 4.53.

Availability or existence of associated components with the presence of the Guidance Lecturer and or instructor based on PPG in-service program standard of PGSD Study Program according to participants was 94%, while according to another human perception involved (Guidance Lecturers / Instructors, Guidance Teacher, Headmaster, and Teacher) was 40%. Meanwhile, the quality of existence Guidance Lecturers according to the participant as well as other human resources involved were not much different, namely 4.57 according to participants and 4.75 according to non human resource participants, and this included more than a good criteria.

Availability or existence of components associated with the presence of Guidance Teacher as in PPG program standards in-service PGSD Study Program by participants was 97%, while according to another human perception was involved Guidance Lecturers / Instructors, Guidance Teacher, Headmaster, and Teacher) was 78% . Meanwhile, the quality of existence Guidance Teacher according to the participant as well as other human resources involved were not much different, namely 4.44 according to participants and 4.77 according to non human resource participants, and this included more than a good criteria.

Partner school is a school where the participants of PPG Program in-service are having device implementation that has been developed in the Workshop (SSP). Partner schools are determined by LP3 (Development Institute for Professional Educators) Semarang State University. Partner school is a school that has had a MoA with LP3. Availability of components related to the existence of partner schools and the quality as perceived by the participants was 92% with more than good quality (4, 51). Meanwhile, according to other human resources was 80% with more than good quality (4, 38). The availability and quality of learning facilities that are used in the implementation of the PPG program in-service of PGSD Study Program was 97% with criteria of "good" (4.1). Meanwhile, according to Human Resource (respondents) who are involved were 80% with more than good quality (4, 38).

PPG program in-service implementation process in PGSD Study Program include: the implementation of the instructional development workshop, intership at school (PPL), evaluation and competency tests. Based on a review of the data that had been done, the evaluation of the implementation of the PPG program in-service of PGSD Study Program has done at the end of the process and program implementation activities. Evaluation process was conducted on the participants while the participants performed appropriate curriculum activities, for example, during the learning and development workshops for participants intership at school (PPL) at the partner school. While the evaluation at the end of the PPG program participants carried out in the form of the end of the workshop assessment and PPL. It can also be said that the assessment of the competence of the participants through a combination of both (process and product). Furthermore, it can be explained that the assessment of the participants in the workshop SSP include: assessment during the workshop activities, the ability of academic field of study from participants, peer teaching abilities of participants, participant competencies, RPP (learning plan) SSP workshop results, and CAR proposal. PPL assessment includes: teaching practice, non-academic activities, social and civic competence, portfolio, PPL reports, and CAR implementation reports. The evaluation of monitoring program implementation was carried out by the Monitoring and Evaluation Team conducted by the Quality Assurance Team Semarang State University. Monitoring and Evaluation activities were carried out 2 times that was the midterm and end of the program.

Results of research, especially the availability or feasibility of components or indicators on the input, process, and output the results indicate a difference between the perception or assessment by participants and other human resources (Instructor / Lecturer, Tutor, Principal / Partner School Teachers), while the assessment towards the quality of the availability or feasibility input, process and output do not differ much. The differences are predictable because of socialization or underprepared preparation. Socialization program is complete with component inputs, processes, and outputs a program that will be implemented resulting in uneven perception or understanding are not the same. Participants have the perception of the existence towards the component input-process-output almost 100% caused by the program participants are those who are undergoing the stages in the program, although initially not or do not understand or do not know.

All the components that will be implemented in the program should be prepared before the program and should be disseminated to all stakeholders. In accordance with the quality management function, then a program will be qualified when planning and organizing functions are already prepared and clear. All that will be involved obviously work to be done, and even all the tasks or plan should not be implemented, although the actual task. A plan will be used as a guide in the work or carrying out the program.

Quality assessment results both by participants and human resources involved in the implementation of the program provide results with more criteria than just "good", but have not reached the criterion of 'Good One'. Quality improvement should be carried out continuously and sustainably. Referring to the principles of quality management, it is to provide for the implementation of quality assurance for PPG Program in-service of PGSD Study Program, it is needed some attention and improvement.

Constraints in the implementation of PPG program in-service of PGSD Study Program which is prominent and need special attention without neglecting other constraint is PPL implementation in conjunction with preparation time of National Examination (UN). In accordance with the Guidelines for Professional Teacher Education (Directorate General of Higher Education, 2010:24-26) explained that, PPL system applied clinical supervision approach and reflective action in the form of cycle with sustainable principles, structured, and relevant to the RPP.

4. Conclusion

Based on the results of the study and discussion of this research, it can be concluded the following.

- Differences in perceptions of the availability or feasibility component input, process, and output due to socialization programs which are not optimal.

- The weaknesses or barriers that exist in the implementation of PPG program in-service include preparedness plans of program activities that are not optimal; implementation of PPL, which coincided with the 2nd half at the partner school cannot run smoothly, because it coincides with activities related to school activities preparatory UN (National Exam), and PPG does not have program online system to expedite the implementation of the academic program PPG

- Best practices in the administration of PPG Program in service of PGSD Study Program that can be applied to the implementation of a similar program or next program is: involvement of Guidance Lecturer and Teacher since the development of learning tools until intership at school; CAR proposal as part of the learning device development workshop (SSP), as well as an integrated part of PPL implementation gives benefit in coaching teacher competence as professional teacher; role as the team's quality assurance as monitoring and evaluation team in the implementation of the PPG program in service of PGSD Study Program provide quality assurance to the program implementation, and assessment of the competence of the participants carried out by several related components (instructor / Lecturer, Tutors, Principal / Teachers who are competent, professional and related workers), and is determined from several components (processes and products)

- Supporting factors that can be recommended for implementation in the PPG program in service of PGSD study program are: the existence of quality assurance team as a monitoring and evaluation program team; understanding or perception of the same and the right of participants and human resources involved to the component input, process, and output program.

- Model evaluation of programs that can be recommended is the evaluation towards the inputs, process, and output which is done sustainably.

Suggestions that can be recommended from the results of this study are:

- Each design activities in the program implementation should be designed and prepared carefully in the beginning before the program runs, and it should be understood exactly with the same perception

- Further studies are required to compare the effectiveness of evaluation model implementation with block and non block pattern (Figure 1).
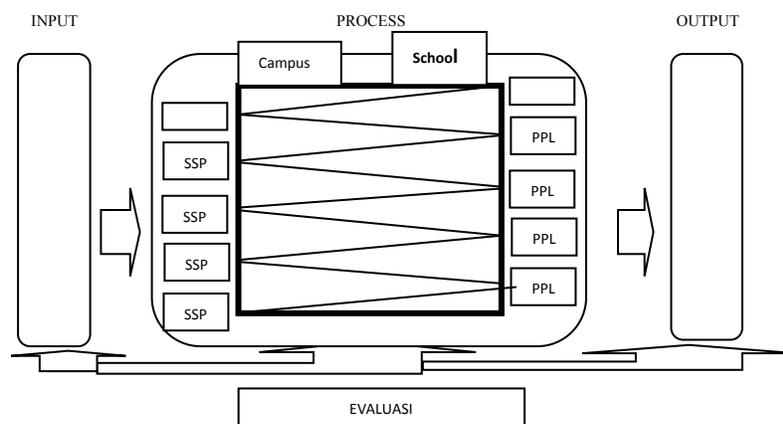
Figure 1. Non Block Pattern

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Improving the Levels of Geometric Thinking of Indonesian Secondary School Students Using Geometry Learning Video Based on van Hiele Theory

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Abstract

Learning difficulties in geometry are commonly associated with the students' detriments to progress through sequentially the respective van Hiele's levels of geometric thinking. Various forms of ICT-based learning are commonly used to improve such vital progression. However, such approach are impractical in many parts of Indonesia largely due to the acute limitations of ICT infrastructure and lack of pre-requisites and conducive ICT-oriented learning environments. This research reports an attempt to assist post junior high school (SMP) Indonesian students in Parepare, South Celebes to ease the problems. An educational video called Video for Geometry Learning (VGL) was designed and developed based on van Hiele's model of geometric thinking. VGL consisted of three learning modules, each was designed and developed using van Hiele's model of thinking aided by specifically crafted Guzman-oriented visualisation activities. Each learning module comprised of learning activities designed to assist students to progress through sequentially the first three levels of van Hiele geometric thinking respectively, namely Level 0 (L0), Level 1 (L1) and Level 2 (L2). A quasi-experimental of pre versus post-test approach was adopted to measure the effectiveness of VGL among three groups of 90, 60 and 30 students representing L0, L1 and L2 respectively. An adapted version of van Hiele Geometry Test (vHGT) was used to measure the students' van Hiele scores on Geometry for SMP (called vHGT scores) as well as to determine the levels of geometric thinking (LGT) of each student before and after the use of VGL. Both the improvements of vHGT scores and the progression of LGT were used to evaluate the effectiveness of VGL. Analyses of means and paired-sample t-test performed on the vHGT scores derived from the whole sample as well as each sub-group strongly indicated that VGL has effectively assisted them in improving the vHGT scores. Similar analyses performed on the LGT also indicated that VGL has managed to assist the post-SMP students to progress through sequentially the respective levels of LGT.

Keywords: van Hiele Theory, Levels of Geometric Thinking, Video for Geomtery Learning

Introduction

The van Hiele theory developed by Piere Marie van Hiele and Dina van Hiele-Geldof in the 1950s had been internationally recognized and affected the teaching of geometry in schools significantly. Russia and the United States are instances of countries that changed their geometry curriculum based on the van Hiele theory. Previous researches done showed that the application of van Hiele theory in geometry lesson brought about positive implications. In a study by Casbari (2007), it was proven that the van Hiele model is effective in motivating students and in creating a better environment for teaching and learning of geometry. Van Hiele theory has been commonly used in many ICT-based geometry education applications such as geometry Sketchpad, geo explorer, Cinderella and 3D CABRI (Liang & Sedig,2010).

However, due to the limitation of infrastructure development and inappropriate curriculum, ICT-based applications are not fully accessible *in some places*. In the context of Parepare, a small city in the province of South Celebes, Indonesia, a preliminary study has been done on the usage of available technology-based educational infrastructure and teachers' ability in incorporating ICT in lessons prior to this current study. It was discovered that internet connection is only available to 9 out of 14 (60%) secondary schools. Moreover, it was also discovered that

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the ratio of computer to student was 1:50, and 10 out of 52 (23.8%) of the available math teachers have not acquired basic skills in using ICT in classroom teaching. Furthermore, 44% of the teachers stated that they have not used ICT in classroom teaching at all, and the information that geometry learning applications are available in the internet is known only by one single teacher among the 52.

Due to the limited technology-based educational infrastructure, the geometry lessons in Parepare are generally taught using the conventional method. Geometrical forms are drawn on the board or merely shown through the shapes of simple things. Consequently, the visual aspect, one of the most important aspects in geometry lesson, is lost Gusman (2008) stated that visualisation is the very basis of geometry learning. This is in line with van Hiele's theory which places the visual introduction of things as the first stage in its five-stage geometry thinking level.

Conventional geometry teaching contributed to the low potential in learning geometry among students in the junior high. This situation is evident in a preliminary study on the third-year junior high students in Parepare who, at the time, would be sitting for the National Examination soon. Among the 277 students who were sampled, it was found that the general score for basic geometry questions was 54 out of 100. Through analysis of the geometry questions, it was discovered that only 12.6% who managed to correctly answer questions on the introduction of geometry shapes.

Based on this issue, this study will produce an alternative learning tool by utilizing the available infrastructure (video+VCD) to help the third-year students to remember/understand the geometry lessons that had been learned since their first year. This tool will summarize all the topics on geometry taught in junior high in one learning module by incorporating the van Hiele-based teaching activities and utilizing multimedia in the making of the module into a learning video in order to maximize the visual process in learning.

van Hiele Theory

Developed in 1957 by Piere Marie van Hiele and Dina van Hiele-Geldof, Van Hiele Theory had been published in 1973 by Freudenthal in his book "Mathematics as an Educational Task" (Usiskin, 1982). Thereafter, a few research had been conducted that showed a connection between students' geometry ability and van Hiele's geometry thinking level. Senk (1989) discovered a positive relationship between the ability to write the geometry verification and students' geometry level. Afterwards, Mason (1998) found that geometry thinking level can distinguish the high-ability students from the low-ability students in geometry learning. With respect to the significance of van Hiele's geometry thinking level, Atebe and Schafer (2008) stated that it is the framework in evaluating students' geometry thinking. According to Van Hiele theory, there are five major steps to understand geometry topics (Usiskin, 1982) namely: Recognition (L0), Analysis (L1), Order (L2), Deduction (L3) and Rigor (L4). Each step is described as follows:

(a)   Level 0 (L0: Recognition).
This level is also known as the basic, the holistic and the visual level. At this level, students can only recognize geometrical shapes based on their visual characteristic. Apart from focusing on the geometrical shape of the objects, students are likely to see the object as a whole; hence they do not pay any effort to understand deeper characteristic of the objects

(b)   Level 1 (L1: Analysis)
At this level, students involve their analytical thinking in order to understand the concepts of the given objects. For instance, students are able to study the objects by observing, measuring, experimenting, drawing and building the objects. Nevertheless, students at this level are not capable of explaining the relationships among different geometrical objects.

(c)   Level 2 (L2: Order)
This level is also known as the level of abstract/rational, theoretical, correlational and informal deduction. At this level, students are able to correlate between different geometrical shapes, and to recognize general characteristic of particular objects and to explain it in hierarchical way.

(d)   Level 3 (L3: Deduction)
This level is known as the formal deduction level. At this stage, students are able to make the connections between one geometrical object with another. Furthermore, they have already known how to sequence geometrical objects correctly.

(e)   Level 4 (L4: Rigor)
At this level, students are able to debate by giving explanations and making comparisons on axiomatic geometry system. They are also able to understand deductive reasoning.

This study only focuses on the first three levels as suggested by previous researchers who stated that learning activities in primary school and secondary school began at L0 to L2 (Crowley,1987; Teppo, 1991; van de Walle, 2004). Van Hiele (*1959*) suggested that students' geometry thinking level depends on neither their age or their maturity but rather on the lessons received. Hence, among the aspects needed to be focused on are the method and arrangement of the lessons in the classroom. Based on van Hiele's suggestion, there are five phases of learning (Usiskin, 1982):

(a) Phase 1: Information. At this stage, a two-way teacher-student interaction is essential in understanding certain geometrical shapes such as making observations, asking questions and understanding the vocabulary for that particular geometrical shape.

(b) Phase 2: Orientation. Students explore the topic about geometry as arranged by the teacher. The activities involved should enable students to identify the geometrical shape that is to be learned. Therefore, for students to master the level, they have to be assigned simpler tasks.

(c) Phase 3: Explanation. Based on previous experiences, students are to express their opinions and discuss about the geometrical shapes that had been observed. At this stage, teachers act merely as facilitators.

(d) Phase 4: Free Orientation. Students are able to solve more complicated problems such as open-ended problems. They gain experience by finding their own solutions or by completing tasks. Much of the relationships among objects are clarified through the interaction among students when making investigations.

(e) Phase 5: Integration. Students survey and summarize what they have learned by making connections among the geometrical shapes. The teachers assist students in making a synthesis on each of the geometrical shapes. However, the form of synthesis done will not be affecting the geometrical concepts that had been learned at all.

Casbari (2007) claimed that the use of van Hiele's model in learning geometry can improve students' academic performance, motivate students, and create a much simpler environment in the teaching and learning of mathematics. In addition, Mayberry (1981) suggested that secondary school teachers have to be trained to understand the van Hiele thinking level to improve students' van Hiele geometrical thinking level. In parallel to this, a few researchers have discovered the importance of van Hiele theory in explaining schoolchildren's learning of geometry (Brown, 1999; Baynes, 1999; Chong, 2001; Tay, 2003; Noraini.et.al, 2004).

Using Video in Learning

To apply the Video Compact Disk media in learning, teachers must first choose the appropriate materials for the program or learning requirements. This is followed by preparing the CD player and television set and after adequate introduction to the learning materials, the CD is played. The number replays depends on the needs and how fast the students are able to digest the learning materials. This method has been widely used in delivering lessons that utilizes numerous pictures, text, voices or animation. There are also several other reasons this method is widely used, such as: (1) the video can be played repeatedly, (2) the video show can be fast forwarded or slowed down, (3) there is no specific requirements for space, (4) its operation is relatively easy, (5) the VCD piece can be used repeatedly.

The importance of using video in learning as presented by Baggett (1984) stated that by using video as a learning media, students are not only able to make a mental representation from the semantic understanding of a story in either audio or visual form but when presented together, each source gives an additional information and completion which helps students in remembering symbols or pictures naturally. In line with that, Cennamo (1993) emphasized that a video presentation has to be designed for the purpose of improving students' mental *ability* and involving them in active learning. Among the previous researchers who discovered the importance of using video in learning, especially in mathematics, are (Choi, 2005) and (Yeong, 2006).

Research Overview

There are over 100 different models of Instruction System Design (ISD), for instance the nine stages of teaching aid development process by Dick and Carey in 1996, the three stages of linear development by Seels and Glasgow in 1998, the eclectic model for evaluation program by Morison et al. In 2004, the 4C/ID model by Bollen in 2006, and the R2D2 model by Botturi et al. in 2007. However, most of the models are a form of the generic ADDIE model which is an acronym for Analyse, Design, Develop, Implement, and Evaluate (Allen, 2006). Hence,

the five stages in the ADDIE model is utilized in this study. The research design for this study is as summarized in Table 1.

Research Method

Selection of the study's subject began with the introduction of potential subject of study. First of all, each SMP graduate in Parepare's van Hiele geometry thinking level had been identified by measurement and categorization (in Stage 1) using van Hiele Geometry Test (vHGT). The vHGT used is the standard vHGT by staff from Cognitive Development and Achievement in Secondary School Geometry (CDASSG) (Usiskin, 1982).

Based on the vHGT results, a sub-group of students who are representatives of the three basic category in van Hiele geometry thinking level (Level 0 (L0), Level 1 (L1), and Level 2 (L2)) were selected for this study. The randomly selected subjects from each group were students who had studied geometry for three years prior to the vGHT. Selected groups will go through the teaching and learning process using VGL in the classroom. The teaching and learning session will be conducted in three meetings (90 minutes per meeting) that will be held during the students' break after taking the national examination. During the learning session, subject will be shown a video and do things (interactive) with guidance from the video. After the next learning session, they will be measured again using vHGT (post-test).

Table 1: Research Design

Stage	Elaboration of Research Procedures
Stage 1 (Preliminary study + Analysis of important information)	a. Data collection on the infrastructure of each junior high school (SMP) in the district of Parepare, especially the ones used in the process of teaching and learning mathematics. b. Analysis of KTSP Mathematics Syllabus (Silabus KTSP Matematik) for junior high school (SMP) and high school (SMA) students. c. Investigation of the more complicated topics on geometry in teaching and learning through interviews with senior math teachers and a few students. d. Data collection and analysis of the geometry thinking level for students graduating from SMP in the district of Parepare using the van Hiele geometry level test (pre-test).
Stage 2 (Designing VGL)	a. Introduction and understanding of the van Hiele geometry thinking level. b. Identification and classification of lesson topics for practice. c. Designing module in appropriate order based on the content and learning objectives. d. Summary of learning activities in the learning module based on van Hiele geometry thinking level (Module 1, module 2, and module 3) e. Designing of learning practice based on learning phase and van Hiele's geometry thinking level.
Stage 3 (Development of VGL)	a. Development of learning module according to students' thinking level (Module 1, module 2, and module 3) b. Development of learning module and activities with computer which is then video-recorded into a CD or DVD. c. The video record is known as Video for Geometry Learning (VGL)
Stage 4 (Execution of VGL)	a. Classification of students according to their geometry thinking level. b. Random selection of 90 students from Level 0 group, 60 students from Level 1 group, and 30 students from Level 2 group. c. Execution of VGL in classrooms of 30 students each with level-appropriate module. Each module will be applied in three meetings (90 minutes per meeting).
Stage 5 (Evaluation of VGL)	a. Execution of van Hiele geometry test (post-test) on all students in each group. b. Analysis of pre-test and post-test results for evaluation on the extent to which VGL is able to help students in improving their van Hiele geometry thinking level.

Based on the vHGT results, a sub-group of students who are representatives of the three basic category in van Hiele geometry thinking level (Level 0 (L0), Level 1 (L1), and Level 2 (L2)) were selected for this study. The randomly selected subjects from each group were students who had studied geometry for three years prior to the vGHT. Selected groups will go through the teaching and learning process using VGL in the classroom. The teaching and learning session will be conducted in three meetings (90 minutes per meeting) that will be held during the students' break after taking the national examination. During the learning session, subject will be shown a video and do things (interactive) with guidance from the video. After the next learning session, they will be measured again using vHGT (post-test).

The answers to the questions in the vHGT pre- and post-test will be evaluated using two methods. The first method is called vHGT score to measure the difference in the average scores of pre and post test, the second method is called LGT Score to measure the progress of LGT students after learning with VGL in the classroom. Score vHGT assessed by giving a value of 0 for respondents who answered incorrectly and a value of 1 for respondents

who answered correctly, while LGT score assessed using methode have developed by Usiskin, known as the "3 correct of 5" method. This means that if a respondent answers at least 3 out of 5 items correctly in any of the vHGT subtests, the student is considered to have mastered the level. The total weighted marks by Usiskin (1982) are as follows:

1 mark for group criteria on items 1-5 (Level 1)

2 marks for group criteria on items 6-10 (Level 2)

4 marks for group criteria on items 11-15 (Level 3)

8 marks for group criteria on items 16-20 (Level 4)

16 marks for group criteria on items 21-25 (Level 5)

The scores obtained by the students are calculated based on the marks that had been determined by Usiskin in the 32 possible answers in determining the students' geometry thinking level table. The effectiveness of VGL is further investigated by dividing the students' improvement in geometry thinking level into four categories as shown in Table 2.

Table 2: Categories of Improvement in Geometry Thinking Level

Category	Explanation
Improvement between levels	Improvement of van Hiele geometry thinking level occurs in sequence (for example, from L0 to L1 or from L1 to L2)
The Skipping Phenomenon	Improvement of van Hiele geometry thinking level does not occur in sequence (for example, from L0 to L2 or from L1 to L3)
Improvement within a Level	There is no improvement of van Hiele geometry thinking level but an increase in the geometry thinking level score is obtained
No improvement	There neither improvement in van Hiele geometry thinking level nor in the geometry thinking level score

Data Analysis and Results

Data analysis of the geometry thinking level (PBG) score from the pre- and post- test obtained is as shown in Table 3

Table 3: Descriptive Statistic of Students' vHGT Score

	Mean	Deviation Standard	r	t	Sig (2-tailed)
Pair 1 Pre-test	7.32	2.341	.975	-9.030	.000
Post-test	9.37	2.954			

The results in Table 3 shown that the average and standard deviation of the post test increased when compared with the pre-test. Another matter that is obtained from the above table is the significant stages of $\alpha = 0.05$ level, then Ho is rejected because a significant stage in the schedule $(0.000) > 0.05$. Meaning mean pre-test and post test differed significantly.

The development of van Hiele geometry thinking level is further investigated by plotting a graph to observe the improvement of van Hiele geometry thinking level in each student from every level.
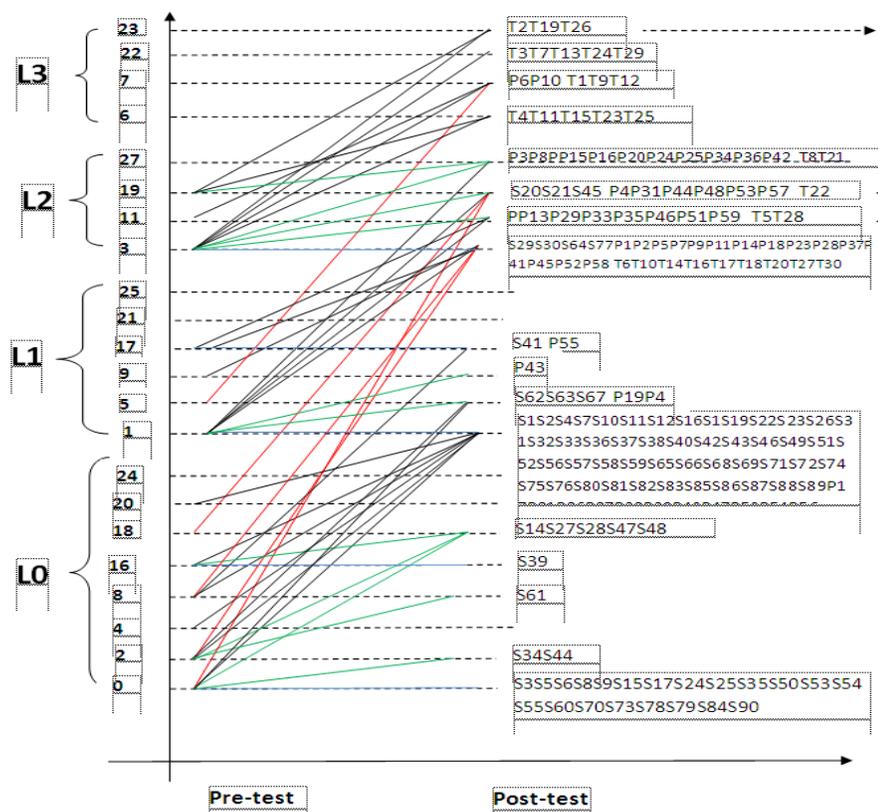
Figure 1: Development of Students' LGT Before and After Total Utility of VGL

Table 4: Number and Percentage of LGT Increase After Implementation of VGL in Learning According to the Categories

Cohort of Students According to LGT (Before Implementation of VGL)	Increase in LGT (After Implementation of VGL)							
	Between Levels		Within Level		The Skipping Phenomenon		No Improvement	
	N	%	N	%	N	%	N	%
L0 (N = 90)	53	58.9	8	8.9	7	7.8	22	22.4
L1 (N= 60)	41	68.3	4	6.7	2	3.3	13	21.7
L2 (N = 30)	16	53.3	5	16.7	0	0	9	30
Overall (N= 180)	110	61.1	17	9.4	9	5	44	24.4

Table 4 shows that 75% out of 180 student respondents who had utilized VGL in learning showed LGT improvement, either between levels, within a level, or underwent the skipping phenomenon. Nevertheless, there are 24.4% students still who did not show any kinds of LGT improvement after learning.

From both of the results and graft above shown, it is clear that majority of the students showed improvement in their geometry thinking level following lessons in the classroom where VGL is implemented. It means that this tool is helpful in assist to improve the van Hiele geometry thinking level among the SMP graduates.

Discussion and Conclusion

The study shows the effectiveness of VGL in improving the van Hiele geometry thinking level of SMP ninth grade students in Parepare. The results of the data analysis shows that out of 90 students in the L0 group sample, 60 of them showed improvement. In L1 group which consisted of 60 students, there were 43 who showed improvement, whereas in L2 group which consisted of 30 students, 15 of them showed improvement. The types of improvement shown were improvement between levels and the skipping phenomenon.

A part from that, the data analysis also shows that there are still a number of students who did not show any improvement in the thinking level after utilizing the VGL. Some of the explanations for this occurrence are listed below:

    a. Some students still find it difficult to analyze the connection between the geometrical shapes

    b. There are students who have not understood the concept transition from two-dimensional geometry to three-dimensional geometry.

    c. There are students who are not able to interpret the figures in geometry lesson.

    d. There are students who still face difficulties in making their own definition of the geometrical shapes.

Based on the findings, there are a few suggestions and recommendations for future research, i.e.

    a. VGL is recommended for districts with similar situation and environment as Parepare in the hope of improving the LGT of SMP ninth grade students.

    b. Further development of VGL, especially the module 2 so that upon completion of the module, students are able to read charts and analyze the properties of the geometrical shapes.

    c. Further development of VGL, especially the module 3 so that upon completion of the module, students are used to the concept application and classification of the basic geometrical shapes.

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Improving Turkish language training materials: Grapheme-to-phoneme conversion for adding phonemic transcription into dictionary entries and course books

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Abstract

Course materials for teaching Turkish as a second language lack information about the pronunciation of Turkish. These materials have chapters about the alphabet and the pronunciations of the letters, but they lack notation as phonemic transcription. Also Turkish dictionaries lack phonemic transcription information with the false belief that Turkish alphabet is a phonemic one. However there is not a one-to-one correspondence between the letters in the alphabet and the phonemes of Turkish. In this respect, this study aims at developing a grapheme-to-phoneme/allophone conversion tool for Turkish. The output of the software can be used in course materials for teaching Turkish as a second language, and Turkish dictionaries for learners.

Keywords: dictionary; course materials; phonemic transcription; grapheme-to-phoneme conversion

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Introduction

Turkish language has become very popular due to Turkey's great potential as a global actor and as a gate to newly emerging markets in the Central Asia. The US government has included Turkish in the mission-critical languages list of the CIA (CIA Values Language Capabilities Among Employees, 2009) and the US universities (Boston University, Texas A&M University, University of Pittsburgh, etc.) have started new programs on Turkish history, culture and history or improved their existing ones. These recent developments caused Turkish to be a promising language for the future and many students from all over the world started to learn Turkish both in their own countries and in the government and private institutions in Turkey. To meet the need for learning Turkish as a foreign language, many universities in Turkey have started graduate programs on Teaching Turkish as a Foreign Language (Dokuz Eylul University, Istanbul University, Hacettepe University, Yildiz Teknik University, etc.). However, the learning materials, especially Turkish dictionaries lack one of the most important information about a language, the pronunciation. Turkish course materials have chapters about the alphabet and the pronunciations of the letters but they lack notation as phonemic transcription. Also the Turkish dictionaries lack phonemic transcription information with the false belief that Turkish alphabet is a phonemic one. However there is not a one-to-one correspondence between the letters in the alphabet and the phonemes of Turkish. In this respect, this study aims at developing a grapheme-to-phoneme/allophone conversion tool for Turkish to resolve the problem mentioned above. The output of this software will be directly accessible by the user and will be intelligible for any language teacher familiar with the phonetic symbols used in IPA (International Phonetic Association) alphabet.

The study is organized as follows: first some basic definitions of the concepts frequently used in the study and the linguistic data which is used as the basis of the study are given. Later a brief review of the literature on grapheme-to-phoneme/allophone conversion is presented. Following the literature review the algorithm of the software developed in this study is discussed in detail. At the last section the output and overall performance of the software is presented with examples.

Basic Definitions and Turkish Linguistic Data

In order to explain the grapheme-to-phoneme/allophone conversion process some basic concepts to be used in the study are presented to explain what we intend in using these concepts.

Graphemes and Turkish writing system

A grapheme is the minimal contrastive unit in the writing system of a language, which may be realized in several forms and usually enclosed in angle brackets (Crystal, 2003). For instance the grapheme < a > may be realized as *A,* a, or *a.* Turkish alphabet have 29 letters; however Turkish writing system comprises of 32 graphemes, 29 letter forms represented in the Turkish alphabet and the graphemes < â >, < î > and < û >, formed by adding the circumflex (^) diacritic on graphemes <a>, <i> and <u> (TDK Yazim Kilavuzu, 2013).

Phoneme

A phoneme is the smallest distinct sound unit in a language (Matthews 1997) capable of distinguishing meaning. For instance phonemes /s/ and /ʃ/ distinguish the words sap and şap. Various sources (Ergenç, 2002; Özsoy, 2004; Göksel & Kerslake, 2005) present different classifications and therefore different numbers of phonemes for Turkish. In this study we manage a unified approach and combine the data from all of these resources. In our classification there are 32 phonemes in Turkish sound system. The equity between the number of graphemes and phonemes should not misguide us to the conclusion that Turkish has one-to-one correspondence between graphemes and phonemes, since some graphemes may represent more than one phoneme. The list of Turkish phonemes is presented in the table below, with the corresponding graphemes and examples.

19. Table 1. Phonemes in Turkish

Graphemes		Phonemes
Uppercase	Lowercase	
A	a	α / a
B	b	b
C	c	ʤ
Ç	ç	ʧ
D	d	d
E	e	e
F	f	f
G	g	g / ɟ
Ğ	ğ	*
H	h	h
I	ı	ɯ
İ	i	i
J	j	ʒ
K	k	k / c
L	l	ɫ / l
M	m	m
N	n	n
O	o	o
Ö	ö	ø
P	p	p
R	r	r
S	s	s
Ş	ş	ʃ
T	t	t
U	u	u
Ü	ü	y
V	v	v
Y	y	j
Z	z	z
Â	â	*
Î	î	*
Û	û	*

* These graphemes do not have phonemic correspondences; however they may cause phonological events such as lengthening the vowel.

As it can be seen in Table 1, Turkish phonemes and graphemes do not always present one-to-one correspondence. Some graphemes represent more than one phoneme, and some graphemes do not have phonemic correspondence, they may have allophonic correspondence which will be discussed in following sections.

Allophone

An allophone is an audibly distinct variant of a phoneme (Matthews, 1997). Allophones are related sounds which are derived from the same phoneme. For instance Turkish phoneme /n/ has three variants, in other words three allophones [n], [ŋ] and [ɲ]. These variants are used with regard to the phonetic environments they occur as below:

<sen>   [sɛ̃n]
<tank>   [tʰɑ̃ŋk]
<cenk>   [ʤɛ̃ɲc]

This allophonic variation is represented as allophonic rule, which covers all allophones of a phoneme and their conditions for occurrence. The allophonic rule for the allophone of /n/ is as follows:

/n/   →   [n]   /   +_____, _____+
              [ŋ]   /   V[back] _____ C[velar, plosive]
              [ɲ]   /   V[front] _____ C[palatal, plosive]

The rule above states that phoneme /n/ transforms into (→) allophones ([n], [ŋ] and [ɲ]) in the phonetic environment (/) stated. Accordingly;

allophone [n] occurs at the syllable boundaries (+), namely at the beginning of a syllable and at the end of a syllable, as in *nasıl* and *sen*
allophone [ŋ] occurs after a back vowel (V) and before a velar plosive consonant (C), as in *tank*,
allophone [ɲ] occurs a front vowel and before a palatal plosive consonant, as in *cenk*.

As it can be seen from one example, Turkish phonology has many nuances for most of the phonemes. The phonemes and their allophones are presented with their examples in Table 2 below. Due to space limitations the allophonic rules, explained with an example above, are not presented in detail.

Table 2. Allophonic Variation in Turkish

Graphemes		Phonemes	Allophones
Uppercase	Lowercase		
A	a	ɑ	ɑ a ɑ̃ ã
B	b	b	b
C	c	ʤ	ʤ
Ç	ç	ʧ	ʧ
D	d	d	d
E	e	e	e ɛ ẽ ĕ
F	f	f	f ɸ
G	g	g / ɟ	g ɟ
Ğ	ğ	*	*
H	h	h	h x ç
I	ı	ɯ	ɯ ɯ̃ ɯ̆
İ	i	i	i ĩ ĭ
J	j	ʒ	ʒ
K	k	k / c	k kʰ c cʰ
L	l	ł / l	ł l
M	m	m	m ɱ
N	n	n	n ɲ ŋ

O	o	o	o õ ɔ
Ö	ö	ø	ø œ̃ œ
P	p	p	p pʰ
R	r	r	r ɾ ɽ
S	s	s	s
Ş	ş	ʃ	ʃ
T	t	t	t tʰ
U	u	u	u ũ ŭ
Ü	ü	y	y ỹ y̆
V	v	v	v β
Y	y	j	j
Z	z	z	z
Â	â	*	*
Î	î	*	*
Û	û	*	*

<ğ> Grapheme issue in Turkish

The grapheme <ğ>, read as "*yumuşak ge*" (soft g), lacks a corresponding consonantal sound in standard Turkish, although it is pronounced as a voiced velar fricative in some dialects (Göksel & Kerslake, 2005: 7). Ergenç (2002) and Göksel & Kerslake (2005) describe the effects of <ğ> in detail. These effects can be summarized as below:

It lengthens the preceding back vowel in when it is in syllable-final or word-final position. The lengthening effect is represented with the symbol ː in the IPA phonetic alphabet: *yağmur* [jɑːmuɾ], *dağ* [dɑː];
It may be pronounced as a palatal glide when the preceding vowel is a front one: *eğlen* [ejlẽn];
It is inaudible between identical back vowels, lengthening the first vowel: *uğur* [uːɽ]; *siğil* [siːl];
If it is between two vowels and these vowels have different distinctive features, in other words they are not identical, it causes a vowel shift. The vowel shift is represented with the symbol · in the IPA phonetic alphabet: *ağıt* [ɑ·ɯt], *öğe* [ø·ĕ].

Syllable and syllable structure in Turkish

Syllable is the basic unit of speech or pronunciation (Bussmann, 1998: 1155). Studies on G2P and also phonology show that in most cases information about the position of a syllable boundary is necessary to define the proper domains for phonological and phonetic rules (van den Bosch & Daelemans, 1993; Demberg, Schmid & Möhler, 2007). As it mentioned in the literature, in Turkish syllable is mostly the domain for phonological rules and allophonic variation. For instance a vowel preceding a nasal consonant in the same syllable becomes nasalized. However a vowel preceding a nasal consonant does not change into a nasal vowel.

gün [gỹn]
günü [gy.ny̆]

As it can be seen in the examples above, the vowel /y/ (ü), becomes nasalized when it precedes the consonant in the same syllable; but it same vowel preceding the same consonant, but this time in another syllable (syllable boundary is presented with full stop), does not change into its nasal counterpart. In order to define the phonemes and the allophonic variation more accurately the syllable structure should be taken into consideration. Özsoy (2004) gives a detailed account of syllable in Turkish; and this study used the rules presented in Özsoy. The structure of the syllable in Turkish can be summarized as below (Özsoy, 2004: 97-98, 101):
Turkish has six different syllable patterns:

```
V          o
CV              bu
VC              aç
CVC             tok
VCC             alt
CVCC    sarp
```

Consonant clusters comprise of two consonants and are limited to two consonants only: *Türk, *plan,*

Turkish syllables are mostly open syllables. When a word ending in a consonant is added a suffix beginning with a vowel re-syllabification process occurs and the consonant at the end of the first syllable shifts into the next syllable and becomes onset. *aç – ım → a + çım*

Turkish has some borrowing syllable structures for loanwords.

```
VCC                 aks
CCV                 pro
CCVC        spor
CCCVC       Strazburg
```

Literature Review

In order to convert the graphemes into phonemic symbols a computer process called the Grapheme-to-Phoneme conversion is used. Grapheme-to-Phoneme (G2P) conversion is a basic module of any text-to-speech system, which converts a written text to synthesized speech signal. G2P is the task of converting a string of graphemes (letters used in writing) to a string of phonetic symbols (letters used to represent speech sounds) (Demberg, Schmid & Möhler, 2007: 96). G2P has application in many areas such as speech recognition, automatic dialogue systems, and in transliteration systems (systems which provide conversion from one alphabet system to another; e.g., from Cyrillic to Roman).

In the literature there are numerous G2P studies for various languages, in which G2P systems are both used as modules in text-to-speech systems and as independent software (Daelemans & van den Bosch, 1993; Kienappel & Kneser, 2001; Demberg, Schmid & Möhler, 2007; Bisani and Ney, 2008). The G2P systems developed in these studies are also used in the transliteration of languages with different orthography.

G2P systems are also present in the national literature (Salor, 1999; Bozkurt, 2000; Sak, 2000; Şayli, 2002; Salor, 2005; Sak, Güngör & Safkan, 2006; Görmez & Görmez, 2008; Yılmaz, 2009; Akbulut, Adıguzel & Yılmaz 2011). However all of these systems are parts of text-to-speech or speech-to-text systems and their outputs are available for the computer systems only and cannot be accessed and used by the user.

There is one valuable resource on Turkish pronunciation "Konuşma Dili ve Türkçenin Söyleyiş Sözlüğü", a pronunciation dictionary by Ergenç (2002). However, this publication is available only in printed medium and it requires great effort to digitize this publication through OCR methods. Therefore it cannot be used easily in course materials and in Turkish dictionaries.

Method

When the literature on Grapheme-to-Phoneme conversion is reviewed it can be seen that this task can be performed using either rule (knowledge) based approach or a data-driven approach (Kienappel & Kneser. 2001):

Rule based approach;
requires great effort and expertise, and explicitly coded, language-specific, linguistic knowledge sources,
cannot be applied to new tasks and languages easily,

has inherent problems with maintenance, it is difficult to change some of the rules without introducing unwanted side effects.
demonstrates impressive performance for some tasks,

On the other hand, data-driven approach;

requires spelling of words with their associated pronunciation in a phonemic or phonetic alphabet
is highly flexible
is automatically produced for a language according to the rules implicit in the training data, without explicit modelling of linguistic knowledge

In rule based approach to the design of grapheme-to-phoneme modules, explicitly coded, language-specific, linguistic knowledge sources are necessary for performing the task. However, great effort and expertise are required to set up such a module and to adapt this module to a new language or task (Kienappel & Kneser, 2001). In data-driven approach which uses supervised learning techniques, based on a corpus of transcribed words, the same even better performance can be achieved, without explicit modelling of linguistic knowledge (van den Bosch & Daelemans, 1993). But modules, developed using this approach, are applied to corpora, thus require annotated data (a database of word-pronunciation pairs) to be at hand already. (Daelemans & van den Bosch, 1993).

In this study we implement the rule-based approach to G2P since there is not any transcribed or machine readable corpus of words in Turkish to enable us to implement a data-driven approach. Only resource for this purpose is the "Konuşma Dili ve Türkçenin Söyleyiş Sözlüğü", a pronunciation dictionary by Ergenç (2002). However, this publication is available only in printed medium and it requires great effort to digitise this publication through OCR methods. Instead, we intend to start from scratch, building a customisable architecture that will store the inventory of graphemes from Turkish alphabet, phonemes and phonological rules from phonology in a database.

Rule-based G2P software for Turkish

The architecture of the software developed is as follows:
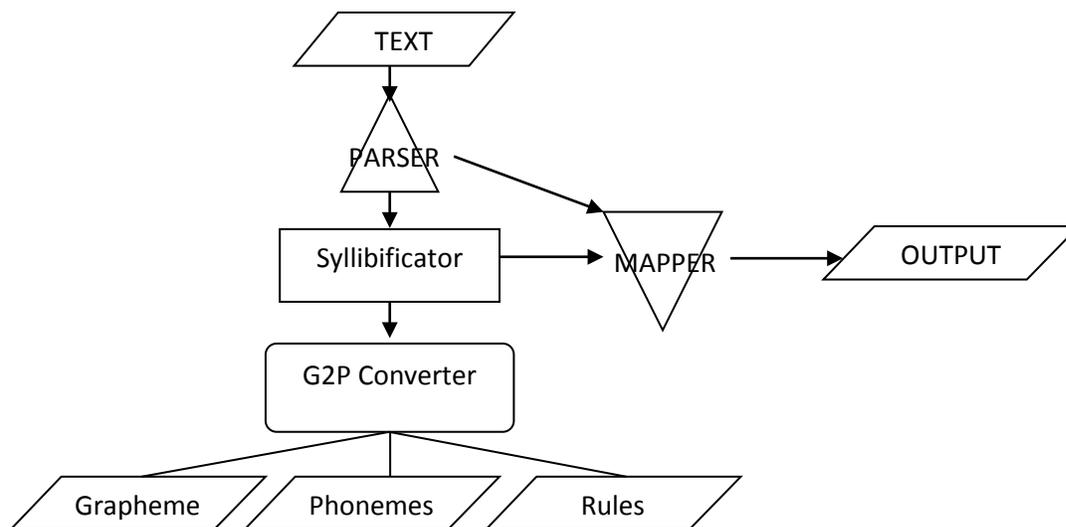
Fig. 1. The architecture of G2P Software

According to this architecture, in the G2P conversion tool for Turkish, the *Parser module* in the first step takes as its input any Turkish text and it parses this body of text into sentences and into words.

In the *syllabificator module*, these parsed spelling of the words are split into their syllables, since in most cases information about the position of a syllable boundary is necessary to define the proper domains for phonological and phonetic rules (van den Bosch & Daelemans, 1993; Demberg, Schmid & Möhler, 2007).

Later in the *G2P converter module* the graphemes in these syllabified words are matched to their phoneme symbols using the phonological rules stored in the inventory.

In the last stage, a *Mapper module* matches the word spelling and phonemic transcription in pairs and produces as its output a corpus of words with their transcription.

Parser Module

The parser module uses the sentence boundary detection algorithm proposed by Aktaş (2006) and Aktaş & Demir (2006) to parse the plain text files into sentences and words. It stores this annotated data in XML format. This module runs online as a web-service.

Syllibificator Module

This module splits the parsed words into their syllables using a syllabification algorithm developed using the phonological rules mentioned above.

In order to evaluate the accuracy rate of the syllabificator module 5000 words (two or more syllables) from TDK Turkish Dictionary were randomly chosen. The evaluation results are as below:

20. Table 3. Accuracy Rate for the Syllibificator Module

Number of Words	5000
Number of incorrectly parsed syllables	22
Number of Correctly Parsed Syllables	4978
Accuracy Rate	*99.56*

As mentioned before syllabification is necessary to define the proper domains for phonological and phonetic rules, and in Turkish phonology in most cases syllable boundaries are important in defining the phonemic environment, namely the context a phoneme occurs.

G2P Converter

G2P converter module takes the parsed and syllabified words as its input and using the data from the inventory sets for graphemes, phonemes and phonological symbols it converts the graphemes into phonemes according to the phonological rules. This module first maps the graphemes to their corresponding *phonemic* symbol in the alphabet of the IPA. After this first step the module applies the phonological rules on these phonemic symbols and returns the final symbols that are altered according to the allophonic variations represented in the rules. The module makes use of three sets of data in its operations, namely the inventory of graphemes, the inventory of phonemes and the inventory of phonological rules

Mapper

Mapper module takes the parsed text and the output of the G2P module as its inputs and pairs these data into a corpus of words with their transcription, with and without syllable marking full stops (.).

Overall evaluation of the G2P software for Turkish

The software was implemented following the structure mentioned in the previous chapter, after building up the inventory of graphemes and phonemes. Later, the phonological rules were gathered from the resources and encoded in a way that the software could understand these rules.

The software uses UTF-8 Unicode encoding system in presenting the IPA symbols for phonemes due to Unicode's widespread support for IPA symbols and for the ease of use for the end-users who are most probably familiar with the symbols in the IPA.

The software takes any pieces of text as input through an "Input Text" box or from a plain text file encoded in UTF-8 Unicode encoding. Then it converts the graphemes in this "Input Text" into phonemes and displays the results in an "Output Text" box. The user may save the results in a plain text file. The screenshot of the program is given in Figure 2 below.
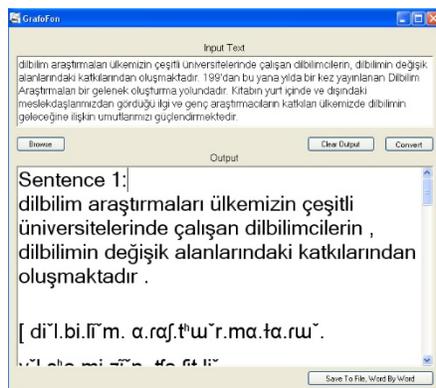
21. Fig. 2. A screenshot of the G2P software user interface

The software saves the output word by word, with each word's phonemic transcription, both with and without syllable boundaries. This saving method is preferred for future studies; especially a G2P system that uses data-driven approach for the process. Thus, the output of the program is saved in such a structure that any data-driven G2P software can access the grapheme data, the phoneme data and, in addition, the syllable data of the words in the text file. The screenshot of the resulting text file is presented in Figure 3 below.

22. Fig. 3. A screenshot of the output file

The software was tested using a 1000 word sample selected from the Turkish dictionary of TDK. The words comprised of two syllables minimum. The 1000 words selected for the sample contained 7894 graphemes. The results of the accuracy evaluation on the software's output are given in Table 4 below.

23. Table 4. Accuracy rate of the G2P software

Number of Words	1000
Number of Graphemes	7894
Number of Correctly Parsed Graphemes	7588
Number of Incorrectly Parsed Graphemes	306
Accuracy Rate	*96.12*

Conclusion

The software implemented in this study is a rule-based grapheme to phoneme system that converts graphemes of Turkish into their corresponding phonemes. The process of implementation comprised of gathering the list of graphemes, phonemes and phonological rules into a database. The resulting software is tested on a word list comprising of the entries of The Turkish Dictionary obtained from TDK. The results of the program are successful and the list of words with their phonetic transcriptions will be presented to TDK to be used in their online dictionaries. The output of the program may be used in text-to-speech and speech-to-text systems which have become popular recently. The output can also be used course materials in Teaching Turkish as a Foreign Language programs or other linguistic research on phonological properties of Turkish Language. The G2P software developed in this study is a rule based G2P system and thus is the first step in grapheme-to-phoneme conversion process for Turkish. The software may give way to other software, for instance data-driven G2P implementations or may be used as an embedded module in text-to-speech systems.

Acknowledgements

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Incorporating Mind-maps in Cell Biology Lectures - A Reflection on the Advantages and Potential Drawback

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Abstract

Mind-maps have been advocated to be a useful learning tool for students. For Mind-maps to be effective, students have to learn how to use them and then construct their own maps. In this report, I describe my use of Mind-maps as a simple but useful tool for integration into teaching slides during Cell Biology lectures for providing students an overview of the topics that they are learning, orientating students during lectures with respect to the progression of the lesson and for showing links between topics. I highlight the strengths and potential weaknesses of such an approach.

Keywords: Mind-maps, Presentation, Overview, Orientation, Student learning

Introduction

The use of Mind-maps or Concept Maps has been proposed to be useful for promoting active-learning of Biology among students (eg. (Allen & Tanner, 2003; Morse & Jutras, 2008; Odom & Kelly, 2000)). For such an approach to work, students have to be taught how to use and construct the maps. It is also useful to provide timely feedback to students on their use of Concept Maps to fully exploit the advantages of the tool (Morse & Jutras, 2008).

I have been teaching a large-class Cell Biology module which was shared by two other lecturers. Due to time-constraints and the student numbers of about 250 - 280, I was not able to provide close supervision of Concept Mapping as we do not have teaching assistants in our module (Morse & Jutras, 2008). Moreover, because the time constrains, peer-evaluation was not tried. Given that Cell Biology is challenging both at the breadth of the subject matter and the amount of details that are accumulating from the fast-paced research in the field, I therefore chose to use Mind-maps as a presentation tool to provide not only the overview of the topics, but to highlight to students where the lectures are in relation to the main ideas I was teaching.

Essentially, the Mind-maps allowed me to zoom-in and –out of the topics as the lectures went on, providing me a tool to supplement my Powerpoint slides to present ideas and concepts to the students. I could demonstrate to the students how I use the Mind-map tools to organize my thoughts. This should provide students with a framework for understanding the topics I was teaching and how the topics connect to one another. Students can add details to the overview maps that they can use as quick revision tools. I also encourage students to try out the Mind-map programs for themselves to determine if they find it useful for making their own maps when they are doing their revisions.

Software Used

Given the large class with students from different background, the guidelines I used to choose suitable software for use are that it should be free and that it should not be restricted to any particular operating systems. FreeMind (freemind.sourceforge.net/) and Xmind (http://www.xmind.net/) are examples of such tools that fit these criteria. This was important because in addition to my using them as presentation tools, I also hoped that some students might find it useful as a learning tool.

Both the software are relatively similar and I used them interchangeably depending on the need such as whether I wanted a simple map (FreeMind is sufficient) or if I wanted the maps presented as a fishbone, logic chart or

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organizational chart (Xmind has more choices). Students were introduced to these two softwares briefly at the beginning of my series of lectures. It was explained to them that I was using the software as a *presentation* tool to provide overviews and summaries of the topics I was teaching.

I also highlighted that some students might find it useful as a *learning* tool, but that they have to construct their own maps for the maps to be effective. To help students use the Mind-map software, I also made a screen recording (recorded with QuickTime) (data shown in the virtual presentation) that I uploaded at the Integrated Virtual Learning Environment (IVLE) site showing how to use the software for students interested in using it as a learning tool for themselves either for the Cell Biology module or any other modules they were taking.

Examples of use

At the start of my series of lectures, I showed a figure with the module topic at the center of the Mind-map (Figure 1) and the key subjects that are essentially the four main areas that will be covered in the module (Figure 1). The red tick indicated the topic just covered by my co-lecturer.

Fig. 1. Main topics as shown in the Mindmap figure inserted into the Powerpoint slide
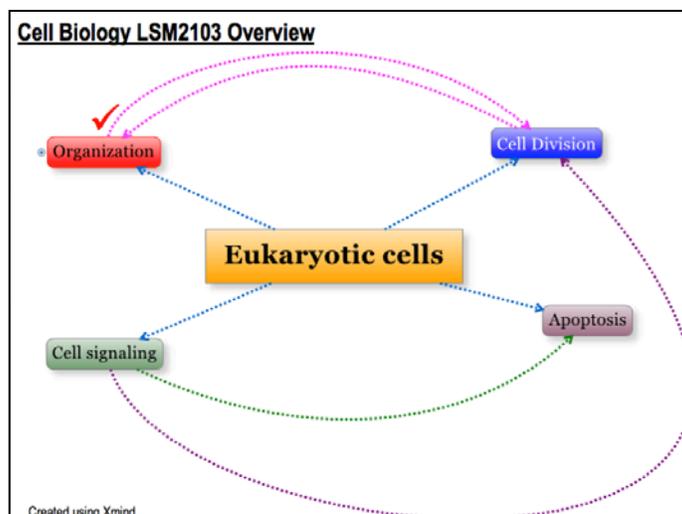
To zoom into the details of what has been taught as a way to help student recall the previous lectures, the Mind-map can be expanded to show more. For example, for each organelle, I highlighted their key functions (Figure 2, left panel). It was also easy to indicate on the same Mind-map the new subject matter for the lecture of the day (Figure 2, green arrow).

Fig. 2. Expanding a node in the Mind map.
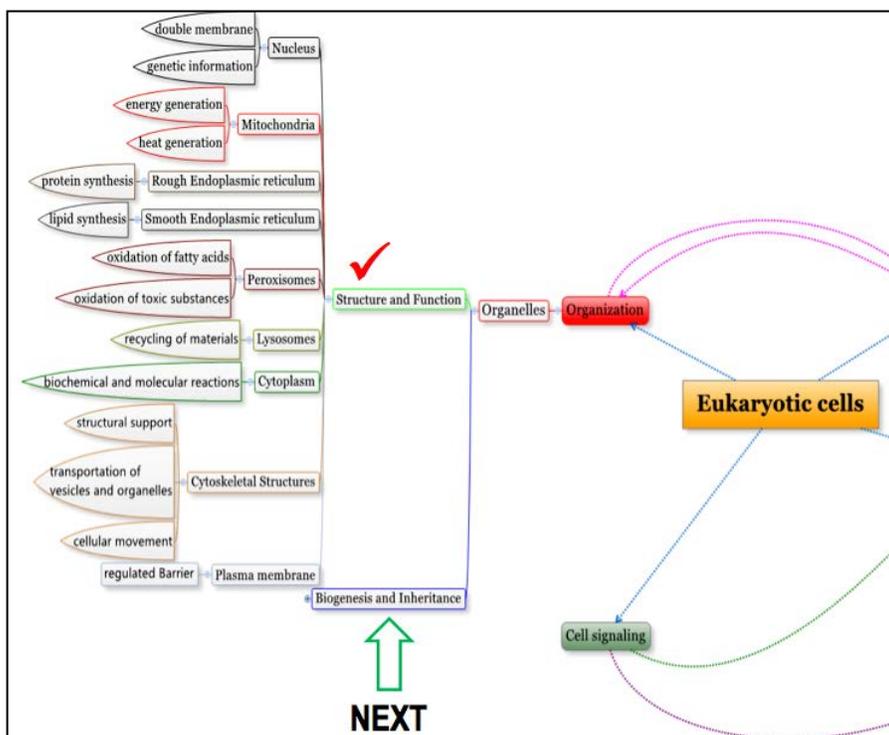
At the end of the lecture, the Mind-map was shown again, but with expanded nodes to indicate what it was that had been covered in the 2-hour lecture (Figure 3, red tick). This will help put into context what we had just taught the students and how that related to the previous topics.

Fig. 3. Topics covered during the day.
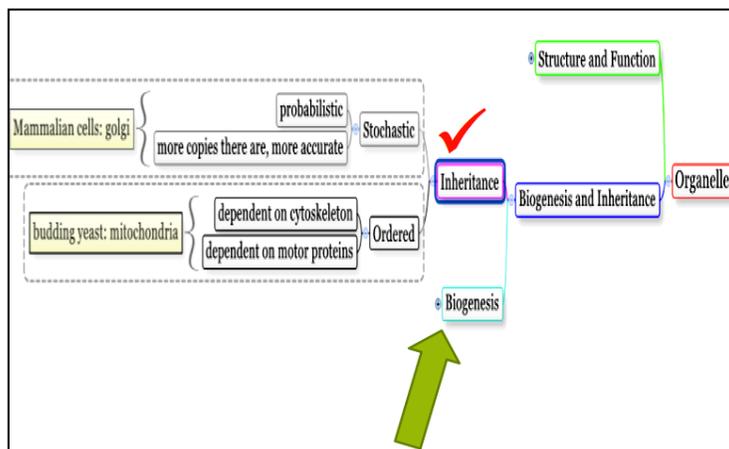
Unsolicited Comments from Students on Mind-maps during End-of-Semester Feedback

Although no formal survey was carried out to obtain the students' thoughts on the use of the Mind-maps, it was interesting to note that in the students' feedback at the end of the semester that the students made mention of the Mind-maps in favorable light. Mostly the students either stated that the Mind-maps were useful or they alluded to

"summary figures" as being beneficial for their learning of concepts as well as for following the lectures and use the Mind-maps as quick study guides. One particular student mentioned that he is normally averse to using Mind-maps as a learning tool personally but found the Mind-maps presented as effective as a summary tool.

It should be noted that with a class size of 250 – 280, these few comments should not be taken to be representative, but that the Mind-maps made an impression on the students who provided the comments voluntarily. These are comments that would only serve to provide some hints as to how the Mind-maps were useful to students.

Table 1. Examples of <u>unsolicited</u> students' comments on Mind-maps

1. "…the use of Mind-map is helping students to know which part of the lectures that are being taught"

2. "Her teaching of the Mind-map , although I am one who dislike using such techniques,is very effective in summarizing all the concepts taught during the lecture"

3. "Like how she makes use of the mind map to help everyone see where we are now so we don't get lost"

4. "Mind-map is very useful to highlight the main points"

5. "good Mind-maps in the notes"

6. "…and she has a summary mind-map page. I think this is effective in giving and overview on what has been coverd so far"

7. "the Mind-map helped give me an overview of the content covered"

8. "Mind-maps and the breeze recordings were useful"

9. "mind mapping ways are really helpful in our learning"

10. "Her use of Mind-maps is extremely helpful in studying and revising"

11. "Provides Mind-maps that allow students to link subject to entire process"

12. "her Mind-maps or the way she teaches us link between ideas is very useful"

13. "Notes are good too, especially the Mind-maps"

14. "Provides useful Mind-maps which links content together"

15. "promotes good studying habits like making Mind-maps"

Reflections on the use of the Mind-maps

At the personal level, I found that the Mind-maps were a good tool to represent the concepts I wanted to teach my students, as the programs such as Xmind allowed me easily to create concept-maps that could be expanded and collapsed to show overviews and details of Cell Biology. It was also easy to copy and paste the Mind-maps as figures into Powerpoint slides so that the maps are incorporated into my lectures. With such an ease of use, I imagine it would also not be difficult for students who are generally more technologically savvy and who want to use the programs for their own learning, especially if they want to construct their own maps.

More importantly, the positive comments from the various students (Table 1) on their impression of the Mind-maps were encouraging to me as it showed that the Mind-map used as a presentation tool could help students in the way I had intended. This is especially so for the use of Mind-maps to provide a good framework for students to orientate themselves through the lectures that can sometimes be rather overwhelming in terms of the content.

A potential drawback of this usage of Mind-maps can be seen from the comments such as #10 or #11 or #14 (Table 1). These comment appear also to be positive in terms of how students think they benefited from being able to see links between topics so that they do not learn each topic in isolation. However, on reflection, I think that having me make the links between topics for students might potentially impede active-learning in students if they do not gradually learn to make their own associations between concepts in Cell Biology. Indeed, Mind-maps should be useful for encouraging conceptual and active-learning in students (Allen & Tanner, 2003; Knight & Wood, 2005; Michael, 2006; Morse & Jutras, 2008). If students become over-reliant on the teacher to make the Mind-maps for them, a possible problem could be that they use the Mind-maps I created merely as materials for studying. As such, even though the use of Mind-maps in my lectures seemed to be an approach that students welcomed, modifications

on how they are used need to be made to fully capitalize on the strengths of such a tool not only for presenting ideas, but also for promoting active-learning in students (Wood, 2009).

Future improvements in applying Mind-maps

The figures of the Mind-maps shown during the lectures were in fact screen shots of the Mind-maps on my computer that I then copied pasted onto Powerpoint slides. This has the advantage that when I uploaded the slides at IVLE for the students, the Mind-maps are directly found in the slides. This was especially useful for students who did not use the Mind-map programs because they were unsure how to use them. However, this was a cumbersome way of presenting the map as compared to using the programs and showing the expansion and collapse of individual nodes to highlight connections between topics. Xmind has a portable version that would allow one to present the Mind-maps at the lecture theatre from a thumb-drive without having to pre-install the software at the computer that one is using in the lecture theatre. This is helpful as there might be administrator protected-rights on several of these computers that might forbid me from installing the Mind-map programs. By presenting from the Mind-maps directly, one can click on various nodes easily to draw students' attention to specific points of interest. The Mind-maps can then easily be export as image files or Pdfs that can be uploaded at IVLE for students.

Another improvement would be to incorporate figures and diagrams of cellular components or processes into the Mind-maps. This will help me better represent ideas as compared to merely using words and phrases in the Mind-maps shown above (Fig 1 – 3). Xmind allows one to do that rather effectively. The figures will enable students to better visualize the structure and processes occurring in the Cell as they learn about the concepts.

It is also critical to address the issue of active-learning (Wood, 2009) that students should be encouraged to do in relation to the use of Mind-maps to make links between topics. While I use my Mind-maps for presentation, a partial Mind-map could be distributed to students who are interested to use it as a starting point to learn to create their own maps or start from afresh. This should not be a completed Mind-map, but rather, one in that provides a framework for students to construct their own Mind-maps. By omitting certain facts in the maps, students will have to think about the links that they find among the different topics. For example, a Mind-map with questions could be used as a starting point to motivate students to think about the topics taught in context of functional processes in Cell Biology (Figure 4). I could provide such maps at the beginning of each lecture for students to review what they had learnt in the previous lesson before I begin on a new lecture. They can also use such question-based maps their self-constructed Mind-maps to fill in details that they judge to be important in their self-constructed maps. These maps could then be peer-reviewed at least so that students can get feedback on their conceptual understanding (Morse & Jutras, 2008). As such, a discerning use of Mind-maps should be the strategy to allow me both to present critical ideas in an effective way in class and at the same time, provide enough motivation for students to learn actively on their own by constructing their own maps. It would be useful to set-up surveys to gather feedback from more students as to their experience with Mind-maps. This will provide me with practical information as to the habits of the students such as whether they are contented to use my Mind-maps or if they are motivated to create their own. Any difficulties or resistance to using Mind-maps could also be revealed and such information will be beneficial to me for improving upon how to encourage students to test out the Mind-mapping programs.

More significantly, it might be valuable to set-up experimental tests to determine if the use of Mind-maps in my lecture slides actually helped with student learning. For instance, I could teach initial topics without using Mind-maps and conduct pre-tests to determine if students can make connections between topics. I could then incorporate the Mind-maps into subsequent other lectures and perform post-tests to see if the students' ability to make links across topics is improved. One could also perform such tests after students progressed to the next level of their degree program and check if such skills in making connections between topics are retained. Such tests could be further combined to examine if students who use such Mind-mapping tools are able to learn better than students who do not. The data gleaned from such a study can be shown to subsequent students so that they can consider better whether they want to try out the Mind-mapping software for themselves.

Fig. 4. Question-based Mind-map to encourage Active-learning in Students.
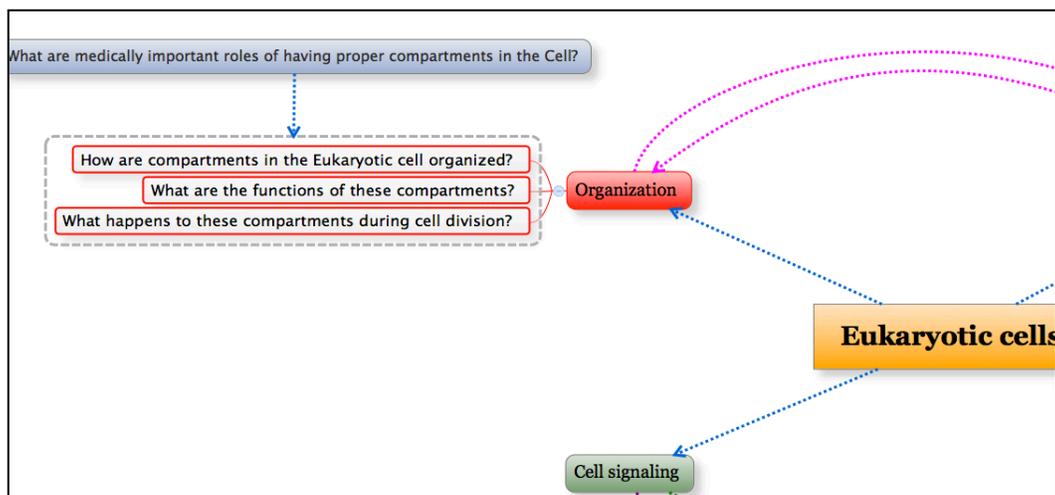
Summary

In summary, the use of Mind-maps as a presentation tool that allowed me to provide topic overviews as well as to drill down into topic details, had indeed been a positive experience for myself and the students who provided comments on them. It would however, be worthwhile to further improve upon the usage of the Mind-maps during my lectures in my subsequent semesters, bearing in mind the potential drawback of using this without at the same time engaging the students in creating their own maps. Students will be encouraged to make use of such Mind-map programs to explore by their own experience, if making their own maps to link concepts give them a better grasp of the different topics taught to them. Ultimately, the aim is to achieve a good presentation of the subject to students but also to get more students who will provide comments such as in #15 (Table 1).

Acknowledgements

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Influence of E-Portfolio Supported Education Process to Academic Success of the Students

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Abstract

Problem Statement: In recent years usage of e-portfolio in education has become the topic of many researches. In these researches it is generally emphasized the influences of e-portfolio to the learning attitude, academic success and usage of information technologies.

Purpose of Study: In this work the influence of e-portfolio supported education process to the academic successes of 10th grade students of Tekirdag Technical and Industrial Vocational High School has been studied. Within the scope of the research, e-portfolio supported education in test group in Vocational Development course and traditional in-class education was applied in control group in 2nd semester of 2010-2011 academic year.

Method: Control Group Trial Model with pretest and posttest was applied.

Findings and Results: While assessing the findings from the work it was benefited from SPSS 17.0 package program for statistical analyses. Kolmogorov-Smirnov normality test was applied in order to see whether the difference between pretests and posttests of test and control groups. In comparison of quantitative data t-test and Mann Whitney U test was used. Conclusions and Recommendations: According to the findings obtained at the end of the research, academic success posttest scores of the students in test group was higher comparing to that of students in control group. Based on these findings it was reached to the conclusion that e-portfolio supported education process influenced the success of students in positive way.

Keywords: e-portfolio, academic success, internet

1. Introduction

Education technologies are the leading among the factors directly effective on education and learning methods. Along with the development of education technologies learning, researching and homework preparation habits of the learners show difference. Internet and computer are the latest technologies used by the learners. Especially such tools as search engine, blog, forum, social network and e-portfolio presented by the internet have opened a quite different world of teaching and learning. Teachers also began to use these tools efficiently for measurement and assessment. The tool used widely to monitor the development of learners is e-portfolio.

Different from traditional portfolio it is easier in e-portfolio to send, access and re-arrange over internet. Its replication and reproduction takes less time. However its preparation might take longer time. Sometimes its preparation can be more expensive and even be more boring. Along with this preparation of e-portfolio is an effective way in showing learnt technology skills and gaining new skills (Heath, 2005).

Increasing in number, e-portfolios might include such files in different formats like text, graphic, video, sound, photograph and animation. Students can research the files in this format proportionally with their skills in using internet, can organize and can add to their e-portfolios (Fiedler&Pick, 2004).

Tolley (2008) made the definition of e-portfolio by reckoning its features. These features are given as the following:

1. *It is portable:* It is not embedded into any institution or registered virtual learning environment.

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2. *It is personal:* It is 'owned' by the user and is customisable to the user's age, stage and style.
3. *It is generic:* It is not modelled on any particular curriculum delivery system nor content.
4. *It is Web 2.0:* It should be compliant with all generic formats within the application.
5. *It is MIS-free:* It is not under administration information system infrastructure of any institute.
6. *It is 'light':* It is not a permanent repository of all of a user's files, rather a 'transit camp'.
7. *It is lifelong:* Ownership must be maintainable as a continuity, '5-95'.
8. *It lifewide:* It is capable of being used by all ages and abilities through a wide range of assistive templates.
9. *It is accessible:* It must recognize common standards of accessibility in terms of both outputs and inputs.
10. *It is Credible:* It supports digital safety standards determined by Bologna Process.

Considering above mentioned features it can be seen that e-portfolio has many benefits in terms of learners and teachers. Such features of it like it is compatible with Web 2.0 technologies, it can be arranged in custom and general mode, its content is variable, it can be used lifelong, it can be used in many places other than education, it is reliable and accessible enables easiness both for the learner and the teacher. For instance teachers may request from their students more sweeping and flexible works. They may request private works from each student and may provide better works with feedbacks. And learners would be able to easily record their works they made at any time in their lives whether these works are about education or business or private interest. Furthermore it can be accessed to rich contented works that include sound, graphics and video easily.

Many works have been made regarding the application of e-portfolio which is used at every segment of life to education. Erdogan (2006) researched the place and importance of assessment based on the portfolio. Furthermore student success of portfolio based assessment in foreign language education and the influence of the attitudes of students towards the course have been reviewed. At the end of the research it was found that portfolio had no influence towards the success and attitudes of students regarding the course yet it might have an influence on writing skills. On the other hand, when solving the answers given by students to ten questions it has been reached to the conclusion that they are content with e-portfolio application, they tried to produce better quality products, they took more responsibility regarding their training, they exhibited positive behavior towards learning yet much time consuming portfolio activities push them a lot and it is a compulsory that students should be trained regarding the formation and assessment of portfolio.

Kazan (2006) expressed that he aimed to set forth in detail how Electronic Development File applications can be used in Turkish Education System. At the end of the research it was determined that students had no anxiety regarding their marks, individuality and self-determination was achieved, they learnt to share, their self-reliance increased in the end of e-portfolio application. Ozyenginer (2006) made a research with 2nd grade students of the Department of Computer in Buca Anatolian Vocational High School and Vocational High School regarding the electronic portfolios which covers the 2005-2006 academic year fall semester. Within this one semester period students prepared an e-portfolio regarding the hardware course and at the end of the process they assessed themselves with electronic portfolio. At the end of the work all students passed and showed a success over the average (4,40 over 5). Cayirci (2007) examined the influence of Web Based Portfolio (WBP) on verbal and quantitative courses of primary school 7th grade students. At the end of the research it was revealed that WBP application increased the academic success of students on both verbal and quantitative courses yet it was seen that the increase of success in verbal courses (167,89) was higher than that of quantitative courses (83,29%) (F(1; 66) = 62,028 and P = ,000).

Erice (2008) researched the effects of electronic portfolio on students whose English language skills are at intermediate level. Based on data made before and after the application it was indicated that the students in electronic portfolio group were more successful in writing skills comparing to students who keep portfolio as file. Basciftci (2011) researched the influence of portfolio in "Journey to the Interior Structure of Living Things" which is primary school 6th grade Science and Technology course, to the success of the student and the durability of the knowledge. At the end of the research, benefiting from the portfolio in the teaching of Science and Technology course subjects increased students' success, memory levels and attitudes towards Science and Technology lesson substantially. It was reached to the conclusion that usage of portfolio in science and technology course was more successful comparing to the usage of classical description method.

The purpose of the research is to provide the students studying in the fields of Information Technologies and Electricity- Electronics Technology in Tekirdag Technical and Industrial Vocational High School to efficiently learn the concepts and skills within the context of the course named Vocational Development and to make assessment by using e-portfolio at the end of education process. For this purpose primarily an e-portfolio interface

was designed. Integrated to a social network (Facebook) this e-portfolio interface was opened to the access of students.

To sum up in this work it was aimed to examine how e-portfolio assessment process influences the success of students and to make a comparison of the processes in traditional in-class education and e-portfolio supported education processes.

Used in all fields of life, e-portfolio is also one of the current education technology tools. This work is regarded as important in terms of the subjects given below:

- E-portfolio usage in education.
- Influence of e-portfolio application process to the success of the secondary school students.

1.

2. Material and Method

2.1. Problem

In this work an e-portfolio applied education and assessment process was realized in order for the constitution of more meaningful and permanent education lives in Vocational Development Course. At the end of this process it was sought answers to below mentioned questions:

1. Does e-portfolio application used by integrating to Facebook social networking site in order to support conventional in-class education activities, have any contribution for students to learn the concepts and skills in Vocational Development course in a more efficient way?

2. Does e-portfolio application used by integrating to Facebook social networking site has any contribution for any change in behaviors of students towards e-portfolio in a more positive manner?

Research Model

In this study Pretest-Posttest Control Group Trial Model was used among experimental pattern types. The pretests used in the research were applied to students in the beginning of 18 weeks work and their academic presence was determined. After the research continued throughout the second semester of 2010-2011 academic year posttests were applied to students once again. Personal Information Questionnaire was filled by the students before the formation of the groups at the beginning of the research.

2.2. Population and Sample

Work group of the research is constituted of students of the Department of Information Technologies and Electricity-Electronic Technology who are in 10th grade in Technical and Industrial Vocational High School in the province of Tekirdag in 2010-2011 academic year. Tekirdag Technical and Industrial Vocational High School embodies 3 different school types. These schools are Industrial Vocational High School, Technical High School and Anatolian Technical High School. Application groups were randomly selected enabling researcher to control the application. While the groups are being constituted it was aimed to include students from different school types and different fields. Distribution of students according to their field, school type, class and group is given on Table 1.

Table 1 Distribution of students according to their field, school type, class and group

Class	10-G	10-H	10-I	T-10B	AT-10A	AT-10B	TOTAL
School type	Industrial Voc. High School			Technical High Sch.	Anatolian Technical High Sch.		
Group	Control	Control	Test	Control	Test		
Field							
Information Technology			36			30	66
Electricity-Electronics Technology	41	37		32	26		136
TOTAL	114			32	56		202

114 students from Industrial Vocational High School, 32 students from Technical High School and 56 students from Anatolian Technical High School and totally 202 students attended to the application. 66 of the subjects were the students of Information Technologies and 136 of them were Electricity- Electronics Technology. While 92 of the students took place in test group on which e-portfolio supported education application was made, 110 of them took place in control group on which traditional in-class education was made. Only one of the students in control group was a girl. Distribution of test group according to the sex was shown on Table 2. As also seen on table all of the students studying in Electricity- Electronics Technology were male students. On the other hand 11 of the students in Information Technologies were female students while 81 of them were males.

Table 2 Distribution of test group according to sex

Sex	Female	Male
Field		
Information Technology	11	55
Electricity-Electronics Technology	0	26
TOTAL	11	81

2.3. Data Collection Tools

Personal Information Questionnaire: This questionnaire was constituted by the researcher to collect data regarding personal information, computer and internet and social network usage periods of students besides their demographic information.

Academic Success Test: Developed by the researcher, this test was used to determine readiness levels of students and their academic success levels after the application. For this test, Personal Development and Communication in Business Life modules determined by the Ministry of Education were used as a resource. 41 questions were prepared to include the determined targets. This 41 questions of multiple choice test was applied to 400 students who studied Vocational Development course in 2009-2010 academic year. Article difficulty and article distinctive values were determined to find out the questions to be included in academic success test among the prepared questions. Considering the 12 articles whose distinctive values were less than 0,2 and the targets prepared in the beginning of the application and also considering the article distinctive values and difficulty indexes 4 articles and totally 16 items of articles were removed from the test. As a result, Academic Success Test which is used to determine the presence level of the students before the education and to determine the efficiency of the application after the education was totally constituted of 25 articles.

2.4. Collection of Data

While certain part of the questionnaires and scales used in the research was realized paper-based, the other part of it was made by using Google survey tool. Paper based data were transferred to electronic environment by using Google survey tool and saved to MS Excel environment.

2.5. Analysis of Data

While assessing the data obtained from the work SPSS 17.0 package program was used for statistical analysis. Kruskal Wallis test was used in the inter-group comparison parameters that show abnormal distribution in the case of quantitative data when there is more than two groups and Mann Whitney U test was used in determination of the group that cause difference. Results were dually assessed within 95% range and at $p<0,05$ significance level.

3. Findings and Results

In this section of the research, quantitative and qualitative data obtained as a result of experimental studies were interpreted in line with goals.

Regarding the problems; pretest and posttest results of the academic success test of the test and control groups were given in Table 3.

Table 3 Academic success test results of test and control groups

	Test		Control		t	p
	Average	Ss	Average	Ss		
Academic Success (pretest)	60,696	12,905	50,764	14,856	5,021	0,000**
Academic Success (posttest)	70,935	12,675	62,655	14,297	4,315	0,000**
p	t= 7,59; 0,000**		t= 7,83; 0,000**		**p<0,01	

As a result of t-test made in order to determine whether the academic success (pretest) score averages of the attendants of the research showed a significant difference or not, the difference between group averages was statistically found to be significant (t=5,02; p=0,000<0,05). Academic success (pretest) scores of the students in test group were found to be higher than the academic success (pretest) scores of the students in control group.

As a result of t-test made in order to determine whether the academic success (posttest) score averages of the attendants of the research showed a significant difference or not, the difference between group averages was statistically found to be significant (t=4,31; p=0,000<0,05). Academic success (posttest) scores of the students in test group were found to be higher than the academic success (posttest) scores of the students in control group. The

graph belonging to the academic success pretest and posttest results of the students in test and control group is given in Fig. 1.
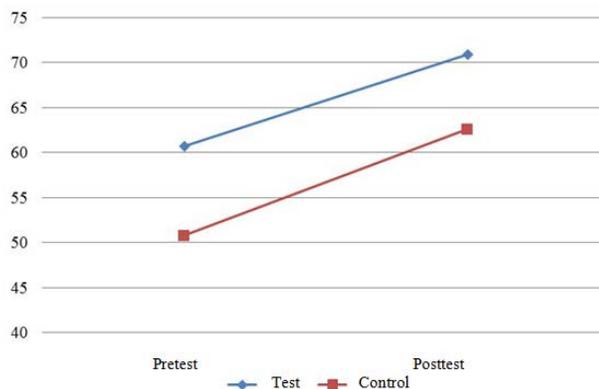
Fig. 1. The graph regarding the academic success pretest and posttest results of the students in test and control group

In order to see whether the difference between pretest and posttests of test and control groups firstly Kolmogorov-Smirnov normality test was applied. As a result of the test ($p<0.05$, $p=0.016$) it was seen that the difference was abnormal. For this reason, as a result of Mann Whitney U test made in order to determine whether the difference between the results of academic success pretest and posttest results of test and control groups was significant or not, no significant difference was found.

Even though the results obtained regarding the problem of the research were not statistically significant, examining the higher academic success posttest scores of the students in test group it can be said that e-portfolio supported education process influenced the success of the students positively.

While this result corresponds to the results of certain works it shows difference with some. With the works of Ozyenginer (2006), Kazan (2006), Cayirci (2007), Erice (2008) and Basciftci (2011) it was seen that academic success of the students studied with the help of e-portfolio was higher than that of students studying with traditional method. The work of Erice (2008) was applied to English course and it was reached to the conclusion that e-portfolio increased the writing skills of students. The work of Cayirci (2007) which deals with whether the selection of quantitative or verbal course is important in e-portfolio application is remarkable. In this work the application was made in Vocational Development course which is a verbal lesson. However in the application of Cayirci the courses of Science and Social Sciences were selected. At the end of the research academic success of the students in both e-portfolios supported courses were higher than that of those studying in traditional methods and it was seen that the increase of success in verbal course was higher than that of quantitative course. It is also a matter of question for what type of courses –verbal, quantitative- would the e-portfolio applications can be more fitting. In the work Erdogan (2006) it is seen that there is no significant difference between the academic success and attitudes of students who either study with e-portfolio support or who study with traditional methods. The reason why the results of the work applied to English course in the preparation class of Maltepe Military High School and the results of this work is that because students study English intensely in preparation classes and unless they succeed there is a risk of dismissal from the school.

E-portfolio applications are not just related to the academic features of the students. Besides enhancing their knowledge it also supports the enhancement of students' perception and skills. Not only the information and skills regarding the course selected in e-portfolio applications but their information and skills regarding the information technologies also show improvement.

4. Conclusions and Recommendations

E-portfolio is an archive in which executed works are stored and exhibited. It is thought that this feature of e-portfolio might have drawn the attention of students. While the percentages regarding the fulfillment of homework in traditional education and students' interest level regarding these homework are pretty low, in e-portfolio application the interest showed to homework are is pretty high. While the students especially those studying in industrial vocational high schools showed reckless attitude regarding the homework, it is observed in this study that a pretty high feedback was taken in this work.

The following should be taken into consideration when using e-portfolio in education:

- Compatibility of the application with course content and goals should be taken into consideration.
- Students' information technologies literacy levels should be determined beforehand.
- Compatibility of the works requested from the students with their education levels, their information technologies usage skills and the goals of the course should be taken into consideration.
- Students' attitudes towards the applications should be determined beforehand.
- Application process should be described to the student in best manner considering especially those who behave negatively.
- During the application good and bad works should be shared with students in certain periods and certain mistakes should be corrected.
- Assessment criteria of the works should be determined in a well manner.
- In order for the students to assess the works of each other different criteria should be determined and should be motivated regarding the assessment of the works of each other.
- Group works should be promoted and while determining the works to be made during the application period it should be paid attention for the presence of at least one group work.
- An environment to which students may attend to the application other that their homes and technological infrastructure should be provided.

The suggestions for those who shall make research and application regarding the usage of e-portfolio in education are given below.

1) Sample e-portfolios can be reviewed for e-portfolio design.
2) Works can be made regarding the usage of e-portfolio applications in vocational education and especially in the field of information technologies.
3) The usage of e-portfolio in primary, secondary and higher education can be researched.
4) Advantages and disadvantages of e-portfolio application can be set forth by reviewing previous application results.
5) Convertibility of e-portfolio applications to a corporate format can be examined.

* This study was prepared by practicing upon the Doctorate thesis of Mehmet Fatih BARIS titled "*Integration of The E-Portfolio into a Social Network and Analysis of Results*".

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13th International Educational Technology Conference

Information technologies in the postindustrial society

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Abstract

New IT technologies, and in particular the Internet have become at present an alternative media channel. The emergence of new technologies changes the forms of communication. Computer networks exert impact on the development of the public domain in which the debate between citizens and authorities. A new international public sphere arises, and thanks to the Internet, the discussion concerning various problems takes place independently of time and space, but above all it crosses national borders. Computer data basis provide better access to reliable information. Yet unequal access to information triggers new factors dividing societies into those which are better or worse informed or those who can take advantage of information thanks to education or technology skills. Hence the following question arises: how to meet the requirements of the development of the global IT society?

New solutions concerning hardware, software and telecommunications combining a great number of subjects ranging individual users, through local communities, universities, enterprises, governmental agencies to international corporations into one global network.

Keywords:

Great transformation

The contemporary society undergoes a significant transformation which can be summarized in the form of the diagram below:

Agricultural society

Industrial society

Post-industrial society

IT society

Source: author's research

The transformation introduces a new order of world perception , the perception of basic social values, social and political structure as well as strategic institutions (parliaments, governments, legal systems etc.)

IT Society

The tempo at which the IT market develops brings us increasingly closer to the IT society. The trend has been confirmed by John Nesbitt (Nesbitt, 1997) who combines the development of the global IT society with information transfer, distribution and application.

The IT society is a new type of society in which information management, quality and transfer constitute

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the principle factors of competitiveness in industry and services. A society becomes an IT society when it reaches the level of development requiring the adaptation of the techniques of information storage, processing, transfer and use and creates a special multi-media structure which serves such purposes.

EU (1993) and G-7 (1995) established the principles governing the IT society. These include general access to communications and IT technology, service providers and cooperation irrelevant of one's place of living and new competitiveness solutions.

The Internet in the multicultural society

The Internet has become a new 'forum' in the sense designated to the word by the ancient Romans. In the past the agora was open to the general public of the polls, where decision were made concerning politics, economy or religion. At present we can talk about the electronic agora.

The young generation of the Internet users, apart from taking advantage of it for day-to-day purposes (school, home, street), apart from the obliging and generally approved values, principles and norms of life, have developed their own standards of the cyber-space. And just like children learn norms with age and experience, new Internet users have to acquire the rules governing the Internet.

Not only young people are active in respect of disseminating culture by means of the global computer network, but also acknowledged and respected institutions whose primary aim consists in the preservation of the monuments of culture. The Internet provides various opportunities of visiting museums, libraries, ethnographic museums, art galleries or national parks. Magazines and newspapers offer website service. According to B. Chmiel this form of publication constitutes an important aspect of the acquisition of knowledge i.e. the readers of electronic publications choose their own paths, which requires more active involvement.

THE IMPACT OF TECHNOLOGICAL INNOVATION ON PUBLIC LIFE

BUSINESS   EDUCATION   LOCAL GOVERNMETN   SOCIAL LIFE

Tele-work   e-learning

Source: the author's research

IT technology

The dynamic access to the broadly understood IT technology constructs 'a global IT society' W.T. Bielecki (2001) observes that 'in the IT society information and resulting knowledge, as well as IT technology constitute the basic factors of development. Information, Communication Technologies. Electronic Business gain in significance. Fisher rightly identified several categories of computer use:
   1) Data processing in business
   2) Information storage and search
   3) Production planning and automatics
   4) Modeling social, economic and political processes.

The application of IT provides new management instruments. At least one of the chapters of books on organization and management focuses on IT systems. The forthcoming period is frequently referred to as the IT Era in which IT technology guarantees common communication. (Kosielnicki, Sroka, 1999). The concept of IT may be misunderstood. Particular publications (Beyon-Davies 1999, Kisielnicki, Sroka 1999, Osmahska-Furmanek 1999. Stefanowicz 1998) offer various definitions. For instance: The concept

of Information technology applies to the hardware and software supportin information processing i.e. computers, communications networks, operational systems, data base management systems, etc. IT is synonymous of the technology of the information system' (Beyon-Davies 1999) 'IT means a scientifically justified system of the application of IT tools for the purpose of storage, transfer and access to information (Stefanowicz 1998).

The interpretation of the meaning of the concept of technology assumes 'scientifically justified use of technical means' i.e. verified on the basis of academic standards and comprising the following two elements: technical resources and the knowledge of the use of such resources (Stefanowicz 1998).

IT as the science of information processing deals with automatics. It covers a broad spectrum of issues related to information processing, collection, storage, processing, presentation of information, construction ad the technology of hardware and information processing systems.

IT systems can be described as multi-level structures enabling users to transform input information into output by means of appropriate models and procedures. The information determines decision making processes (Kisielnicki, Sroka 1999). Beyon-Davies (1999) present three levels of IT systems: informal, formal and technical (referred to as IT).

According to Osmahska-Furmanek (1999) IT covers such elements as:
- social communication by means of IT systems
- social and ethical aspects of human activity in IT
- information analysis and synthesis (processing, selection and the formation of a cohesive image from diversely located pieces of information)
- the application of IT tools and means
- system and data security

The above considerations present the scope of IT.

Computer Science

Computer science is a relatively new branch. Its emergence is connected with the introduction of digital processing machines and their implementation. Computer science covers the entire spectrum of issues related to collection, storage and access to information, the research on the principles governing such processes as well the provision of methods and tools for rational information processing.

Information systems

The IT marketing systems are increasingly more frequently perceived not only as elements of the information policy of enterprises, but also as elements system of information. They form the basis of e-marketing and stimulate e-commerce.

The function of IT marketing systems are subject to constant change. In the US economy Business Process Reengineering constitutes the core element of management. It is identified with the location of the customer in the very heart of the organization. IT marketing systems integrate all management functions in companies (Unlod 2001).

In the first half of 1980s, the view prevailed according to which computer technology exerts limited impact on management. At present the world of business amplifies the tempo of the IT revolution and technology development. What does the change involve? They include the diverse IT society, new relations between business and customers, changes in the organization of work places, increased market competitiveness, the appearance of new global networks.

The above phenomena influenced the changes (crisis) in traditional marketing. The most important include: inappropriate attitude to customers, high expenditure on promotion, marketing departments falling behind new trends, demanding customers, shortening of the product life cycle, market globalization, the appearance of new distribution channels (Unlod 2001, pp 38-40).

Hence the application of modern IT technologies, e-market and virtual business have become of paramount importance to modern enterprises. Entrepreneur increasingly more eagerly take advantage of modern marketing instruments i.e. data-base marketing management, interactive use of multi-media or IT based customer service management.

Conclusions

The development of IT systems can be understood as the principle factor of the information focused revolution. The process has already started and according to the World Bank 'global tele-economics will arise with the next generation' (Whitehorn 1996) This is the result of progress which occurred ofer the last dozen of years in IT and electronic media. We have just entered the 'Information Age' and 'information society.

The process results from developmental changes in three principle spheres: hardware, software and telecommunications. Yet, the changes demand a deeper insight presented in Diagram 1 below:

HARDWARE   SOFTWARE   TELECOMMUNICATIONS   INFORMATION

IT

CUSTOMER USER

COMPUTER SCIENCE

METHODS   TECHNIQUES TECHNOLOGY   SPECIALISTS
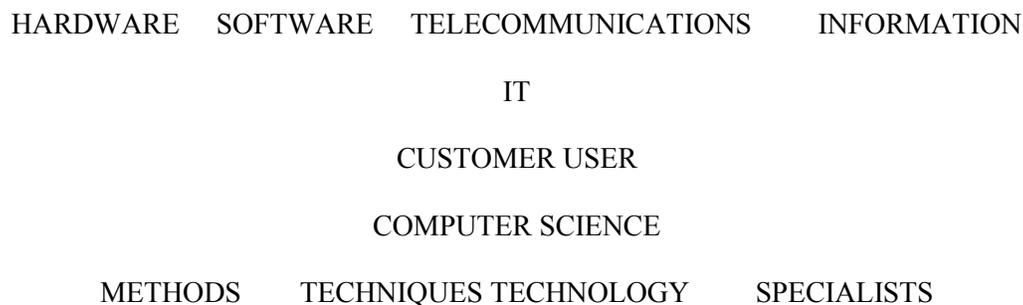
Diagram 1: the relations between users, IT and computer science

Not only business but all customers - users or societies trigger the tempo of the information revolutions. IT meets the demand, while the computer science provides solutions for customers. Hence the education of specialists, the development of new methods, techniques and technologies as well as customer care are of paramount importance. Such changes facilitate the transformation of post-industrial societies into information societies.

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Innovation Models of Indonesian Learning in Multicultural Society

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Abstract

This research was aimed to resulting innovative models of Indonesian learning the ICT integration in the context of a multicultural society. This research design was Research and Development. The data were collected during 6 months through observation, interviews, and test to teachers and students of Junior High Schools in Central Java. The research finds out that there are two models of Indonesian learning integrated with ICT, namely multi-culture-based group investigation and social inquiry models, be accompanied learning devices. The multi-culture based group investigation model is used to learn to write paper, and the model of social inquiry is used to learn to write a drama text integrated with ICT. Meanwhile, learning device model includes syllabus, lesson plans, teaching materials, ICT-based learning media, and learning evaluation instruments. In this model the students have the opportunity to get more actual information and upload their work creatively and independently. This model can be effectively used because teachers can check the students work and give feedback via e mail, facebook and then the students can upload their works on the school blog.

Keywords: models of learning, the context of a multicultural society, ICT-based

1. Introduction

Indonesian is the key unifying Indonesian nation which consists top of various groups of society and cultural. Java community has a different culture with Sunda community. Merchant community has a different culture or customs with employees. Coastal communities have a culture or customs that are different from rural communities. In the context of such a society, learning Indonesian, especially at Junior High School that the students come from different groups of people who have diverse cultural require models are innovative. Innovation of models learning has become very important with the needs of modern society in obtaining information and solve communication problems. Ease, speed, and accuracy of the information needed by modern society can be met by utilizing ICT. Therefore, learning Indonesian in the context of a multicultural society that uses media ICT more effectively broaden the knowledge and experience of the students will be cultural diversity in society (Zulaeha, Rokhman, & Faridi, 2010).

In the Indonesian subjects, the students learn writing scientific papers and drama texts (BSNP, 2006). Writing scientific papers is one language competence, whereas writing is one of the drama texts compose competence. Scientific work is a work based on the results of observations, review of, or research in a particular field that are prepared in accordance with certain rules and systematica. Language is scholarly and polite. Its contents should be accountable (Hasnun 2009:41-42). Scientific paper is a kind of essay that contains a set of ideas that results obtained in accordance with the scientific nature. The students of Junior High School be taught a skilled writing scientific papers in the form of reports. Writing scientific papers through the stages of prewriting, writing, and post writing. Drama texts is that according to the content of expression language, syntax, and pragmatic is an entity that presents

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conflicts between characters in the dialogue written to be staged. Drama text written by considering stages: preparation (prewriting), stage of incubation, illumination, and verification/evaluation. The competence was studies using innovative learning model that is more effective.

Scientific papers and drama texts written by students is the result of observations, thoughts, and their expression of the multicultural situation and conditions in the local community. The message delivered by the students through the scientific paper and the drama text is multicultural values that they understand. Then, understanding it through discussed with the teacher to get approval. Understanding about of multicultural values appropriate to the situation and condition of the people is important so that they can coexist with others in the community.

Model of learning is a conceptual framework that describes a systematic procedure in organizing learning experiences to achieve specific learning objectives and serves as a guideline for teachers in the planning and implementing learning activities (Joyce & Weil, 2000). Learning models that integrate multicultural Indonesian provide more opportunities for students to learn more by using ICT as a resource for information, send a draft paper for review by teachers and friends, and disseminate the work produced. The use of ICT in the teaching of writing scientific papers and writing text drama can be implemented in various forms in accordance with its function in education. Indrajut (2004) argued that information and communication technology in education has seven functions, namely: as a storehouse of knowledge, as a learning tool, as an educational facility, as a standard of competence, as administrative support, as a tool for school management, and as an educational infrastructure.

Innovation in the learning interpreted as a a new effort in the learning process, using a variety of models. Dryden & Voss (1999) argued that the 'new' in the innovation that is what is not yet be understood, accepted or implemented by the recipient innovation. The learning process involves humans (students and teachers) that have distinctive characteristics, namely the desire to develop themselves, progress and achievement. There are four functions that must be performed in his teacher as a motivator (Miarso, 2007). First, arousal function or evoke the urge students to learn. Second, the funtion expectancy concretely explain to the student what to do at the end of the lesson. Third, the incentive function, the reward teachers for student achievement in order to stimulate the next achievement. Fourth, disciplinary function, the teacher helps students kilter behavior. The fourth function meruapakan important reason to use innovative models in the context of learning Indonesian in multicultural communities that integrate ICT.

2. Model-Based Investigation of Multicultural Groups in Learning Writing a Scientific Paper Integrating ICT

Research and development has been done by Zulaeha, Rohman, and Faridi (2010) produced models based multicultural group investigation include the goals and assumptions, syntagmatic, social systems, the reaction system, support system, and the impact of instructional and accompaniment.

Objectives and Assumptions

1. Model of ICT-based investigative group is a series of operational framework that is used as a guide for teachers to facilitate students learn to work together cooperatively in groups. Among members of the group interact to achieve cognitive competence through intellectual activity and affective competencies,

namely positive feelings toward one another despite different cultures, build positive relationships with friends of different cultures, and improve self-esteem. Model-based investigative group multicultural characteristics, namely (1) the purpose and assumptions, (2) syntagmatic Multicultural Model-Based Investigation Group, (3) social system, (4) support systems (5) principles of management / response, and (6) the impact of instructional and accompaniment (Zulaeha , Rokhman, & Faridi, 2010:45-50).

Syntagmatic Multicultural Model-Based Investigation Group

Model inivestigasi group developed, implemented with seven steps, namely: topic selection, cooperative planning, implementation, analysis and synthesis, presentation, evaluation and re-creations. Re-creation is the novelty of the research. The addition of this step is to explore and improve the competence of individual students optimally. Syntagmatic Multicultural Model-Based Investigation Group.

- Selection of topics

Learning activities begins with the selection of multicultural topics offered by the teacher concerned with the cultural identity of a group, ethnicity, race or tribe; habits; traditions and patterns of behavior. The topics include: 'buka luwur', 'sedekah bumi', clean village, the Islamic New Year celebration, 'dandangan', 'punden', Chinese New Year, 'mitoni', school culture, beliefs, and so on.

- Cooperative planning

Teachers communicate the objectives, materials, time, pace, and final results are expected from the students, as well as the assessment will be applied. With the help of teachers, students plan how to collect data and other learning activities, such as browsing the internet and libraries as well as conduct investigations.

- Implementation

Students carry out the plans that have been made with the strategies and learning different sources. Students explore the way an investigation of issues / concepts that will be studied. Investigation can be done in various ways, such as reading, observation, interviews, conduct experiments, browsing through the internet, and so on. Investigations carried out in groups in accordance with the agreements. During the investigation process, students can communicate with teachers via e-mail, yahoo massenger, or facebook. Communication through the internet can help students who have difficulties in the process of preparing scientific papers.

- Analysis and synthesis

Students analyze and process the information gathered to be presented through discussion and question and answer. Analysis and synthesis can be done outside of school hours by e-mail, yahoo Massenger, and facebook to a teacher or friend group with teachers through e-mail, yahoo Massenger, or facebook. Communication through the internet can help students who have difficulties in the process of preparing scientific papers.

- Presentation of the results (presentation)

Each group prepared a 5-10 slide power point presentation materials. Time presentation of each group 10-15 minutes. After listening to the presentation, another group responded politely guided one group representative. During the presentation, the teacher assess the presentations, make comments and suggestions for improvement, either repair material and the manner of presentation.

- Re-creation, is a novelty in the model group investigation of learning to write scientific papers in a multicultural context. Her student recreation scientific papers produced by a creative work, such as articles, poems, or posters appropriate events and activities that have been studied. Results of re-creations sent via e-mail and will be displayed or blog loaded on the specified teacher.

- Evaluate, an attempt to measure objectively and give value to the achievements have been planned in advance. Seriousness assignment, investigation, critical and logical thinking skills in giving the views / arguments, willingness to cooperate and shared responsibility are aspects considered during the learning process. The students were invited to assess the advantages and disadvantages of scientific work and the results of re-creations developed by another group with a criteria that has been prepared teachers.

Principles of Management / Reaction

In the classroom, teachers act as consultants and providers of hostile criticism. Teachers guide the group through three stages, namely (1) the problem-solving stage, (2) phase of classroom management (3) the meaning of the individual phases. Students should feel the comfort, security, protection, cooperation, mutual assistance, mutual respect, mutual respect between teachers give students, students to teachers, and students with other students.

Social System

Prevailing social system and takes place in this model is democratic. Group activities that occurred starting from the direction of the teacher. Classroom climate characterized by a process of interaction that is the deal. Learning is characterized by joint activity showed a reciprocal relationship between teachers and students and the students with other students. Students and teachers have a role (status) and act (act) in accordance with the norms or rules made by mutual consent. Class is part of the mikrososiologi that examines life in the school of social groups with the overall dynamics that occur in it. In the classroom there is a combination of individuals who form a social group that is organized and has a complex function and role in education eyeglasses. Meet the definition of classroom social group because a group of people who have a shared awareness of membership and will interact with each other. With the application of the model group investigation, students are expected to work together in heterogeneous groups.

Support system

Means of support necessary to implement this model is everything that touches the needs of the students to explore a variety of information is appropriate and necessary to carry out the process of problem solving. The system in question is supporting infrastructure, school culture and multicultural society. Infrastructure needed to support ICT-based learning is a multimedia laboratory / computer, hotspot, LCD projectors, school libraries, digital libraries, and others. School culture is a culture that is applied in schools that get used all the school community appreciates the diversity, technological literacy and reading culture. All the carrying capacity is expected to optimize learning and ICT-based multicultural context. Existence perpstakaan schools, computer labs and the hotspot would not just there but the completeness of the origin is a necessary tool utilization. School libraries should provide encyclopedias, dictionaries and books necessary for learning and ICT-based multicultural context.

Impact of Instructional and Accompaniment

The use of models investigative group based multicultural in learning to write scientific papers have impact instructional positive, the student can achieve competence to write scientific papers properly; solve problems multicultural with constructive, and work together in groups. In addition, the impact of accompaniment using this model is that students can solve problems independently with the group, the opinions and dignity of others of different cultures, and sensitive to the problems of multicultural around him.

3. Social Inquiry Learning Model in the Context of Multicultural Writing the Dramatic Texts Integrating ICT

Research and development has been done by Zulaeha, Rohman, and Faridi (2010) produced model social inqury include the goals and assumptions, syntagmatic, social systems, the reaction system, support system, and the impact of instructional and accompaniment.

3.1 *Assumptions and Objectives*

Social inquiry learning model with the guidance is intended to prepare students to find a concept or phenomenon through observation, collection of data and draw conclusions. Guru is not a conduit of information and students as recipients of information, however, teachers making lesson plans or steps of problem analysis. Students have investigation to discover the concepts. The main purpose of the model with the guidance of social inquiry is the development of thinking skills. This model was developed on the basis of principles: discovery, excavation theme, asking, liveliness, evaluation, diversity of learning resources, openness, cooperation, and tolerance.

3.2 Syntagmatic

- *Orientation*

Teachers provide an illustration of the appreciation of drama and materials before students practice writing drama texts. Teachers serve a multicultural video titled "sociology Out of The Box" lasted 9 minutes the players were students. Video was themed cultural differences that still unites friendship. This activity is conducted to train students sensitivity to social problems faced. Teacher directs the students to recognize the culture that is around them and how they feel about the cultural diversity. Students are expected to define their own elements of drama as well as builders in the text captures this cultural diversity into the theme of the drama texts. After that, the teacher gives some examples of text to be analyzed student teen drama.

• Hypothesis, is a temporary answer to the problem of a se-dang studied. Estimates as a hypothesis not just any estimates, but should have a solid foundation to think, so the hypothesis is raised that is rational and logical. Logical thinking ability is affected by the depth of insight and breadth of experience possessed. Thus, individuals who have less insight into the hypothesis will be difficult to develop a rational and logical and not skilled in formulating the problem.

- Explanation of Terms, is clarified that all group members can understand the subject matter covered. Each group are free to name asalakan accordance with multicultural themes. The students look up the definitions of terms in the text of the drama over the internet. Searched term on the internet including the prologue, text side, scenes, round, epilogue, dialogue, etc.. Once students know the definition of the term in the text drama, will facilitate the

understanding of the text entry drama.Dengan teacher, the students in each group discuss the questions raised, so as to have the same hypotheses and ideas can specify the text to be written drama.

- Exploration

Students did explore social phenomena and multicultural. Each group discussed the issue of cultural differences, to overcome these differences. Then identify the steps to write text drama, discuss, and pour the results of these discussions into a drama text in accordance with the theme they have chosen. Drama texts written by the students is still a draft, for further consultation via e-mail teacher.

- Verification

Verification is the process of determining the answer to that is considered acceptable in accordance with the data or information obtained by data collection. The students collected data from the discussion, find various cultural differences that exist around them, find solutions together counteract the problems that can arise due to cultural differences. Once the data is collected, they perform data analysis. Social berinkuiri jams occur frequently when students are not guided is appreciative of the subject matter. It's usually not appreciative ditunjukkan oleh ketidakgairahan symptoms in the study.

- Guided practice

Teachers guide students to write text drama outside school hours by utilizing e-mail and facebook adjust to students' abilities. Teachers receive e-mails that have been sent by students. E-mail that contains the text of the draft was examined by the drama teacher. This is done because the drama text written by the students are not at all so. Improvements are given in the form of the elements that will be assessed, eg the number of rounds, writing dialogue, giving the side text, writing setting accuracy, and text elements in the multicultural drama. E-mails that have been input by teachers, students resent the email to immediately rectified. In addition, teachers also receive mentoring through facebook.

- Generalization

Generalization or conclusion is formulated to describe the findings obtained based on the results of hypothesis testing. Students who have improved the draft immediately collect their drama text is final. At this drama text collection or print out a hardcopy. It aims to make it easier to teacher assessment.

Social System

Teachers help students to combine the event with the expected ideal conditions. Students still have freedom in an open discussion during the orientation phase and formulate hypotheses. Discussions were held with the heterogeneous grouping of students based on gender, religion, social status, and ethnicity. The students are aware of the condition of the existing cultural diversity in their classrooms. Background underprivileged students, assisted by students who are able to borrow the internet facility at home.

Reaction System

Students to search information through a search engine google. Cooperation conducted among students with other students when the discussion. E-mail and facebook as a medium for interaction between teachers and students outside of instructional hours. The draft text written drama students sent to the teacher via e-mail. Once given a

review, the draft is send back to the e-mail addresses of students. ICT used as media and means of more intensive coaching.

Impact of Instructional and Accompaniment

2. Instructional impact in the socio-guided inquiry learning model is (1) drama students write text in accordance with the steps to write correct, (2) can be sensitive to multicultural issues, (3) can pour ideas and ideas through the written text plays a multicultural context, and (4) active use of ICT in teaching writing drama texts.

3.

4. Conclution

Based on the above description can be concluded that the ICT-based language learning innovation made possible with the ICT-based learning. The device includes: (1) the conceptual framework SBC, (2) syllabus-RPP, (3) teaching materials, (4) media / visual aids, and (5) evaluation of learning. One form of learning and the development of innovative teaching materials is the development of a model investigation group in learning to write scientific papers ICT-based multicultural context. Development of the model is intended as a guide that contains the basis in the development, the principles of the model, the characteristics of the model, model design, teaching materials, scenarios, assessment and closing. Principle investigative group models include (1) the principle (2) democracy, (3) cooperative, (4) collaborative, (5) constructivist and (6) investigation. This principle is derived from the results of the respondents' answers to the statement of needs analysis. Model investigation group that developed the form of seven steps which include: the selection of topics, cooperative planning, implementation, analysis and synthesis, presentation, evaluation and re-creations.

In order to improve the utilization and development of innovative learning and teaching materials and language-based information communication technology (ICT) is oriented to the needs of students' communicative competence have submitted suggestions that the product of the results of this development can be used as a step in the world of schooling in the use of advanced science and technology . ICT is carried through in this study undoubtedly students, teachers, schools, governments, and stakeholders can be motivated or moved again in advancing education. In addition, competition is increasingly fierce global world makes ICT is no longer an expensive item, but it kind of needs to be met. On the other hand, the limitations of the model generated in this study provide further opportunities for research that can be used as a complementary study of the results that have been generated in this study.

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Instructional relationships within a web-based learning environment: Students' perceptions in a Malaysian classroom

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Abstract

The tertiary education in Malaysia like many countries in the South-east Asia region has gone through a huge transformation since the enhancement of web technologies. With the easy access of Web 2.0 tools, learners are able to engage in meaningful social interaction that can be harness into the educational context. The shift towards active student-centred learning strategies has allowed educators to continuously transform their classroom into a more active and interactive learning environment. This study investigated the instructional relationships, created by the use of web 2.0 and multimedia technologies and using Laurillard's (1993) Conversational Framework, between the teacher, students and technology. Results showed that using web 2.0 as a mediating component in the instructional process was interesting and effective for the student learning process and the Conversational Framework was successfully adapted in this learning environment.

Keywords: Malaysia, Laurillard, web-based learning, instructional relationships, multimedia, collaborative learning

Introduction

Malaysia's government has taking several initiatives to increase the role of science and technology education to achieve a develop country status by the year 2020 with a comprehensive 30-years plan to ensure that Malaysia becomes a developed nation in the new millennium to produce citizens who can apply knowledge in new domains and in different situations. The development of Information and Communication Technology (ICT) has given a tremendous boost in supporting new modes of delivery in training, teaching and learning within the last thirty years (Samuel & Zaitun, 2005). The utilization of ICT tools in education is increasingly felt in recent times and the utilization can bring a lot of advantages to both teacher and learner. ICT change the way teachers delivers content to students and students learn.

Research has shown that the traditional approach to teaching is of limited effectiveness (Jusoh & Jusoff, 2009), as emphasis is placed on theory without any practical and real life time situations (Ishak, Ariffin, Rosseni & Kari, 2002). This may lead to inadequate capability of handling different kinds of situations when students go out to the real world. In the traditional classroom, teacher is the one who delivers the lecturer content and controls the whole instructional process and the students listen to the lecture. Learners play a little part in their learning process and the learning mode tends to be passive. It has also been found by many teachers and students in most universities that the conventional lecturer approach in classroom is of limited effectiveness in both teaching and learning. Tan (2000), further noted that in order to address the development in education, there is a need to change the content of curriculum and the mode of delivering this curriculum to students. Laurillard (1993), stated that there is a need to look into university teaching and learning to promote effective teaching and learning and proposed a framework that emphasizes the importance of dialogue between student and teacher rather than the transmission of information from teacher to students which was used as a guide to design this study.

Addressing the issue of the passivity of students within traditional classroom settings has led to the development of student-centred learning environments and using constructivist learning approaches which are focused on giving the students control over their learning process and to develop their skills in active learning and problem-solving. As such, these approaches greatly affect the dynamics in the classrooms and the relationships between the students and

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the teachers (Jusoh & Jusoff, 2009). Laurillard's Conversational Framework (1993) has been shown to be a framework that addresses the limitations of conventional teaching, and focus on the instructional relationships, defined as the "...l*earning process that will affect one another between teacher, student and technologies and how their roles changes in multimedia-mediated learning environment*" (Laurillard, 1993), that emerge from the learning environments.

With the introduction of multimedia and web 2.0 technologies into the curriculum, these relationships become even more complex, sophisticated and deeper. Such inclusion of multimedia technologies into the classroom has changed the educational landscape and introduced important changes in the educational system and impact the way learners communicate information with each other (Muller, Lee & Sharma, 2008). With Web 2.0 technologies, educators can further ensure that students have access, collaborate, reflect on their learning, and be engaged with technology (Herrington & Kervin, 2007, Jusoh & Jusoff, 2009, Laurillard, 2002). However, technology alone will not replace intuition, good judgement and problem-solving abilities, and thus, there is a need for educators to adjust their pedagogical suit to the new kind of learner they are encountering in this new generation of digital-savvy students. According to Laurillard (1993), there are four main aspects of the teaching-learning process: (a) The teacher's concepts, (b) The teacher's constructed learning environment, (c) the student's concepts, and (d) The student's specific actions.

This study investigates Laurillard's Conversational Framework in the context of a technology-backed classroom centred around a multimedia- and web-based project, to study these instructional relationships between students, teachers and the technology. The marriage of technology and a learning framework that emphasizes active participation through conversations and experiential learning would provide a deeper insight into these instructional relationships and create a community of learners mediated by multimedia and web 2.0 technologies.

Web 2.0 and web-based learning in the classroom

Web 2.0 is becoming the tools of choice to be use in education, particularly with the net generation (Jones & Cross, 2009). Web 2.0 technologies including social networking sites such as Facebook, MySpace, Twitter, blog, content sharing site such as Youtube and Flickr change learners from passive to active. Web 2.0 empowers students, engage students and enhance communication skills with others, increase peer learning and to inculcate lifelong learning (Barnes & Tynan, 2007). Understanding how students learn today is important for teachers to understand not only for how to teach digital students but more importantly, for how teachers reach them (Prensky, 2001). Web 2.0 technologies including social networking sites such as Facebook, MySpace, Twitter, blog, content sharing site such as Youtube and Flickr change learners from passive to active, and are therefore becoming the tool of choice. According to O'Reilly (2007), Web 2.0 provides richer user experiences than web 1.0. Web 2.0 is a new generation of web-related technologies and standards. The current era of the Web is all about two-way communication, collaboration and the classroom is an ideal place to utilize these technologies (Ishak et. al., 2002).

With the expanding lexicon of Web 2.0 applications, the landscape of education has evolved from using technology to teach to using technology to construct knowledge. The current student body too has evolved to a more techno-savvy and techno-hungry users as social networking tools have become part of their social lives (Windham, 2005). As such, the need to include these techno-social tools into the classroom has become the focus of many research studies in the educational field. The advent of multimedia technology has also created a new arena in learning. Educators are beginning to switch their attention into the new directions through technology resources to motivate learning. In the process of multimedia learning and interaction, students were influenced by the way the material is structured, presented and processed and enabled them to participate and be involved with the content of the application (Kim & Gilman, 2008). With these emerging technologies, students were expected to learn in various ways other than the traditional "chalk & talk" teaching method. Moore (2008) urged teachers to consider a role to change by using projects as learning strategies and multimedia creates ideal environments for such activities in which learners are engaged in their learning process. In addition, web learning has become common in classroom teaching with most of the higher education institutions engaging in web learning or some form of online teaching.

Laurillard (1993) states that, "*as an information and retrieval system, it [the Web] is a very well-designed medium*" and can be used in addition to classroom teaching. In order to strengthen the face-to-face engagements between peers, stronger links between in-class and online environments needed to be created. In developing the student

learning experiences, it is crucial to remember that an online connection is an important factor in forming a meaningful relationship and that physical interaction with peers is essential (McCarthy, 2010). Web 2.0, which includes social networking sites such as Facebook, MySpace, Twitter and blogs, empowers students, can engage students and enhance communication skills with others, increase peer learning and support in-class interactions (Barnes & Tynan, 2007). According to Hear (2006), the impact of web 2.0 is visible and teachers have started to use and explore the potential of blogs, social networking, and other social software which can empower students learning and create new way of thinking and learning opportunities. These tools allow teachers to share and discuss innovations more easily and, in turn spread good practice. It also allows students to become selectors, creators and collaborators while teachers have adopted the role of content shepherd, environment provider and facilitator, and enables them to interact and shift from passive learners to active and creative participation in multimedia content.

Laurillard's (1993) Conversational Framework was developed as a way of capturing the iterative, communicative, adaptive, reflective and goal-oriented actions with feedback that were necessary to support the complete learning process. The framework aimed to support the learning process by developing students' understanding through reflection and adaptation in relation to a goal-oriented task, with feedback which are operated on a discursive level (discussion, conception, negotiation between teacher and students), where dialogues between teacher and student take place, and on an experiential level. (practice, action, application), where the process of adaptation and reflection of the discursive level occur.

The framework aimed to optimise the learning process by supporting the student in developing their understanding through reflection and adaptation in relation to a goal-oriented task, with feedback. It requires students to iterate through a cycle of attending, questioning, practising, adapting their actions, using feedback, reflecting, and articulating their ideas. Educators have used this framework as a basis to explore communication and discussions between students (Phillips & Luca, 2000) and of the mix of web technologies used in teaching. With the interaction and feedback gained from the teacher, students are encouraged and supported to understand the concept and objectives of their tasks and proceed to experiential level, which is where students will then implement their ideas and reflect on what they have done. It is the level where students involved themselves, and experience critical thinking skills, problem-solving skills and communication skills. The framework allows them to iterate through a cycle of attending, questioning, practising, adapting their actions, using feedback, reflecting, and articulating their ideas (Laurillard, 2002). As such, this Conversational Framework is adapted for this study to investigated these relationships when mediated by Web 2.0 and multimedia technologies.

Designing the web-based learning environment with Laurillard's Conversational Framework

In this study, the learning environment was designed based on Laurillard's conversational framework. Laurillard maintains that the learning process must be constituted as a dialogue between teacher and student. Students are learning face to face in the class as well as learning using technology at their convenience time and place. Laurillard (1993) emphasized the importance of students getting feedback from their learning through reflection and adaptation in relation to a goal-oriented task, with feedback which is operated on two levels: discursive (upper half of the framework) and experiential level (lower half of the framework). On the discursive level, it is where all the discussion, conception, negotiation between teacher and students occur. With the interaction and feedback gained from teacher, it is to make sure that students understand the concept and objectives of the project and proceed on experiential level, which is where students work on their assignment. It is the level where students involved themselves, and experience which required critical thinking skills, problem-solving skills and
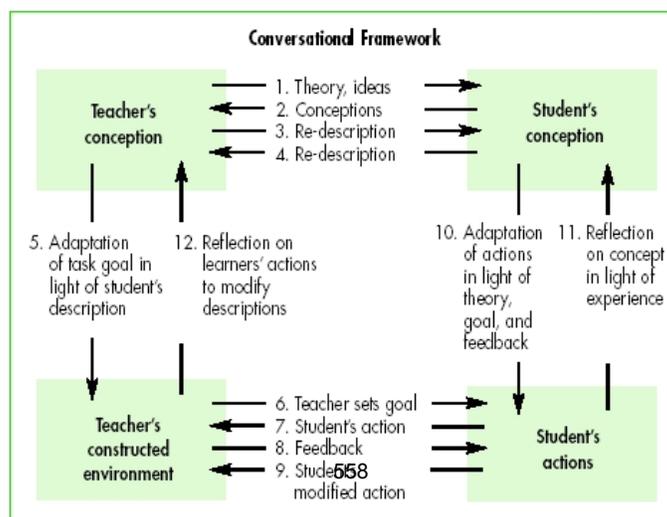
communication skills. Figure 1 shows Laurillard's Conversational Framework and Figure 2 shows the framework mapped to the learning environment.

Laurillard's Conversational Framework (1993, 2002)	Integrating Laurillard's conversational framework into learning environment
1. Theory, ideas	1. Teacher brief on multimedia project to students in the class and what they need to do.
2. Conceptions	2. Student asking teacher on the project conception and requirements
3. Re-description	3. Teacher explains to students on what they do not understand in details
4. Re-description	4. Students re-describe what teacher had explained to make sure they understand
5. Adaptation of task goal in light of student's description	5. Teacher design and adapt the learning environment based on discussions
6. Teacher sets goal	6. Teacher set the project's requirement
7. Student's action	7. Students working on project based on teacher's requirement
8. Feedback	8. Teacher gives feedback on students's work during in-class consultation hours or through web learning, Facebook and blog
9. Student's modified action	9. Students make amendment on their works based on teacher's comments and feedback
10. Adaptation of actions in light of theory, goal, and feedback	10. Students work on their projects based on the understanding during discussions
11. Reflection on concept in light of experience	11. Student's action reflect on their understanding
12. Reflection on learner's actions to modify descriptions	12. Teacher modify the project description based on reflection of learner's action

Fig. 1 Laurillard's Conversational Framework (Source: Quinn & Reid, 2003)
Fig. 2: Mapping Laurillard's Conversational Framework into learning environment

This study took place at Multimedia University (MMU) and this learning environment applied to MCC 0023, Computer Graphics 2 course. The participants were 1st year students (Alpha year) from Faculty of Creative Multimedia (FCM). This course took 8 weeks to complete, total consist of 3 credit hours. These were students with little or no background in design foundations. The students' ages ranged from 20-26 years old and consisted of 154 students (N=154) included mix of male and female. They came from different background and different races, consisted of Malay, Chinese, Indian and international students. The students were given a class project where The course design required students to form groups of 6 persons in a group and come up with a calendar design of their own choice. One group leader will be selected from each group. The calendar will have all 12 months and each member will be in charge of 2 months. In addition to the calendar, each group were required to create a blog to post and document the making of their calendars. The documentation would include the ideation of the calendar and each of the months created. Students were encouraged to include their designs, sketches, ideation, and references to create the calendar. These blogs would be update continually on their work on their progress, ideation, information sharing, and would be maintained by each of the team members and team leaders. These blogs could be view by all the other members in class to comment and share opinions. Students now had the opportunity to share their ideas as well as their progressions with their fellow group members while cooperate with one another in order to complete the assignment. Here students would be able to reflect on their work and make any necessary improvements before submitting their final application. Figure 3 shows an example of a group's blogging progress, and Figure 4 shows an example of their final work.

Fig. 3: Students blogging on their progress on the calendar development
and their peers' comments during the collaboration

Fig. 4: The final output from one student team

Data analysis and results

A questionnaire was administered to gauge the student's perceptions and attitudes on the learning environment. Questionnaires were measured in the Likert-type scale, the ranges for Likert-type scale are 1 - Strongly disagree, 2 - Disagree, 3 - Undecided, 4 - Agree and 5 - Strongly Agree and adapted from Burdett, (2003). The results of the survey were broken down into means (M), Standard Deviation (SD), and Percentage (%) of favourable responses (i.r., scored between 4 and 5 on the scale). The results are presented according to the following categories: 1) Teamwork and collaboration, to gauge how well they communicated and collaborated with each other, where the effectiveness of student communication and collaboration would impact the instructional relationships among the students, and is presented in Table 1, and 2) role of the teacher, which would shed light on the interrelationships between the students and the teacher when in this learning environment, and presented in Table 2. The data was analysed with SPSS 18.0 and each category yielded a Cronbach Alpha of over 0.8, making them reliable (Lim, Khine, Hew, Wong, Shanti, and Lim, 2003). Student comments were also solicited to further support the findings.

Table 1: Survey items on teamwork and collaboration

No	Items in the survey	(M)	(%)
1	I was able to cooperate with my leader	3.99	76.7
2	Class discussions generated close relationships between the students, teacher and vice versa	3.98	75.8
3	I enjoyed group discussions with my peers	3.92	76.7
4	I was able to cooperate with my team members	3.91	75.9
5	Class discussions helped me to understand the topic better	3.91	77.5
6	I learnt something from peer's feedback	3.86	72.4
7	I was not afraid to speak out my opinions in my group.	3.80	64.7
	Cronbach's Alpha =0.858		
	Student comments: 1. *"Able to communicate with the leader, share and compare ideas and thoughts."* 2. *"Great. We were able to communicate easily and finish work on time."* 3. *"We had fun and good discussions. We enjoy working in the group."* 4. *"Good. We have some problems at the beginning but after that we manage to solve it."* 5. *"We have good relationship. Communication is the best to maintain our relationship."* 6. *"My relationships with them are great. We share our opinions and suggestions to improve our project."*		

Results from Table 1 showed that 77.5% of the students enjoyed having class discussions to help them understand their topic better (Item 5, M=3.91). 72.4% of students reported having learned from their peer's feedback (Item 6, M=3.86), and being able to cooperate with their leader and team members (Item 1, M=3.99, 76.7% and Item 4, M=3.91, 75.9%). Furthermore, students enjoyed group discussions with peers (Item 3, M=3.92, 76.7%), which generated closer relationships among them, as they were able to contribute and voice their opinions (Item 2, M=3.98, 75.8%, and Item 7, M=3.80, 64.7%). The survey results were also supported by student comments, which showed that student found communications among their peers and leaders contributed considerably to their relationships and collaboration process.

Table 2: Survey items on the role of the teacher

No	Items in the survey	(M)	(%)
1	The teacher played an important role in this class	4.22	91.4
2	Communications between the teacher and students were important to me	4.03	81
3	Conversations between teacher and peers were important to me	3.91	74.1
4	I enjoyed class discussions with the teacher	3.90	75.9
5	I learnt something from the teacher's feedback	3.88	75.9
6	I learnt best when I interacted with teacher and peers	3.85	74.2
7	I enjoyed gave responses when the teacher asked questions	3.53	49.1
	Cronbach's Alpha =0.866		
	Students' comments 1. *"As a consultant, source of advice and progress monitor."* 2. *"To guide and help the students to understand better."* 3. *"Act as a guide for our studies. Students have to take the initiative to learn for themselves."* 4. *"Give us lecturer, explanation and as a consultant. Give us more useful information and tutorial."* 5. *"The one who we can refer to when we have problems."* 6. *"Motivate students; widen student's point of view and knowledge."*		

Results from Table 2 showed that 91.4% of the students preferred to have teacher in the classrooms (Item 1, M=4.22). Students also reported that communication and conversations with the teacher were important to them (Item 2, M=4.03, 81% and Item 3, 74.1%). Class discussions with the teacher were also enjoyable (Item 4, M=3.91, 75.9%) and students enjoyed giving responses when teacher asked questions (Item 7, M=3.53, 49.1%). Students learn from teacher's feedback (Item 5, M=3.88, 75.9%) and reported learning best with class discussions with

teacher (Item 6, M=3.85, 74.2%). Student comments solicited also supported these findings, as students commented on the various types of assistance they received from the teacher during their learning process. It was evident from the results that students saw the teacher still playing an important role in the learning environment.

Discussion and conclusion

From the results of the study, students showed that they were motivated to learn in this learning environment. They had fun and thought that it was interesting to do web-based multimedia project with their peers. By working collaboratively in a group to complete the project they were able to gain real life working experiences and learned to communicate and collaborate with one another. They acted as creative learners and active learners, and gave their opinions and ideas in the group, something which was lacking in the conventional teaching and learning classrooms, and was consistent with Burdett's (2003) finding that working collaboratively improves the learning process, builds friendships and sharing workloads. Students took on the role of supporter and helper to their peers to help solve problems together. Findings also showed that communication was everything, thus supporting Laurillard's framework for conversation and dialogue. From the finding from the survey, 91.4% of students stilled preferred having the teacher in the classroom. Students reported that the teacher played an important role in their learning and enhanced the learning environment. However, in this environment, the role of the teacher evolved, as students preferred that the teacher act as helper, guidance and reference for them to help and assist them in explaining the multimedia project, learning content, and for providing them feedback, thus supporting Ashe & Bibi (2011) who stated that in such learning environments, the teacher's role evolves to become providers of information, creators of communication spaces, facilitators of discussions, and designers of the environments. In addition, students found themselves in a two-way learning where communication and feedback occurred in the classroom as well as in web learning environment through blogs between them and the teacher, and amongst themselves as well, which facilitated increased productivity and collaboration. Their relationships became more transparent and dynamic, and the web 2.0 technology became an enabler for them to solve problems, communicate and collaborate. Giving and getting feedback was important to students, unlike in conventional classrooms, where the transmission of knowledge only occurs from teacher to students. With web 2.0 tools, students are able to obtain information anytime and anywhere. It moved from teacher-centric teaching to student-centered learning. Learning using web 2.0 showed the student learning process was more fun, challenging and motivating to them. Students were highly motivated to learn using technologies as they became active in the learning process. They showed that they were more willing to learn and explore in order to learn the content. They took the initiative to find out the answer for the problems, and became more confident in their learning. Learning using web 2.0 in the classroom had a positive impact on student learning process. The findings thus extends the conventional teaching and learning to include the dialogue and feedback between teacher and students and between students to students, consistent with that of Phillips & Luca (2000), to provide educators with better understanding of the impact of technology on the teaching and learning process and their roles in new learning environments. Figure 5 presents the conceptual model of the instructional relationships in this learning environment, culled from the results of using Laurillard's (1993) framework.

"Act as a guide for us...we can ask the teacher we don't understand and she will give us feedback."

"To motivate and guide students learning in multimedia environment."

"The teacher was there to guide us and help us."

"Teacher playing an important role. She is the one who motivate us to learn more about multimedia."

"Teacher assists us learning in multimedia learning environment."

Fig. 5: The instructional relationships between teacher, students and technology

The study also showed that Laurillard's (1993) Conversational Framework was an effective instructional guide for creating discourse and dialogue among the learners and the teacher. Mapping the framework to the group project and supported by web 2.0 technologies, to create this learning environment further strengthened the value the framework as practical guide to building engaging learning environments.

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Integrating Project Based Learning Environment into the Design and Development of Mobile Apps for Learning 2D-Animation

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Abstract

A widespread use of mobile devices such as smartphones, iPad, and Android tablet were known as rapidly growing trends among students in higher education. With thousands of applications or apps that are available via Apps Store and Google Play market, there are wide variety of applications or apps that meeting the vast needs among learners nowadays. Yet, it is quite a challenge for instructional designer to adapt with specific instructional learning setting in the design and development of mobile apps. This article focuses on integrating project-based learning environment into the design process and development of mobile apps for learning 2D-animation.

Keywords: Mobile learning; project based learning; instructional system design ; R2D2 model

Background of Study

With the abundant of apps in the App stores and Google Play, the effectiveness of those apps towards students' learning is questionable since learning is closely related to the instructional design of learning materials. It marks the importance for instructional designer to begin with well-structured learning materials by incorporating the learning objectives and teaching strategies as suggested previously by Moore and Kearsley (1996). This paper focuses in integrating project based learning environment into the design and development of mobile apps for learning 2D animation. We believe that, mobile apps that promote learning in the current market are highly beneficial to the students. It support self-paced learning environment where students could learn anywhere and at anytime according to their own preferences. In this paper, the apps are mainly developed for masters' students who are enrolled in Educational Technology programme in one of the university in Southern Peninsular of Malaysia. Students in the programme are required to complete one subject that will be exposed them with knowledge and skills in developing 2D-animation or multimedia applications using Adobe Flash software.

On the other hand, we are also aware that integrating project based learning environment means to offer authentic learning experience among students in which it proposes students to learn by taking part on every project or tasks provided. Besides, as nature of most authoring-based subject, it highly requires students to participate and involved in 'hands-on' activities as this subject require them to establish their technical skills rather than on theory basis.

Project based learning environment

Project based learning involved authentic learning environment (Eskrootchi & Oskrochi, 2010) that enables learners to construct knowledge in authentic context (Papanikolou & Boubouka, 2010). Such learning environment is highly believed to be the best approach that could facilitate learners to have full control throughout their learning process. It requires students to complete certain tasks and exposed them to investigate possible ways to complete the task (Kwok &Tan, 2004). From such experience, students are able to generate their own thinking skills and make them realize that there are few alternative ways to solve a problem. Present study incorporated project based learning environment in the design and development of mobile apps for students whereby the apps act as an educational tool that reflects task based on project. The apps consist of step-by-step video tutorial of practical and technical skills in developing 2D animation with Adobe Flash software. Project-based learning is actually reflects

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the Theory of Constructivism by John Dewey (1916). It explains how learners construct knowledge by getting involved in the process of learning and experience it at the first place.

Mobile apps for learning

The use of mobile devices has transformed the way people communicate, access, and giving information (Bolorizadeh, Brannen, Gibbs & Mack, 2012). The rapid developments of apps have shifted the way information delivered especially in educational field to adapt with the current technology and to be used in teaching and learning. Interestingly, one study reported that student preferred to use mobile devices as technology supported educational tool because it is more accessible, more portable and newer technology (Sung & Mayer, 2012). Undoubtedly, there are numbers of apps that have been developed as a technology tool to support learning nowadays. Present report by NMC Horizon stated that mobile apps are the fastest growing trends in mobile technology in higher education (Johnson, Adams & Cummins, 2012).

Design and Development of Mobile Apps

Mobile apps for learning 2D animation is a mobile tutoring apps that provide users with information, interactive examples and step-by-step self designed video tutorial that will assist students on creating and developing 2D animation tools and creating multimedia courseware applications with Adobe Flash software. In this study, we plan to develop four apps that assist students in learning. The apps are mainly developed for Master's students who were enroll in Educational Technology programme in which most of them are teachers and part-time students. They are expecting such mobile apps in which they can have access anywhere and at anytime.

In this study, the R2D2 model was used as instructional guideline in the design and development of learning 2D animation apps. R2D2 stands for Recursive, Reflective Design and Development model developed by Willis (1995). This instructional design model lies on the constructivist principle. It is a non-linear model compared to ADDIE model and Morrison, Ross and Kemp model in terms of its flexibility. In this sense, it allows the designers to acknowledge the relationship between each stage of the design process and enable them to revisit each step in regulatory order (Willis, 1995). It is fluid and versatile model (Beldarrain, 2008). The R2D2 model had also been revised by Willis and Wright (2000). R2D2 is the suitable model as this model was based from constructivist theory of learning.

The R2D2 models developed by Willis (1995) offered a constructivist development model that is an alternative to the traditional model. Unlike the other model, R2D2 proposed a recursive approach, allowing the instructional designers to examine the development process in any order. They may revisit the process and make decision and make amendment and changes if needed (Chen & Toh, 2005). It is also a reflective model by means the designer must seek and consider feedback from other sources. The last principle is the participatory design in which this model offers both experts and users to contribute to the development process.

The main components of this model consist of three focal points:
i. Define Focus,
ii. Design and Development Focus, and
iii. Disseminate Focus.

The components of R2D2 are as appear in Fig 1. It shows that this model has no beginning or ending and there is continuous interaction between those three focal point (Dick & Carey, 1996). It also shows that R2D2 is a non-linear process; it is a spiral process in which the tasks will be addressed many times.
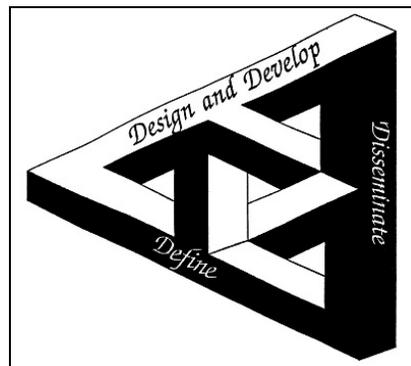
Fig. 1. Components of R2D2

Define Focus

Unlike the traditional instructional design, there is no need to establish an objective at first point because to Willis (1995), what is more important is to involve end users, the teachers and students in the design process. Define focus has three activities including, a) Creating and Supporting a Participatory Team, b) Progressive Problem Solution, and c) Developing Phronesis or Contextual Understanding.

2.2.1 Selection of Development Environment

The development environment consists of three main characteristics: a) Power, b) Flexibility and c) Accessibility. As for the tool of the design, current software programs, Adobe Flash Professional CS5.5 were selected as the development environment. The software includes 2D authoring tool that support for creating interactive and dynamic multimedia content and also provide support for publishing mobile applications or apps for iOS and Android market. The software also provides powerful and accessible programming language, known as Actionscript. This programming language is easily accessible even to those who are not familiar with coding opens to develop the project with the software. Thus, this development environment is adequately powerful, flexible and accessible for experimentation and exploration of alternatives. In this study, Adobe Flash Professional CS5.5 was selected as development environment to create iPad apps that serve as a technology tool to support students in learning Authoring System subject. Adobe Flash Professional CS5.5 provides support for publishing mobile for iOS platform. Designer need to modify the publish setting and select AIR for iOS.

Then, a researcher will continue with the design process. Firstly, it started with the components of learning environment such as preparing the storyboard, the interface and also the instructional strategies. Table 1 indicates the outlines of each developed apps and its descriptions on learning topic, project based tasks and integration of project based learning criteria by Larmer (2012), embedded for each app.

Table 1. An example of a table

Apps	Learning Topic	Project Based Learning Criteria	Project Based Task	Learning Outcome
1	Introduction to Adobe Flash • The apps contain information of Introduction to Adobe Flash CS3. Several topics covered in the apps such as Flash's Interface including its tools and functions, Example of applications in Flash, Types of Interactions in Flash and requirements needed in learning Adobe Flash CS3.	• The project sets up a scenario or simulation that is realistic.	• Interactive example of several interaction elements in Adobe Flash such as the use of button, hotspot, drag and drop activity and types of text in Adobe Flash.	• Students are exposed with the basic understanding of Adobe Flash for instance, the software interface, the tools include and each functions. Students also are given with comprehensive information of types of interactivity offers in Flash, and various examples of multimedia applications that can be developed with Flash.
2	Drawing in Flash • The apps contain information and step-by-step video tutorial of Drawing tools and drawing techniques in Adobe Flash CS3. Several topics covered in the apps such as Basic Drawing: Creating Simple object & text, Basic Colouring and Drawing button in Adobe Flash CS3.	• The project meets real world situations beyond the classroom setting, or the products that students create can be used by real people. • The project focuses on a problem, issue or topic that is relevant to learning content. • The project sets up a scenario or simulation that is realistic. • The project involves tools, tasks or processes in real settings.	The tasks involved the students to produce several products including: • Drawing a building. • Drawing a cartoon. • Drawing a company logo. • Drawing menu buttons.	• At the end of the acivities, students will be able to construct their creativity by developing their own products based from the information and video tutorials embedded in the apps. • Students are able to identify tools and appropriate drawing techniques and skills needed upon completion from these authentic tasks.
3	Creating Animation • The apps contain information and video tutorial on basic tools and functions in creating animation with Adobe Flash CS3. Topics covered including types of symbols and various types of animation techniques that can be developed with Adobe Flash CS3. This app basically exposed learners on how to animate an object or graphic in Flash.	• The project meets real world situations beyond the classroom setting, or the products that students create can be used by real people. • The project focuses on a problem, issue or topic that is relevant to learning content. • The project sets up a scenario or simulation that is realistic. • The project involves tools, tasks or processes in real settings.	The tasks involved the students to produce several products including: • Creating a movie clip of butterfly flipping its wings • Paper aeroplane flying in specific path • Simple animated cartoon	• At the end of the activities, students will be able to construct their creativity by developing their own products based from the information and video tutorials embedded in the apps. • Students are able to identify tools and appropriate animation techniques and skills needed upon completion from these authentic tasks.
4	Application of Interactivity • The apps contain information and video tutorial on types of applications that can be develop using Adobe Flash CS3. This topic expose learners to develop interactive applications based on Flash core language that is Actionscript.	• The project meets real world situations beyond the classroom setting, or the products that students create can be used by real people. • The project focuses on a problem, issue or topic that is relevant to learning content. • The project sets up a scenario or simulation that is realistic. • The project involves tools,	The tasks involved the students to produce several products including: • Creating simple quiz • Creating drag and drop activity • Creating simple educational courseware	• At the end of the activities, students will be able to construct their creativity by developing their own products based from the information and video tutorials embedded in the apps. • Students are able to developed simple multimedia applications and practice the techniques and skills needed upon completion from these

<table>
<tr><td>tasks or processes in real settings.</td><td>authentic tasks.</td></tr>
</table>

Upon the completion of preparing the learning materials, instructional designer will proceed with producing a single path prototype. The single path prototype examines the operational and navigational structure of the apps. A researcher had developed a simple prototype of the apps to ensure that the program runs smoothly from the beginning to the end. A researcher than proceed with alpha version, a completed apps that soon be provided to the students to provide feedback. In this study, a researcher had conducted a preliminary investigation (PI) whereas the apps were distributed to the students and a set of open-ended questions were prepared for students to provide feedbacks and opinion regarding the contents of the apps, the operational features and also the navigational structures. Feedbacks and opinions were gathered and several changes have been made before proceed to beta version. For example, in alpha version, the apps were embedded with video tutorial to assist student in learning, however students suggested providing a video tutorial with playback button. This will enable them to have full control over the video. For instance they would play, pause, stop and repeat the video according to their preferences. The alpha version was revised and with beta version, the apps were introduced as Version 1.0.0.

2.2.2 *Cooperative inquiry*

In R2D2 model, team members could cooperatively discuss and gathered materials in order to improve and enhance the learning environment. This continuous process requires members to reflect together and providing feedback based from their own experience because each member, the designer, subject expert, instructor and students will reflect based from their own point of view. In present study, each student's opinion and feedback on alpha version of the apps were reviewed and several changes have been made to suits student's need. This is known as one-on-one evaluation. Same goes to subject matter expert, who have a done a review on the accuracy and comprehensiveness of the contents delivered in the apps. These are all important to assured that the materials being prepared are in accordance with student's preferences.

2.2.3 *Product design and development*

In this study, four iPad apps were developed as instructional tool to facilitate students learning in Authoring System subject. As mentioned earlier, these apps were developed with Adobe Flash Professional CS5.5. In R2D2 model, Willis (1995) had listed out several components involve in the product design and development including: a) surface design, b) interface design and c) instructional strategies. The surface design refers to several aspects like the typography, language and graphics used in the study.

Besides focusing on the surface design, project designer also focuses on the aspects of interface design. The interface design highlights several criteria including the 'cosmetic' part of the project, usability, user interaction, navigation, user experience and also system support. For example, the use of text, button and graphics to show learners which section they are in. Adams *et al.* (2008) stated that the interface design is as important as it will support general features as example, to make a simulation engaging and easy to use for the users, and the types of controls that could enhance students' engagement in learning. Moreover, Oppermann (2002) also agreed that the presentation of the content is important as it will permit the learners to interact with content efficiently.
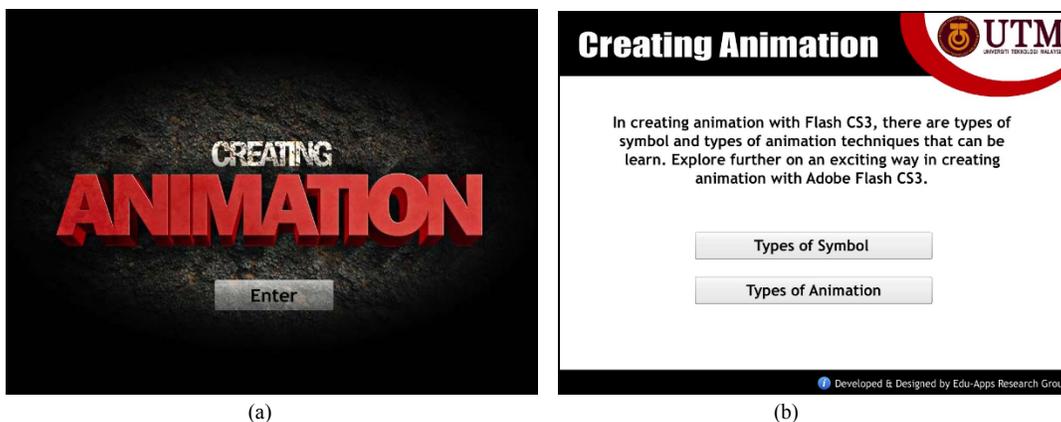
(a)   (b)

Fig. 2. (a) Interface design; (b) Main Menu

The apps also embedded with a step-by-step video tutorial along with audio narration to assist students in learning Authoring System subject. The playback button were provided for the video tutorial so that the students will be able to navigate the video according to their preferences whether to play, pause, stop or replay the video. Fig 3. shows the example of embedded step-by-step video tutorial.
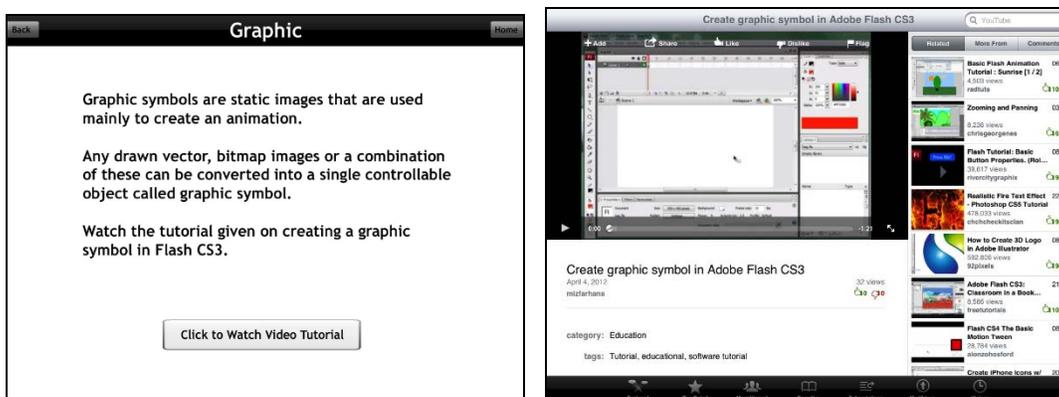
Fig. 3. (a) Lesson Topic; (b) Self designed step-by-step video tutorial

Disseminate Focus

Dissemination focal point in R2D2 model focuses on the final packaging, diffusion and adoption of the iPad apps. This step is about distribution the apps to the students and it is essential to ensure that technical components in the apps are functioning. Diffusion and adoption is about helping the teachers and students to adapt the material to the local context.

24. Fig. 3. Developed apps as an educational tool in classroom

Conclusion

This paper provides a comprehensive overview of the design and development of learning 2D-Animation apps that is convincingly expected to supplement the learning of developing animation among novice learners. The learning 2D animation apps is designed and developed in an organized and systematic process within the context based on R2D2 model. The integration of project-based learning in the design and development of the apps suggests that it could facilitate learners to have a dominant control of their own learning process.

25.

Acknowledgements

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Interacting with Screenagers in Classrooms

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Abstract

The differences in communicating methods between teachers who have learned to study in paper based context and students who are more familiar with screen based context can cause problems in classrooms. This paper discusses issues and concerns in interacting with students who grew up surrounded by multimedia and digital devices, in other words, screenagers, in classrooms. Based on the recent projects and research findings, four key themes are discussed regarding interacting through personal learning devices, communicating with the students in the way they do using social media, appropriate amount of exposure when using audiovisual resources, and possible side effects of using personal learning devices. Finally, teachers' roles and responsibilities in dealing with screenagers are discussed, and suggestion for using teaching models and teacher training are provided.

Keywords: Screenager; interactivity; personal learning devices; teachers' roles

1. Introduction

There always have been frustration and difficulties in understanding when it comes to communicating to teenagers. But there seems to be more than just generation gap and misunderstanding when trying to interact with the students in the 21st century. The students in classrooms now have been surrounded by multimedia and digital devices since they were very young, and they are very comfortable with high-technology and using small screen devices, hence the term—screenagers. These screenagers read information provided on screen instead paper, write using keyboards or keypads instead of pen or pencil, and they can tap into immeasurable amount of information on the Internet without having to physically get to the library. They freely use multimedia for instantaneous communication, multi-tasking, and information management in nearly all aspects of daily life. Therefore, teachers have to keep in mind that it is not simply generation gap or misunderstanding, but the means of communication itself for the young people have undergone radical changes. In choosing appropriate ways of teaching the screenagers, suitable communication methods needs to be taken into consideration as well as the characteristics of screenagers.

There are many countries where high-technology and multimedia play an essential role in the society, and South Korea is one of them. In most homes and schools, high-speed Internet connection is available, and most people, including children, use cellular phones. Taking advantage of the groundwork of nationwide information technology, digital textbook, personal digital media, Internet Protocol TV (IPTV), and others have been explored for possible use in education in last five years. Specialists in education and technology have been trying to find effective and efficient teaching methods and techniques for the screenagers. What is more, research projects using such multimedia tools have been concentrated on investigating the appropriate functions of learning devices, development of applicable teaching methods, a high level of interactivity, changes in students' academic performances, motivation and attitude, and suggesting solutions to problems that may arise when using the tools in classrooms. Based on these researches and projects, this paper discusses what the researchers have found as well as the lessons learned about screenagers in classrooms, focusing on the following four key themes: 1) interacting through personal learning devices (PLDs); 2) communicating as students do through social media; 3) appropriate amount of time for using moving pictures; and 4) possible side effects of using PLDs.

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2. Interacting through Personal Learning Devices (PLDs)

In 2005, the development of digital textbooks was instigated with the funding from the South Korean government. By 2009, digital textbooks for 10 subjects including Korean, English, social studies, mathematics, science, music for 5th grade, and Korean, mathematics, social studies, and science for 6th grade were developed. The implementation of digital textbooks began with 5 experimental schools in 2006, and by 2010, they were put into service in 112 schools. From 2015, teachers and students are to use digital textbooks in the language classrooms at elementary and secondary schools nationwide, and learning tools in the smart learning environment are to follow (C. H. Lee, 2012). Extracurricular support for cyber home learning system (CHLS) using videoconferencing for the digital textbook has been developed and has shows positive results according to research findings (Lee, Yoon & Lee, 2013)

The reasons for using digital textbooks are due to rising need for a change in educational environment and up-to-date pedagogy that is more suitable for screenagers. PLDs and shared displays have been found to promote student participation and interaction while improving learner articulation process as well (Liu, Chung, Chen & Liu, 2009). Digital textbook provided through tablet PC is implemented, therefore, as an evolved form of learning materials for the screenagers. Digital textbooks use the same content as the printed textbooks along with multimedia contents such as video clips, animation, virtual reality, access to search engines, and a variety of interactive tools. The hardware used for digital textbook is tablet PC networked to the teacher's computer and the electronic blackboard. Students can use electronic pens to take notes or highlight contents in the textbooks and save them for later viewing (KERIS, 2008). The digital textbook not only expands the possibilities for learning, but it makes what was impossible with printed textbook possible. For example, video clips of interviews with authors can show students what the authors had in mind in more personal manner than via paper. Augmented reality technology or animation of volcano eruption can visually assist science lessons. In foreign language classes, authentic audio and video files can provide much needed ample exposure to the target languages.

An appropriate use of multimedia tools and resources like digital textbooks and web contents can make classrooms come alive, but then again, that does not mean that it always increases students' comprehension and cognitive ability. Multimedia alone cannot substitute the role of teachers, replace the humanness of classroom interaction, nor take the place of firsthand experience (C. H. Lee, 1988, 2012). Therefore, appropriate and high quality interaction patterns, students-content, student-student as well as student-teacher interaction need to be ensured and enforced through suitable application of multimedia tools and resources. Figure 1 shows how PLDs can be used for various types of interaction among teacher, individual student, groups, whole class, and PLDs in individual learning as well as whole class teaching. For example, interactive composing tools can be used in music classes where students can compose musical pieces and play them using variety of musical instruments. Also in math classes, students can solve problems on their respective table PCs. Teachers can click on students' computers from the teacher's computer to take a look at how they are doing. The teacher can also display a specific student's tablet PC screen on the electronic blackboard for the entire class to see. The individual students can then compare the process of solving mathematical problems with their peers. By sharing their thought processes and knowledge with each other, students can engage in both reception of knowledge and active production through engaging in interactive learning.
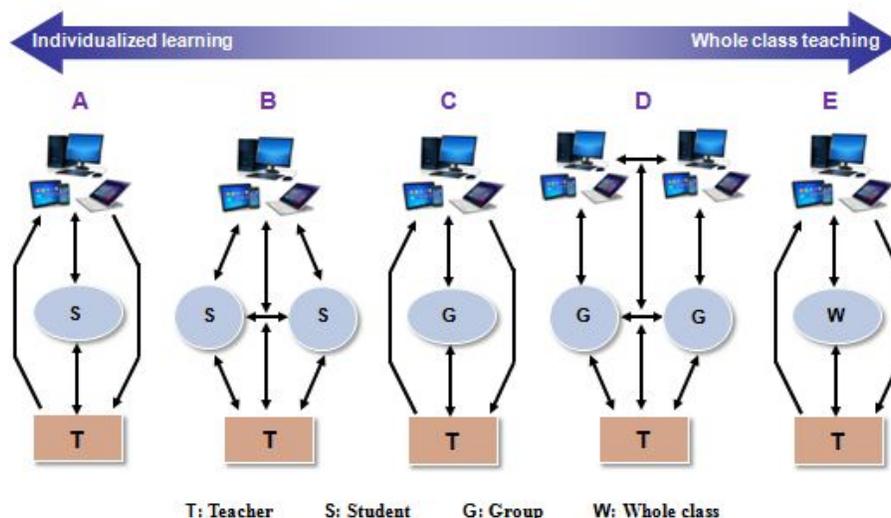
Figure 1. Interaction patterns using PLDs in the classroom (Based on Lee, 1998)

There is an assortment of PLDs available for classrooms like tablet PC, personal digital assistant, portable media player, and cellular phone to name a few. In employing PLDs in the classroom, the interaction patterns need to be maximized regardless of the type of PLDs and functions. Appropriate use of PLDs in classrooms have been reported to promote learner collaboration and interaction and provide enrich learning experience (J. Lee, 2012; Roschelle, 2003; Zurita & Nussbaum, 2004). When the teachers successfully make the most of PLDs while providing maximized interaction, it will bring about positive changes to the students' performance and the quality of education in schools.

3. Communicating as students do through social media

The majority of students in Korea carry cellular phones with them wherever they go. Cellular phones are primarily used for communication purposes, but some students use them for more than just communication. The advance and evolution of cellular phone technology has allowed users to listen to mp3 files stored in their phones to listen to songs, study foreign languages, or record voices. Most phones now allow users to take pictures as well as record videos, surf the Internet, and watch Internet lectures through digital multimedia broadcasting services. Recently, the expansion of smartphones enabled numerous academic applications to be used by students and teachers both in and out of the classroom. Students can search for the nearest library and the availability of books before they actually go to the library to rummage through the shelves, and visually impaired students can download applications that read books aloud for them.

In the flood of applications and functions that are made available via cell phones or smartphones, the most popular and the most frequently used ones are, needless to say, Short Message Service (SMS) and Mobile Messenger Application (MMA). It is common to see students sending SMS or MMA messages in school, in restaurants, on the street, and even in classes. The one way to overcome the communication gap is actively engaging in communication using the methods that the target group uses. If students use SMS or MMA to carry on interaction, it means that it is worth considering SMS or MMA as a potential tool of student-teacher interaction. In fact, incidents of South Korean public school teachers successfully building relationships and taking communication to a meaningful level with teenagers using SMS have been reported (Lee, 2007). The interactions reported were meaningful in that they were more than mere increase in number of messages, but the content of communication was genuine. In other words, students felt more personal to the teachers who are willing to communicate in the way that they do and were willing to open up to the teachers who seem to understand them.

Affective domains regarding knowledge and skill acquisition such as students' attitude, beliefs, underlying emotions can affect learning significantly (Brown, 2007). Also intimacy to the teachers cause students' affinity seeking behaviors in a variety of context and positively affect students' performance in respective academic subjects, and ultimately, school life in general (Mottet, Richmond, & McCroskey, 2006). It is also found that learners are given the opportunities to be creative and produce information when they were given the chance to apply the knowledge they have learned in the manner they are familiar with, such as in networked environment or

online environment (Beghetto, 2007: Burleson, 2005; Sawyer, 2006; Tuomi, 2007). If a teacher can successfully communicate to the students using SMS or MMA to reinforce genuine student-teacher interaction, it may lower students' affective filter and promote enhanced learning environment. To promote such effect, SMS component of cellular phone can be used as a tool for individual counseling, and social media such as MMA, Tweeter, and blogs can be used as group counseling or group communication tools for the whole class. Figure 2 shows how 6th grade students used camera application, picture editing application and Social Network Service (SNS) application in their smartphones to conduct a group project in science class (J. Lee, 2012). J. Lee (2012) reported that the students were able to successfully complete their projects on comparing and contrasting of objects of their choice and suggest possible usages without technical difficulties. PLDs provide group and individual communication tools such as e-mail, SMS and MMA messages, Bulletin Board System (BBS), and chat. Moreover, instantaneous application, and students' familiarity, cellular phone and social media seem to be more efficient and effective for communication purposes.
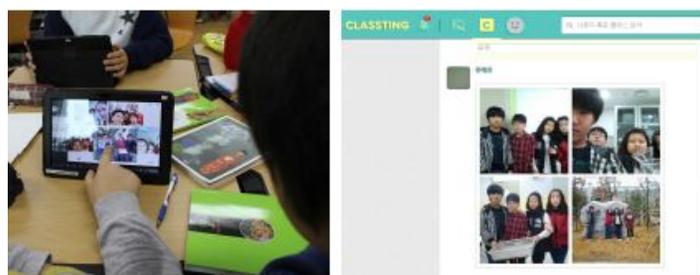
Figure 2. Group project using PLDs and SNS (J. Lee, 2012, p. 47)

4. Amount of time for using moving pictures

In order to get in touch with screenagers, more and more teachers are turning to TV programs, videos files, and DVDs to use as teaching resources in classrooms. To assist these teachers and to enhance the quality of education through ample provision of academic programs and resources, the government began installing IPTVs in all South Korean public elementary and junior high schools since the fall of 2009. Unfortunately, the teacher perspectives on IPTV have not been positively so far. Some teachers have complained that the remote control operated IPTV is complicated to use, and others wanted control panel to be linked to the teacher's computers. Surprisingly, the biggest issue with IPTV that the majority of the teachers addressed was not the technical unfamiliarity or difficulties. They questioned the educational value of using audiovisual contents for a prolonged time in class and pointed out the length of video programs to be the biggest problem (Lim, Kim, Han, & Ko, 2009). It is difficult to find time to have students-teacher interaction outside of the classroom, and student-teacher interaction mostly takes place in the classroom. Accordingly, many teachers were unwilling to sacrifice in-class students-teacher interaction time by showing audiovisual contents for prolonged time in classrooms.

When it comes to the most preferred web contents by Korean elementary school teachers, it was found that the 3 minute video clips from the major Korean broadcasting companies and foreign news programs related to the contents addressed in the textbooks were the most one (Lee, 2004). These short 3 minute video clips related to the contents found in the national curriculum are provided to the teachers as educational resources. The teachers found them useful for focusing students' attention on the content, activating schema, and bringing together the lesson for follow-up activities. When DVDs or TV programs are used in reality, they are too long to allocate class time to check for comprehension, not to mention discussion or interaction. Audiovisual contents can be very useful in classes, but it seems that too much of it can do more harm than none. To conduct a class using short video clips, Lee (2004) suggests a thorough and effective listening class can be conducted in language classrooms using 3 minute video resources in Figure 3. It can be seen that each step serves to promote learners' listening skills using video, audio, as well as textual aid.
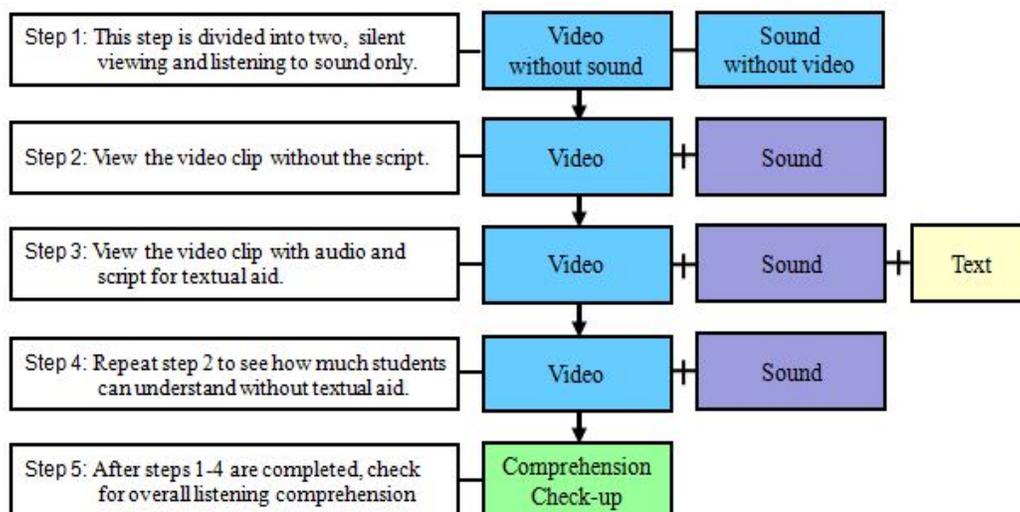
Figure 3. Five stages of using video effectively (Based on Lee, 2004)

5. Possible side effects of using PLDs

The digital textbook used in Korea displays the contents through monitors and projectors and use the wireless Internet just like PLDs. It seems to be helpful in teaching and learning as well as communicating to the students. Moreover, when the level of exposure to electromagnetic wave was measured, and the result showed that it was less than that of tablet PC. It seems to be effective and appropriate for the screenagers, but it is not a cure all, and there are downsides to it. When 40 elementary school students who have used digital textbook for more than 1 year were asked if they have experienced discomfort while using the digital textbook, some students have complained of eye fatigue, stiff neck, shoulder pain, fatigue, dizziness, drowsiness, and lethargy when using the digital textbooks (SeoMoon et al., 2009). Therefore, the students were advised to keep a distance of at least 50cm from the screen to prevent health risk and take frequent breaks from staring at the monitor for a prolonged period of time. Also, a study on children's interaction with tablet PCs, it was reported that when students use individual tabletop display and there was no shared display available in the classroom, there were possibilities of loss of eye-contact as well as unaware of visual focus (Scott, Mandry & Inkpen, 2003). The availability and arrangement of technical devices in classrooms need careful consideration in actual implementation.

Using screens and monitors introduces learning environment that is completely different from using printed textbooks. Such environment can be effective, efficient, and convenient; but it needs to be acknowledged that it may cause computer-related health problems if used excessively. Bright screens and monitors causing eye fatigue and eye sensitivity are one example of it. Many of these health problems can be avoided with proper training and forming good habits such as having good posture and stretching constantly.

The good news is that there are new technologies and electronic devices being developed like flexible displays using e-ink, and smartpens that electronically save the handwritten notes. The introduction of such technologies and being aware of possible health risks may alleviate many health problems and concerns that current PLDs seem to cause. Despite how convenient digital technologies seem, as teachers, both students' mental and physical well-being need to be taken into consideration, and the time and amount of PLDs usage should be carefully considered in using PLDs in classes.

6. Conclusions

What teachers know for sure about screenagers is that teachers do not know enough about them. The things teachers know are limited to the external descriptions like screenagers use the Internet and cellular phones all the time, they prefer audiovisual presentation over textual, they put an emphasis on emotion and sensation, and they are used to quick access to information online. But screenagers do not stare at screen just for the sake of doing so. They seek genuine interaction through SMS and look for group identity through BBS.

Some teachers use SMS or MMA to build student-teacher relationship and win their trust, and others use blogs and Twitters to reach out to their students. When experienced and qualified educators and teachers are clearly

informed of the needs, preference, and learning styles of this distinct and unique generation, appropriate and effective teaching methods and teaching models can be developed and made available for improving the quality of the classrooms. Kangas (2010) presented Creative Playful Learning (CPL) model using technology to provide interesting educational contents in highly technology enriched environment. It aims to let learners play with technology in learning environment as they normally do in their daily lives. In order to use teaching models using technology, such as CPL model, the teacher has to be aware as the students are in using technology including PLDs and SNS, and teachers must be able to navigate the technology enriched environment with ease. Many teachers are now aware of the possibilities that online environment offers, and they are turning to blended learning models as well. An example of such teaching model is seen in Figure 4. Yoon (2011) presented a blended learning model for teaching spoken language skills using online and offline multimedia tools that are generally familiar to teachers and students using both asynchronous and synchronous communication. The model allows different types of learning to occur such as independent self-regulated learning, collaborative learning, and cooperative learning while promoting various types of meaningful interaction among teacher-students, teacher-whole class, and student-student. In this model, meaningful interaction is permitted in and out of the classroom using various multimedia tools which allow more focus and guide during in class task. It was found to be helpful for large classrooms because the students felt that they were given more personal attention by the teachers through interaction on PLDs and SNS. Teachers, in turn, should be able to take the model, make necessary modifications based on sound theories, and apply them to their own classes.
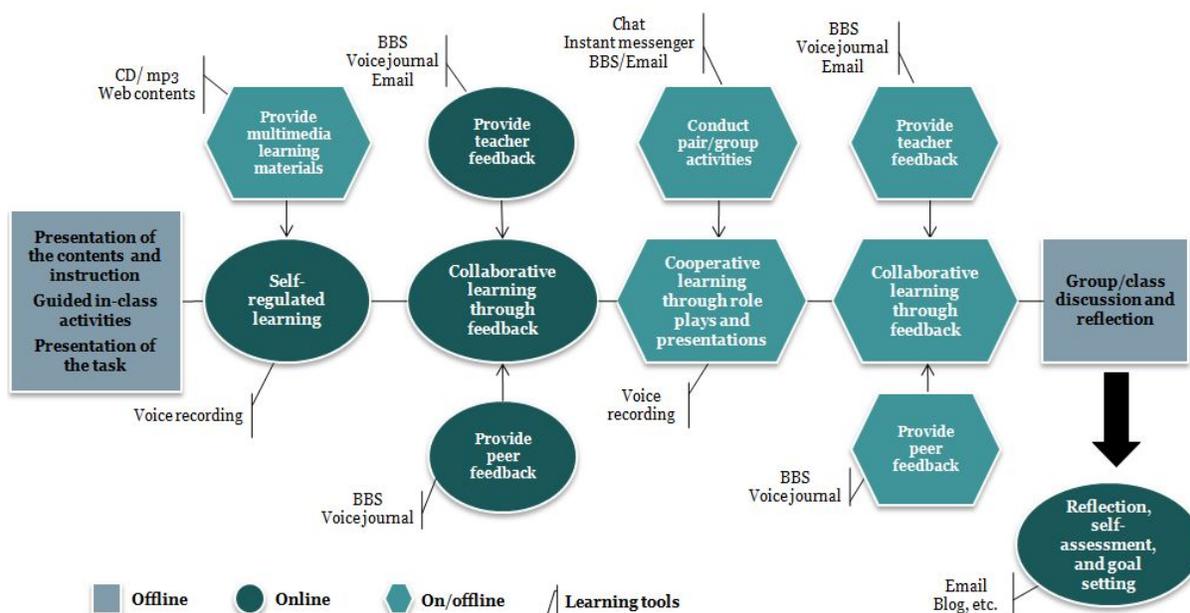
Figure 4. The optimal BLS model (Yoon, 2011)

As Prensky (2001) claimed, the teachers now are digital immigrants whereas the students are digital natives, and the bizarre circumstance of immigrants trying to teach the natives is what is going on in schools. That of course, does not mean that the immigrants should give up and leave the natives own their own. What needs to be kept in mind is that the screenagers are students. They have lots to learn, and so far, they lack experience and knowledge and need teachers to guide them. That is why meaningful interaction between students and teachers is needed, and teachers need to learn the language of screenagers to communicate with them. When teacher presence was strong, and interaction was directly felt, students reacted as desired; however, when the teacher presence was taken away, even when the technical interactivity was there, the students did not meet the pedagogical goals as desired (Kennewell, Tanner, Jones & Beauchamp, 2008). Teachers must be well aware of the importance of using technology in the way the students do, but teachers must also take the responsibility to control and make appropriate use of technology for effective learning to occur. Therefore, proper teacher training programs based on hands-on practice are needed so that teachers can use, evaluate, and modify teaching methods and instructional models for application of multimedia and PLDs, and ultimately design and develop syllabus and contents for their classroom needs. The teachers need to rise up to the challenge of the current times. Teachers who can meet the needs of the

learners are teachers who can bring about changes in their learners. In order to do so, they must take responsibility to evolve into knowledgeable teachers who can use multimedia and SNS efficiently and effectively.

Acknowledgements

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13th International Educational Technology Conference

Internet memes as an information dissemination tool for libraries: the Ateneo de Manila University experience

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Abstract

An increasing popularity of Internet memes can be observed particularly among college students. Websites such as 9gag, Reddit, and 4chan provide a venue for these memes to be visited by the general public. Having observed this trend, the Rizal Library of the Ateneo de Manila University embarked on a strategy to use Internet memes as an information dissemination tool. The initial phase involved creating social media accounts for the Rizal Library to serve as the initial source of information. After which, various marketing strategies were implemented to amplify the followership of the aforementioned accounts, therefore increasing the figures of the targeted audience. The final phase involved creation of the memes and the evaluation of results. After the completion of the project, statistics reflected an exponential growth in the reach of the advertisements posted by the Rizal Library, with the audience themselves contributing to the information dissemination process. This can be supported by the enhanced usage of the services and collections which were promoted using memes.

Keywords: Internet memes; information dissemination; libraries; social media; Ateneo de Manila University; Rizal Library; Philippines

Background

The Rizal Library of the Ateneo de Manila University kept itself occupied in the past years by continuously building its collection and improving its services. It prides itself in its unique special collections, namely, the Ateneo Library of Women's Writings (ALIWW), a collection of manuscripts and other realia by and about influential Filipino women, the American Historical Collection (AHC), with materials from the American regime in the Philippines, and the Pardo de Tavera Library and Archives, which houses donated materials from influential Filipino families, and is considered a rich collection of materials on Philippine culture. During the past half decade, it has managed to construct two buildings for its expanding collection and growing number of users. Aside from that, it keeps itself abreast with current library practices, such as e-collections, ubiquitous access for library materials, and various digitization projects for preservation and access purposes. However, despite these efforts, statistics reflect low usage for library materials. Announcements also have a very small reach, with very few students knowing about training schedules, changes in hours, and events in the library. Management decided it was high time to give more importance to marketing. Aside from exploiting the gains from the various expenses the library has incurred to service its clients, it is also important to conduct marketing for institutions such as the Rizal Library to gain political, social, and economic support. (Naikwadi & Chaskar quoting Kotler, 2012). The move was not only necessary; it was also long overdue. The institution then hired an Assistant to the Director for Special Programs and Events in 2011 to focus solely on marketing and promotions. She started with getting to know the different market segments, and found out that the largest mass of the client base was not being marketed to: the undergraduate students. This group was found to be composed of millennials, born between years 1980 to 2000, the era of the computer, and are proficient in working with technology. (Beekman, 2011) They are further described by Solheim (2012) as individuals who "grew up with video games and tend to interact over their smart phones." In the same article it was said that social media plays a vital role in their lives.

It has been evident in the social media sphere that Internet memes have been gaining popularity during the past few years, with websites such as 9gag, Reddit, and 4chan providing venues for these memes to propagate. Masterpasqua (2010) defined memes as "bits of information that replicate themselves; they can exist in brains as

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well as in any number of other storage devices, from books to the Internet." Thus, it is natural or innate for a meme to replicate itself, even those found on the Internet. This has been the premise of this study: that memes can prove to be an important information dissemination tool for libraries—particularly for promotion of its collection and services as well as for circulating important announcements. Furthermore, Bell (2013) described the importance of using memes in her column, Belltones. According to her, "students of all ages are in tune with popular culture and love tie-ins that show teachers, librarians, and other educators are as well." She adds that memes appeal to people across different age groups. This information served as the basis for the marketing *plan of attack* to use social media and Internet memes as an information dissemination tool in the Rizal Library. The strategy was implemented by the second semester of academic year 2011-2012.

Marketing via Internet memes

2.1 Preparation of Social Media

While the Rizal Library did have its own Facebook and Twitter accounts since 2010, the use of these accounts was not very utilized. The Facebook account had only 2,000 likes, while no more than 900 users were following its Twitter account. This is a far cry from the University's approximately 10,000 students. Moreover, the accounts were being used to post traditional announcements, with a formal status update informing the community of changes in schedule, public holidays, among others.
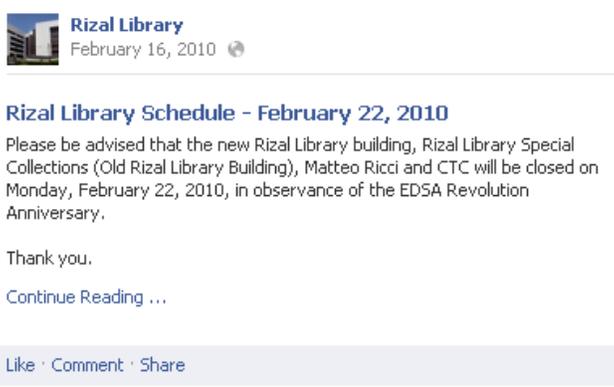
Fig. 1. Sample of social media announcements before strategy implementation

To improve its utilization, various marketing activities were conducted in 2011 to increase the followership of these accounts. Updating the accounts regularly was the first step conducted. Posting quotes from books, asking engaging questions to help initiate interaction, and holding contests from time to time were performed by the Library.
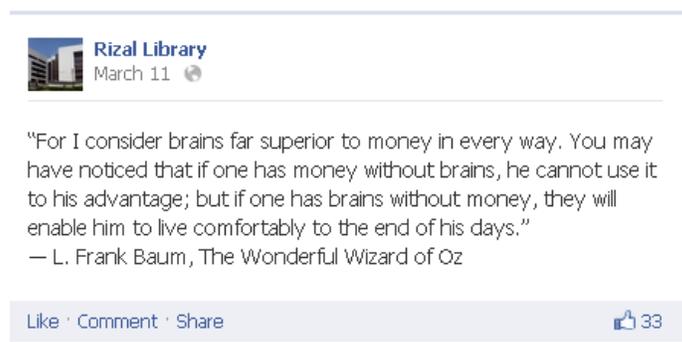
Fig. 2. Sample of social media announcements beginning strategy implementation

Followership doubled at this time, and it was evident that the market was ripe for picking—there were enough people to see and share the memes as they are posted.

2.2 Implementation and Results

The strategy initially targeted the most resource-intensive yet underutilized services of the Rizal Library: 1) EBSCO off-campus online database access, and 2) Readers Advisory Service. Being an institution from a third world country, subscribing to EBSCOhost databases and technology services entailed a huge chunk of the institution's budget. It was still, however, found highly important by the Library as it is the "the most-used, premium online information resources for tens of thousands of institutions worldwide, representing millions of end-users." ("EBSCO Publishing", 2011) Readers Advisory Service, on the other hand, was very expensive in terms of labor, as three professional reference librarians were hired to conduct this service.

The strategy employed to use Internet memes was further utilized to market openings for student assistantships, changes in schedule, and new collaborative spaces within the library. In 2011, posters of these memes were posted on the social networking sites of the institution. These were augmented by printed posters situated inside strategic places within the building, such as elevator waiting areas, computer terminals, and doorways.

2.2.1 Marketing Underutilized Services

EBSCO off-campus online database access would allow students to view and download e-articles in the comforts of their own home. Thus, the library is able to provide service even after the working hours of its employees. While this is a useful service for students, there is still room for improvement in terms of usage statistics. Pre-implementation, there were only 1,417 password requests. This reflects low usage if these figures will be compared to the 10,000 students of the University. In the same manner, Readers Advisory Services, or one-on-one consultations with librarians is one of the standard reference services offered by academic libraries, yet the Rizal Library only garnered two during the year 2010-2011.

26. Table 1. Usage of Underutilized Services

Service	Pre-implementation	Post-implementation	Increase
EBSCO Off-campus Password Requests	1417	1972	39%
Readers Advisory Requestors	2	52	2500%

After implementation of the project, a significant improvement in usage of the two services was observed, as password requests increased by 39%. On the other hand, the number of Readers Advisory requestors recorded a 2500% increase, rising to 52 sign-ups in 2011-2012, after the strategy has been implemented.

27.

28. Table 2. Extent of Reach of Memes for Underutilized Services

Service	Likes	Shares
EBSCO Off-campus Access	406	285
Readers Advisory Service	545	147

The memes for the two aforementioned services were posted on the Rizal Library's social networking accounts. The poster for the EBSCO off-campus access garnered 406 "likes" and 285 "shares" on Facebook, while the poster for Readers Advisory Service acquired 545 "likes" and 147 "shares".

2.2.1 Use of Memes for Announcements

The Rizal Library has had openings for student assistants for the past couple of years, but had no applicants for the posts. In the same manner, students were being informed by the library of changes in schedule, but only a few have been reached by the said announcements. Thus, it has been decided that the same strategy implemented to promote the aforementioned underutilized services be used for important announcements as well. Results show a positive outcome, as post-implementation, the institution has received 91 applicants and counting.

29. Table 3. Extent of Reach of Memes for Announcements

Service	Likes	Shares
Term Break Opening	317	71
Roodeck Study Hall Availability	119	105
Student Assistantship Program	251	75

In applying memes to its announcements, the Rizal Library has achieved a farther-reaching effect for its posts, with its audience "sharing" or "reblogging" the posts, hereby helping extend the reach of the announcements. Announcements have also increased their reach exponentially, with 317 "likes" and 71 "shares" for the term break schedule announcement, and 119 "likes" and 105 "shares" for the availability of the Roofdeck Study Hall.

Conclusion

Memes proved to be a very effective means of conveying a message to the Rizal Library's clients. With an expanding followership for its social media accounts, and a continuing popularity for Internet memes, the Rizal Library intends to continue using this medium to promote its other services and collection. In the same manner, the institution shall continue to use memes to post announcements and exploit the multiplier effect of this method. The Facebook account of the Rizal Library now has over 7,000 likes, and its Twitter account has garnered over 5,000 followers, and an increasing trend is foreseen for the academic years to come.

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Appendix D. Internet Memes Used for Underutilized Services

F.1. EBSCO Off-campus Access Password

Readers Advisory Service
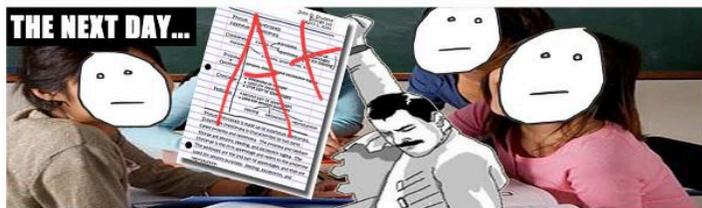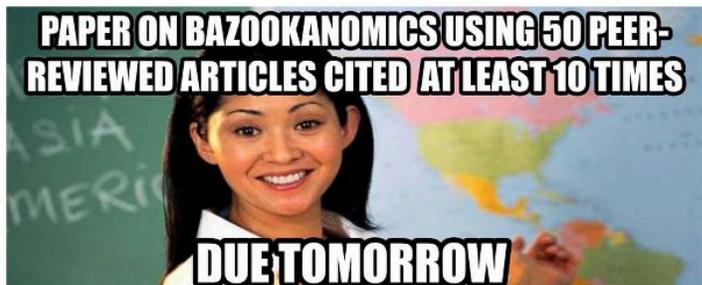
Appendix G. Internet Memes Used for Announcements

Term Break Opening
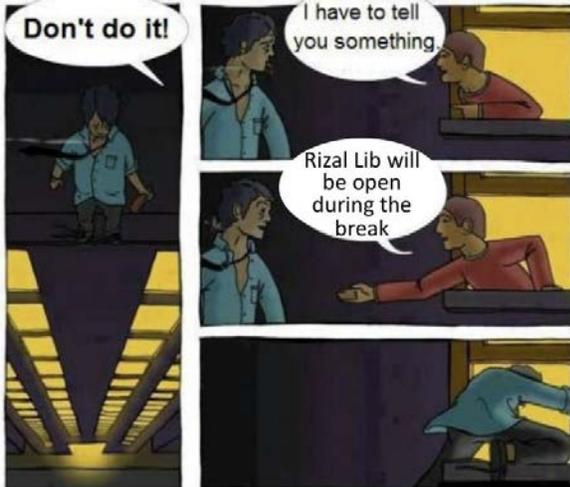
Roofdeck Study Hall Availability
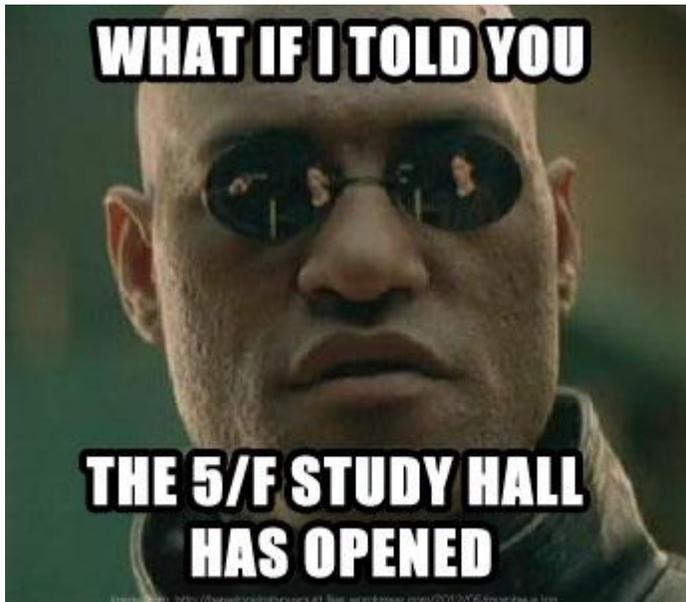
Student Assistantship Program

13th International Educational Technology Conference

Investigation of Problematic Internet Usage of University Students With Psychosocial Levels at Different Levels

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Abstract

The aim of this study is to analyse problematic internet usage of university students according to pyscho-social features (loneliness and shyness) and gender. Survey model is used for this research. To collect data; personel information form, problematic internet usage scale, UCLA-loneliness scale and shyness scale were applied for 601 students who are from different Departments of Faculty of Education at Fırat University. To analyse these data correlation, t test, one way variance (ANOVA) analysis and Scheffe test were used. Results revealed that problematic internet usage was significantly associated with loneliness (r=.35) and shyness (r=.31). Furthermore, there were significant differences between problematic internet usage and independent variables (gender, loneliness and shyness). The results of the study were discussed together with the results of different studies and suggestions were made.

Keywords: Problematic internet usage, loneliness, shyness.

Introduction

Today which is called technology era, it is a reality that technology makes our lives easier. Internet comes first among these technologies which makes our life easier. Besides providing easy access to information, internet offers online shopping, online banking and communication by social networks. While providing these facilities, it has some risk factors which can effect our lives in negative ways. The most important of them is the problematic usage of internet as a risk of human life.

Beard and Wolf (2001) defined problematic internet usage (PIU) as use of the internet that creates psychological, social, school, and/or work difficulties in a person's life. PIU is a multidimensional syndrome consisting of cognitive and behavioural symptoms that result in negative social, academic, or professional consequences (Caplan 2002, 2003; Davis, 2001; Davis, Flett, & Besser 2002; Morahan, Martin & Schumacher, 2003, cited in Caplan, 2005). According to Young (1996) problematic internet users who spare little time for real people in life prefer to spend time alone on computer. The definition of problematic internet usage focuses on variations in one's life.
A variable which studied with problematic internet usage is loneliness. Loneliness is generally defined as being physically alone in a society. A person can feel the loneliness despite being with others. Thus, the reason of loneliness is because of insufficient social relationships and satisfaction taken from these relationships (Buluş, 2007). Engelberg and Sjoberg (2004) have found that there is a positive relationship between internet addiction and loneliness and negative relationship between social episodes and internet addiction. Nalwa and Anand (2003) has

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found that addicted internet users are much more lonely comparing non addicted ones. Whang, Lee and Chang (2003) reported that Internet addiction group had higher degree of loneliness and depressed mood compared with the non-addicts group. In a different study, Deniz and Tutgun (2010) found that there is a correlation between loneliness levels and problematic internet usage of prospective teachers studying at education faculties.

Another variable which studied with problematic internet usage is shyness. Definition of Melchoir and Cheek (1990) is that shyness is an anxious preoccupation of the self in response to real or imagined social interaction and is associated with heightened self-consciousness during self-presentation and evaluation situations. Yuen, Lavin, Weinman and Kozak (2004) applied online questionnaire to assess Internet dependency and shyness. The results demonstrated the predicted interaction such that shyness level for nondependents did not differ online or in face-to-face (FTF) interactions. However, dependents' shyness was greater in FTF interactions relative to online interpersonal exchanges. The research Yang and Tung (2007) applied in Thaiwan shows that students with personalities characterized by dependence, shyness, depression and low self-esteem are more likely to become addicted than students without these characteristics.

Aim of study

The aim of this study is to examine problematic internet usage of university students at the age of 16-24, which are the most common internet users' age range in Turkey (Turkish Statistical Institute, 2012) , according to pyscho-social features (loneliness and shyness) and gender.

2. Method
2.1. Sample

The sample group of this study is 601 students from different Departments of Faculty of Education at Firat University. 328 (%54,6) of the students are female, 273 (%45,4) of them are male, average age of students is 22,35 (Sd:1,07).

2.2. Instruments

Problematic Internet Usage Scale (PIUS): The PIUS was developed by Ceyhan, Ceyhan and Gürcan (2007) with the assumption that the severity of Internet use shows continuity from normal to pathological use. The PIUS consists of 33 items rated on a five point scale. The high scores on the scale indicate that an individual's Internet usage is too unhealthy in that it may affect his or her life negatively and it may increase the tendency to addiction. According to the validity and reliability studies, the PIUS is a valid and reliable instrument which can be used to measure university students' problematic computing behaviour (Ceyhan, Ceyhan & Gürcan, 2007). In the present study, the internal consistency coefficient of the scale was computed as .91.

UCLA Loneliness Scale (UCLA-LS): UCLA Loneliness Scale was developed by Russell, Peplau and Cutrona (1980); the validity and reliability of its adapted version is tested by Demir (1989). The scale measures the overall feelings of loneliness in individuals through a self-report Likert-type scale comprised of 20 items. 10 of these items are positive statements and the rest are negative statements. The scale reports range from 20 to 80 where higher scores mean a higher degree of feelings of loneliness. Reliability of the scale is reported as .96. In the present study, the internal consistency coefficient of the scale was computed as .85.

Shyness Scale (SS): The SS used in the study was developed by Cheek (1983) as a revision of the original shyness scale developed by Cheek and Buss (1981). It measures the inhibition and discomfort that people experience in the presence of others. The scale contains 13 items, each of which consists of five response options in a Likert-type format and anchored by ''very uncharacteristic or untrue, strongly disagree'' and ''very characteristic or true, strongly agree.'' The Cronbach alpha reported for the revised scale was .90. Shyness scores on the revised scale were also correlated substantially (r= .68) with the aggregated ratings of subjects' shyness as provided by three to five close friends and family members (Leary, 1991). The scale was translated into Turkish, and reliability and validity studies of the scale were carried out with a Turkish sample of 300 university students (Gungor, 2001). The result of the construct validity study, using principal component analysis with varimax rotation, showed that the scale had one identifiable dimension. After this study, a new form of the scale consisted of 20 items. The result of the reliability study showed that the test-retest correlation coefficient was .83. Gungor (2001) reported internal consistency reliability for the scale as .91. In the present study, the internal consistency coefficient of the scale was computed as .89.

2.3. Procedure

Survey model is used for this research and to collect data; personal information form, PIUS, UCLA-LS and SS were applied to students from different Departments of Faculty of Education at Fırat University. UCLA-LS and SS were categorised by using mean and standard deviation as low, middle and high. Correlation test, t test and one way variance (ANOVA) were used in this study. Furthermore, to find out the differences among groups, Scheffe test was used.

3. Findings

Table 1. Means, standard deviations, correlations, and alpha reliabilities for variables.

	1	2	3	Cronbach's Alpha
1.PIU	1			.91
2.UCLA-LS	.35*	1		.85
3. SS	.31*	.50*	1	.89
Mean	70,9	39,3	54,5	
Standart Deviation	20,7	9,8	15,4	

*p<.01

As seen in Table-1, the results indicated that there is a positive relationship between problematic internet usage and loneliness (r=.35). It has been found that there is a positive relationship between problematic internet usage and shyness (r=.31). Furthermore there is a positive relationship between loneliness and shyness (r=.50).

Table 2. Means, standart deviations and t values of problematic internet usage of university students according to gender

	Gender				
	Female (n=328)		Male (n=273)		
	$\overline{X}$	Sd	$\overline{X}$	Sd	t	p
PIU	68,4	20,9	73,8	20,1	-3,249	.001*

*p<.05

Table-2 show that there is a significant difference between males and females in relation to problematic internet usage (t(599)=-3,249; p<.05). When these results analysed, it is seen that problematic internet usage of males ($\overline{x}$=73,8, Sd=20,1) is higher than the females ($\overline{x}$=68,4,Sd=20,9).

Table 3. Means, standart deviations and F values of problematic internet usage of university students according to levels of loneliness

	Levels of Loneliness								
	Low (n=113)		Middle (n=380)		High (n=108)		F	p	Difference H>M H>L
	$\overline{X}$	Sd	$\overline{X}$	Sd	$\overline{X}$	Sd			
PIU	63,3	17,7	70,4	20,1	80,2	22,5	19,582	.000*	M>L

*p<.05

As seen in Table-3, the result showed that significant difference was found between problematic internet usage and levels of loneliness (F(2-598)= 19,582; p<.05). Scheffe test was performed to determine the groups which caused difference. The results showed that problematic internet usage is higher for the student who feel lonely in high level when it is compared with middle and low levels. Furthermore, problematic internet usage is higher for students who feel lonely in the middle level than who feel in the low level.

Table 4. Means, standart deviations and F values of problematic internet usage of university students according to levels of shyness

	Levels of Shyness								
	Low (n=103)		Middle (n=401)		High (n=97)		F	p	Differences H>M H>L
	$\overline{X}$	Sd	$\overline{X}$	Sd	$\overline{X}$	Sd			
PIU	63,8	19,6	71,2	19,4	77	24,5	10,713	.000*	M>L

*p<.05

As seen in Table-4, the result showed that significant difference was found between problematic internet usage and levels of shyness (F(2-598)= 10,713; p<.05). Scheffe test was performed to determine the groups which caused difference. The results showed that problematic internet usage is higher for he student who is shy in high level when it is compared with middle and low levels. Furthermore, problematic internet usage is higher for students who is shy in the middle level than who is in the low level.

4. Results and discussion

This study examined the relationship between problematic internet usage and pyscho-social features (loneliness and shyness). Furthermore, problematic internet usage was examined according to independent variables (gender, levels of loneliness and shyness).

When the problematic internet usage was examined according to gender, there was a significant difference between males and females in relation to problematic internet usage (t(599)=-3,249; p<.05). When this result was analysed, problematic internet usage of males ($\bar{x}$ =73,8, Sd=20,1) was higher than the females ($\bar{x}$ =68,4 Sd=20,9). This finding is consistent with the finding in literature (Bakken, Wenzel, Götestam, Johansson & Øren, 2009; Balta & Horzum, 2008; Bulut-Serin, 2011; Choi, 2001; Li & Chung, 2006;Odacı & Kalkan, 2010; Tahiroğlu, Çelik, Uzel, Özcan & Avcı, 2008). The reason of higher problematic internet usage of males can be considered as effect of culture. Male in Turkey can access internet easier than female in Turkey. Some other studies show that there are no significant difference between male and female users (Ceyhan, 2010; Hall & Parsons, 2001; Ferraro, Caci, D'Amico & Blasi , 2007; Subrahmanyam K & Lin G., 2007). In another study, Doğan, Işıklar and Eroğlu (2008) found that the level of problematic internet usage of females were higher than males.

When the relationship between problematic internet usage and loneliness of university students was examined, it was found that there was positive moderately relationship (r=.35). Besides when the problematic internet usage is examined according to levels of loneliness, it was found that there was significant difference (F(2-598)=19,582; p<.05). According to this significant difference it was found that problematic internet usage was higher for the student who felt lonely in high level when it was compared with middle and low levels. Furthermore problematic internet usage is higher for students who feel lonely in the middle level than who feel in the low level. One hand these findings are consistent with the findings other studies in literature. (Batıgün & Hasta, 2010; Bozoğlan, Demirer & Şahin, 2013; Caplan, 2007; Engelberg, & Sjoberg, 2004; Esen, 2010; Moody, 2001; Nalwa & Anand, 2003; Odacı & Kalkan,2010; Özcan & Buzlu,2007; Wang, Lee & Chang, 2003). On the other hand some studies' results are not consistent with the results obtained from this research. (Dittman, 2004; Subrahmanyam & Lin, 2007). According to these results, it was mentioned that as the level of feeling loneliness gets higher, problematic internet usage gets higher too and there were positive significant relation between loneliness and problematic internet usage. The reason of relationship between loneliness and problematic internet usage can be thought as a result of accepting people of internet without any condition. Furthermore, spending time on the internet limits the time for face to face relationship with other people. This situation causes low social interaction and loneliness in society. According to Moody (2001), although internet is used as communication tool, it affects people's social being in negative way.

When the relationship between problematic internet usage and shyness of university students was examined, it was found that there was positive moderately relationship (r=.31). When the problematic internet usage is examined according to levels of shyness, it was found that there was a significant difference (F(2-598)= 10,713; p<.05). According to this significant difference it was found that problematic internet usage was higher for the students who were shy in high level when it was compared with middle and low levels. Furthermore problematic internet usage was higher for students who were shy in the middle level than who were in the low level. These findings are consistent with the findings other studies in literature (Caplan, 2002; Chak & Leung, 2004; Ebeling-Witte, Frank & Lester, 2007; Yang & Tung; 2007; Yuen et al., 2004). Internet may be so attractive for shy individuals because they disguise their identities easily and live less anxiety in internet. This situation may increase the possibility that those individuals may isolate from the social life.

An increase in problematic internet usage due to the increase in loneliness and shyness level, which influence interrelationship among individuals negatively, is a notable finding of this study. In accordance with these findings, individual or group counselling can be provided for students to improve their interpersonal capabilities. Also, Implementation of social skills education may be effective in reducing loneliness and shyness. Furthermore, these programs may have indirect effect in prevention of problematic internet usage.

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<center>**13th International Educational Technology Conference**</center>

Investigation of Vocational High-school Students' Computer Anxiety

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Abstract

With the advent of the computer technologies, we are increasingly encountering these technologies in every field of life. The fact that the computer technology is so much interwoven with the daily life makes it necessary to investigate certain psychological attitudes of those working with computers towards computers. As this study is limited to the impact of technology on education, anxiety, out of certain psychological attitudes, was investigated within it. The investigation was on the vocational high-school students' computer-related anxiety, and as a data collection instrument, the Computer Anxiety Scale was used. The Computer Anxiety Scale was conducted on 265 students receiving education at various departments in the Tunceli Vocational School of Tunceli University. It was observed as a result that gender is a variable that did not make any meaningful difference for the computer anxiety, while the type of education received, grade, receiving computer education and having a computer may mean meaningful differences in terms of various sub-factors and the whole scale itself. It is necessary to determine the level of computer anxiety, and keep it under control while receiving computer education or while learning with computers.
Keywords: Undergraduate study, Computer anxiety, learning with computers, Vocational High-school students

INTRODUCTION

With the advent of the computer technologies, we are increasingly encountering these technologies in every field of life. The fact that the computer technology is so much interwoven with the daily life makes it necessary to investigate certain psychological attitudes of those working with computers towards computers. One of these psychological attitudes is computer anxiety. Howard and Smith (1986) define the computer anxiety as "*the tendency of a person to experience a level of uneasiness over his or her impending use of a computer*".

In the relevant literature, the anxiety is mentioned together with such behaviors as keeping off computers, abstaining from computers and computer phobias. The computer anxiety is classified as a special kind of anxiety, and such various types of it as sense of frustration, possibility of shame, disappointment and experiencing fear of obscurity are mentioned (Orr, 2009). Moreover, such findings as that the computer anxiety leads to decrease in success and in effort for success (Phelps and Ellis, 2009) seem to have been obtained. Keen (1998) mentions the existence of a social dimension for the computer anxiety, and states that such expressions during learning as "*you cannot do it*", "*you cannot be successful*" are effective on the computer anxiety. Saade and Kira (2009) emphasize that feelings like disappointment, frustration, worry, etc. will affect not only the interaction with computers but also productivity, learning social relations and individual welfare in general. In addition, Çakıroğlu (2009) dwells on the computer anxiety in terms of human physiology, and claims that the computer anxiety has some symptoms like sweating, dampening of hands, stomachache, difficulty in breathing or feeling of suffocation, palpitation and strain of lips. Other than the computer anxiety, frustration, regret, disappointment and feeling of panic are said to be other affective hinders that computer instructors encounter (Burkett, Compton and Burkett, 2001).

All of the above-mentioned research findings clearly show that the computer anxiety should be taken into account in learning activities conducted with computers. In this study, the computer anxiety was dealt with in terms of the

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students of Vocational school. Thus, the general aim of the study can said to be the investigation of the Vocational school students' computer anxiety. In accordance with this aim, the Vocational school students' opinions about the computer anxiety were compared in terms of such variables as gender, type of education received, grade, experience of computer education and having a computer.

METHOD

The design of this study can said to be a survey model. As Karasar (2009:76) puts it, it is aimed to describe past or present situations in the survey model. The survey model is resorted to in the case of larger samples differently from other research designs (Büyüköztürk et al., 2008:177).

The sample of the study consists of 265 students receiving education at various departments of the Tunceli Vocational School of Tunceli University. 200 of these students are females (75.5 %), and 65 of them are males (24.5 %). 160 of the students are in the first year (60.5 %), while 105 of them (39.5 %) are in the second year of their study. The students are from 7 different programs. The ages of the students range from 16 to 28, and the age mean is 22.13.

The data collection instrument used in the study is the Computer Anxiety Scale developed by Heinssen, Glass and Knight (1987), and adapted by Tuncer (2012). As a result of the adaptation of the scale, it was observed that the scale is made up of 13 items and three dimensions. Altogether with this three-factor structure of the scale, 56.045 % of the total variance is explained. The scale is made up of these three factors: anxiety due to lack of learning, anxiety due to fear of making mistakes and uncertainty-based anxiety. The Cronbach's alpha coefficient for the whole scale is .75.

FINDINGS

The student's opinions gathered with the application of the Computer Anxiety Scale were compared in terms of such variables as gender, type of education received, grade, experience of computer education and having a computer. The independent groups t-test results of the students' opinions about the computer anxiety in terms of gender variable are given in Table 1 below.

Table 1: Comparison of the Opinions about Computer Anxiety in terms of Gender

Dimension	Gender	n	$\overline{X}$	SS	Levene's test			T test	
					F	p	df	T	p
Anxiety due to lack of learning	Female	200	4,02	,85	1,433	,232	263	1,068	,286
	Male	65	3,90	,80					
Anxiety due to fear of making mistakes	Female	200	2,87	1,09	,105	,746	263	-,789	,431
	Male	65	2,99	1,07					
Uncertainty-based anxiety	Female	200	3,09	,93	,359	,550	263	-,685	,494
	Male	65	3,18	,92					
The Whole Scale	Female	200	3,45	,62	,774	,380	263	,005	,996
	Male	65	3,45	,56					

As it is seen in Table 1, the opinions about the computer anxiety were compared in terms of the gender variable, and no meaningful difference was observed in any dimension of the scale and in the whole scale itself.

Another variable that was investigated within the study is the type of education received. There are two groups of students in this regard: the students attending school in daytime (Normal education) and those ones, which entered the school with relatively lower exam-marks, attending school in the evening (Evening education). The results of the independent groups t-test, by which the students' opinions were compared, and of the Mann Whitney U test, which is resorted to when the distribution is not homogenous, are summarized in Table 2 below.

Table 2: Comparison of the Opinions about Computer Anxiety in terms of the Type of Education

| Dimension | Education type | n | $\overline{X}$ | SS | Levene's test | | df | T test | |
					F	p		t	p
Anxiety due to lack of learning	Normal ed.	172	4,10	,77	5,311	,022*	263	U=6931,50	
	Evening ed.	93	3,79	,92				p=,008*	
Anxiety due to fear of making mistakes	Normal ed.	172	2,90	1,09	,000	,988	263	,032	,972
	Evening ed.	93	2,89	1,07					
Uncertainty-based anxiety	Normal ed.	172	3,12	,89	,948	,331	263	,031	,975
	Evening ed.	93	3,11	,99					
The Whole Scale	Normal ed.	172	3,50	,55	5,684	,018*	263	U=7790,00	
	Evening ed.	93	3,36	,69				p= ,205	

*p<.05

According to Table 2, there is only a meaningful difference of opinions, in terms of the education type, in the "anxiety due to lack of learning" factor of the scale in favor of the students of normal education (U=6931.50, p<.05). No other meaningful differences were observed in other dimensions of the scale in terms of the education type variable.

The grade of study was determined to be another variable that should be investigated within this research study. For, it was aimed to investigate the state of computer anxiety of both those who had just started receiving undergraduate study and taking information technologies courses, and those who would be graduated in a short time with a relatively more informed mind in this sense. The results of the independent groups t-test which compares these students' opinions about the computer anxiety in terms of the grade variable are given in Table 3 below.

Table 3: Comparison of the Opinions about Computer Anxiety in terms of Grade

| Dimension | Grade | n | $\overline{X}$ | SS | Levene's test | | df | T test | |
					F	p		t	p
Anxiety due to lack of learning	1st Year	160	4,07	,811	,778	,379	263	1,818	,070
	2nd Year	105	3,88	,871					
Anxiety due to fear of making mistakes	1st Year	160	2,98	1,05	,927	,336	263	1,453	,147
	2nd Year	105	2,78	1,12					
Uncertainty-based anxiety	1st Year	160	3,00	,88	,994	,320	263	-2,447	,015*
	2nd Year	105	3,28	,97					
The Whole Scale	1st Year	160	3,49	,61	,003	,956	263	1,091	,276
	2nd Year	105	3,40	,61					

As a result of the analyses, there is only a meaningful difference of opinions in the "uncertainty-based anxiety" dimension of the scale in favor of the second-year students (t(263)=-2,447, p<.05). No other meaningful differences were observed in other dimensions of the scale in this regard.

There were also comparisons of those students who had somehow received computer education before and those who had never received any computer education before. Thus, it was thought that there could be an answer for the

question "Does having a knowledge of computers affect the computer anxiety?". In the analyses done in this sense, it was observed that there is only a meaningful difference of opinions in the "anxiety due to fear of making mistakes" factor of the scale in favor of those who had not received any computer education before (t(263)= -2,752, p<.05). The results of this analysis are given in Table 4 below.

Table 4: Comparison of the Opinions about Computer Anxiety in terms of Experience of Computer Education

Have you received any computer education?		n	$\bar{X}$	SS	Levene's test		T test		
					F	p	df	t	p
Anxiety due to fear of making mistakes	Yes	140	2,75	1,11	1,688	,195	263	-2,752	,006*
	No	125	3,11	1,01					

The last variable whose effect was investigated within the study is the case of having a computer. The computer anxiety-related opinions of those who have a computer and those who do not have any were compared and summarized in Table 5 below.

Table 5: Comparison of the Opinions about Computer Anxiety in terms of having a Computer

Do you have a computer?		n	$\bar{X}$	SS	Levene's test		T test		
					F	p	df	t	p
Anxiety due to fear of making mistakes	Yes	107	2,58	1,06	,170	,681	263	-3,919	,000*
	No	158	3,10	1,05					
The whole Scale	Yes	107	3,40	,49	8,621	,004*		U=7588,500	
	No	158	3,49	,67				P=,035*	

The analyses show that there are meaningful differences of opinions in the "anxiety due to fear of making mistakes" dimension of the scale (t(263)=-3,919, p<.05) and in the whole scale itself (U=7588,500, p<.05) in favor of those who do not have a computer.

DISCUSSION

On evaluating the overall findings of the study, it was identified that gender is a variable that did not make any meaningful difference for the computer anxiety, while the other variables may mean meaningful differences in terms of various sub-factors and the whole scale itself. This finding regarding gender is opposite to the findings of the study carried out by Chen (1986). Chen (1986) concludes that males have more positive attitudes towards computers than females, and they have less computer anxiety. On the other hand, Loyd, Loyd and Gressard (1987) claim something totally opposite to this idea. Rosen, Sears and Weil (1987), Tuncer (2010) and Badagliacco (1990) conclude in parallel with this research that gender is not effective on the computer anxiety.

Upon the comparisons in terms of the grade variable, a meaningful difference was found on behalf of the second-year students in the "uncertainty-based anxiety" dimension of the computer anxiety scale; whereas Tuncer (2010) concludes that there is no any meaningful difference in terms of the computer anxiety according to the grade variable.

Another find of the study is that having experience of computer education is effective on the computer anxiety. There is a meaningful difference of opinions on behalf of those having not received any computer education in the "anxiety due to fear of making mistakes" factor of the scale. According to Chua, Chen and Wong (1999), Harris and Davison (1999), Computer training courses or computer education reduce the computer anxiety temporarily. However, according to Gos (1996), Safford and Worthington (1999), the computer anxiety increases with the increase of skills in this sense. According to Arıkan (2002) and Akkuş (2004) the computer anxiety decreases with the increase of computer experience.

Learning in this sense is negatively affected with the increase in such anxieties as failure to accomplish the learning task, encountering bad situations, inability to achieve the objectives (Başaran 2005: 411). Therefore, while receiving computer education or learning with computers, to determine the level of the computer anxiety and to keep it under control will enhance learning productivity.

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Khatam Al-Quran in Islamic Education Curriculum in Malaysia

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Abstract

This study intends to explore the role played by J-QAF and Islam Education teachers in achieving the objective of complete recitation of the Quran (Khatam al-Quran) by primary school pupils. The study is focussed on teachers involved in the teaching of J-QAF first level pupils in 2005, now in their fourth year of primary school. The teachers involved have used the best possible strategy and technique in their lessons in order to ensure that Muslims pupils would be able to accomplish Khatam al-Quran while at primary school. Among fourth year pupils, there are some who have achieved complete recitation. However, this has been accomplished through a combination of the pupils' recitation at home as well as in school. Although some pupils have completed, there are still (many) pupils at the level of Iqra' books 1, 2 and 3. So this study is intended to discover the reality of the teaching of J-QAF since it was introduced in 2005.

Keywords: Khatam Al-Quran; Islamic Curriculum; Malaysia

INTRODUCTION

The J-QAF programme was based on an idea proposed specifically by the Prime Minister of Malaysia during his visit to the Ministry of Education Malaysia on the 30th of December 2003. The proposal was considered in detail at a J-QAF seminar organized by the Ministry of Education from the 3rd to the 5th of March 2004. The J-QAF programme was implemented on an experimental basis in a pilot project for 3 months ending in July 2004. The Prime Minister subsequently agreed for this programme to be implemented from school year 2005.

The J-QAF programme is an effort to strengthen Islamic Education through special emphasis in the teaching of the Jawi script, the Quran, Arabic Language and Fardu Ain at the primary school level. The implementation of this programme involves the use of its own distinctive curriculum, models and modules. Specialist teachers are used for remedial teaching, guidance, skill development, strengthening, enrichment and subject appreciation among pupils. The implementation of the programme uses the present timetable allocations.

Nevertheless, this study will only focus on matters related to the Khatam al-Quran (Complete Recitation) programme in primary schools and on the role of teachers in achieving this objective.10 pt) Here introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 10 pt. Here follows further instructions for authors.

1.1. J-QAF KHATAM AL-QURAN MODULE

According to the "Panduan Dasar dan Pelaksanaan J-QAF" (J-QAF Policy and Implementation Guide), JAPIM (2008), the recitation of the Quran is currently being taught as part of Islamic Education under the category Quran Recitation guidance. However it does not stress learning until completion of the Quran because that would require continuous guidance using an adequate number of teachers in proportion to the number of pupils, using the *talaqqi* and *mushafahah* approach (that is, by a method of learning where each student directly faces his teacher, who shall listen to the student's recitation, correct any mistakes, and demonstrate the correct and proper way of reciting). As such, the subject of Islamic Education in schools is only geared towards the ability to recite the Quran, while the aspect of complete recitation of the entire Quran (khatam) is not emphasized but left instead to society to deal with.

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2.1. PROBLEM STATEMENT

According to the "Panduan Dasar dan Pelaksanaan J-QAF" (J-QAF Policy and Implementation Guide), JAPIM (2008), the recitation of the Quran is currently being taught as part of Islamic Education under the category Quran Recitation guidance. However it does not stress learning until completion of the whole Quran because that would require continuous guidance using an adequate number of teachers in proportion to the number of pupils, using the *talaqqi* and *mushafahah* approach (that is, by a method of learning where each student directly faces his teacher, who shall listen to the student's recitation, correct any mistakes, and demonstrate the correct and proper way of reciting). As such, the subject of Islamic Education in schools is only geared towards ability to recite the Quran, while the aspect of complete recitation of the entire Quran (khatam) is not emphasized but left instead to society to deal with.

In order to achieve the objective of Khatam al-Quran at the primary school level, several Khatam al-Quran modules have been introduced into the J-QAF programme:-

A.   6 Months Khatam al-Quran model during the Teaching and Learning (T & L) time-period for the first 6 months.
B.   Recitation of Quran guidance during the T & L period for the second 6 months.
C.   Tasmik Module outside the T & L period.
D.   Regularly scheduled Quran Literacy camps outside of school hours

2.2. SURVEY OF BOOKS FOR IMPLEMENTING THE MOE J-QAF PROGRAMME

The J-QAF Khatam al-Quran programme consists of 4 models as follows: -

A. 6 months Model implemented according to the established guidelines using the currently allocated time period for Islamic Education (IE). This model will use the *talaqqi* and *mushafahah* approach.   Pupils who have yet to acquire the ability to recite the Quran will be taught using the IQRA' method, while those who can already recite will be allowed to proceed using the 6 month Khatam al-Quran model. The 6 month Khatam al-Quran model will use the time allocated for IE, that is 4 periods (a week) for the first 6 months each year, from Year One to Year Six. At the same time, those pupils who have yet to acquire the ability to recite the Quran will continue using the IQRA' method.

B. Quran Recitation Guidance is a continuation for the **6 month Khatam al-Quran model** described earlier**.** In the second 6 month period, Quran Recitation Guidance will use 3 periods (a week) for Year One and 2 periods for Year 2 to Year Six. The following is a summary of the allocation of time for the two activities above throughout the year:-

Table 1 Allocation of time for the 6 month khatam al-quran and recitation guidance

Year	First 6 months (Khatam al-Quran)	Second 6 months (Recitation Guidance)
Year 1	4 periods a week	3 periods a week
Year 2	4 periods a week	2 periods a week
Year 3	4 periods a week	2 periods a week
Year 4	4 periods a week	2 periods a week
Year 5	4 periods a week	2 periods a week
Year 6	4 periods a week	2 periods a week

C. The Tasmik Model is carried out outside of normal school hours depending on the suitability (of the time), convenience of pupils and availability of Tasmik teachers comprising J-QAF and IE teachers, as well as teachers of other subjects who have the ability**.** The Tasmik teachers have to be officially appointed by the school. The Tasmik Model is a programme for guiding and recording the progress of pupils through the Iqra' method books and the pupils' individual recitation based on a scheduled programme to enable each pupil to complete the recitation of the whole Quran.
    Among the objectives of the Tasmik model is to guide the pupil to recite the Quran with tajweed and subsequently for the pupil to achieve recitation of all 30 parts of the Quran during his years in primary school. This

is a programme to strengthen the 6 month Khatam al-Quran model and the Recitation Guidance programmes outside of the normal school time-table.

D. The Quran Literacy Camp has been likewise created as a strengthening activity for the Tasmik Model above. It has been created to overcome the problem of weak pupils who are still at the level of the Iqra' books 1, 2 and 3, while the other pupils in general are already able to progress to recite the Quran proper. The weak pupils will be identified by means of a screening test so that only the weak pupils are selected to participate in the camp and thus special attention can be given to them. The time for holding the camp will be determined by the school concerned. Usually the camp is held during the weekend or during school vacation.

2.3. LEARNING OBJECTIVES OF THE J-QAF KHATAM AL-QURAN MODULE

From interviews with MoE sources, the MoE is hopeful that by means of the the Khatam al-Quran subject pupils will have the ability:

A.   To recite the verses of the Quran, articulating correctly every letter from its point of articulation.
B.   To recite the verses of the Quran by applying correctly all the rules of Tajweed
C.   To recite the verses of the Quran smoothly and fluently.
D.   To complete the recitation of the whole Quran while at primary school.

All the four objectives mentioned above shall be attempted through the 4 teaching and learning strategies of the J-QAF Khatam al-Quran model as in the table below: -

Table 2: J-QAF Teacher's Teaching Strategy
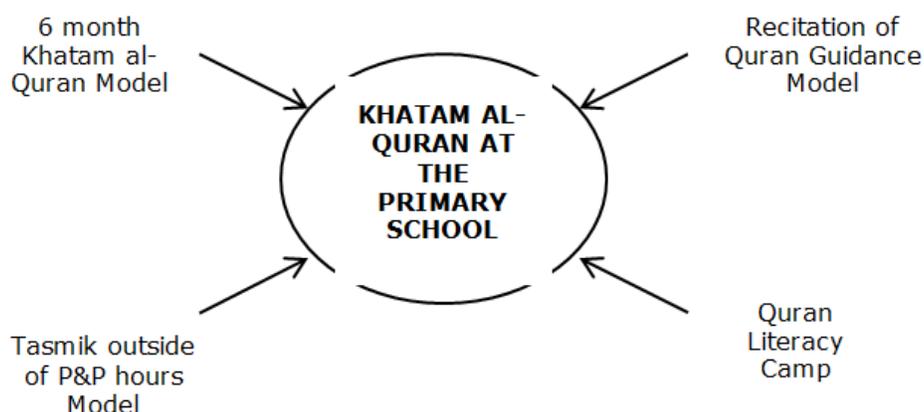
3. PARTICIPANTS AND PLACE OF STUDY

This study has been carried out as a **case study** in order to enable the researcher to investigate and make detailed observations as suggested by Fraenkel (1996). As such, the teaching strategies and techniques can be looked at in depth although the study involves only a small number of respondents. In this study, the most important factor in determining the researcher's choice of participants/ respondents and locations is that the teacher comes from a school that was involved in J-QAF first layer in 2005, where the pupils should be in year 4 (in 2008). The following is a list of the schools served by the teachers who were interviewed: -

- A teacher from Sekolah Kebangsaan Toh Indera Wangsa Ahmad, Batu Gajah, Perak who was involved in the J-QAF first layer, 2005. There are 1429 pupils in the school and the number of Muslim year 4 students is 182. This school has a total of 6 Islamic Religious Education teachers and the number of J-QAF teachers is 7. The respondent/ participant is the writer's own younger sibling who has served as an Islamic Education teacher at various national primary schools for 18 years.
- A teacher from Sekolah Kebangsaan Seri Aman, Pokok Assam, Taiping, Perak nvolved in the J-QAF first layer, 2005. There are 680 pupils in the school and the number of Muslim year 4 students is 83. This school has a total

of 7 Islamic Religious Education teachers and the number of J-QAF teachers is 6. The participant is also a younger sibling of the writer's who has served as a J-QAF teacher since it was introduced in 2005.

- A teacher from Sekolah Kebangsaan Riam Batu Dua, Kem Sri Miri, Miri, Sarawak. There are 515 pupils in the school and the number of Muslim year 4 students is 49. The participant is the wife of an acquaintance of the writer's who has served as a J-QAF teacher since it was introduced in 2005.
- A teacher from Sekolah Kebangsaan Bandar Samariang, Kuching Sarawak. There are 1403 pupils in the school and the number of Muslim year 4 students is 184. The participant is an acquaintance of the writer's who has served as a J-QAF teacher since it was introduced in 2005.

The writer took the opportunity to interview all the above respondents during the 2008 Eid al-Fitr holidays, when all the respondents were back in their hometown.

4. STUDY FINDINGS

4.1. TEACHING STRATEGY FOR J-QAF KHATAM AL-QURAN MODULE

The writer finds that there are only 2 Khatam al-Quran modules employed as the main teaching and learning strategy by J-QAF teachers. Other activities mentioned in MoE sources are actually sub-modules to stabilize the 2 main modules as follows: -

- The Khatam al-Quran model during the T & L time-period for the first 6 months followed by the Recitation of Quran Guidance during the T & L period for the second 6 months
- The Tasmik Module and the Quran Literacy Camp outside the T & L period. and scheduled outside of school hours.

4.2. TEACHING STRATEGY FOR KHATAM AL-QURAN MODEL DURING T & L PERIOD

From interviews with the 4 respondents from the 4 schools which have been directly involved in the J-QAF programme since 2005 the writer finds that: -

- The Khatam al-Quran model was implemented during the Islamic Education T & L period 4 times a week for the first six months of the year, from January to June each year. The teaching strategy that was carried out was the BIG (*bacaan ikut guru)* or (Repeat After Me) technique. This means that what is intended by Khatam al-Quran is complete recitation of the Quran by repeating after the teacher. The teacher will recite a portion of the Quran, and the pupils will then repeat after him in unison. The division of the verses and surahs for the BIG activity has managed to follow closely the syllabus included in the J-QAF teaching guide book prepared by the MoE.
- For pupils in Year 1, the first 6 months will be allotted for teaching the lessons from the Iqra' books 1, 2, 3, 4, 5 and 6. Generally the pupils will be able to complete the Iqra' books by repeating after the teacher. For the second 6 months, the period for Recitation Guidance will be filled with recitation of the Quran according to the BIG technique from Surah al-Fatihah, followed by Surah al-Baqarah, and so on until the whole Quran is eventually completed in Year 6. From the writer's observation, until September 2008, the BIG recitation of the pupils in Year 4 has reached Surah al-Hajj, which is in the 17th part of the Quran, as indicated by the syllabus.
- For schools which have less than 600 pupils, the number of IE and J-QAF teachers must be at least 12, in order to achieve an almost perfect implementation of the Khatam al-Quran teaching module. Every classroom of between 35 to 40 pupils will be handled by 2 or 3 IE and J-QAF teachers. The first 15 minutes will be allotted for BIG recitation according to the syllabus, while the second 15 minutes will be used for group recitation led by the 2 or 3 teachers as mentioned. Pupils will be divided into 3 groups: good, medium and weak. This technique is used to ensure that all pupils would be able to recite the Quran and be corrected by teachers. This is the normal method of teaching for every class using the J-QAF Khatam al-Quran module.
- A problem which might arise is if the school has more than 700 pupils while IE and J-QAF teachers number not more than 12. Every classroom will in fact be led by only one Khatam al-Quran teacher. How then can the BIG programme be implemented well throughout the year? For those pupils whose are already good, there will of course be no difficulty keeping up with their teacher's recitation; as well as some of those moderately good pupils. But what about the weak pupils? The BIG programme for the whole year would surely go to waste. Nevertheless, at least all the pupils would have have heard every verse of the Quran recited to them by

the   teachers,   although   they   could   not   repeat   after   the   teachers   well.

- The BIG (Repeat After Me) method has been used to overcome the problem of uneven pupil achievement within a single classroom or school. Not all pupils are able to follow the lessons of the Iqra' books 1, 2, 3, 4, 5 and 6 well during the first 6 months of Year 1. If the pupil fails to achieve the level of recitation upon entering the second 6 month period of Year 1, this failure will persist without end although the pupil has reached Year 4

4.3. TEACHING STRATEGY FOR TASMIK MODEL OUTSIDE T & L PERIOD

The Tasmik model was introduced to help pupils achieve complete recitation of the Quran individually (not in groups, such as BIG). At the same time the Tasmik model also helped to overcome the problem faced by pupils who could not keep up with the rate of progress as planned in the syllabus.

From interviews with the 4 respondents from the 4 schools which have been directly involved in the J-QAF programme since 2005 the writer finds that: -

- The Tasmik model is implemented outside the official school hours. This is proven when IE and J-QAF teachers will come early or leave late, 30 minutes to 1½ hours earlier or later than the official school hours.
- According to a survey that was carried out, pupils generally do not rely solely on recitation in school. Most of the pupils who recite the Quran at home will continue their recitation during the Tasmik session in school. The teacher will keep a record of the pupil's recitation in a record book meant for this purpose provided by the MoE. This record book will then be brought home for parents, family members or whoever is supervising the pupil's recitation outside school hours to keep track of the pupil's progress. According to the study respondents, many Year 4 pupils have already the ability to read the Quran (well) while some have already completed the recitation of the whole Quran through recitation in and out of school hours, going beyond the original target.
- The writer finds that in most districts in Peninsular Malaysia there are Quran and Fardhu Ain (KAFA) classes conducted outside schooling hours. This makes the school teacher's job easier and enables the pupil to accomplish Khatam al-Quran earlier. The situation is, however, different in Sabah and Sarawak. Both the respondents who served in Sarawak say that in Sabah and Sarawak the Quran and KAFA classes are not performing well. Most pupils recite the Quran only in school. Outside of school hours, it depends on the parents. Those parents who are concerned about their children's progress will themselves teach their own children to recite the Quran. Some of them send their children to a mosque or surau to recite the Quran after Sunset prayer. According to information received from respondents, the writer concludes that there are districts or states which do not have KAFA programmes, in Peninsular Malayusia as well as in Sabah and Sarawak.
- The success of the Khatam al-Quran model in primary school is very much dependent on the number of pupils, and the number of IE and J-QAF teachers in the school. Based on the interviews, we find that schools which have 600 or fewer pupils show a commendable level of success. Generally speaking, all the schools which have been following the J-QAF programme since 2005 were supplied with 12 or 13 IE and J-QAF teachers each Schools which have more than 700 pupils will show failure and there is a lot of dissatisfaction among the IE and J-QAF teachers in the implementation of the programme. In schools with a high pupil population, the respondents say that there are pupils who are still at the Iqra' books level 1, 2, or 3. According to IE and J-QAF teacher evaluation, a pupil must be at Iqra' books level 4, 5 and 6 to be categorised as one who already has the ability to recite the Quran.
- Among the reasons for the failure to achieve the target of the Khatam al-Quran module is the lack of cooperation from the pupil's own family in not allowing the pupil to stay back after official school hours. They prefer their children to be at home rather than participate in the Tasmik programme after official school hours This situation becomes more acute if the pupil has no other Quran recitation activity at home. It is bad enough that the parents themselves do not know how to recite, they would not even bother to send the child to a neighbour or the local community centre to help the child recite the Quran.
- The reality is that there exist in all schools some pupils who are very weak mentally. Not only are they not able to recite the Quran, they cannot even recognize letters and numbers. Pupils in this category are not just stuck at the level of the Iqra' books 1, 2, 3 but they should be placed far below that. However, the very dedicated IE and J-QAF teachers never give up on these children. They use various ways to teach these Islamic buds using various techniques such as flash cards, Alif Ba Ta videos and so on. These pupils will be placed together in a group and given more intensive guidance during the Tasmik period compared to other pupils.

Through the interviews we learn that the Quran Literacy Camp is the last resort for IE and J-QAF teachers to help weak pupils to be able to recite the Quran. After failing in all the planned modules above, selected pupils will be brought to join the Quran Literacy Camp. The camp is held periodically according to a schedule determined by the school authorities. Usually the camp is held during weekends or during the school term break. The location of the camp is the school itself and therefore the costs are minimal. There are schools which hold these camps annually as festive occasions with a large budget, courtesy of the school's Parent-Teacher Association. At the same time there are also schools which have no need to hold a camp because, thankfully, there is no pupil "qualified" to take part. Praise be to Allah.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. STRATEGY OF TEACHING BY J-QAF KHATAM AL-QURAN TEACHERS

From the research data obtained in the study, the writer notices that the success of the J-QAF programme in primary schools has been achieved as a result of the mutual cooperation of the IE and J-QAF teachers. They spend between 32 to 36 periods a week, plus many extra hours outside the official school hours to ensure the success of the J-QAF programme. The IE and J-QAF teachers, in implementing the Khatam al-Quran module, divided it into to 2 principal activities, namely activity during the T & L periods and activity outside the official schooling hours. The modules that are used to achieve the target of enabling all pupils to complete recitation of whole Quran during their time in primary school, can be summarised as follows: -

- The BIG (*bacaan ikut guru)* (Repeat After Me) teaching strategy that is implemented during the T & L time-period for 6 months and the Recitation of Quran Guidance throughout the year.

- The Tasmik teaching strategy based on *talaqqi* and *mushafahah* technique (that is, the teacher deals with each pupil individually) implemented outside the official school hoursg. This strategy this strengthened by the Quran Literacy Camps held on a regular basis to overcome the pupils' weaknesses.

5.2. THE ROLE OF THE MINISTRY IN ACHIEVING THE OBJECTIVE OF J-QAF

The Ministry of Education (MoE), through the Islamic Education Division, has been cooperating very well in the effort to ensure success of the J-QAF programme in primary schools. From the interviews the writer is informed that every pupil is supplied with the Iqra' books and a "mushaf tajweed" - demonstrating praiseworthy commitment (on the ministry's part). The writer would like to commend the Malaysian Education Ministry in implementing the J-QAF programme which is centred on increasing the value of human capital to equip Muslims with adequate spiritual provisions. The MoE's efforts can be further strengthened by increasing the number of J-QAF teachers, to a ratio of 1 teacher for every 10 pupils in a school, as originally proposed.

5.3. THE ROLE OF THE SCHOOL IN ACHIEVING THE OBJECTIVE OF J-QAF

It is hoped that schools would continue to give strong commitment and take practical steps to ensure the smooth running of J-QAF programmes in schools. There is still a lot more room for improvement on the part of schools in ensuring the success of their J-QAF programmes. Any problems faced can be overcome by regular discussions and continuous monitoring of pupils and teachers. Teachers are the pillars of support for the success of the J-QAF programme, hence they should continue to raise their level of professionalism from time to time. They are advised to be fair, honest, trustworthy, disciplined and dedicated in carrying out their teaching duties. The successes achieved by pupils in the J-QAF programme are also the teachers' permanently abiding achievements.

5.4. THE ROLE OF THE COMMUNITY IN ACHIEVING THE OBJECTIVE OF J-QAF

The family is the most important institution in educating children. Parentsnshould be mindful of their children's development. It is suggested that parents should be willing to sacrifice time and money to ensure their children's success since their children are their future assets. From this study, the writer finds that the Khatam al-Quran programme is very much related to the Quran and Fardhu Ain classes (KAFA) held at the local community centres. Not all districts or states in Malaysia have KAFA classes as a means to improve the pupil's self-development outside the official school hours. Therefore the writer would like to recommend those communities that have yet to

organize any KAFA activity to do so urgently, even if only in a surau (prayer hall) or local community hall. To carry out about such programmes as KAFA is a religious obligation incumbent upon the community as a whole (fard kifayah) which should not be taken lightly by Muslims living in that community.

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Learning Management in Enhancing Potential of Thai Community ICT Learning Center Project for ICT Development and Utilization

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Abstract

The objectives of this research were to: 1) study the general information about the administration problems and needs of Thai Community ICT Learning Center; 2) develop the strategic plans for the implementation of theThai ICT Learning Center projectwith the cooperation and needs of the community members and among the communities; and 3) evaluate the learning strategic plan and learning activities in the regional training of the participant from four regions.

The research sample included 30 Thai Community ICT Learning Centers (Thai Tele-Center) in four regions of Thailand: Central, Northern, North-eastern, and Southern regions. There were 104 respondents who served as participants in the Community Content Creation and Media Production Training. This training was conducted in order to enhance their potentials to develop the contents in the Thai Community ICT Learning Center such as video and animation in websites. The research instruments used in gathering data composed of two questionnaires, one for Community ICT Learning Center problems and needs, and another for the participants asking about the training and learning activities.

The research methodology involved five steps: 1) survey on management, problem, and needs of Thai Community ICT Learning Center using a questionnaire; 2) development of strategic plan to enhancethe potential of Thai Community ICT Learning Center in learning management for the community based on the survey results; 3) training of selected Thai Community ICT LearningCenter members; and 4) evaluation of the the output and outcome of the training and learning activities.

Findings showed that Thai Community ICT Learning Center had no problems with regard to the equipment and infrastructure. The centers where were supported by the local organization such as the community authorities. They did not have any problem with regard to financial support. However, in case of the services, almost of the center managers and committee members came from the other community organizations, so they only work part-time in managing the centers. The strategic plans developed and approved by the Ministry of ICT could be used for enhancing the services. Each center needed to learn more how to generate and prepare   the contents to use through the internet. Lastly, the research found that the participants who attended the training workshop on the content generation project had high satisfaction level with regard to the training. They noted that the knowledge and practices gained from the training were applicable to their work and enhanced their potentials. Moreover, they could create content and engage in media production to support the community learning management services in Thai Community ICT Learning Center.

Keyword: learning management; Thai Community ICT Learning Center; ICT center management

Introduction

The concept of Thai Community ICT Learning Center(TC-ICTLC) or Thai Telecenter was founded in Thailand in2001-2002. Since then, many organizations had supportedtheir activities. The Ministry of ICT policy emphasized to develop Thailand to be the Knowledge Base Society such as the National Electronic and Computer Technology Center (Nectec) of Thailand, Canadian International Development Agency (CIDA), Community Organization (DevelopmentInstitue (CODI) and the World Bank. There were also projects launched continually on one temple one learning center (OTEC) and Information Community (i-Community).After a short period of development, Thai Community ICT Learning Center(or Thai Tele Center), had been established in 2007 with the support of the Ministry of Information and Communication Technology (MICT). From 20 centers in the beginning, the Center had expanded throughout the country with almost1887centers in 2013
(www.thairtelecenter.org) These centers were located in four regions in North, Northeast, Central, and South regions of Thailand.

The Thai Community ICT Learning Center is generally managed by the CEO of the organization where the center is located (e.g. school, temple, Local Administrative Bureau). A community board is also created to help advise the tele-center management on lead policies and to increase the transparency of the tele-center's activities.

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The board members often provide moral support and some supervision of the tele-center, if requested. The management team intends to strengthen the role of the community board to be more concrete and participatory, which is expected to improve operations. Financing The MICT sponsors the equipment procurement, training of operators and operational costs for a period of one year, after which the centers are expected to be self-sustainable. (http://www.connectaschool.org/?q=node/1859)

The Thai Community ICT Learning Center was established to develop the lifelong learning of people in the community by using ICT as the tools. However, there were limitations and issues in the management and services offered such as lack of the participation with the organization and agency in the remote area. The center could not integrate ICT application to enhance the full potential in the community. This may come from the difference in the eco-geography and social diversity of their communities. It was necessary to study and investigate the vision, expectation, and needs of the people in the community to determine the proper activities about the ICT application.

The other significant limitation of the center involved the community it served which the center could not search, collect, and gather knowledge, content or other local wisdom, which would be very useful to them in sharing their knowledge through the media and channels of the community. Therefore, ways to manage their learning about ICT to support their really life could not be determined.

Objectives

This research aimed to: 1) study the general information about the administration problems and needs of Thai Community ICT Learning Center; 2) develop the strategic plans for the implementation of the Thai ICT Learning Center project with the cooperation and needs of the community members and among the communities; and 3) evaluate the learning strategic plan and learning activities in the regional training of the participants from four regions.

3. Review of Related Literature

One of the main issues in community development is the application of ICTs on how to further enhance communities. Communities face the challenge of maintaining their identity and improving the condition of their members in a changing world. Meanwhile, many functions and responsibilities are being devolved to the local level, as part of moves towards decentralisation and delocalisation. In this context, the power of ICTs can be fully exploited to promote local development. For many remote communities, ICTs are a means for communicating with the outside world and getting in touch with news from outside, but also for letting the world know about these communities and their people. (International Telecommunication Union, 2005).

One way to bring ICTs to indigenous communities is to develop digital community centers that should be considered in implementing such centers (Newhouse, et al, 2002). This emphasizes the need to create an enabling environment for sustainability through public policy, careful planning, creation of local content and most important through direct involvement of the indigenous people being served. Therefore, the involvement of the in the Information Society is embedded in their use and adoption of ICTs. It is clear that the "digital divide" can turn into a "digital opportunity". Moreover, infrastructure and technology are generally the most dominant factors in the ICT development practice. These are also essential elements that need to be considered to match to any given locality. Therefore, the ICT development stage should be enable the analysis of needs and condition in the selection of appropriate technology to match the community's circumstances. The selection and deployment of the technology to be used has to be tailored to benefit indigenous communities.

ICT Learning Center organization in the community can be achieved success, it needs to carry out intensive reflection and organizational work of the team. This concerns the organization leader and the committee members who have high leadership competencies which could be developed to the good performances by training. So, training strategies may be one of the ways to develop the skills of ICT Learning Center's members in the communities.

4. Scope of the study
4.1. This study focused on the Thai Community ICT Learning Center from the four regions of Thailand (Central, Northern, Northeastern, and Southern).

4.2. The strategic plan would be developed based on the basically data and the related documents which would distribute to every centers to try out then evaluation was employed finally.

4.3 The training courses were done to strengthen the content generation and creation of the centers to match their needs. Training evaluation was done by using a questionnaire.

5. Methodology

5.1 Samples of the Study

The respondents of the study came from the four regions of Thailand. In determining the number of samples, the location, management, and size of the centers were first considered. The centers were classified as either extra-large, large, medium, or small. Overall, 104 respondents from 30 centers in Thailand were included in this study.

5.2 Research Instruments

Three research instruments were constructed and used in this study. These included a structured questionnaire, an observation form about the training, and an evaluation questionnaire for the training course. Most of instruments had been pre-tested to check on validity before gathering data.

5.3 Data collection

The following were the steps conducted in gathering data.

1) The researcher gathered data about the problems, needs, and some administration issues in the Thai Community ICT Learning Centers. Thirty centers in the four regions of Thailand were surveyed.

2) The strategic plans were developed and distribute to 30 selected centers. The centers selected three activities from the plan for implementation in the 4 regional centers. Afterwards, evaluation was conducted by the researcher.

3) The training course was arranged for 104participants by the researcher. This training focused on the content creation courses for center staff in four regions.

4) The activities of the strategic plan and the training courses were evaluated by the researcher.

5.4 Data analysis

Data were analyzed using SPSS for windows. Descriptive statistics such as mean, standard deviation, and percentage were used. Qualitative data analyzed by using thematic.

6. Research Findings

Part I: General Information about the Administration Problems and Needs of Thai Community ICT Learning Center

1. The Thai Community ICT Learning Centers

The majority of Thai Community ICT Learning Centers were large-sized (L) (36.70%).The centers mostly opened offices every day. The computers and other equipment and facilities were enough to serve the clients of the centers. Most of users were government offices and private sectors such as non-formal education promotion office, community colleges, and schools. In addition, most of members of the administrative board of the center were representatives from public and private sectors such as schools, and those that offer vocational and religion classes. The regular meeting of the board depends on the chairman. The budgets of the center were not an issue. The centers have an average of 1-100 users per day. Most of them were 13-18 years old. They got the news through official letters from the Ministry of Information and Communication Technology (MICT) as well as via e-mail and website of MICT(www.thaitelecentre.org) and www.ict4you.net.

2. The Data and Knowledge about Local Wisdom and Occupation of Community to Content Creation Course

Table 1 reveals the data and knowledge in local wisdom and occupation of community to content creation course. Thai Community ICT Learning Centers' emphasized the need for a content creation training course because this could be very useful in designing and gathering content creation activity. Some participants also noted

problems like staff training, administration, infrastructure, facility, staffs, budget, co-networks and participation of members.

Although findings show that the center needed content creation course was at the low level, surveys indicated that there were less local content in their websites as well as they lack local wisdom in the center. In addition, they were not able to use ICT to empower people in the community because databases or knowledge banks and backups were not available in the community.

Table 1 Data and knowledge in local wisdom and occupation of community to content creation course.

Activity	Size			
	S Mean	M Mean	L Mean	XL Mean
1. Enhancing the information system to increase administrative efficiency of knowledge and local wisdom for research and retaining the culture and arts in community	1.31	1.33	1.25	1.24
2. Promotion and diffusion of ICT utilization in community by the new technology for community stability development	1.57	1.37	1.47	1.43
3. Implementationof ICT-Based Applications	1.64	1.43	1.46	1.50
- occupations	1.51	1.38	1.35	1.42
- administrations	1.72	1.32	1.31	1.33
- services	1.78	1.62	1.69	1.71

Part 2:The strategic plan of Thai Community ICT Learning Centers

Tables 2- 5 summarizes the strategic plan developed based from the survey data gathered from the Community ICT Learning Center. In general, this included 4 strategies.

Table2. Development of the quality of life, community, environment, and national stability strategy

Planning	Project/Activity	Output/Indicators
1. Enhancing the stability of economy and occupations for people plan	1. The ICT based learning & sharing for wealthy project 2. The promotion of leadership & administration project 3. The promotion of local wisdom &occupations for people project	1. Percentage of occupations& employment 2. Percentage of increasing benefit for people 3. Value of overall economy
2. Developing the quality of life, community, healthy, and security in life and property plan	1. The enhancement of ICT knowledge for quality of life project 2. The knowledge enhancement of community network for quality of life development project 3. The promotion of alternative energy using & production project	1. Percentage of ICT using via community network system 2. Percentage of hole happiness in people & community 3. Number of alternative energy using & production in household
3. Conservation of Thai identity for ASEAN community plan	1. The promotion of conservation knowledge for historic and cultural in 4 regions of Thailand project 2. The promotion of basic English language skills project 3. The promotion of learning for cultural in ASEAN community project	1. Percentage of knowledgeable people in Thai historic 2. Percentage of knowledgeable people in basic English language skills 3. Percentage of knowledgeable people for cultural in ASEAN community

Table3. Leadership in the use of ICTs to increase efficiency of administration (e-Management)

Planning	Project/Activity	Output/Indicators
1. Providing the infra-structure for efficiency administrative plan	1. The multimedia learning classroom project 2. The development of ICT system for community administrative (e-Community) project	1. Statistic of customer services 2. Satisfaction of customer services
2. Providing hi-speed internet for administration& services in community plan	1. The extension of computer network services project 2. The diffusion & public hearing of laws & regularity information project	1. Statistic of computer network services 2. Satisfaction of computer network services in laws & regularity information
3. Providing the software, tools & equipment system for administrative & service plan	1. The promotion & supporting in innovative production research project 2. The organization of agricultural information center	1. Amount of innovative production research project 2. Statistics of people who participate

Table 4. Creating and enhancing the capacity of ICT human development (e-Manpower)

Planning	Project/Activity	Output/Indicators
1. Enhancing & promoting staff in ICT learning plan	1. The enhancing capacity of people to readiness in national software contest project 2. The ICT based co-operative of community network project	1. Amount of software in national software contest project 2. Statistic of people participating in national software contest
2. Enhancing of information sharing in staffs for increase the ICT resource capacity plan	1. The organization of learning center for science & technology diffusion in community project 2. The transfer of expert's technology in co-network & resource sharing project	1. Satisfaction of customer services 2. Amount of expert's technology in co-network & resource sharing
3. Increasing efficiency of learning service via electronic media system plan	1. The organization of white IT service classroom for youth project 2. The development of ICT in local office (e-Tambon)	1. Satisfaction of customer services in white IT service classroom 2. Efficiency of e-Tambon System

Table 5. Opportunities to increase capacity and enhancing the learning standard of people with electronic media (e-Learning)

Planning	Project/Activity	Output/Indicators
1. Making policy to promote media creation for learning community plan	1. The workshop training for video on demand in local wisdom documentary project 2. The development of local wisdom database for continually learning project	1. Satisfaction of trainee 2. Efficiency of local wisdom database
2. Promotion of staffs & volunteers to develop & use electronic media (e-Content) to continue community learning plan	1. The organization of ICT knowledge bank	1. Efficiency of organization of ICT knowledge bank 2. Satisfaction of customer services in organization of ICT knowledge bank
3. Promotion & cooperation of public & private sector to e-Contents co-creation for community learning plan	1. The development of e-Learning media to increase capacity in agro-industry project 2. The development of e-Training in occupations course for people project	1. Efficiency of e-Learning media & e-Training 2. Satisfaction on e-Learning media & e-Training

In summary, these four strategies had been used by the 30 centers and found that some of the strategies could be used for enhancing the strengthening for community ICT Learning centers. However, the implementation had to determine the proper strategies to fit the needs and circumstance of the ICT Learning Center in the community.

Part 3: The Output of Training Course in ICT Learning Management Project

1) Basic Information of the Participants

There were a total of 104 respondents who participated in the training courses in Enhancing the Potential of Thai Community ICT Learning Center Training Project. Overall, there were 56.73 percent male and 43.27% percent female. Most of the respondents' age ranged from 26-35 years old (41.34%). In addition, more than half of them were graduated college (57.69%) and were government officers (51.92%).

2) The Level of Satisfaction of the Participants on Training Inputs

The participants' satisfaction level were divided into three parts: input, process, and output. Table 6 shows that there was a high level of participants' satisfaction with regard to the input factor of The Learning Management in Enhancing Potential of Thai Community ICT Learning Center Training Project (mean = 4.07). The highest satisfaction level were observed in the place for training which the participants regard as suitable and convenient (4.29), while the lowest satisfaction was observed in the number of days (1 day) conducted for the training (3.38).

Table 6.Participants' level of satisfaction with the input factor of the Learning Management in Enhancing Potential of Thai Community ICT Learning Center Training Project.

(n = 104)

Satisfaction Items	$\overline{X}$	S.D.	Level of opinion
1.Food and drink are enough and suitable	4.31	0.73	high
2.The place for training is suitable and convenient	4.29	0.75	high
3. The process of training	4.24	0.61	high
4. Appropriate technology are used in the training	4.17	0.66	high
5.The materials for training	4.12	0.74	high
6. The contents of the training are suitable for participants	4.07	0.62	high
7.The number of days for training	3.38	0.87	moderate

3) The Level of Satisfaction of the Participants on the Training Process

Tables 7 shows that the level of satisfaction of the participants with the process factor in the Learning Management in Enhancing Potential of Thai Community ICT Learning Center Training Project was high (mean=4.31). In general, all satisfaction items reported a high level. The highest mean was observed in the attentiveness and voluntary service of the trainers and officers (4.58). On the other hand, the lowest mean was observed in the suitability of the duration or time of the training (3.78).

Table 7. Participants' level of satisfaction with the process factor of the Learning Management in Enhancing Potential of Thai Community ICT Learning Center Training Project.

(n = 104)

Satisfaction Items	$\overline{X}$	S.D.	Level of opinion
1 The trainers and the officers are attentive and served voluntarily.	4.58	0.53	highest

2. The trainers can advise and answer the questions clearly and correctly	4.47	0.56	high
3 .The trainers and the officers can address and solve the problemsof the participants	4.44	0.57	high
4 .Get more valuable and benefit from the knowledge	4.40	0.62	high
5 .Giving the chance for sharing an opinion and inquiry	4.39	0.66	high
6 .The information and the knowledge that participants get is correct	4.37	0.61	high
7 .The media equipment for training are up-to-date	4.21	0.62	high
8 .Theprocess for training is suitable	4.19	0.61	high
9 .The duration/time of training is suitable	3.78	0.81	high

4) The Level of Satisfaction of the Participants on Output of the Training

Table 8 shows that the level of opinion from participants' satisfaction with output factor of the Learning Management in Enhancing Potential of Thai Community ICT Learning Center Training Project was high (mean = 4.04). The highest mean was observed in the applicability of the knowledge gained from the training in the work of the participants (4.34), while the lowest mean was seen in the knowledge of the participants before attending the training (3.18).

Table 8 Participants' level of satisfaction with the output factor of the Learning Management in Enhancing Potential of Thai Community ICT Learning Center Training Project.

(n = 104)

Satisfaction Items	$\bar{X}$	S.D.	Level of opinion
1. The knowledge from training can be applied to work	4.34	0.53	high
2. There is a confidence to apply the knowledge from the training to the work of participants	4.18	0.65	high
3. The knowledge from training can be applied to daily life	4.17	0.61	high
4. The knowledge from training can be transferred to the community members	4.17	0.65	high
5. Participants can serve as consultant to the community members after the training	4.13	0.68	high
6. The knowledge gained after attending the training	4.12	0.70	high
7. The knowledge of participants before attending the training	3.18	1.16	moderate

The results of the training showed that the participants have strong positive impacts from the training course. The participants gained a lot of knowledge that can use in their work. The training curriculum and materials were practically designed and produced to address the participants' needs, and impacts were created to fit with the future endeavors of the trainees. The positive comments and feedbacks noted by the participants included the following: 1) The training materials and handouts were comprehensive; 2) The trainers were experienced and experts on the topics discussed; 3) The venue of the training and the learning environment was satisfactory; and 4) The class and group exercises were very useful and interesting. However, the participants noted that they needed more days for the training so that they can practice and apply the lessons discussed in the training.

7. Discussion and conclusion

1) Even though the ICT Learning Centers did not needed in the content creation from the research result,, but the evidences showed that most centers   lacked of the content and local knowledge storage so the center's staff had to develop to enable and collect data and distribution by using ICT in the community.

2) Four strategic plans should be implemented and create the opportunity to the community by selecting the strategic plans to implement depend on the context and the characteristics of the indigenous people in the community.

3) The research showed that the voluntarily training courses were successful in the empowered potential strengthening of the center staff. Therefore, they could create the indigenous contents and mediated their knowledge to the public by using ICT as a tool. The government though Ministry of ICT should focus to set up the activities in the ICT learning center in the future.

Author Acknowledgements

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Learning Outcomes and Student Perceptions In Using Of Blended Learning In History

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Abstract

This paper examines the effectiveness of blended learning among students in form four (grade 9) in learning of history. A survey of literature on the subject found that although a number of studies were devoted to the use of blended learning (Bonk & Graham, 2006; Duhaney, 2004; Garrison & Kanuka,2004; Singh & Reed, 2001), in the teaching of history in school there seemed to be very little evidence of detailed examination to determine learning outcomes and an account or mechanism of how the subject is learnt. In the present study reflective and collaborative learning supported by scaffolding provides an attractive glimpse of blended learning - the employment of face-to-face teaching approach and the use of blogs by groups of students on the Twitter platform, in the teaching-learning interaction throughout the lessons. A mixed-method approach was employed with survey, interview, and text analysis for data gathering. Qualitative text analysis of the interview script analysis clarified the different merits students perceived from each activity. The variations provided by the blended course design served well in meeting challenges set in the learning outcomes and learning standard, and the learning environment was found to be enjoyable for the students. We also discovered that students had positive perceptions of the blended course design.

Keywords: Blended learning; history learning; learning outcomes; Blog; Perceptions of blended learning.

Introduction

The rapid rise of Internet technologies in the past few years led to the opening of alternative and non-traditional learning opportunities across various levels of education and training (Bonk & Graham, 2006; MacDonald & McAteer, 2003). The change involved a wide range of innovations in teaching learning approach, one of which is blended learning whereby a variety of models was employed. Typically all of them basically involved in combining face-to-face and online learning (Bonk & Graham, 2006). Owing to the flexibility as well as the richness in the possibility of remodeling of the approach, interest in blended learning has grown rapidly (Boyle et al., 2003; Duhaney, 2004; Thorne, 2003).

Blended learning has a number of definitions. It may be any learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and program delivery cost (Singh & Reed, 2001). In short, it describes a variety of teaching which integrates both face to face and online delivery methods (Chew et al., 2010). Blended learning is attractive and realistic because it combines the traditional classroom approach with the online learning model. The mode of delivery modality of blended learning provides an efficient and effective educational experience for learners, with the added value of increased learner accessibility to programs; hence it is also possible to apply the blended model in innovative ways to increase both student learning outcomes and reduce instructional delivery costs (Dziuban et al., 2004). A stern reminder to educationists is that blended learning technology should not be used to replace the teacher or instructor because "students never learn from technology per se; they learn from the strategies teachers use to communicate effectively through the technologies" (Singh & Reed, 2001, p. 5).

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Literature Review

Blended learning in the current form has come into the scene for over a decade. According to Chew et al. (2010) researchers and practitioners considered that blended learning is currently in embryonic form of its development. Its development to the current stage is much influenced by highly interactive technologies, such as gaming and simulations (Dede, 2005). A good example of the blended learning development came from the University of Central Florida (UCF). Since 1998 it has been using a similar definition for its blended learning courses termed mixed mode courses (Dziuban et al., 2004).

At this juncture an important question raised is whether blended learning is more effective than other learning environments. Many of the studies looking into the three instructional environments -- traditional face to face learning, blended learning and fully online learning -- show mixed results. Dziuban et al. (2004) using course outcomes such as grades show that blended learning students performed better than those in fully online and in some cases those in traditional face to face learning but then there are significant differences among the disciplines. However Reasons et al. (2005) found that students in blended courses performed less effectively than those in fully online courses on grades and tests. Garrison and Kanuka (2004) in their survey on blended learning showed that students believe that they are learning from discussions but their actual performance is only slightly positive and not statistically significant. Further study by Vaughn and Garrison (2005) did not find any evidence that blended learning improved student cognitive performance. A recent experiment of a course taught in all three modalities concluded that fully online was the best of all the approaches, being better than blended and face to face learning environments (Reasons et al., 2005). In short the evidence on the effectiveness of blended learning is inconclusive.

Conceptual Framework

In implementing blended learning one requires a well-supported approach that includes a theory-based instructional model (Dziuban et al., 2004). According to Alonzo et al. (2005), ideally blended learning focuses on the individual learner and is based on social constructionist theory where students work cooperatively to readjust learning as an effective course. The acquisition of new knowledge and experience is reinforced through activities using a scaffold approach to help students practice and acquire new skills. During the activities each student working cooperatively constructs meaning of his or her own. To support the constructivist approach, a learning community belonging to specific grades as groups should be formed. Through a process of collaboration guided by teachers, learning is constructed, not by individuals but by the group (Alonso et al., 2005)

In a traditional face-to-face learning environment, one of the more common methods of constructing group meaning is through discussion. The teacher typically begins the discussion by posing a question. The teacher then invites members of the class to make an impromptu response. Other class members then respond to the first student, and a discussion develops. In this way, students are exposed to several perspectives, and the answer to the original question is constructed for each learner based upon the individual's assessment of the group's responses. In a blended learning environment, however, this discussion format can still be adapted and enhanced. The discussion could be held synchronously, in group chat, or could be held asynchronously, in a forum to which learners post responses. In a blended environment, students have the capability of responding to several points at once. Since an asynchronous discussion can continue over a longer period, students can take time to formulate responses, and can respond to a particular part of a comment, even if the discussion has taken another route.

The majority of public education in the United States over the next 10 years will be in the form of blended learning in which fifty percent of high school courses will be face to face and the other fifty percent will be delivered online; in fact six emerging models for blended learning have been identified in K-12 (Picciano & Seaman, 2008). A good model is provided by one of the schools in Denver in which face to face delivery is supplemented by an online environment in which courses are conducted from a DPS server using the Moodle learning management system. The trend in using blended learning will most probably be adopted in many countries throughout the world. The choice of online platform will be quite a challenge as there are even now many in the offing.

Online platforms such as Twitter, Facebook, Tumblr, Pownce, Jaiku, Edmodo, and Cirip.ro. can be used to publish and edit online brief text, and also images. A micro blogging platform such as Timsoft for example, offers a platform with many educational uses, for information and knowledge management, course enhancement,

delivering entire online courses, and collaborative projects in schools and communities. On the contrary, Twitter, a popular social media was designed for general purposes, but could be used in education when users employ it as online learning spaces and tools to work out how to teach in the different contexts. When conducting a literature class using the online learning environment Miles (2011) raised a question with regard to what an online space makes it possible by way of teaching that the normal face to face method cannot do. One effective answer to this is that in the context of his experiment online spaces allow students to role play one of the characters from Charles Dickens's Bleak House. This study has adopted a blended learning modality in which face to face classroom meetings were supplemented by asynchronous online unstructured learning environment in which students freely and cooperatively interacted in question and answer, discussion and intermittently responded to assignments provided by their teachers. Through this process they would build meanings of the events and episodes related to the subject learned.

4. The problem

Face to face learning environment remains to be the main teaching and learning mode in most of our schools and will remain so in in the future. However, due to the limitation and constraints involved in ensuring effective learning, other modes of learning are introduced and these include the recent development in the use of online learning such as blogs, Wiki and forum (Miyazoe & Anderson 2012), educational computer and video games (Aldrich, 2004; Watson et al., 2010), simulated learning (Dede, 2005; McKenna et al., 2010) and blended learning (Chew et al., 2010).The potentials of these learning environments to improve learning have been positive as shown by many studies (Bonk & Graham, 2006; Dziuban et al., 2004; Miles, 2011). Since variations in applying these modes are vast (Miyazoe & Anderson, 2012), hence the findings are also varied depending on the subject areas investigated, the modes and also the online platform employed.

One subject that seems to be neglected both in its content organization and teaching mode in schools today is history. It is of no surprise that since the 1980s educators have voiced their opinion that the teaching of this subject in schools failed to meet expectations (Brophy & Good, 1969; Shulman, 1986). Britt and Aglinskas (2002) contended that most history in school provides simple narratives that do not acknowledge the controversies surrounding historical topics. In recent years history teaching began to adopt other learning environments in conjunction with the face to face learning mode and this enables historical controversies be discussed and argued. Watson et al. (2010) employed video games to teach the history of World War II and Lyons (2005) used online learning to teach United States History. They found that students learned better and discovered the subject interesting using these methods. However, there is still doubt with teaching using face to face and online in the form of blended learning (Dede, 2005; Reasons et al., 2005; Vaughn & Garrison, 2005). Since the problem of understanding history as taught in schools at present is a serious one (Brophy & Good, 1969; Shulman, 1986), therefore there is a need to overcome this shortcoming and with the introduction of blended learning students may find history more meaningful. It is therefore important to explore both the process and the meaning students created as they experienced blended learning.

5. Research Questions

Based on the problems posed and the considerations of using blended learning three research questions were raised. These were:

1. Is there a change in the understanding of history in the context of students being able to:

   a. evaluate events and their relationship in order to understand the interplay of change and continuity in history

   b. locate sources and select evidence to support arguments, and develop a critical attitude of abstract generalizations and opinion

   c. offered by historians on the topic and thus making own judgment on the generalizations.

      d.   offer alternative answers to the established facts, opinion and judgment about the events.

2.   What are students' views of history after following the blended learning mode?

3.   Is collaborative and constructivist approach through blended learning much more satisfying and meaningful than following the lesson in the face to face approach only?

6. Methodology

Two classes of 32 and 38 students from each class in form four (grade 9) were exposed to the same blended learning course in history. There were altogether 12 class meetings, each lasting 45minutes. The objectives of the course were for the students to improve their understanding of history of the British intervention in the Malay State of Perak. By understanding it means that the students should not only be able to narrate episodes and recall events leading to the intervention, or accounting for the causes and effects after the intervention but they must also be able to make judgment of the episode and the events vis-a-vis evaluating the events from different sources and different perspectives, reformulating the episode and posing a different interpretation of the events and attempt to arrive at the conclusion as to the validity of the historian's interpretation of the events, its causes and effects and finally provide suggestion in which the event may be averted.

Each week there were four face-to-face instruction and out-of-class online learning activities which include forum, additional notes and materials, short discussions and short assignments to be completed with group assists and feedback among the students and the teachers. The online activities took place both in the school computer laboratory and also at home if online facilities are available. Despite the availability of many miniblog platforms such as Edmodo, Twitter was used as a platform for the group involving students and two teachers of history. Throughout the course, the teachers as in the face to face learning environment participated in the online activities and at the same time observed what was happening in the system. In terms of procedure, the students were allowed short practice sessions on online tools in class prior to the assignments.

Owing to the nature of the study, data gathering and analyzing were not only carried out at the end of the course but continuous data gathering, sorting out and analyzing were also done during the course. Class face to face observations were also carried out on two occasions. Interesting points raised in the face to face class observations and online day transactions were recorded, analyzed while the study was carried out. Focus group interviews (Patton (2002) were conducted at the end of the study. Students in groups of five to six participated in semi-structured interviews. Areas of questioning include student perception of using miniblog in learning of history, the experiences they went through, the view they have about history and also the teaching and learning of history, the process in which historians should go about in establishing historical abstractions. A qualitative approach was employed to describe and to provide a triangulated interpretation of the learning process, the learning outcomes, and the perception on history and history teaching and learning (Creswell & Plano Clark, 2007).

7. Results

On the first question with regard to whether there is a change in the understanding of history in the context of students being able to evaluate events and their relationship in order to understand the interplay of change and continuity in history, there was some evidence in the later part of the lesson in both face to face class sessions and the transactions in the forms of discussions, note exchanging and questions and answers in the blogs that the students showed some indications of understanding the temporal concept as the underlying structure of history. In both online and face to face class sessions, for example, the students took some time to discuss whether the absolute power of Sultan Abdullah could withstand the power of the British imperialists. They compared the events to those taking place before during the Malacca Sultanate which succumbed to the Portuguese or the Dutch in Java.

In one of the forum series one question was raised by a student; "Can the Malay lords and other dignitaries using daggers and spears stop the British who come with gunships and big guns?" Another student related to the episode of the fall of the Malacca Sultanate in 1511 by noting; "The Malay ruler must remember how the people of Malacca fought the Portuguese and finally the Malays lost, fast and quick!" One student reacted; "How much attempt made to save Perak by the Malay chieftains, unavoidably it will fail because western imperialists determine to conquer us.

They will do whatever they can to subdue the local people." Although signs of understanding history began emerging through the concept of interplay of change and continuity as depicted in historical events and episodes which is the subject building block, the meaning making of history was still unstable and needed to be reinforced.

With regard to understanding history in the context of locating reliable sources and critical selection of evidence to support arguments and assertions the students did show some degree of understanding in that in their discussions and questions and answers both online and during face to face classroom contact were not only voluminous and lively but also indicated efforts to refer to a variety of sources. On what roles played by Raja Ismail and other nobilities such as Maharaja Lela and Dato' Sagor in Perak during the troubled 1870s for example, some students provided answers like these lords were opportunists waiting if they could get British support. They did provide some credible evidence but other students disputed their assertions, and in turn proposed those nobilities were Malay patriots or strategists or even pacifists. The sources of their evidence varied from different books such as *History of Perak*, online search to stories both fiction and oral.

Regarding development of a critical attitude of abstract generalization and opinion offered by historians on the topic and thus making own judgment on the generalizations, it was found that though there were signs that students were critical with the conclusions or explanations offered by historians, they however were unable to counter the generalizations made or the opinion suggested by historians. In the case of the topic raised, the general agreement among historians was that intervention was inevitable as the tide of imperialism was at its height. Evidence offered by historians was clear. In terms of student learning there was a positive development that students were much more critical of the idea that intervention was inevitable. They felt that if Perak had an able ruler intervention could be avoided. This could be seen in what happened to Malay states such as Terengganu, Kedah and also Siam. They did provide examples and proposed reasons or hypotheses but found difficulty in coming up with reliable sources. This may be due to their lack of exposure to literature on the subject.

For the students to offer alternative answers to the established facts, opinion and judgment about the events they had to master the earlier learning outcome that is develop a critical attitude of abstract generalizations and opinion offered by historians on the topic and thus making own judgment on the generalizations. The students in their deliberations on blogs attempted to provide alternative explanations to the episode studied. However, these explanations were flawed with inconsistencies of accounts and facts. As suggested, the lack of exposure to a wide range of literature might explain why an alternative explanation was not forthcoming.

Data on students' views of history after following the blended learning mode came from two sources. The first source was from both the amount of information and the nature of information being exchanged through the discussions among themselves and with their teachers both online and during face to face interaction; and the second data source was from the focus group interviews. From the first data source it can be said that the students showed signs of changing their view of history. Before following this lesson through blended learning they thought that history is about facts and fixed episodes, already fixed by a group of experts known as historians. Students should see, understand and believe history as depicted by historians. As they went through blended learning they cooperatively constructed meanings to events and relate in them in the form changes and continuity in relation to time. What has been established and believed as history could still be changed and this made history inconclusive. In the interview many students did say that they had different views of history after having been given the opportunity to say their opinions and to disagree with the assertion and conclusions made earlier. They think the subject was alive as conclusion and assertion could be altered as long as there is credible evidence to support the assertion. One group of students asserted that; "At least now we don't have to listen to narration of events and accept what and why things happened this or that way. We now can get involved in shaping what and why things happened".

Another group of students mentioned that: "We enjoyed seeing the subject alive, Now we don't learn about dead people or events, already past and gone, we think history offers avenue for people to discuss, and to argue without ends...not until they are satisfied with the evidence and the conclusion made". The idea that history was not fixed but alterable made the student feel that it was different from before in which their involvement was passive. From the students' responses it can be perceived that there was a slight shift of belief about history from being simply facts to ideas proposed by people in the area.

The data for the question on whether students felt much more satisfying and meaningful following the lesson in the collaborative and constructivist approach through blended learning than from the face to face approach came

from focus group interviews. Most of the groups mentioned that their engagement online in the form of note exchange, raising questions and suggesting answers, explaining and elaborating points of contention, giving support and encouraging fellow students to keep on engaging helped in their face to face class context in that they were much more prepared. By being in constant contact with friends and teachers and having ideas put forward getting support from teachers and friends really they found blended learning helpful and satisfying. One student stated that; "You learn easier because you are not alone. You are always in the company of your friends. They are very helpful".

8. Discussion

Face to face learning is limited by time. Most school subjects including history require more time for students to engage in the subject together with other students. Since history is based on interpretations of events and episodes it is one subject which needs to constructed with credible and convincing evidence. History as taught in the past due to the constraint of time and the approach adopted did not allow students to deliberate and propose conclusion about events and episodes. Owing to the need to accept facts presented the subject not only caused learning drudgery but also stifled the object of learning history, that is creating the understanding of change and continuity in the context of time- temporal relationship. The introduction of constructivist approach together with the idea of working cooperatively was timely in that history should be a meaningful subject and the students should feel they can contribute in the process of meaning making of events and episodes.

Blended learning offered students more time and in the form of variety of contextual exchange such as forum, discussions, quizzes, short brainstorming and even jokes. Even with this short experiment one can see positive signs emerging that students began to understand that history was about meaning making and they had the roles to play. With their active involvement they would be able to dispute earlier interpretations of a specific historical event and propose a new interpretation. Being able to reinterpret history or even to follow argument why a specific assertation was made was a new experience to the students. Thus history was viewed much more positively as a school subject and its learning was made much more enjoyable.

School learning always puts pressure on students apart from providing very little returns in terms of learning experience to students. Blended learning releases pressure on the students and also on the teaching staff. A variety of learning modes could be explored and this would enable student learning experience to be enriched. As shown in this study the students found the blended learning environment embedded in the constructivist-cooperative framework was helpful and supportive. Much of their potentials were able to be actively demonstrated both through online and face to face interaction.

9. Conclusion

As a case study, this study has limitations in how well its results generalize to other situations. However, these results can still be used as information of how it is possible to pursue teaching particularly history in a much more positive and interesting way. Further research definitely needs to be conducted in a more structured way to ascertain which modality of the blended learning is effective for which subject and which learning situation. As noted in the online transactions there was no guidance provided perhaps with some controls better approach could be gained to guide implementation. With more transactions going online, face to face meeting becomes more important in terms teachers and students not only to clarify and crystallize evidence, argue for the decision and provide judgment as to the validity of historical interpretation made; but also to seek and pose more problem if any are to be investigated.

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Learning Style in A Personalized Collaborative Learning Framework

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Abstract

This paper aims to discuss learning style implementation into an e-learning environment. The relationship between learning style and adaptive system is identified and connected. Elements gained from traditional learning style researches are adapted into e-learning system to support Personalized Collaborative Learning (PCL) online learning environment. PCL embed Human Computer Interaction (HCI) elements in its environment. Learner model in terms of learning style, learners' needs and references are smaller, hence it should be broadened to integrate more personalized features into an adaptive system. Therefore, knowledge/materials sharing, question well formation and freedom option support the design of depth personalization into adaptive system like iYu to balance between Personalized Learning Environment (PLE) and collaborative learning. Apart from that, theories overlapping, generalization and time constraints are among the factors that may cause failure to e-learning system effectiveness. In addition, learners' learning style is found to be dynamic during a learning process or self-reflection occurence in PCL framework. Results showed that learners were able to reflect and discover themselves with the presentation of iYu user interface.

Keywords: learning style; online learning environment; Personalized Collaborative Learning (PCL), user interface

Introduction

Existing systems such as Social Networking Sites (SNSs) are not able to clarify specifically learning style according to their provided learning environment. Each learner possesses different unique learning style. Therefore, an appropriate learning environment platform need to be constructed in order to suit learners' varied learning style. Most traditional learning style researches can be converted into online learning style research to design an online learning environment. There is also a need to embed HCI features in a learning environment framework to enhance learners' performance in terms of detecting early learning style and its change when they login to or logout from a particular system. Online persona relationship with learning style is not really emphasized in several SNSs. If combined, learning style can also be studied to enrich online persona rubrics development. Studies on online learning environment are needed to analyze relationship between online persona and early/last detection of learners' learning style. Online persona and learning style are related to learner identity and learner mood. In addition, online persona, learning style, learner identity and learner mood are related to learners' whole selves (learner model) either in their class or outside class.

Several issues identified for learning style include:
  i. the "one size fits all" teaching method which is contrast to learning style overlaps varied theories either in traditional researches or integration of it into any adaptive systems
 ii. generalization of many learners' learning style and learning preference to personalization or deep personalization into adaptive system
iii. time barrier during class/lab hours cannot give ample time/opportunities for learners to reflect on their learning for task-based activities
 iv. learners' and teachers' time response duration may not be the same, hence affect both sides performance
   The key features for iYu system invention are also identified as follows:
  i. knowledge sharing wealth: by personalization (learners' themselves) and collaboration (with peers)

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ii.   knowledge question depth: by climbing thinking ladders steps

iii.   knowledge search freedom: by discovering learners' selves, learning and future career search manipulation

In addition, PCL framework for an online learning environment can be built based on the integration of PLE and Computer Supported Collaborative Learning (CSCL). PLE refers to adaptive system approach to recognize wider/unique scope of learner model (not limited to learning style and group formation only) to provide customizable learning to learners. Meanwhile, CSCL falls under collaborative learning where learners are required to complete tasks within groups. CSCL refers to a much intense area of collaborative learning using computer. Several CSCL tools identified from various researches are used to enhance interaction between learners and their peers, lecturers or online facilitators. Clustering method is applied in order to recognize group representative in PCL framework (Li and Zhao, 2008).

Learning Style

Learning style is always associated with intelligent and adaptive system. Adaptive system links either learners' needs or preferences into adaptive system. And adaptation refers to personalization. Learning style metrics are often found in educational researches and are integrated into adaptive system to enhance learner intent and participation as well as learning performance. Scopes of learning style in e-learning researches can be wider and not limited to attachment of it into systems only. The overlapping of learning style type and many learning style theories makes it difficult for system designers to test system to a particular matched learning style discovered by them. Thus, a framework is needed to solve the issue by providing several important components of an adaptive system in a personalized learning environment. Below is a table built by the author to summarize different researches found on learning style (refer Table 1):

30. Table 1. Learning style integration in adaptive system

Title	Authors	Issues	Contents	Results	Future Works
Experiences of learning styles in an intensive collaborative course	Alaoutinen et al. (2012)	Pedagogical framework goal is to achieve learning objectives by an e-learning and gives design emphasis on the whole learning model, course design and activity management of it which can be normative or descriptive depending on its teaching methodology.	E-learning must follow the latest trend due to learners' interest on a particular popular features and the rise of new learning style like up-to-date. Pedagogy approach can be used either alone or by mixed methods (traditional/engagement) such as personalized learning, collaborative learning and problem-based learning. Learners' cultural background and learning style are also inserted as crucial elements in the designed Code Camp as an educational concept which pays attention to time usage and cooperative learning.	Code Camp offers collaborative learning in an intensive course which is considered as today's trend and has flexibility provided to learners. Learners' preference based on learning style is compared to Code Camp components like intensive co-operation, free application, help, short lecture, demonstration, information retrieval, practical task and instant feedback. Code Camp is observed as a place for learners to reflect, express ideas, learn quickly, do open-ended task, listen for lectures, think reflectively and critically and get continuous facilitation.	Code Camp can also be used for other courses to teach practical skills. Apart from that, Code Camp should be enhanced from curriculum integration, skill/level integration, optionality, better teaching method verification to generalization of it to other fields.
Learning style model for e-learning	Hamada (2012)	Freedom and social emotional aspects and learners' learning preference collective view	Learning style model helps learners in finding their own learning preference. An adaptive and intelligent	Enhanced Learning Style Index (ELSI) where new components are	Evaluation should be done to test system integration and

systems		need to be given proper attention in designing an e-learning system.	system assist learners to perform better with four system easiness in terms of user-friendly interface, e-learning integration, collective view of learners' preference in learning (based on gender) and access/use.	built based on learners' learning preferences. Hamada's (based on culture) old system applied automata and computation theory that caters the needs of all learners, but learners face problems in terms of manipulation.	model reliability.
A study of a learning style index to support an intelligent and adaptive learning systems	Hamada et al. (2013)	Learners and their learning materials are given proper attention to generate adaptive system. It is because, adaptive system could refer to various learning model existence.	ELSI is an improved system of Hamada's (2012) work that uses automata and computation theory. ELSI applies fuzzy-like evaluation system to evaluate its realistic dimension of social and emotional dimension. The social and emotional dimension is emphasized based on five skills related to feelings, moods, social awareness, collaborative skill and decision making skill.	Rapid growth of learning push integration of adaptive system to a new level. Educational system in some countries shifts from collectivity to individuality. Most learners have well-balanced learning preference. ELSI embraces several components such as animation, hypertext introduction, Finite State Machine (FSM) simulator, Turing Machine (TM) simulator, self-assessment, chat and visual automata example.	Due to ELSI integration to intelligent and adaptive e-learning system, further follow-ups are needed to improve the automata integration.
Learning style as a factor which affects the quality of e-learning	Marković and Jovanović (2012)	Challenges in designing good e-learning frameworks are discussed such as learning style type and tool hour to relate content with varied learners and content domain level.	Quality, time and interaction, content display tool are important for better online learning. Liaw and Huang (2007) frameworks consist of two e-learning environment sub-elements (characteristics – information sharing and satisfaction – positive perception with increased learner participation level) as well as learners' characterization and activities (knowledge sharing and experience). There are three adaptation/personalization of e-learning such as adapted system (system customization design phase), adaptable system (user requirement and intervenion) and adaptive system (continuous process of meeting users' needs).	Learning style plays significant role in e-learning and instructor must be prepared with different teaching methodology (frameworks).	Testing system is built based on learners' preference. A recommendation representation is also provided.

Methodology

The designed iYu system interface used participatory design method in determining its usability and manipulation. Respondents whom were involved in this study are second year learners from Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru (UTM JB). They had taken basic English course and are also attending advanced English class when the experiment were conducted. The respondents' data were analyzed quantitatively and qualitatively while their performance was observed for nearly two weeks. Items for both quantitative and qualitative data asked learners about their experience with iYu system use to evaluate it effectiveness in measuring reflective and critical thinking. Apart from that, constant online facilitation and semi-authentic materials were also provided to ensure learners could finish their tasks conveniently. SNSs like Facebook and its Messenger, Short Message Service (SMS) and e-mail were also used as additional tool in increasing learner participation level as well as interaction quality either in real-time or delayed discussion.

Implementation of Proposed Learning Style into iYu System

A PCL environment can be defined as integration of PLE and collaborative learning where it provides caring approach to learners while working in group. The scope of Dunn and Dunn's (1999) "five stimuli which includes smaller components called elements" is narrowed by taking physiological stimuli with perceptual elements only such as Visual (V), Auditory (A) and Kinaesthetic (K) excluding Tactual (T) element. iYu interface design as displayed in the following figure (refer Fig. 1) applied the proposed learning style with the integration of V, A and K characteristics (refer Table 3). The proposed learning style had been compared and matched with the selected psychological stimuli components and there is overlapping of learning style such as one characteristic representing two learning style types. They were obtained from previous data collection before designing the actual iYu interface design to fulfil users' current needs. The interface design is also influenced by PLE and CSCL principles. Several principles of PLE are injected/embedded into CSCL principles to come out with a new PCL framework in nurturing a good reflective thinking and critical thinking. The PLE and CSCL principles are also matched with learning style adaptation in learners' activities and teaching materials in terms of presentation (El-Bishouty et al., 2008; Kirschner et al., 2004; Dunn and Dunn, 1999). Among the principles applied in designing the PCL framework (refer Table 2) include:

Table 2. PCL framework principles

Framework adaptation	Authors	Principles
PLE	El-Bishouty et al. (2008)	• Learners routine must be recorded • Web-based • Learners can interact either with chat or delayed discussion • Constant feedbak and facilitation must be provided • Materials originality
CSCL	Kirschner et al. (2004)	• Learning objectives/outcomes are written in lesson plan • Interation type had been determined • Step-by-step approach to achieve class goal • Group size, interation type, activities and e-learning structure must be taught beforehand • Computer interation verification as learning improvement learner participation level increment must be proved
Learning Style	Dunn and Dunn (1999)	• Characteristics of learning style type must be applied and integrated into task and framework (for instance, VAK)

The Feathers menu represents thinking layers that could help generating reflective thinking and critical thinking at the same time. Although the participatory design method data was obtained from small sample of learners' population, the students managed to discuss and collaborate with their peers along the learning process quite well. From the author observation, the respondents:

- could climb thinking level ladder
- could finish system exploration within one hour approximately
- could complete all tasks within one to two hour/hours with two to six logins
- who are reflective learners performed well with good response and feedback
- are last-minute learners were positive and has the intention to use the system repeatedly
- enjoyed using the system to discover themselves and plan their future

Fig. 1. iYu index page interface design

Table 3. iYu interface design proposed learning style

Type/Keyword of Proposed Learning Style	Description/Characteristics of Learning Style	Features in iYu Interface Design
Easy	- Simple - Simple yet colourful for easy understanding and memory - Easy study	- Layout - Avatar mood - Makes it easy for learners to view menus and profiles
Exercise	- Answers questions if encounter problems - Studies through exercise	- Problem angle - Train learners by exploring themselves online - Feathers and Profiles menus help learners in providing professional guide for career search - Train learners by exploring themselves online
Experience	- Learns through past years - Takes experiment to fulfil a theory	- Learners can learn at their own pace in Profile Linkage and Feathers

		• In Feathers and Profiles, learners can develop their own reflective and critical thinking
Last Minute	• Performs only when under pressure • Studies a day before a test • Studies last minute with study group for revision • Always studying at the last minute	• Learners can finish system familiarization depending on their own time set • Could help learners train their mind within limited time
Reference Search	• Finds references from books • Probes questions when do not understand a topic • Seeks for answer from lecturers	• Original, Share Half and Share Part assists learners in realizing their own original idea • In Interview and Feathers, Peer Review and Peer Remark helps learners to gain some feedback from their lectures and/or peers
Smart	• Studies basic stuffs/materials • Smart, but in a hard way	• Feathers Why? 1 feature help learners in generating basic idea on a subject • Feathers three Why? features help learners think in a smart yet complex way
Summary	• Makes short notes for every special topic • Jot down notes in very simple keywords on a very small paper	• Feathers, Profiles and My Identity layouts applied summary type by providing small textboxes in each interface
Up-to-date	• Cool style • Trendy	• Certain Social Networking Sites (SNSs) like elements
Relaxed	• Rests after studying activities like listening or watching audio/video • Relaxed, but organized	• Uploaded audio and/or video help learners to relax • Lounge feature help learners identifying their learning type using a nice interface

Conclusion

The paired version of PLE and CSCL could form PCL framework based on learner model metrics expansion. As a results, learning style cannot be hidden, but the association of it with several other components must also be emphasized in designing an adaptive system. New principles of PCL to evaluate justified framework that focuses on labelling concept and deep personalization can be proposed in the future. Future works should include or enhance iYu adaptive user interface manipulation to a new level such as labelling, deep personalization, flow and technique. Apart from that, iYu system must also be tested to other courses learners to differentiate data analysis results based on demographic background in order to maintain and improve iYu system performance as well as its effectiveness to them.

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Learning Styles of Teacher Education Students: Basis in Improving the Teaching - Learning Process

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Abstract

This study was conducted to look on the learning styles of the teacher education students which served as basis in improving the teaching and learning process. Specifically, it described the students' socio-demographic profile and their learning styles. The implications of learning styles to the instruction process were also given as well as some proposed strategies to improve the instruction process which is congruent to the learning styles of the students.

This study was anchored on Howard Gardner's Theory of Multiple Intelligences which states that human beings have nine different kinds of intelligence that reflect different ways of interacting with the world. The types of intelligence that a person possesses (Gardner suggests most of us are strong in three types) indicates not only a persons capabilities, but also the manner or method in which they prefer to learn and develop their strengths.

Results of the study showed that majority of the respondents are 16-17 years old; belong to a family with Php10,000 and below monthly income; with 4-5 siblings in the family; parents are high school level or high school graduates; and fathers are engaged in farming while mothers are housewives.

Learning styles of the students in terms of learning environment showed that majority prefers to learn in a quiet environment; well lighted room; with cool temperature; sitting in soft chairs or pillows; and in informal setting. In terms of emotional preferences, majority are self motivated; prefers to study lesson one at a time; prefers to study without being reminded; and prefers to be told exactly what and how to do things. In terms of social preferences, most prefers to study and learn by pair. In terms of physiological preferences, most prefers to learn by doing things; eating or munching while studying; prefers to study in the morning; and with less break and movements. While in terms of psychological preferences, majority are analytic or they prefer to learn sequentially and reflective or they take time to make decisions.

Keywords: learning style, teaching-learning process, teacher education students

INTRODUCTION

Nowadays, people live in a new world. Almost everything is different now compared few years ago; the kinds of music the students listen, the dance, the instruments and technology that carries the music, the TV shows that they patronize, the games they play, the language they use, their styles of learning and even values they possessed. The world now is truly technology driven, where instead of being a mere tool for civilization, it poised to become its master.

Every student is unique and has genius potentials. Teachers know this but they overlook or ignore it especially those who grew up exposed to conventional learning theories and traditional teaching methods. Teachers should learn to recognize, acknowledge and respect the learning style aspects of students' innate tendencies.

Learning style is the way in which each individual learner begins to concentrate on, process, absorb and retain new and difficult information (Dunn and Dunn Learning Style). A personal style is the biological and developmental set of characteristics that makes identical instructional environments, methods and resources effective for some learners and ineffective for others.

Recent studies revealed that when teachers develop and expand their instructional methods and techniques according to the individual learning styles of their students, there is marked improvement in their performance and

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achievement and a drop in the number of disciplinary problems. Hence, this study was conducted to determine the learning styles of teacher education students which served as basis in improving the teaching-learning process.

1.1 Statement of the Problem

This study was conducted to look on the learning styles of the teacher education students which served as a basis in improving the teaching - learning process. Specifically, this was conducted to answer the following questions:

    1.1.1. How are the students described in terms of their socio-demographic profile such as:

        a. gender,
        b. age,
        c. average monthly family income,
        d. number of siblings in the family,
        e. educational qualification of parents, and
        f. occupation of parents?

    1.1.2. How are the students described in terms of their learning styles?

    1.1.3. What are the implications of student's learning styles to the teaching - learning process?

    1.1.4. What strategies may be proposed to improve the teaching - learning process?

1.2 Significance of the Study

Given responsive environments, resources, and approaches, students attain statistically higher achievement and test scores in congruent or matched rather than dissonant or mismatched treatments. This implies that if the instructional situation is organized in a manner that takes advantaged of the student's learning styles, the rate and quality of learning will be improved.

The learning style preferences of students differ significantly from each other. It is important that teachers know the styles of their students so that they can connect their teaching styles. Through this, the teacher may choose compatible instructional strategies that may be used in teaching suited to the styles of the learners. This may be the basis of choosing learning activities that will suit to their preferred learning styles to further improve their performance.

1.3 Scope and Delimitation of the study

This study was conducted to determine the learning styles of the teacher education students; their socio-demographic profile; the implications of learning styles to teaching-learning process; and proposed strategies to improve the teaching-learning process.

1.4 Theoretical Framework

This study was anchored on Howard Gardner's Theory of Multiple Intelligences. According to Gardner, human beings have nine different kinds of intelligences that reflect different ways of interacting with the world. Each person has a unique combination or profile. Although people have all nine intelligences, no two individuals have them in the same exact configuration -- similar to the fingerprints. This established a classical model by which teachers understand and teach many aspects of human intelligence, learning style, personality and behavior, both in education and industry. It provides absolutely pivotal and inescapable indication with regards to people's preferred learning styles, as well as their behavioral and working styles, and their natural strengths. The types of intelligence that a person possesses (Gardner suggests most people are strong in three types) indicates not only a persons capabilities, but also the manner or method in which they prefer to learn and develop their strengths and their weaknesses. Developing a person's strengths will increase their response to the learning experiences, which helps them to develop also their weaknesses.

In this study, the researchers conceptualized that the students' learning styles have implications to the teaching – learning process which may serve as a basis in proposing strategies to improve teaching – learning process. When instructional situations are organized in a manner that takes advantage of the learning styles of the students, the teaching - learning process will be improved. Hence, the student's performance will also be improved.
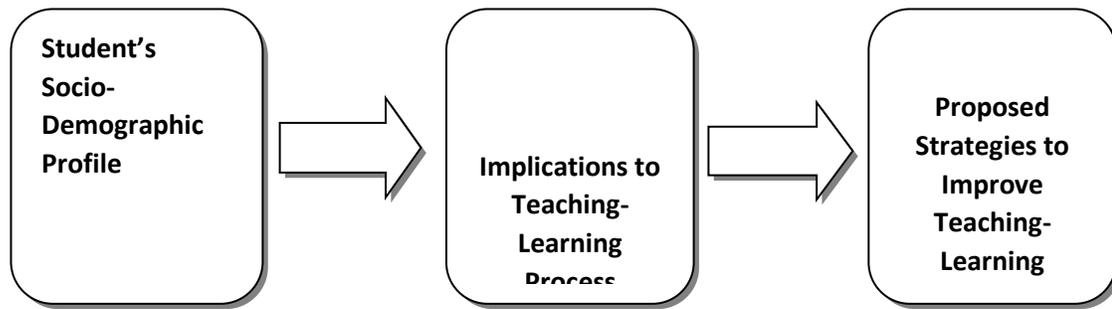
Figure 1. Conceptual paradigm of the study

2. Methods and Procedure

2.1 Research Design

The descriptive method of research was used in this study. It is descriptive because it described the socio-demographic profile and learning styles of the students.

2.2 Respondents of the Study

The teacher education students of the Institute of Education, Tarlac College of Agriculture, Camiling, Tarlac, Philippines enrolled during the school year 2011-2012 were the respondents of the study.

2.3 Data Gathering Instrument and Analysis

Learning style questionnaire adapted from the Center for Learning Styles, Philippines supplemented with interview was used in gathering data from the respondents to determine their learning styles.

The data gathered were analyzed using frequency counts and percentages. The implications were based on results of the study as well as the proposed strategies.

3. Results and Discussion

31. 3.1 Students' Socio-Demographic Profile

32. Table 1. Distribution of Students' Socio- Demographic Profile

Profile	Frequency	Percentage
Gender		
Female	127	87
Male	19	13
Total	**146**	**100**
Age		
16-17	48	33
18-19	42	29
20-21	38	26
22 above	18	12
Total	**146**	**100**
Average Monthly Family Income		
10,000 and below	89	61
10,001 to 30,000	45	31
30,001 to 70,000	7	5
70,001 to 140,000	5	3
Total	**146**	**100**
No. of Siblings in the Family		
Only Child	5	3
2 – 3	52	36
4 – 5	59	40
6 – 7	20	14
8 and above	10	7
Total	**146**	**100**

Table 1 shows the socio-demographic profile of the respondents of the study. It shows that in terms of gender, majority of the teacher education students are female which is comprised 87% of the sample population, while 13% are male. This further shows that teacher education courses are still the most preferred courses among the female students.

In terms of age, majority of the students are 16 -17 years old which is 33% of the sample population, while 29% are 18-19 years old and the rests are twenty years old above. This shows that there are more young students which represent the freshmen and sophomore students than junior and senior students. Meanwhile, with regards to average monthly income, majority has Php10,000 & below monthly family income which is 61%, while 31% have Php10,000-30,000 average monthly family income. Based on the data, very few of the respondents have income beyond Php 30,000 which manifests that in terms of economic conditions in life, majority of their families belong to poverty line. With regards to the number of siblings in the family, the data show that 36% have 2-3 siblings, while 40% have 4-5 siblings. There are 14% of the respondents who have 6-7 siblings in the family while 3% are only child and 7 % have 8 and above siblings in the family. This reveals that most of the respondents belong to medium size family. The result is consistent with the common observation that if the parents are both professionals and both are working, they usually have small family size.

Table 2. Distribution of Parents' Educational Qualification

Educational Level	Father		Mother	
	F	%	F	%
Elementary level/graduate	31	21	31	21
High School level/graduate	65	45	59	40
College level/graduate	44	30	51	35
Post graduate level/graduate	6	4	5	3
	146	**100**	**146**	**100**

Table 2 reveals that most of the parents of the respondents are high school level or high school graduate which is comprised of 45% for father and 40% for mother. It was followed by parents who are college level or college graduate which is comprised of 30% and 35% respectively. Some of the parents are elementary level which is comprised of 21% both of the fathers and mothers. Very few parents attained the graduate and post graduate levels.

Table 3. Distribution of Parents' Occupation

Occupation	Father		Mother	
	F	%	f	%
Farmer/Forestry/Fisherman	89	61	21	14
Teacher/Instructor/Professor	2	1	11	8
Police/Soldier	1	1		0
Businessman/Entrepreneur	10	7		0
OFW	1	1	9	6
Driver	14	10		0
Barangay Official	4	3	2	1
Government Employee	2	1		0
None	23	16		0
Housewife		0	103	71
Total	**146**	**100**	**146**	**100**

Table 3 shows that in terms of parent's occupation, majority of the fathers are generally engaged in agricultural activity such as farming and fishing while majority of the mothers are involved in housekeeping. It is observed that some of the mothers are teachers, OFW, and Barangay Official. Among the father's occupations other than farming are Driving, Government Employee, Barangay official, Overseas Workers and Entrepreneurs. There are also father's who are not employed. This further shows that majority of the respondents belong to a family whose source of livelihood is basically agricultural activities such as farming and fishing.

3.2 Learning Styles of Teacher Education Students

3.2.1 Learning Environment Preferences

Table 4. Learning Styles of Students in terms of Learning Environment Preferences

Environment	Learning Preferences	f	%
Sound	Prefers to study/learn in quiet environment	82	56.16
Light	Prefers to study/learn in bright light	102	69.86
Temperature	Prefers to study/learn in cold environment	71	48.63
Design	Prefers to study/learn when sitting in soft chair or pillows	82	56.16
Setting	Prefers to study/learn in informal setting	81	55.48

Table 4 shows the various elements that affect the learning environment of students. It includes the element of sound, light, temperature, design and setting. Result shows that in terms of sound element, majority of the students (56.16%) prefer to study in a quiet environment. It is also observed on the data that some students prefer to study with sound such as soft music as background while studying.

Light is a basic requirement in studying especially inside the classroom, however, the level of lights preferred by students while studying varies. Majority of the students (69.86%) prefer to study and learn bests with bright light. Very few students prefer to study in a low or in a dim lighted environment.

In terms of temperature, 48.63% of the students prefer to study in a cool temperature. It is observed that very few students prefer a warm temperature while significant proportion of the respondents has no preferences, or they can study either in warm or cool environment.

Meanwhile, in terms of design and setting, majority of the students (56.16%) prefer to study while sitting in soft chairs and in informal setting which is comprised of 55.48% of the respondents. They found it easier to concentrate and focus on their studies if they are relax and comfortable while studying.

Teachers, as facilitators of learning should consider these elements and be flexible in organizing classrooms to address the learning environment preferences of the students. Considering these elements may possibly improve the teaching - learning process because this will provide conducive environment for the students to learn.

3.2.2 Emotional Preferences

Table 5. Learning Styles of Students in terms of Emotional Preferences

Emotional Element	Learning Preferences	f	%
Motivation	Self motivated	71	48.63
Persistence	Starts and finish assigned task	99	67.81
	Prefers to study/work on one task	83	56.85
Responsibility	Prefers to study/work independently without being reminded	82	56.16
Structure	Prefers to be told exactly what and how to do things	73	50.00

Table 5 shows the various elements that affect the emotional preferences of students. It includes motivation, persistence, responsibility and structure elements. Result shows that in terms of motivation, 48.63% of the students are intrinsically motivated while the rests are either motivated by parents or by their peers and teachers. Most of the students are happy and they feel good if they do well in their studies.

In terms of persistence, majority or 67.81% of the students are persistent in doing their tasks. They try to finish what they have started and they like to get things done first before starting new task. Majority or 56.85% also prefers to study lesson one at a time rather than working on different task simultaneously.

In terms of responsibility, majority of the students (56.16%) prefer to study/work independently without being reminded of their activities. They are responsible for their own academic learning. However, significant proportion of the students prefers to be frequently reminded and given feedbacks to finish their task.

Meanwhile, with regards to structure, 50% of the respondents prefer to be told exactly what and how to do things while the other students prefer to be given the objective and left alone to do things on their own ways.

Teachers, as facilitators of learning should consider these elements in facilitating, providing and monitoring learning activities of the students. Considering these may possibly improve the teaching and learning process because this will address the emotional preferences of the students in relation to their ways of learning.

3.2.3 Social Preferences

Table 6. Learning Styles of Students in terms of Social Preferences

Learning Preferences	F	%
Prefers to study and learn alone	52	35.62
Prefers to study and learn by pair	56	38.36
Prefers to study and learn with peers or group	38	26.02

Table 6 shows the elements that affect the social preferences of students in studying. Results show that 38.36% of the students prefer to study and learn by pair. They want to study with other students or with small group of their friends. However, 35.62% of the students prefer to study alone without other students. They can concentrate more if nobody interrupts them while studying. The rests of the students prefer to study with their peers or with a team. They like studying with lots of friends or students sharing ideas with them. Results implied that teachers should provide varied learning activities ranging from individual, paired and group activities to meet all the social preferences of students in studying.

3.2.4 Physiological Preferences

Table 7. Learning Styles of Students in terms of Physiological Preferences

Physiological Element	Learning Preferences	F	%
Perceptual Strength	Prefers to learn by doing things	54	36.98
Intake	Prefers to eat or drink while studying	76	52.05
Time of Day	Prefers to study/learn in the morning	66	45.20
Mobility	Prefers to study/learn with less break and movements	68	46.57

Table 7 shows the elements that affect the physiological preferences of students while studying. It includes the element on perceptual strength, intake, time of day, and mobility. Results show that in terms of perceptual strength,

36.98% of the students prefer to learn by manipulating or doing things. Significant proportion of the students also prefers to learn by visual and auditory. They like seeing and hearing things to retain more information.

In terms of intake, majority of the students (52.05%) prefer to have something to eat or chew while studying. Munching of finger foods while studying helps them to concentrate on their studies. Very few students prefer not to eat while studying.

The time element is related to the energy level of the students to study at different time of the day. Result shows that 45.20% of the students prefer to study and best learn in the morning. This shows that these students are active to study and learn in the morning. Many students also prefer to study in the evening while very few prefer to study in the afternoon. The result is similar with the common observation that most students are sleepy in their classes during afternoon.

With regards to mobility, it is concerned with the extent to which the movement of the body while involving in a learning task. Result shows that 46.57% of the students prefer to study with less break and body movements. They prefer to stay or sit in one place until they finish their tasks. However, there are also students who prefer to move constantly, changing their body positions while studying.

Teachers, as facilitators of learning should consider these elements in the preparation of instructional materials, classroom management and providing learning activities. Considering these may possibly improve the teaching and learning process because this will address the physiological preferences of the students in relation to their ways of learning.

3.2.1 Psychological Preferences

Table 8. Learning Styles of Students in terms of Psychological Preferences

Psychological Element	Learning Preferences	f	%
Analytic	Prefers to learn sequentially – one aspect at a time	87	59.58
Reflective	It takes time to think before making decisions.	67	45.89

Table 8 shows the learning styles of the students in terms of psychological preferences. Result shows that 59.58% of the students are analytic or prefer to learn sequentially or one at a time. They like to know the details or the step by step process to get things done.

Also, significant proportions of the students are reflective in nature, which is comprised of 45.89% of the students. These students take time to think and evaluate various alternatives before making decisions. Results show that in terms of psychological preferences, majority of the students are analytic and reflective thinker. This implies that teachers should provide activities suited to their psychological preferences to improve the teaching and learning process.

3.3. Implications of Learning Styles to Teaching - Learning Process

3.3.1 The Teacher

Every student is unique; each student learns best in different ways. Every teacher therefore, knows how to identify the ways (modalities, preferences, styles) in which individual students learns best and then uses this information in planning activities and arranging learning situations to connect his teaching style to the learning styles of students. This will serve as basis in choosing appropriate teaching strategies, teaching materials and in organizing activities that will accommodate the learning styles of the students, to improve the rate and quality of learning.

It is suggested that teachers may guide and motivate students to identify and utilize their preferred learning styles and to take deliberate advantage of those preferences. If teachers can show students the variety and versatility of learning styles by providing experiences in different teaching styles, the resulting awareness and expansion of student learning styles may better allow students to meet the demands of academic teaching methods and assignments (Grasha, 1972). Thus, one goal of instruction could be to help students identify and assess their individual learning styles. Another could be to allow students to sample unfamiliar teaching and learning styles. Indeed, a teacher who can "purposefully exhibit a wide range of teaching styles is potentially able to accomplish more than a teacher whose repertoire is relatively limited" (Smith & Renzulli, 1984, p. 49).

3.3.2 The Students

Each student should know and understand his/her learning preferences and uses this understanding in choosing learning activities provided by the teacher. Knowing his own learning style implies that he is responsible in monitoring, motivating and controlling his own behavior because he knows how he learns best.

3.3.3 The Classroom Setting

Classrooms should have variety of furniture and equipment to accommodate learning environment preferences of the students. It should allow flexibility when it comes to layout and different from typical classroom with rows and desks. It should have facilities for individual work, work by pair and small group sessions. Arrangements should promote an atmosphere that reflects informality and friendly environment.

Moreover, the understanding and use of different teaching styles by the instructor, as well as the awareness of individual learning styles by the student, may influence success in the classroom.

3.3.4 Instructional Materials

The teacher should spend time in selecting, developing and maintaining variety of instructional materials as well as references to accommodate the individual preferences of students. Some students need materials for visual and audio while others need materials for tactile or kinesthetic activities. Instructional resources and materials should be designed based on the learning styles of the students and to facilitate mastery of learning objectives.

3.4 Proposed Strategies to Improve Teaching - Learning Process

Learning Preferences of Students	Suggested Strategies
Learning Environment Preference	
Sound	➢ The school should always maintain a quiet environment by providing policies that will regulate the entry of noisy vehicles inside the campus especially during class hours. ➢ Students discipline should be strengthened by providing regular counselling to noisy students. ➢ Student lounge or centers be made available and functional to accommodate students without classes. ➢ Proper classroom management must be observed by teachers to avoid disturbance of other classes. ➢ Schedule of events in the Gym and other assembly areas other than school activities may not be allowed during class hours.
Light	➢ Well lighted classrooms should be maintained by the teachers and school officials all the time. ➢ Curtains and other furniture that obstruct light to enter the classrooms should be minimized.
Temperature	➢ Provision of adequate electric fans or air con unit in every classroom be considered. ➢ Standard number of classes per classroom be maintained. ➢ Orientation of the sun be considered in the construction of school buildings.
Design and Setting	➢ Provision of comfortable chairs for students in every classroom may be considered. ➢ Arrangement of chairs other than rows and columns may be considered to create informal setting.
Emotional Preferences	
Motivation	➢ Teachers should recognize student's achievements by using praises and good comments. ➢ Feedbacks on the performance of the students should be provided by returning test papers and other assessment tests. ➢ Teachers should encourage their students to learn to make them feel that somebody cares for them.
Persistence	➢ Teachers should provide activities which are realistic and attainable within the given period of the lesson. ➢ Teachers should monitor the progress of students in doing their learning activities.
Responsibility and Structure	➢ Opportunity for the students to work independently and decide for themselves should be considered by the teacher.
Social Preference	➢ Variety of learning activities for individual work, for pair activity and for group activity may be provided for the students.
Physiological Preference	
Perceptual Strength	➢ Activities that will allow students to get involve in doing things to apply what they learned may be considered by the teacher in preparing activities.
Intake	➢ The school may allow students to chew gum or munch finger foods while in the classroom but be sure to remind them to maintain cleanliness all the time.
Time of Day	➢ Lectures and discussion activities may be scheduled in the morning while kinesthetic activities be scheduled in the afternoon.
Psychological Preferences	
Analytic	➢ Teachers should provide clear and step by step procedure and instruction to students in doing their activities.
Reflective	➢ Teachers should provide opportunity for students to develop their higher order thinking skills which may develop their reflective thinking.

4. Conclusions

Based from the results of this study, the following conclusions were drawn:

- Majority of the respondents are female; 16-17 years old; with 10,000 and below average monthly income; and belong to a family with 4-5 siblings. The parents are high school level/graduate; and most of the fathers are farmers while most of the mothers are housewife.
- The teacher education students prefer to study in quiet, well lighted, cool, relax and comfortable, and informal setting environment.

- The teacher education students are motivated by their own selves, persistent, prefers to do task one at-a-time, prefers to study independently without being reminded frequently, and prefers to be told exactly of what and how to do things.
- Most of the students are tactile, prefer to eat or chew while studying, active in the morning and prefer less break and movements while studying.
- Majority of the students are analytic and reflective thinker.

5. Recommendations

In the light of these findings, this study recommends that:
- Faculty and officials of the college should continue finding ways to improve the physical plant and facilities of the college in order to provide the most conducive environment for the students to learn.
- Teachers should develop a thorough understanding of the learning style elements and the learning styles of their students to effectively facilitate the learning process.
- Teachers as facilitators of learning should plan and organize instructional activities based on the learning preferences of the students to improve the rate and quality of learning.
- Instructional environments, resources, strategies and approaches of teachers should respond to the diversified learning styles of students.
- Further study related on this topic is recommended.

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LEGO MINDSTORMS Uygulamalarının Eğitsel Açıdan Etkilerinin İncelenmesine İlişkin Bir İçerik Analizi Çalışması

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Özet

Araştırmada, LEGO MINDSTORMS ürünleri ile gerçekleştirilen uygulamaların eğitsel açıdan etkilerini incelemek amaçlanmıştır. Bu doğrultuda Web Of Knowledge, EBSCOHost, ProQuest Dissertation Publishing ve Yükseköğretim Kurulu Başkanlığı Tez Merkezi'nde konu ile ilgili alan yazın taranmış ve ulaşılabilen çalışmalardan ölçüt örneklemesine göre belirlenen ölçütlere uyan 17 çalışma içerik analizi yapılarak incelenmiştir. Analiz sürecinde çalışmalar amacı, örneklemi ve süresi ve sonucu ölçütlerine göre incelenmiş ve kodlamalar yapılmıştır. Yapılan kodlamalar temalaştırılarak yorumlanmıştır. Yapılan araştırma sonucunda LEGO MINDSTORMS ürünleri ile en çok ilkokul ve ortaokul öğrencileriyle çalışıldığı ve çoğunlukla fen, matematik, teknoloji ve mühendislik alanlarıyla ilgili olarak çalışmalar yapıldığı görülmüştür. Öğrencilerin motivasyonlarının, özgüvenlerinin, başarılarının arttığı; yaratıcılıklarının geliştiği ve LEGO MINDSTORMS ürünlerinin etkili bir öğretim aracı olduğu elde edilen sonuçlar arasındadır.

Anahtar Kelimeler: LEGO MINDSTORMS, LEGO-LOGO, FIRST LEGO Ligi, eğitim.

Abstract

The Purpose of this study is to examine the effects of educational aspects of applications realized with LEGO MINDSTORMS products. In this direction, review of the literature on the subject was in Web of Knowledge, EBSCOHost, ProQuest Dissertation Publishing and The Council of Higher Education. Content analysis can be reached the 17 studies that meet the criteria determined by the sampling criteria. Analyzed according to purpose of the study, samples and implementation time and results of the study the analysis process. Research results show that primary school and secondary school students with LEGO MINDSTORMS products were attempted and mostly science, mathematics, engineering and technology fields have been studied. Increase students' motivation, self-confidence and success; develop students' creativity and LEGO MINDSTORMS products are an effective teaching tool results obtained.

Keywords: LEGO MINDSTORMS, LEGO-LOGO, FIRST LEGO League, education.

GİRİŞ

LEGO, çeşitli renklerdeki yapı parçalarından oluşan, üzerindeki girinti ve çıkıntılar vasıtasıyla birbirlerine kolayca kenetlenebilen ve hemen hemen her nesnenin inşa edilmesine olanak veren bir oyuncak çeşididir. LEGO üretimi başladığı 1932 yılından itibaren sürekli olarak kendisini geliştirmiş ve hemen hemen her alanda LEGO parçaları ile çocukların yapılar inşa etmesini sağlamıştır. LEGO çocukların bireysel şekilleri tanımalarına ve farklı şekillerle eşleştirme yapma becerilerini geliştirmelerinde katkılar sağlamaktadır (Yu, Harrison, Lu, Li, & Wang, 2011). Ayrıca LEGO setleri, eğitsel olarak tartışmasız çok geniş kullanım alanına sahip; genellikle uygun bütçeli, dayanıklı, tekrar tekrar kullanılabilir ve her öğrenci seviyesine uygun setleri olan oyuncaklardır (Kim ve Jeon, 2009). 1980'li yıllara gelindiğinde, LEGO eğitsel ürün departmanı kurulmuştur (Mortensen, 2012). LEGO eğitsel ürün departmanı kurulması ile birlikte çocukları eğitici LEGO setleri üretilmiş ve kullanılmaya başlanmıştır. Teknolojinin giderek gelişmesine ve eğitim alanındaki artan ihtiyaçlara yanıt vermek üzere 1998 yılında programlanabilir LEGO parçalarının üretildiği LEGO MINDSTORMS (LEGO Beyin Fırtınaları) birimi kurulmuştur. Bu doğrultuda LEGO parçaları ile robotik sistemler oluşturulmasının temeli atılmıştır.

LEGO MINDSTORMS

Programlanabilen bir LEGO parçası ve o parçaya diğer LEGO parçaları ile birlikte monte edilerek, bir robotik ürün ortaya koyan ve programlanmış görevleri yerine getiren LEGO MINDSTORMS ürünleri 1998 yılında üretilmeye ve kullanılmaya başlanmıştır. İlk LEGO MINDSTORMS ürünü olarak RCX adı verilen programlanabilir bir parça üretilmiştir. RCX bir bilgisayar aracılığıyla programlanıp yönetilebilen; üzerinde küçük bir ekran, üç giriş aygıtı bağlantı portu, üç çıkış aygıtı bağlantı portu, dört buton ve kızıl ötesi (IR) iletişim sensörü olan bir bilgisayardır (Ferrari, Ferrari, & Hempel, 2001).

LEGO MINDSTORMS ailesinin bir üyesi olan RCX, 2006 yılında yerini ikinci jenerasyon robotik ürün olarak adlandırılan NXT'ye bırakmıştır. Tıpkı RCX robotik sistemlerde olduğu gibi NXT robotik sistemler de servo motor ve çeşitli sensörlerle birlikte LEGO parçalarının birleştirilmesiyle meydana gelmektedir. Bir adet bilgisayar bağlantı portu, bir adet kablosuz bağlantı aygıtı, bir adet şarj edilebilir bataryası, yedi adet bağlantı portu ve dört adet işlem butonuyla birlikte üzerinde LCD ekranı bulunan NXT, 32 bit ARM7 mikroişlemcili akıllı bir mikrobilgisayardır (LEGO, 2012). Ayrıca bluetooth ve wireless bağlantıları sayesinde de kablosuz iletişim olanağı sağlamaktadır. NXT ile birlikte kullanılan motor, sensör ve bağlantı araçları sayesinde oluşturulan robotik sistemler üstün yeteneklere sahip birer robot gibi programlanan görevleri yerine getirmektedirler.

LEGO MINDSTORMS NXT teknolojisinden önce birçok programlama dili ile program parçacıkları yazılabiliyor olmasına rağmen, NXT teknolojisi ile birlikte LOGO (Language Of Graphical Output) programlama dili kullanılarak program parçacıkları hazırlanmaya başlamıştır. Bu şekilde LEGO-LOGO uygulamaları olarak isimlendirilen aktiviteler meydana gelmiştir.

LEGO MINDSTORMS ürünleri ile birlikte bilgisayar destekli yazılımlar kullanılarak soyut kavramlarla ilgili benzetimlerin ve öğrencilerin aktif bir şekilde öğrenme sürecine katılmalarına imkan veren canlandırmaların kullanılması ile öğrencilerin anlamakta güçlük çektikleri kavramları zihinlerinde daha kolay yapılandırmalarını sağlayabilen bilgisayar destekli öğretim uygulamalarına bir yenisi eklenmiştir (Karamustafaoğlu, Aydın, ve Özmen, 2005). LEGO-LOGO uygulamaları kullanılarak dünya genelinde birçok eğitim-öğretim aktivitesi düzenlenmektedir (McDaniel, 2004; McWhorter, 2008; Beisser, 2006; Mojica, 2010; Tian, 2007; Adams ve Keene, 2005; Jarvinen, 1998; Chambers, Carbona ve Rex, 2007; Hamada ve Sato, 2010). Ancak Türkiye'de çok az LEGO MINDSTORMS ürünleri ile gerçekleştirilmiş eğitim-öğretim aktiviteleri bulunmaktadır (Çayır, 2010).

Araştırmanın Amacı

Araştırmada, LEGO MINDSTORMS ürünleri ile gerçekleştirilen uygulamaların eğitsel açıdan etkilerini incelemek amaçlanmıştır.

YÖNTEM

Araştırmada nitel araştırma yöntemlerinden doküman incelemesi kullanılmıştır. Gözlem, görüşme ve doküman analizi gibi nitel veri toplama araçlarının kullanıldığı, olguların doğal ortamında gerçekçi ve bütüncül bir biçimde ortaya konmasına yönelik nitel bir sürecin izlendiği araştırmalara nitel araştırma yöntemleri; araştırmacının ihtiyaç duyduğu veriler için veri toplama araçlarını kullanma gereği duymadan; doğrudan araştırılması hedeflenen olgu veya olgular ile ilgili olarak bilgileri elde edebileceği dokümanların analiz edilmesiyle gerçekleşen nitel araştırma yöntemi türüne de doküman analizi denilmektedir (Yıldırım & Şimşek, 2008). Araştırmanın amacına ulaşılması hususunda verilerin analizi sürecinde doküman incelemesi türlerinden içerik analizi yapılmıştır.

Araştırmada doküman incelemesi yapılacak çalışmalar Web Of Knowledge, EBSCOhost, ProQuest Dissertation Publishing ve Yükseköğretim Kurulu Başkanlığı Tez Merkezi'nde LEGO-LOGO uygulamaları ve FIRST LEGO Ligi gibi LEGO MINDSTORMS ile gerçekleştirilen ve eğitim-öğretim sürecine yönelik olan son beş yılda (1 Ocak 2008 - 31 Aralık 2012 yılları arasında) yapılmış çalışmalar taranmış ve ulaşılabilen çalışmalar araştırmanın amacı doğrultusunda analiz edilmiştir. Araştırmanın amacı doğrultusunda doküman analizi yapılacak çalışmalarda incelenecek ölçütler belirlenmiş ve bu ölçütlere göre analiz gerçekleştirilmiştir. Bu ölçütler şu şekildedir:

- Çalışma amacı
- Örneklemi ve süresi
- Çalışma sonuçları

Araştırmada amaçlı örnekleme yöntemlerinden ölçüt örneklemesi kullanılmıştır. Bu bağlamda alan yazın taraması yapılırken "LEGO MINDSTORMS", "LEGO MINDSTORMS NXT", "LEGO-LOGO", "FIRST LEGO League" ve "LEGO-LOGO uygulamaları" anahtar kelime olarak girilip arama gerçekleştirilmiş ve son beş yıl içerisinde yayınlanmış olan araştırmalar taranmıştır. Ulaşılabilen çalışmalardan eğitim-öğretim sürecine yönelik olmayanlar ve deneysel bir süreç içermeyenler araştırmaya dahil edilmemiştir. Bu şekilde gerçekleştirilen taramalar sonucunda 17 çalışma (Chambers, Carbona & Murray, 2008; Behrens ve diğ., 2010; Cruz-Martin ve diğ., 2012; Coxon, 2012; Çayır, 2010; Sullivan, 2008; Gomez-de-Gabriel, Mandow, Fernandez-Lozano & Garcia-Cerezo, 2011; Jewell, 2011; Jim, 2010; Nugent, Barker, Grandgenett & Adamchuk, 2010; Mojica, 2010; Kato, Hattori, Ivai & Morita, 2012; McWhorter, 2008; Ramli, Yunus & Ishak, 2011; Karp, Gale, Lowe, Medina & Beutlich, 2010; Kim & Jeon, 2009; Tse, 2009) araştırma kapsamında incelenmiştir. Doküman analizindeki ilk olarak çalışmalar belirlenen ölçütlere göre incelenmiş ve kodlamalar yapılmıştır. daha sonra kodlamalara ve ölçütlere bağlı olarak elde edilen bulgular temalaştırılmış ve yorumlanmıştır.

BULGULAR

Bu bölümde veriler, içerik analizi yapılırken göz önünde bulundurulan ölçütlere göre sıralanarak verilmiştir.

Çalışma amaçlarına ilişkin bulgular

Araştırma dahilinde incelenen araştırmaların amaçlarına ilişkin yapılan içerik analizi sonucu elde edilen temalar Tablo 1'de görülmektedir. İncelenen makaleler kapsamında LEGO MINDSTORMS ürünleri kullanılarak gerçekleştirilen çalışmaların büyük bir kısmı mühendislik alanı ile ilgili kavramların öğretimi içermektedir. Bu alanın dışında fen, teknoloji, matematik ve dil öğretimine ilişkin çalışmalar da bulunmaktadır. Ayrıca öğrencilerin üstü düzey öğrenme becerilerinin, bilimsel süreç becerilerinin, anlama becerilerinin ve yaratıcılıklarının geliştirilmesi ile ilgili uygulamaları da kapsamaktadır.

33. Tablo 1. Çalışma amaçlarına ilişkin temalar

Temalar
Kavram öğretimi gerçekleştirme
Öğrenmeyi test etme
Beceri geliştirme
Yarışma ile öğretim
Gerçek dünya görevlerini yerine getirme
İlgi ve motivasyonu sağlama/arttırma
Tutum geliştirme
Algıyı belirleme
Yaratıcılık geliştirme

Araştırmalarda genel olarak öğrenci motivasyonlarındaki, LEGO MINDSTORMS ürünlerine ilişkin algı ve tutumları, LEGO MINDSTORMS ürünleri ile gerçekleştirilen öğretim faaliyetlerine yönelik algı ve tutumları belirlemek, öğrencileri yarıştırarak öğretmek ve gerçek dünya görevlerinin LEGO MINDSTORMS ürünleri ile yerine getirmek ve bunun sonuçlarını incelemek amaçlanan diğer öğeler arasındadır.

Çalışma örneklemleri ve sürelerine ilişkin bulgular

Araştırmalarda gerçekleştirilen uygulamalar 40 saat ile 2 yıl arasındaki bir süreç aralığında gerçekleştirilmiştir. Genel olarak çalışmanın kapsamına bağlı olarak mühendislik ve fen alanlarında gerçekleştirilen çalışmalar 6-8 hafta

aralığında, gerçek dünya görevlerini yerine getirme ve teknoloji, matematik, dil öğretimi gibi alanlarda gerçekleştirilen uygulamalar ise 5-8 gün aralığında gerçekleştiği bulgularına ulaşılmıştır.

Araştırmalarda çalışılan örneklemlere ilişkin bilgiler Tablo 2'de verilmiştir.

34. Tablo 2. Çalışma örneklemlerinin yaş dağılımları

Yaş Aralığı	Kişi Sayısı
9-12	662
13-16	598
17 yaş ve üstü	253

Tablo 2'de de görüldüğü gibi en çok 9-12 yaş aralığındaki öğrencilerle çalışmalar gerçekleştirilmiştir. İncelenen 17 çalışmadan dokuzunda 9-12 yaş arasında öğrencilerle çalışılmıştır. Diğer çalışmalardan beşinde üniversite öğrencileriyle, üçüyle de 13-16 yaş arasındaki öğrencilerle gerçekleşmiştir. Özellikle 11-13 yaş aralığındaki öğrencilere yönelik olarak daha çok çalışma; 20 yaş ve üstündeki bireyler için ise daha az çalışma yapıldığı elde edilen bulgular arasındadır.

Çalışma sonuçlarına ilişkin bulgular

Araştırma sonuçlarına ilişkin bulgular Tablo 3'te verilmiştir.

35.

36.

37. Tablo 3. Çalışma sonuçlarına ilişkin temalar

Temalar
Ölçülen beceriler gelişti.
Öğrenme arttı.
LEGO MINDSTORMS etkili bir öğretim aracıdır.
Öğrenci başarısı arttı.
Teori ile pratik arasındaki öğrenme boşlukları (Learning gap) giderildi.
Öğrencilerin güven duyguları gelişti.
LEGO MINDSTORMS gerçek dünya uygulamaları için ideal bir araçtır.
Erkek öğrencilerin daha başarılı olduğu
Kullanımı kolay
Yaratıcılığı geliştirir.
Motivasyonları artırıcı
Ölçülen algılar gelişti.
Ölçülen tutumlar gelişti
Özgüveni artırdı

Araştırma kapsamında incelenen çalışmaların tamamında incelenen durumlara ilişkin pozitif sonuçlar elde edildiği görülmüştür. Kazandırılması hedeflenen becerilerin gelişmesi ve öğrenmelerin sağlanması incelenen çalışmalar arasında en sık rastlanılan sonuçlardır. Gelişen beceriler arasında programlama becerisi ve bilimsel süreç becerileri, mühendislik alanıyla ilgili beceriler, sosyal becerileri ve üst düzey eleştirel düşünme becerileri bulunmaktadır. Ayrıca, LEGO MINDSTORMS ürünlerinin kullanımının kolay olduğu ve öğrencilerin yaratıcılıklarının geliştirildiği, gerçek dünya uygulamalarının bu ürünlerle etkili bir şekilde yapılabildiği ve bu ürünler sayesinde öğrenci başarısının arttığı elde edilen bulgular arasındadır.

LEGO MINDSTORMS ürünleri ile derslerde anlatılan teorik bilgiler ile pratik yapılması arasında meydana gelen öğrenme boşluklarının (learning gap) giderilebileceği ve bu ürünlerin etkili bir öğretim aracı olduğunun yanı sıra,

öğrencilerin derse ve robotik aktivitelere yönelik ilgi ve motivasyonlarının arttığı, algı ve tutumlarının olumlu yönde geliştiği elde edilen diğer bulgulardır. Ayrıca öğrencilerin kendilerine ve akranlarına olan güvenlerinin arttığı, LEGO MINDSTORMS ürünleri ile akran öğretiminin ve işbirlikli öğrenmenin sağlanabildiği bulgularına da ulaşılmıştır.

SONUÇ VE TARTIŞMA

Araştırmada literatürde var olan ve son 5 yıl içerisinde LEGO MINDSTORMS ürünleri kullanılarak gerçekleştirilen çalışmalar taranmıştır. Rastlanılan çalışmalardan eğitsel amaçlı olan ve deneysel desenler kullanılarak gerçekleştirilen çalışmalar seçilmiştir. Bu doğrultuda seçilen 17 çalışma amacı, örneklemi, süresi ve sonucu içerik analizi yoluyla incelenmiştir.

Dünya genelinde LEGO MINDSTORMS NXT setleri kullanılarak birçok alanda çok sayıda eğitim-öğretim aktivitesi gerçekleştirilmektedir (Kim, 2011). Bu çalışmaların büyük bir kısmının hedeflerine ulaştığı ve başarıyla sonuçlandığı yapılan literatür taramasıyla görülebilmektedir. Ancak LEGO MINDSTORMS ürünleri ile gerçekleştirilmiş eğitim-öğretim aktivitelerinin önemi Türkiye açısından henüz tam olarak bilinemediği düşünülmektedir. Ayrıca eğitim ortamlarında bu ürünlerle gerçekleştirilerek yapılan çalışmaların sayısı oldukça azdır. Türkiye'deki durumun aksine uzunca bir süredir dünya genelinde birçok eğitim-öğretim kurumu LEGO-LOGO uygulamaları ile LEGO MINDSTORMS ürünlerini kullanarak eğitsel aktiviteler gerçekleştirmektedir. Bu sayede öğrenciler daha küçük yaşlardan itibaren birer bilim insanı, mühendis, sanatkar gibi düşünmeyi öğrenerek gelecekleri için önemli olan pek çok beceriyi daha önce kazanmaktadırlar (Çayır, 2010).

Yapılan içerik analizi sonuçlarına göre çalışmaların büyük bir kısmı ilkokul ve ortaokul öğrencilerine yöneliktir. Bu durum LEGO MINDSTORMS ürünlerinin genellikle çocuklara hitap eden oyuncaklar olmasından ve eğitsel açıdan bu ürünlerin en etkili olacağı kitlenin çocuklar olarak görülmesinden kaynaklandığı söylenebilir. Ayrıca çocuklar LEGO MINDSTORMS ürünleriyle çalışırken olumlu yönde motivasyona sahip olmaktadırlar (Karp, Gale, Lowe, Media & Beutlich, 2010). Lise ve üniversite düzeyinde yapılan çalışmalar daha çok mühendislik alanında gerçekleştirildiği görülmüştür.

İncelenen çalışmalarda görüldüğü gibi LEGO MINDSTORMS setleri ile yapılan çalışmalar genel olarak bir süreç gerektirmektedir. Analiz sonuçlarına göre bu süreç 40 saat gibi bir sürede olabileceği gibi 2 yıl gibi uzun bir süreç de gerektirebilmektedir. Ancak genel olarak bir LEGO MINDSTORMS ürünleri kullanılarak gerçekleştirilecek çalışmaların 5-8 hafta arası bir sürede yapılabileceği düşünülmektedir.

Çalışmaların büyük bir kısmı öğrencilerin öğrenmelerini sağlamayı ve amaçlanan becerileri geliştirmeyi amaçlayan çalışmalardır. Ayrıca motivasyon, tutum, algı ve ilgi gibi öğrenci özellikleri de incelenerek/geliştirilmeye çalışılarak daha etkili öğrenme ortamları sağlanmaya çalışılmıştır. Araştırma sonuçlarının tamamında olumlu olumlu sonuçlar alındığı görülmüştür. LEGO MINDSTORMS ürünleriyle gerçekleştirilen LEGO-LOGO ortamları öğrenciler için konforlu, eğlenceli ve kendilerini rahat hissettikleri bir ortamlardır (Jarvinen, 1998).

Eğitsel bir araç olarak LEGO-LOGO uygulamaları öğrencilerin bilimsel prensipleri daha iyi anlamalarını sağlamak için önemli bir rol üstlenmektedir (Chambers, Carbona ve Murray, 2008). LEGO MINDSTORMS ürünleri ile büyük oranda mühendislik, fen, matematik ve teknoloji alanlarında çalışmalar yapılmıştır. Bu alanlar uygulamaya dönük alanlar olduğu için öğrencilerin LEGO MINDSTORMS ürünlerini kullanarak bu alanlar kapsamında edindikleri teorik bilgileri uygulamaya geçirerek öğrenmelerini daha kalıcı ve etkili hale getirilebilirler. Hamada ve Sato tarafından (2011) gerçekleştirilen çalışmada öğrencilerin robot hareketlerini gözleyerek öğrenebildikleri sonucuna ulaşılmıştır. Gerçekleştirilen başka bir çalışmada da öğrenme fırsatlarını artırmak için LEGO-LOGO temelli uygulamalar geliştirilebileceği öne sürülmüştür (Aufderheide, Krybus, & Witkowski, 2012). Öğrenciler bilgisayar programcılığı, mekanik tasarım, fizik, matematik, hareket, çevresel faktörler ve işbirlikli grup ortamında problem çözme konularında yaratıcıklarını keşfedebilmektedirler (Chambers, Carbona ve Rex, 2007). Ayrıca LEGO MINDSTORMS NXT ürünleri gibi robotik öğrenme ortamları aktif öğrenme ortamı sağlamaktadır (Ramli, Yunus & Ishak, 2011). LEGO-LOGO uygulamaları ile öğrenciler kendi öğrenmelerinden sorumlu hale gelmektedirler ve kendi kendilerine öğreneceklerinden dolayı daha anlamlı öğrenmeler sağlanmaktadır (Hiltunen ve Jarvinen, 2000). Bu bağlamda incelenen çalışmalarda ulaşılan LEGO MIDSTORMS ürünlerinin etkili bir öğrenme aracı olduğu sonucu bu ürünlerin eğitim-öğretim sürecinde kullanılması hususundaki önemi göstermektedir.

LEGO MINDSTORMS uygulamaları öğrencilerin anlamakta güçlük çektikleri kavramları zihinlerinde daha kolay yapılandırmalarını sağlamaktadır (Karamustafaoğlu, Aydın, ve Özmen, 2005; Çayır, 2010). Bu uygulamalar vasıtasıyla öğrenciler takım çalışması ile iletişim becerilerini geliştirme fırsatına sahiptir ve daha bağımsız, kendine güvenen öğrenenler olmaya başlamaktadırlar (Church, Ford, Perova, & Rogers, 2010). Ayrıca bu ortamlar ile

öğrencilerin hem kendi kendilerine ve kendi öğrenme hızlarında öğrenmeleri hem de grup çalışmasıyla öğrenmeleri açısından etkili ortamlardır (Akçay, Aydoğdu, Yıldırım, ve Şensoy, 2005).

Lindh ve Holgersson tarafından (2007) yapılan araştırmaya göre problem çözmeye yönelik etkinlikleri seven öğrencilerin başarılarında artma olduğu görülmüştür. Bu bakımdan LEGO-LOGO uygulamalarının eğitim-öğretim ortamlarında kullanılmasının öğrencilerin başarılarını da olumlu yönde etkileyeceği söylenebilir. Ayrıca, bu etkinlikler sayesinde ortaya çıkan öğrenme ortamları ile de öğrencilerin yaratıcıklarının gelişmesine olumlu yönde etkilenmektedir (İşman, 2003). Öğretmenler, LEGO MINDSTORM NXT robotik setleri diğer LEGO setleriyle birlikte kullanarak, sınıftaki öğrencilerin bireysel ihtiyaçlarına göre öğretimi planlayabilme imkanına sahiptirler (Gregory & Hammerman, 2008).

LEGO MINDSTORMS ürünleri kullanılarak gerçekleştirilecek yarışma faaliyetleri ile de öğrencilerin öğrenmeleri, becerileri geliştirmeleri sağlanabilir. Özellikle FIRST LEGO ligi (FLL) olarak isimlendirilen ve LEGO MINDSTORM NXT setleri ile gerçekleştirilen yarışma bu hususta büyük öneme sahip olduğu düşünülmektedir. Türkiye'de eğitim-öğretim ortamlarında gerçekleştirilen LEGO MINDSTORMS uygulamalarının azlığından dolayı bu yarışmanın gerçekleştirilmesi ve yarışmaya etkin katılımların sağlanması öğrencilerin gelişimlerine katkılar sağlayacağından ötürü önem arz ettiğine inanılmaktadır.

Öğrenme fırsatlarını artırmak için LEGO MINDSTORMS seti temelli uygulamalar geliştirilebilir (Aufderheide, Krybus, & Witkowski, 2012). Dünyada çok yaygın kullanımı ve birçok avantajı olmasına karşın eğitim-öğretim ortamlarında gerçekleştirilen LEGO MINDSTORMS uygulamaları ülkemizde henüz olması gerektiği seviyeye ulaşamamıştır. Araştırma kapsamında seçilen 17 çalışmadan sadece bir tanesi Türkiye'de gerçekleştirilmiş olması bu durumu desteklemektedir. Bu sebepten dolayı okullarda LEGO MINDSTORMS ürünleri ile gerçekleştirilecek uygulamalara gerekli olanakların sağlanması ve desteklenmesi öğrencilerin bilişsel ve motor becerilerinin olumlu bir şekilde gelişmesi sağlanması açısından önerilmektedir.

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Kaynakça

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Loneliness and mobile phone

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Abstract

The aim of this study is to analyse loneliness of university students according to mobile phone addiction, daily phone use time and gender. Survey model is used for this research. To collect data; personel information form, problematic mobile phone use scale, and UCLA-loneliness scale were applied for 527 students who are from different Departments of Faculty of Education at Fırat University. To analyse these data; correlation, t test, one way variance (ANOVA) analysis and Scheffe test were used. Results revealed that loneliness was significantly associated with problematic mobile phone use (r=.35) Furthermore, there were significant differences between loneliness and independent variables (gender, mobile phone addiction and daily phone use time). The results of the study were discussed together with the results of different studies and suggestions were made.

Keywords: loneliness, mobile phone, mobile phone addiction

INTRODUCTION

Loneliness is one of the most common feelings that individulas could experience in their lives. Loneliness is a negative emotion that comes about through a discrepancy between desired and achieved levels of social contact (Perlman & Peplau, 1981). According to Lopata (1969), loneliness is an emotion experienced by an individual who wishes for a level of contact unlike from the one currently encountered. The multiplicity of social relations does not matter but the quality of them is important. However, having more social relations may not always derive individuals a profit in social life**.** According to Masi, Chen, Hawkley, & Cacioppo (2011), an individual may be lonely in a crowd or socially contented while alone. When studies are analysed on loneliness, it is seen that loneliness is associated with some variables. Loneliness is related to the variables of depression (Anderson, & Arnoult, 1985; Brage,Meredith, &Woodward, 1993; Ceyhan, & Ceyhan, 2011; Nangle, Erdley, Newman, Mason, & Carpenter, 2003; Rotenberg, & Flood, 1999; Ünal, & Bilge, 2005; Wang, Yuen, & Slaney, 2009; Wei, Russell, & Zakalik, 2005; Yaacob, Juhari,Talib,&Uba, 2009), stress (Yaacob, Juhari,Talib,&Uba, 2009), internet addiction (Durak-Batıgün,&Hasta, 2010; Esen, & Siyez, 2011), shyness (Anderson,&Arnoult, 1985; Erözkan, 2009; Baş,2010), alexithymia (Koçak, 2003; Özdemir, Güreş, &Güreş, 2011; Qualter, Quinton, Wagner, & Brown, 2009), self-esteem (Brage, Meredith, & Woodward, 1993; Güloğlu, & Karaırmak, 2010; Sübaşı, 2007; Yaacob, Juhari, Talib, &Uba, 2009), hopelessness (Chang, Sanna, Hirsch,&Jeglic, 2010; Kırımoğlu, Filazoğlu-Çokluk, & Yıldırım, 2010; Pehlivan, Ovayolu, Ovayolu, Sevinç, & Camci, 2012; Ruchkin, Eisemann, & Hägglöf, 1999), social anxiety (Johnson, Lavoie,&Mahoney, 2001; Sübaşı, 2007). In recent years, the other variable which has studied together with loneliness is mobile phone addiction. (Jin,&Park, 2012; Reid,&Reid, 2007; Şar, 2013; Takao, Takahashi,& Kitamura, 2009; Wei,&Lo, 2006).

In addition to being a means of communication and having rapidly spreading use around the world, mobile phones, in particular the new generation of smart mobile phones, are technological tools due to offering many functions, such as providing short message service (SMS) to users, taking photos, playing games, using the Internet, connecting to social networks, providing navigation services, having a video player functionality, watching TV and shopping. Arslan and Unal (2013) indicated in their study that Faculty of Education students have widely used their mobile phones for the purpose of talking, messages, MP3/music, game, photo / camera and the Internet. They also remarked that students have taken quite a lot of time to use their mobile phones. Considering the facilities that a mobile phone provides to individuals as mentioned above, these facilities can be handled at the same time as the needs of individuals. While normal use of mobile phones is to restrict individuals' use of mobile phones in

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accordance with their needs, problematic use of mobile phones occurs due to the fact that individuals aren't able to restrict their use in accordance with the needs. The findings of some studies have indicated that problematic use of mobile phones has negative effects.. Ha, Chin, Park, Ryu ve Yu (2008) found that the excessive user group experienced more depressive symptoms, difficulty in expression of emotion than the comparison group did. Furthermore, excessive user group had higher interpersonal anxiety, lower self-esteem, higher score on the Internet Addiction Scale (IAS) than the comparison group. In Şar's (2013) study, the problematic phone use increases as talking time increases, however increase of talking time decreases loneliness level in teenagers. Jin and Park (2012) found that more face-to-face interactions were associated with lower levels of loneliness; however, more cell phone calling was associated with greater loneliness. Reid and Reid (2007) revealed that lonely people preferred calls and rated text such as short message service (SMS, or text messaging) as a less intimate method of contact. According to Takao, et al. (2009) it is conceivable that lonely people are eager to maintain contact with their peers through frequent calls so as to fulfill their loneliness. We therefore would expect that higher or problematic phone use is predicted by loneliness.

Mobile phones offer many possibilities presented by the Internet and computers. While computers and the Internet may cause loneliness of individuals, may mobile phone cause loneliness of individuals? In this context the purpose of the study is to examine loneliness of university students in terms of daily use of mobile phone, mobile phone addiction and gender.

2. METHOD

2.1. Participants
The sample group of this study is 527 students from different Departments of Faculty of Education at Fırat University. 372 (%70,5) of the students are female, 155 (%29,5) of them are male, avarage age of students is 20,8 (Sd:2,8). All of participants had mobile phone (%100).

2.2. Instruments

UCLA Loneliness Scale (UCLA-LS): UCLA Loneliness Scale was developed by Russell, Peplau and Cutrona (1980); the validity and reliability of its adapted version is tested by Demir (1989). The scale measures the overall feelings of loneliness in individuals through a self-report Likert-type scale comprised of 20 items. 10 of these items are positive statements and the rest are negative statements. The scale reports range from 20 to 80 where higher scores mean a higher degree of feelings of loneliness. Reliability of the scale is reported as .96. In the present study, the internal consistency coefficient of the scale was computed as .85.

Problematic Mobile Phone Use Scale (PMPUS): The Problematic Mobile Phone Use Scale developed by Bianchi and Phillips (2005) was adapted to Turkish by Şar and Işıklar (2012). In the frame of adaptation works, the scale items were primarily translated into Turkish and then the opinions of nine specialists were taken, and the translation was improved in line with those opinions. The English and Turkish forms generated were filled out by 30 undergraduate students having a good command of English with 2-week intervals. The correlation value between English and Turkish forms was calculated as 0,78 and both scales were accepted equal. The scale was applied to 300 students for validity – reliability studies. For Turkish form of the scale, Cronbach Alpha coefficient for internal consistency was calculated as 0,94 and reliability co-efficient as 0,88. As a result of these values obtained, Turkish form of the scale was accepted as reliable and valid. The scores that may be gotten over a 5-point likert type scale with 27 questions vary between 27 and 135. As the scores that are gotten over the scale get higher, the mobile phone addiction increases.

2.3. Procedure

Survey model is used for this research and to collect data; personal information form, PMPUS, and UCLA-LS were applied to 527 students from different Departments of Faculty of Education at Fırat University. PMPUS was categorised by using mean and standard deviation as addiction group (M+1Sd) and non addiction group (M-1Sd). Correlation test, t test and one way variance (ANOVA) were used in this study. Furthermore, to find out the differences among groups, Scheffe test was used.

3.FINDINGS

Table 1. Means, standard deviations, correlations, and alpha reliabilities for variables.

	1	2	Cronbach's Alpha
1. UCLA-LS	1		**.85**
2. MPA	.35*	1	**.95**
Mean	37,2	59,2	
Standart Deviation	9,7	21,6	

*p<.01

As seen in Table-1, the results indicated that there is a positive moderately relationship between mobile phone addcition and loneliness (r=.35).

Table 2. Means, standart deviations and t values of loneliness of university students according to gender

	Gender					
	Female (n=372)		Male (n=155)		t	p
	$\overline{X}$	Sd	$\overline{X}$	Sd		
UCLA-LS	35,8	9,4	40,6	9,4	-5,311	.000*

*p<.05

As seen in Table-2, there is a significant difference between males and females in relation to loneliness (t(525)=-5,311; p<.05). When these results analysed, it is seen that loneliness of men ($\overline{X}$ = 40,6, Sd=9,4) is higher than the women ($\overline{X}$ =35,8, Sd=9,4).

Table 3. Means, standart deviations and F values of loneliness of university students according to daily phone use time

	Daily use												
	<1 hour[A] n=139		1-3[B] n=245		4-6[C] n=97		7-9[D] n=22		10≥[E] n=24		F	p	Differences
	$\overline{X}$	Sd	$\overline{X}$	Sd	$\overline{X}$	Sd	$\overline{X}$	Sd	$\overline{X}$	Sd			E>A, D>A C>A, B>A
UCLA-LS	34,9	9,3	37,2	9,7	39,1	10,1	39,6	10,2	40,9	7,3	4,072	.003*	

*p<.05

As seen in Table-3, the result showed that significant difference was found between loneliness and daily phone use time(F(4-522)= 4,072; p<.05). Scheffe test was performed to determine the groups which caused difference. According to this significant difference, students who have mobile phone use 10 or over ten hours, 7-9 hours, 4-6 hours and 1-3 hours were found to have more loneliness score than those who have mobile phone use less than 1 hour per day.

Table 4. Means, standart deviations and t values of loneliness of university students according to addiction   group   and   non addictiction group

	Mobile Phone Addiction					
	Addictin group (n=93; %17,6)		Non addiction group (n=77; %14,6)		t	p
	$\overline{X}$	Sd	$\overline{X}$	Sd		
UCLA-LS	39,5	9,1	35,7	11,4	-2,399	.018*

*p<.05

As seen in Table-4, there is a significant difference between addict and non addict in relation to loneliness (t(168)=-2,399; p<.05). When these results analysed, it is seen that loneliness of addicted students ($\overline{X}$ = 39,5, Sd=9,1) is higher than the non addicted ($\overline{X}$ =35,7, Sd=11,4).

4. Discussion

Loneliness of university students was examined in the current study in terms of mobile phone addiction, daily use of mobile phone and gender. When literature is analysed, the literature has revealed that studies on mobile phone addiction do not have too much background. In addition, studies on mobile phone addiction related to loneliness are quite a few. In this context, this study may be important for the literature.

When loneliness of university students was examined according to gender, loneliness scores of male($\bar{x}$ =40,6, Sd=9,4) students were found higher than the scores of female ($\bar{x}$ =35,8, Sd=9,4) students. The results of some studies are similar to the results obtained from this study (Erözkan, 2004; Karaoğlu, Avşaroğlu, & Deniz, 2009; Wiseman, Guttfreund, & Lurie, 1995). In addition, some studies revealed that loneliness scores of female students were higher than the scores of male students (Kutlu, 2005). Some studies also indicated that there were no significant differences between the loneliness scores of male and female students (Baş, 2010; Gürsoy, & Bıçakçı, 2006; Sezer, Tekin, & Aldemir, 2011).

According to another finding of the study, there was a significant difference between loneliness of university students and daily use of mobile phone (F(4-522)= 4,072, p<.05). According to this significant difference, students who have mobile phone use 10 or over ten hours, 7-9 hours, 4-6 hours and 1-3 hours were found to have more loneliness score than those who have mobile phone use less than 1 hour per day. Şar (2013) found that there was a significant difference between daily phone use time and loneliness. According to Şar's (2013) study, the issue of problematic phone use increases in parallel with increasing time of speaking on the phone, but the loneliness decreases.In another study, Jin and Park (2012) found that more cell phone calling was associated with greater loneliness. Pierce (2009) found that On average, 35–40% of teens reported using cell phones/text messaging and online social sites between 1 and 4 h daily, 24% reported using IMs 1–4 h daily and only 8% reported using email between 1 and 4 h daily. Females tended to use cell phones/text messaging and online social sites more so than did males. Hong, Chiu and Huang (2012) found that there was medium positive correlation between mobile phone addiction and mobile phone usage behavior.

According to the results obtained from the study, 17.6% of university students participated in the research is addicted to mobile phone. There was a significant difference between loneliness of university students and mobile phone addiction (t(168)=-2,399; p<.05). Loneliness scores of students who have been addicted to mobile phone ($\bar{x}$ =39,5, Sd=9,1) were found to be higher than those of non-addicts ($\bar{x}$ =35,7, Sd=11,4).This result supported Kraut and his collegues' claim. Kraut et al. (1998) had claimed that pathological use of the new technologies reduces the individual's social implication in the real world and, as a consequence, his or her psychological well-being, because it produces the kind of isolation, loneliness and depression the individual wants to ease by connecting to the Internet. Chen's (2006) result indicated heavy mobile phone users meet their friends less. Ha et al., (2008) found that the excessive user group experienced difficulty in expression of emotion than the comparison group did. Furthermore, excessive user group had higher interpersonal anxiety than the comparison group.

Considering the features of mobile phones, especially smart mobile phones, recently introduced, it is seen that these kinds of mobile phones are not only manufactured to provide communication. These mobile phones include many features presented by the Internet and computers. In this context mobile phones offer a great opportunity, especially for young people who use the Internet. Individuals who have such a great opportunity can interact with mobile phones almost everywhere (at home, at school, on the bus, on the street, in the café, in the canteen, in bed, or even in the toilet). Individuals who have engaged in mobile phones constantly may be exposed to a decrease in the time allocated to other social relations, especially relations based on face-to-face interaction. This situation may also make individuals lonely. Although mobile phones and the Internet are used as communication tools, excessive use of these technological tools causes individuals to become addicted. Even communication tools may cause non-communication situations. Individuals who are under these circumstances can be supported to receive the help of individual or group counseling in order to make use of such technological tools in accordance with their needs.

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Making the Teacher Relevant and Effective in a Technology-Led Teaching and Learning Environment

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Abstract

Growing use of technology in the process of teaching and learning has made the role of teacher subservient if not irrelevant. The teacher has been reduced to the level of an informer and a facilitator. Added to these are the commercial trends which have made the teacher a paid service provider being compensated for his efforts; thus making the noble profession of teaching a commercial enterprise. It has also relegated the traditional function of the teacher as a guide and a mentor, influencing and shaping the lives of students, building their character on higher moral principles. The increasing use of technology has depersonalized the whole process of teaching and learning, taking away the moral high ground and pivotal position the teacher always held. This is a challenge faced by the teachers in a technology-intensive environment. This paper aims at analyzing these factors with a view to exploring ways to make the teacher relevant and effective in a technology-led teaching and learning environment.

Keywords: Teaching technology; teaching and learning; character building; teacher leadership

1. Introduction

Technology has greatly transformed the dynamics of teaching and learning. It is restructuring education, teaching, and learning, in ways that impact everything (Minocha, Schroeder, & Schneider, 2011). It has not only changed the process of education, it has also affected the teacher-taught relationship and the value system governing these relations. Recent studies on the impact of technology on students, conducted by Pew Research Center and Vicky Rideout, show that "technology is deeply altering how students learn," that digital technology hampers the attention spans of students and their "ability to persevere in the face of challenging tasks" and also highlight that "technology was as much a solution as a problem." (Richtel, 2012). The real challenge is the fact that technology has almost relegated education that it was envisaged to support (Schacter, 1999). The teacher is getting marginalized in the process and is under tremendous pressure to outperform and remain relevant to the students excited and allured by technology surrogates. While technology is satisfying the increasing appetite for new information, it has serious limitations in attainment of higher levels of learning in cognitive, affective and psychomotor domains, not to mention moral uplift of students and acquisition of tacit knowledge. It can only be possible if we keep technology in a subservient position in the process of education and help the teacher regain the leadership in the changing dynamics of education in the new millennium.

2. Impact of Technology on Education

Traditionally, the teacher was a guru and a guide, controlling the entire process of teaching and learning. The students were invariably passive recipients of information provided by the teacher who also determined the pace and direction of learning. The students would ask questions and seek clarifications but seldom challenged his authority or leadership. However, there has been a paradigm shift in the process for teaching and learning with the introduction of applied disciplines, and more so with the advent of technology, allowing greater access to information and sources of knowledge. "The instructor is no longer the king of the classroom but rather a middleman between information and student." On the other hand, "the student has now become an active informational architect, procuring, rearranging and displaying information, instead of a passive sponge soaking up knowledge." (loraevanousk, 2011)

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Technology has been used in education in four different ways: as a part of the curriculum, for delivery of teaching contents, as an aid to instructions and as a tool to enrich learning experience. Its role is more pronounced in student-centered learning or constructivist approach wherein the "students are active participants in their learning; they learn at their own pace and use their own strategies; they are more intrinsically than extrinsically motivated; learning is more individualized than standardized". (Walle, Virak, Cnudde, & Mono). It includes project-based learning, problem-based learning and inquiry-based learning. Here, the teacher is made to take a back seat and become a facilitator and a collaborator. This methodology seems to work better with problem solving and project work. Although "facilitation" can be a form of leadership in certain pedagogical models where the teacher remains on the sidelines and directs the process of learning, allowing greater freedom to the students, it falls short of the leading role of the teacher.

The combination of education and technology has created "more stimulating learning environment" and new possibilities to make the process of education more innovative and enjoyable. There have been numerous studies, mostly at school level, to ascertain the impact of technology on education but few are conclusive and definite. Some important conclusions are as under: (loraevanousk, 2011)

- Easy access to information.
- Greater interest in learning.
- Increased retention of information.
- Robust information storage.
- Better presentation of information.
- Teaching made interactive.
- Knowledge sharing made easy.

Whereas there are many admirers of technology who are simply overawed by its range and reach, there is no dearth of dissenting voices, such as Clifford Stoll, the author of Silicon Snake Oil (1996) who talks about "depersonalization of education and the substitution of 'real people' with technology". He strongly urges that "students need to be interacting more frequently with teachers and other students--not technology". (Stoll, 1996)

Although technology can be used effectively in both pedagogical practices—teacher-centered and student-centered--there is no hard evidence to favor one against the other. Moreover, most of the studies are school-based; thus cannot be taken as authority for all levels and types of education. John Hattie's 2009 publication Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement, is based on the effects of a large range of strategies for learning. Its findings are somewhat unexpected for many and merit reconsideration of our approaches to teaching. He places teacher (Expert teacher against experience teacher and a novice) at the centre stage of what he calls "active" teaching. It is excellence in teachers that make the greatest differences. Among the top fourteen influences, as many as eleven are related to the teacher, with greatest size of influence. (Hattie, 2003)

There are others who talks about Digital Nativism, Digital Delusion, and Digital Deprivation (McKenzie, 2007), and "clutter of online information, the social media hype, the overwhelming technologies, the misguidance and misinformation online" (Buehler, 2013). While Buehler talks about seven deadly delusions in the domain of business, McKenzie forcefully refutes the technology Pied Pipers, like Prensky (who advocates "digital nirvana" of video-game learning) and warns of digital deprivation due to lack of contact with the real world: "A Digital Waste Land is a poor substitute for the rich flavors, smells and touches of the real world. Leading psychologists have signaled their concern in reports like Fool's Gold. FaceBook, MySpace and Second Life are poor substitutes for face to face communities and the playground." (McKenzie, 2007)

Technology has travelled a long distance and opened new avenues of learning. From Computer Based Teaching (CBT) and Computer-Aided Communication (CMC) to E-learning and Web-Based Training (WBT), education technology has helped create innovating learning environment. Its singular achievement has been in the field of distance learning in which several people can learn simultaneously from different locations. However, its success largely depends on good student-teacher interaction, proper use of technology, meticulous planning and effective management. Thus, technology may work wonders but may not be able to substitute the teacher and his ability to guide the students and equip them with knowledge, skills and values to face the challenges of the real world.

While technology is a sharp and powerful tool, its effectiveness depends on the ability of the teacher to determine the needs of the students, design and develop the contents and make strategies to deliver them effectively.

3. The Challenges

The dynamic environment of technology poses new challenges for teachers to maintain academic ascendancy over the students and master teaching technologies as well. Mastery over the subject or professional knowledge and capacity to absorb change can still make the teacher the leader of educational experience. His ability to transmit knowledge and culture can keep him relevant, provided he keeps their interest and curiosity alive. Some of the challenges are discussed hereunder:

3.1 Digital Divide

There are two types of Digital Divide: Technology Divide and Generation Divide. Both the divides impact the teaching and learning processes. The teacher has to overcome and bridge these divides to remain effective. While "Technology Divide" is beyond the control of the teacher, the "Generation Divide" is manageable at the individual level.

 "A digital divide is an economic inequality between groups, broadly construed, in terms of access to, use of, or knowledge of information and communication technologies (ICT)." (Norris, 2003) It is closely linked with social disparities and economic inequalities. It is a challenge for the teachers teaching in institutions which attract students from diverse communities and social backgrounds. What the teacher can do is devise ways and means to ensure that digital inequalities do not put socially dispossessed students at a disadvantage against those who have greater access to technology.

The teachers and students invariably belong to different generations with separate mind-sets, attitudes, work ethics, etc. We know of Generations X, Y and Z. The generation gaps do pose new challenges but may not make the older generation irrelevant as suggested by enthusiasts like Prensky, who speaks of Digital Nativism and terms the pre-iPod generation as Digital Immigrants. (McKenzie, 2007) Barring such extreme views, the fast-moving technology will continue to challenge generations of teachers.

3.2 Personal Learning Environments (PLE) and Self-Regulated Learning (SRL)

PLE represents a paradigm shift in teaching and learning (Elliott, 2010). In PLE structures, "the learner constructs knowledge socially with the help of knowledgeable peer mentors and teachers"(McLoughlin & Lee, 2010). It is particularly relevant to on-line and distance learning scenarios. However, the role and competencies of the teacher are considered critical components of PLE design, delivery and management, including effective use of technology (Shaikh & Khoja, 2012). Recent studies in this area reassert the importance of teacher's role in the process; especially in cases where learners do not get started despite PLE and find it difficult to attain learning objectives. Likewise, success of SRL also depends of the competence of the teacher.

3.3 Transmission of Cultural heritage

Transmission of cultural heritage and value system always formed part of the philosophy and process of education. Cultural deprivation of a single child was considered "irreparable loss to all humanity". (Smith, 1979) Its ownership rested with the schools (state) and teachers. During the 20th century, there rose many strong voices against "indoctrination" of the youth. Questions were raised over types of values to be taught, when to be taught and where to be taught. It became difficult in multi-cultural societies that adhered to separate sets of values. However, there are exponents of universal or living values who want them to be included in the curriculum. In higher education sector, where education is less encumbered by moral trappings, because of built-in freedom, institutions still inculcate and value intellectual honesty, professional ethics, tolerance, team spirit, etc, to prepare their graduates for competitive job markets. Teaching of "global citizenship" and additional foreign languages is encouraged. All these activities demand an active involvement of teachers and educators, in line with Greek word Pedagogy which means "to lead the child".

3.4 Transmission of Tacit Knowledge

The term "tacit knowledge" was introduced by the Hungarian polymath Michael Polanyi with the assertion that "we can know more than we can tell." (Polanyi, 1966) . It is the inherent knowledge which is deeply ingrained in individuals (and organizations with such individuals) and is difficult to articulate and transmit. It has acquired significance with the studies in the field of Knowledge Management, especially pertaining to processes and practices in business and industry, where "know-how" plays an important role (Nonaka & Takeuchi, 1995). In the field of teaching and learning, tacit knowledge, or insight and experience of teachers, especially in the domains of processes and skills, play an important role. In such cases, the teachers being the repositories of tacit knowledge become key players because acquisition of tacit knowledge lies in some form of shared experience.

3.5 Teacher Training

There have been two main philosophies of teacher education: teacher-based, in which teachers are trained to be experts in knowledge or exceptionally well-educated, where effectiveness depends on their "ability to interest, motivate and instruct"; and competency-based to prepare him as a guide in the learning process to engage the students in discovery. (Jalalzai, 1993) With ever-increasing role of technology, teacher training is getting more and more complex and challenging. Besides learning educational philosophies, pedagogical theories and practices, the teacher has to learn the use of technology in teaching strategies--most importantly, getting feedback and modifying the design and measurement of learning objectives. Thus, technology-related training is a must for new generations of teachers. Added emphasis on competencies has weakened the focus on academic excellence and ability of the teacher to mold minds and characters.

3.6 Caring Touch

Computer-based and web-based learning has depersonalized the process of education, where teacher and students become virtual entities, with limited human interaction or considerations. Whereas electronic linkages are expanding, human bonds are weakening. "Most strategies focus on goals and outcomes; very few focus on real student and his problems as a person."(Harrison & Killion, 2007). Students frequently need teacher's attention for positive reinforcement, guidance, counseling and direction. Jeremy Boggs talks of three roles for teachers using technology: Instructor as a Role Model, Instructor as Tech Support and Instructor as Cheerleader. Of these, he terms cheerleader as the most important for positive reinforcement in higher education. (Boggs, 2009) Success of a teaching strategy thus lies in teacher's ability to intervene and lend a personal touch to personalize the process. That is a challenge for teachers working with technology-driven processes.

4. Analysis

Technology has transformed education; and has the potential to influence it even more in the foreseeable future. Regardless of his position as "a sage on the stage" or "a guide on the side," his role still remains important if we consider the old maxim: "student learning depends first, last, and always on the quality of the teachers." While it opens new opportunities for students, it gives the teacher new communication tools and a wider reach. It can have "real impact on education if used intelligently with effective teaching practice." (Harrison & Killion, 2007). Surprisingly, instead of sidelining the teacher, new researches in teaching strategies tend to place him at or around the centre stage to manage complexities of the evolving scenarios and learning environments.

4.1 Teacher Competencies in Technology-led Environment

Studies in PLE perspective have identified the teacher roles and competencies as critical components (Minocha et al., 2011). Since the process of teaching is dynamic, the teacher has to excel in these competencies to deal with the changes effectively (Shaikh & Khoja, 2012). Many studies, such as Global Teacher, 2010, see teacher as a role model, leader, manager and change agent. Based on these studies, Sheikh and Khoja (2012) have summarized these competencies as follows:

- **Planning and Design (Designing/Planning Role)**. Roles identified: planner, designer, instructional/learning designer, programmer.

- **Instruction and Learning (Instructive/Cognitive Role)**. Roles identified: lecturer/instructor, demonstrator, theorizer, master artist, learner, critic, agitator, motivator, mentor.
- **Communication and Interaction (Social Role)**. Roles identified: coordinator, facilitator, partner, connector/communicator, moderator, convener, salesperson, collaborator, participant, collector.
- **Management and Administration (Managerial Role).** Roles identified: leader/change agent, administrative manager/bureaucrat, curator, coach, guide, concierge, goal setter, evaluator.
- **Use of Technology (Technologist Role).** Roles identified: alchemist, sharer, network administrator, technician, technologist, media publisher/editor.

Educational potential of wikis is being explored and developed for collective cognition. There is a role and space for the teacher in these initiatives as well:

When learners and teachers engage in collective cognition and across online as well as offline contexts, multiple activity structures come into play. For teachers, the complexity of the learning environment increases dramatically. At the same time, the practices we have examined point to the need for a teacher's space in the wiki. This space is not a fixed position in a structure but is an activity space in which wiki features make it possible for the teacher to trigger, stimulate, monitor and guide online as well as offline activities conducive to learning. How to develop such activity spaces is a question that guides our continued research on the educational use of wikis. (Lund & Smørdal, 2006)

4.2 Student as Apprentice

There are many domains of knowledge and professions where students learn best as apprentices, such as medicine. Likewise, there are many skill-based domains which involve "know-how" or "technique" more than the theoretical knowledge, such as sports and arts, where guided practice leads to higher attainments. Much talked about web-based teaching methodologies are not relevant at all in many areas. So, while talking about the teacher, we should not limit teacher's role and scope of activities to classroom environment of a particular level of education only, or divorce him from real-life experiences. Moreover, if learning is based on experience, vicarious experience and aided discovery can be more rewarding.

4.3 Teacher as a Powerful Influence

". . . Excellence in teaching is the single most powerful influence on achievement." Based on numerous studies, John Hatties has drawn a set of possible influences on the achievements of students. Major influences, with highest effect size, are in the hands of the teacher. Thus, excellence of teacher is the most powerful influence, which makes the greatest difference as seen below: (Hattie, 2003)

Table 1 - Possible Influences on the Achievement of Students

Influence	Effect	Source of Influence
Feedback	1.13	Teacher
Students' prior cognitive ability	1.04	Student
Instructional quality	1.00	Teacher
Direct instruction	.82	Teacher
Remediation/feedback	.65	Teacher
Students' disposition to learn	.61	Student
Class environment	.56	Teacher
Challenge of Goals	.52	Teacher
Peer tutoring	.50	Teacher
Mastery learning	.50	Teacher
Parent involvement	.46	Home
Homework	.43	Teacher
Teacher Style	.42	Teacher
Questioning	.41	Teacher

4.4 Teacher-Student Relationship

Rudolf Steiner (1861-1925) considered sympathetic relationship between the teacher and the taught as the secret of effective education, while Giovanni Gentile believed in a spiritual relationship between the two. (Smith, 1979) It is a neglected area in modern teaching-learning strategies, especially is the affective domain. Technology has dangerously weakened the student-teacher relationship. Teachers tend to ignore the significance of affective attributes and a relationship based on mutual respect. Expert teachers, on the other hand, treat their students as persons and show care and commitment to build a human bond with them. "By having such respect, they can recognize possible barriers to learning and can seek ways to overcome these barriers." (Hattie, 2003) In Germany, the Supervisor is called "Doktor-Vater" or "Doktor-Mutter" meaning father or mother. The very title lends a personal touch to teacher-student relationship, which "is the foundation of effective instruction". (Lickona, 2004)

4.5 Excellence of Character

Aristotle talked about two kinds of human excellences: excellences of thought and excellences of character. Many educators from ancient, medieval and modern times have supported the need of character building and the role of teacher in shaping that character. Technology has given us amazing access to information and ideas, thus, facilitating excellences of thought. However, the flux of information carries distortions and misrepresentations, besides socially and morally repugnant material, which has created new moral challenges. While there is a need to guide the students to sift facts from fabrication and safely navigate through clutter and chaos, there is a need to strengthen him morally and spiritually to withstand the new hazards brought in by technology. There is none other than the teacher who can help the students through these turbulent times. Neil Hawkes espouses value-based education which "creates positive culture for teaching and learning that is so vital for successful education in the 21st century." (Hawkes, 2012) Thomas Lickona says that character and academics should be thought simultaneously. (Lickona, 2004)

5. Conclusion

Education is a very comprehensive and purposeful activity, which includes "all the elements of experience—cognitive, contactive and affective. (Saiyidain, 1992) It involves mental, moral and spiritual uplift of students or a desirable transformation. It cannot be restricted to passing on information or knowledge only. More than knowledge, it is the understanding of principles and application of knowledge which is important. Superior or expert teachers exhibit genuine interest in their students and lead them through vicarious experience and guided discovery or inquiry. They engage them intellectually, emotionally and spiritually, and mold their character by inculcating universal values. They guide them to excellence through aesthetic education creating opportunities for experiencing beauty in its diverse forms and manifestations.

Present day teacher is required to prepare the students for a highly competitive globalised world, equipped with far better professional, soft and life skills than ever before. It is too serious a matter to be left to the students alone. The teacher cannot sit back and leave the students at the mercy of the environment. He has to take the lead. Research after research tells us that best result can be achieved through leadership role of the teacher. Even in student-centered strategies, competences of the teacher are considered crucial for success. (Shaikh & Khoja, 2012) Hattie's synthesis, based on thousands of studies, shows that quality feedback is the single most powerful influence for improvement among students—and it is totally teacher dependent or teacher led. (Hattie, 2003) Therefore, "the effective teacher must be a leader who can inspire and influence students. . . This teacher empowers students and gets them to do things of which they did not think they were capable." (Sandy, 2005)

Technology has a powerful presence in the modern-day educational environment, with ever-expanding possibilities for innovative strategies. It can yield best results if it is used as a tool and a technical support to connect and communicate. There is a need to guard against its depersonalizing effects and lure to take the teachers and students into a virtual world—divorced from reality and life. The teachers therefore should respect and lead the students as persons, guide them and help them compete in the globalised environment. Only as leaders and role models can they influence the students morally and inculcate such virtues and values which can help them steer through the stormy times. As leaders, they will remain effective and relevant in technology-led environment.

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Malaysian Teachers' Perception of Applying Technology in the Classroom

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Abstract

Although application of technology in the classroom has been introduced for the last two decades, some teachers are still resistance to use technology in the classroom. This study is designed to investigate Malaysian teachers' perceptions of using technology in the classroom. In this study perception is regarded as interpretation of events among Malaysian teachers due to past experiences, current understanding, present situation and information. Qualitative research is used as the mode of inquiry for this research study. The main mode of data collection is the questionnaire that elicits information on the respondents' views of the use of technology on the classroom. Participants for this study were seven local English teachers in Malaysia. The findings indicate that although Malaysian English teachers were using technology and have positive perceptions towards using technology in the classroom, they feel it is crucial for them to undergo training in this aspect. They view time constraint and access to equipment as the main obstacles to implementing technology in the classroom. This research concludes that although Malaysian teachers are faced with some difficulties in implementing technology in the classroom, they see a value in technology and want to use technology in the classroom.

Keywords: Technology, Malaysian teachers, perceptions.

1. Introduction

The idea of applying technology in the classroom comes from the United States but the efficiency of Technology programs is still a controversial topic.

"Technology is only a tool; it allows us to develop dialogue and interaction, but is a means, not an end in and of itself. Tech-based global education has the capacity to improve critical thinking and cultural pluralism but requires far more than just fancy technology; it requires careful, thoughtful curriculum development and the support of organizations whose goal is to build authentic global communities online" (Klein, 2010, p. 86).The introduction of computer technology among the society has changed the way people live, work and learns. The application of technology has improved the teaching and learning in many schools especially in the last two decades. The latest studies on the use of technology for teaching and learning shows promising results for teachers, students and education.

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Using technology in the classroom prepares learners to be autonomous and active in their learning. By using technology such as computers, learners will be able to create their own knowledge based on past experiences with new information (Bitter and Pierson, 2005).

Creating each technology is for a specific purpose so Winner (1980) felt that educators should deconstruct the "purpose" of a given technology in the classroom according to the biases and systems in each classroom. Scholars (Winner,1980, 2000; Bromley, 1998; Postman, 1998) have called on teachers to pay more attention to the objective of using technology in a purposeful and meaningful way before applying it in the classroom.

We need to remember that using technology in the classroom will only be useful if it is applied to meet its purpose (Bromley, 1998; Klemm, 2007).

2. Background and Theoretical understanding

There are two contrasting perspectives in support for and against using technology in the classroom; constructive and critical. Constructivism means "how people learn and what needs to be learned" (Duffy and Jonassen (1992). Constructivist Andrea Gooden (1996) perceives technology as a toolbox filled with skills for better learning by creating new materials not a tool for performing a particular task. Constructivists consider the advantages of classroom technology while critical theorists perceive technology as a tool, an agent of change, and also as an object with political motivation that causes isolation so critical theorists tend to add or delete technology into an environment to change that environment. Critical theorists believe that using technology in the classroom has a significant role in the students' interpretation of materials.

3. Classroom Technology Use

Teachers repeatedly use technology if they receive enough equipment and supports (Yan and Zhao, 2006) but recent findings (Cuban, Kirkpatrick, and Peck, 2001; Russell, Bebell, O'Dwyer, and O'Connor, 2003; Solomon and Wiederhorn, 2000; Zhao and Frank, as cited in Yan and Zhao, 2006) reveal that. Yan and Zhao (2006) suggest that technology adoption lies with teachers' goals and perceptions. The results of their study show that teachers are more pessimistic about using technology in the classroom because of the lack in training needs in applying technology. The result of their study suggest that maintaining the status quo and avoiding disturbance have a higher priority on the hierarchy of teachers' goals after balancing the costs and benefits of using technology (Yan and Zhao, 2006). Some researchers (Snoeyink and Ertmer, 2001–2002; and Zhao et al., 2006) believe that teachers' adaptation of technology are influenced by their skills and beliefs about technology. From the perspective of Zhao and Frank (2003) teachers' beliefs, pedagogy, and technology skills influence on technology integration into the school culture.

Beliefs are personal, are difficult to address in staff development, and take time to change. Even if they do changes, the process can take years. Cuban (1990) observed that teachers will use technology based on their personal perspectives about curriculum and instructional practice. Although billions of dollars (NCES, 2008) and much focus have been put on technology in education (ISTE, 2010; NCES, 2008), instruction has not changed much (Cuban et al., 2001).

The use of technology in the classroom is also much related to their attitudes towards the technological barriers inherent in the traditional deployment of technology in schools. These barriers reflect the school culture and affect a teacher's personal belief system or self-efficacy and the ultimate impact of using technology in the classroom. Brzycki and Dudt (2005) believe that there are some difficulties and challenges such as time, support, models, infrastructure, and culture that persist and even reappear with new technologies in applying technology in the classroom.

The barriers of implementing technology are classified into First- order or extrinsic factors and second-order or intrinsic barriers (Brickner, 1995; Ertmer, 1999). First-order barriers include environmental or institutional issues

and resources while second-order barriers related to a teacher's personal instructional beliefs, experiences and strategies. Teachers are faced with many difficulties due to these intrinsic which affect their decision-making processes and classroom practices (Ertmer, 1999).

The majority of teachers believe that first-order barriers prevent teachers from using technology in the classroom. In support for this, Cuban, Kirkpatrick, and Peck (2001), and Bauer and Kenton, (2005) cite time to learn and prepare instruction as barriers that hinder teachers from utilizing technology in the classroom. Poor professional development (Koehler and Mishra, 2005) and access to equipment (Yan and Zhao, 2006) also contribute to first order or extrinsic barriers.

4. Importance of the Study

Previous research have shown that using technology improves the learning experience and students' academic performance. In Emdin's (2008) opinion, by integrating technology into the curriculum, education practices will be improved and teachers will be able to expound upon the textbook and prepare more authentic and student-centered classroom learning materials. Stoll (1999), however disagreed with using technology because this sends students the message that "illegible handwriting, grammar, analytical thought, and human dealings don't matter" (p. 158).

The reason for placing focus on technology is to produce definite outcomes (Masgoret and Gardener, 2003; p. 4). Many schools provide technology in the classroom to create more academic opportunities for students' academic development and growth. However, using technology in the classroom depends on the way technology is allied by teachers (Sinclair, 2009).

There are a few studies on teachers' perceptions of applying technology in the classroom. Malaysian teachers' perception of using technology in the classroom practices is described in the current study. The teachers were located at multiple schools in Johor Bahru.

5. Methodology

Quantitative survey methods cannot describe the interaction as among perceptions and actions (Brookhart and Freeman, 1992; Richardson, 1996). As such qualitative research is used for the mode of inquiry for this study. One of the unique components of qualitative research is the small number of participants in the study (Russel, 2003). However, while the number of participants may be fewer than is found in quantitative studies, the depth of questioning and the richness of the data that qualitative research uncovered cannot be compared to quantitative research (Slauen White and Simpson, 1998). The pool of participants in this study was small, thus effort to focus in-depth on the findings and themes coming out of the data was possible .

Survey questionnaire in this study (Appendix A) was adapted from UTAUT Survey Study URL: http://www.educ.uvic.ca/tie/utaut/. The UTAUT Model was developed by Venkatesh et al. in 2003. The questionnaire composed of two parts. Part I relates to the personal information of participants. Part II comprises questions on the use of technology in teaching. Definition of technology also encompasses computer hardware (e.g. scanners, cameras, and videoconferencing tools), software applications (e.g. word processing, excel, internet, PowerPoint, webpage construction) and any technology specific to the teaching area.

Regarding the academic degrees earned by the participants, most of them hold a Master of Arts (MA) degree majoring in Teaching English as Second Language while some of them possess a Bachelor Degree. With respect to the age range, the majority of the participants are 20-29 years old and some of them are in their 30s. The teaching experience of the participants varies from three to eight years. six of the participants are female while one is a male.

6. Analysing the Data

Data analysis is a complicated process used to try and make sense of the data. It involves "consolidating, reducing, and interpreting what people have said and what the researcher has seen and read. Analysis involves working with data, organizing them, breaking them into meaningful units, synthesizing them, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others". (Merriam, 1998; p.145) .Glesne and Peshkin (1992) pointed out that "data analysis is the process of organizing and sorting data in light of increasingly sophisticated judgments and interpretations" (p.130). The purpose of data analysis is to locate crucial meanings, patterns, and themes within what the researcher has extracted as the theme through the questionnaire.

7. Findings

The reason for conducting the current study is to determine Malaysian teachers' perceptions of applying technology in the classroom and the challenges they may face in implementing technology. The results are categorized under several major themes, i.e. skills in handling technology for instruction in the classroom, difficulties and challenges in applying technology in the classroom and perceptions of using technology in the classroom.

Skills in handling technology for instruction in the classroom

Almost all the participants reported that they use the technological devices every day. All of them use the Internet regularly, all of them claim they have the necessary knowledge for using the technology, and again, the participants are in unison in their view that it is easy to become skillful at using these technology.

All but one of them have the experience of using the computer to deliver presentations, all have used the Internet to access curriculum, and all of them have used the computer to deliver design and also to perform database. Most of the participants claim they can also accomplish tasks using technology quickly.

These findings show that the participants have a sound knowledge in the use of technology and in using these technological devices in the classroom, for teaching and learning purposes. This is because all the participants of this study belong to the category of "digital natives", whom Presky (2001, cited in Bennett et al, 2008) defines as the generation born in the years between 1980 and 1994 and are familiar with and rely much on ICT in their daily lives.

Difficulties and challenges in applying technology in the classroom

Almost all of them felt that time to learn computer skills is not the obstacle to implementing the use of technology in the classroom. They felt that they have enough time to learn computer skills. However, almost all of them felt that it was difficult to use technology in the classroom and this is related to several factors. The participants were in unison when identifying the lack of computers as the major obstacle to using computer-based teaching in the classroom. The next major constraints reported by the participants are insufficient time (6 participants), the absence of access to equipment (5 participants) and the lack of technical support (4 participants).

Insufficient time would usually relate to the amount of time a teacher needs to prepare his teaching and learning resources for use with his learners. The finding that time is a constraining factor, is consistent with the findings of Peirson (2001), Carlson and Reidy (2004) and Friedman (2006). The absence of access to computers has, time and time again been the complaint of many teachers in schools in Malaysia. Computers are insufficient not just for the use of the students, but also for the teachers who would need them to prepare their computer-based lessons. Other equipment that include the LCD projector, the server, and all other related technological devices that are required to make computer-based teaching a success, are also usually hard to come by. The lack of technical support, in the form of technicians who would assist in the set up of these devices in the classrooms and to help maintain these

resources, is another challenge that would need sound financial back-up from the schools or the Ministry of Education.

The participants have all ruled out that personal beliefs would hinder their use of technology in the classroom. This, again, is attributed to the fact that these participants are all digital natives who would not have any inhibitions or fear or negative beliefs about the use of technology as they are familiar with ICT. All but one also felt that administrative support was also not a problem.

Thus, this study concludes that insufficient time, and access to equipment as well as the lack of technical support are the main obstacles in using technology in the classroom.

Perceptions of using technology in the classroom

Although there were several variables that constrained the use of technology among these teachers of English, they had positive perceptions of the implementation of technology in enhancing learning. Most of the participants felt that computer instruction is useful and most have also expressed their intention to use technology in their teaching. Although they are adept in their use of technology, all of them hoped to attend more training in the use of computers as this would motivate them to apply more technology for instruction in the classroom. This finding is also similar to that reported by Roach (2010).

8. Limitations of this study

Despite the researcher's aiming to design a quality research study, it is important to note that this research study has limitations in its design and implementation. The research was limited in several ways. The primary limitation was related to the sample size. It should be noted that the sample size was not large enough. If a larger-scale quantitative study was to be developed, a larger number of participants could be surveyed—either teachers from different regions.

It would be more reliable if the researcher used multiple data sources such as interview, reflective journals and observations as additional instruments. Moreover, the analysis of the data was limited since the students were neither questioned nor interviewed. Using data from multiple sources would have allowed triangulation, and thus benefit the overall results of this study

9. Conclusions

In general, we can conclude that these participants, who are teachers of English, are very familiar with the use of ICT and have no qualms with implementing technology in the classroom. However, the only drawbacks they have in using technology would be the lack of computers, insufficient time in preparing technology-based lessons and the lack of technical support. Although there were constraints faced by these teachers, they were motivated in undergoing more training in the use of technology in the classroom and were in general, positive towards the use of computers in education.

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Management of Academic Information System (AIS) at Higher Education in The City Of Bandung

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Abstract

The purpose of this research is to describe and analyze; 1) the planning and the organizing of academic information system (AIS) at higher education in the city of Bandung; 2) the implementation of AIS at higher education in the city of Bandung; 3) The monitoring and the evaluation of AIS at higher education in the city of Bandung; 4) the quality of information produced by AIS at higher education in the city of Bandung ; 5) the quality of AIS at higher education in the city of Bandung and 6) the effectiveness of Academic Information Systems Management in Bandung. This research is descriptive research that taking place in the city of Bandung with all higher educations in the city of Bandung for the populations. The used selected sample is purposif sampling technique, it is higher educations that organize graduate program and adopt ICT into their academic information system. The samples come from 18 higher educations, 988 persons are lectuters and 1581 persons are students. Data is obtained by using questionnaire and it is processed by using descriptive statistical technique.

The results shows that the effectiveness of the planning and the organizing of academic information systems at higher educations in the city of Bandung has been largely effective. The effectiveness of the implementation of the academic information systems is good enough. The effectiveness of the process of monitoring and evaluation of the academic information system indicates that the number of higher educations that still ineffective in their monitoring and evaluation systems is quite significant. The output of academic information system of all higher educations in the city of Bandung is good. In addition, all higher educations have a good quality information system program.

Keywords: Higher Education, Academic Information System, Information and Communication Technology, Effectiveness

A. Background

The utilization of information and communication technology (ICT) in education is an absolute necessity that must be undertaken and utilized by higher educations if they want to improve the quality of education. For higher educations, as well as other modern institutional, utilization of information technology is not only serves to help management (supporter), but also serves to improve (enabler) in the decision-making process at various levels of college management (Indrajit and Djokopranoto, 2006). The effective utilization of information and communication technology in the management of education in higher educations will be realized when supported by the development of an effective management information system (Hanna, 2003).

The use of ICT as a supporter or an enabler among higher educations, particularly in the city of Bandung, has already become a must either at higher educations or at some higher educations that have students and a simpler affair. The utilization of ICT for management of institutional power support is an important factor in the effectiveness of service management, and it seems to be a modern institution lifestyle that can be proud of in the community (Allen and Fifield, 1999; O'Brien, 2005; Kartiwa, 2008). There are many problems encountered by many universities in Bandung city related to ICT applications in the management of institution, such as an ineffective system made up, non technical problems that have no connection with the system or brainware problems.

The effectiveness of the implementation of ICT in the management of higher education needs more attention as its central role in the process of managerial decision-making or other decisions (Chamblin and Steger, 2000; Ramsden, 2004). To improve the effectiveness of this implementation which would obviously affect the effectiveness of the achievement of the education institution, the factors that affect the effectiveness of the implementation of ICT in institutional management, particularly in terms of academic administration need to keep be researched. It is intended that the process of academic management in higher educations could more effective and efficient then it would support the achievement of high performance of institutions.

From the entities and the properties, academic information systems refer to a set of systems and activities that are used to organize, to process, and to use information as a source within an organization (Sprague and Carlson, 1982). The output of the information resulted from this system will provide information to the leaders or the decision makers that can be classified in different utilization and different purposes. (Levin, Kirkpatrick, and Rubin, 1982) They are :

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a. Academic Information System for the pupose of resulting reports in a various activities such as academic, finance, personel, the distribution of students to all kinds of majors.

b. Academic information system for the purpose of answering the "what if" question. This information system use database to be shared to other users.

c. Academic information system for the purpose of supporting decision making, evaluation, and the development of the system. This system provides information for all kind higher educations.

The purpose of this research is to describe; 1) the planning and the organizing of academic information system (AIS) at higher education in the city of Bandung; 2) the implementation of AIS at higher education in the city of Bandung; 3) The monitoring and the evaluation of SIA at higher education in the city of Bandung; 4) the quality of information produced by AIS at higher education in the city of Bandung ; and 5) the quality of AIS at higher education in the city of Bandung. and 6) how far the effectiveness of Academic Information Systems Management in Bandung.

B. **Methodology**

By using descriptive research analytical method, the population in this study involved 37 higher educations in the city of Bandung which adopt ICT in their academic and administrative system that runs undergraduate (S1) program. While for the institutional sample, I used proportionate random sampling and it is involved 18 higher educations consisting of 8 universities, 3 institutes, and 7 colleges. For faculty sampel, 988 persons are lecuters and 1581 persons are students. To measure effectiveness on this study, it was used Cobit tool modification for the instruments (IT Government Institut, 2000). The data collecting tool is a good validity and reliability closed-open questioner. Measurement of the samples was done using the formula of Yamane (1967: 258)

The data obtained from the study then analyzed with descriptive analysis. Descriptive analysis seeks to expose data or answers given by students as respondents to the number of questions posed in the form of a questionnaire, so that the results will clarify issues that will be examined.

C. The Result and Discussion

1. Planning dan Organizing of AIS

These sub variables are divided into 5 indicators, they are:

a. the existence of the strategic planning of AIS and how far of the implementation;

b. Socialization and training to the users of AIS;

c. Organizing of AIS and its effectiveness;

d. Human Resources management of AIS (from the recruitment to the dismissal); and

e. The ownership and the effectiveness of the AIS software owned by the colleges.

From the data, it is recocnized that the effectiveness of planning and organizing of higher education academic information systems whether is good or not, where 3 higher educations (16.7%) are considered very high, 12 higher educations (66,7%) are categorized high, the 2 universities (11.1%) are categorized under high, while 1 higher education (5.6%) is considered low.

Table 1. The Effectiveness of Planning and Organizing of AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	3	16,7	16,7	16,7
	High	12	66,6	66,6	83,3
	Average	0	0	0	83,3
	Low	2	11,1	11,1	94,4
	Very Low	1	5,6	5,6	100,0
Total		18	100,0	100,0	

 The planning and organization of information systems is one of the processes that should not be ignored in the process of management information systems. The planning of information systems is the most important step in the process of the establishment of information system in institutions. The most important factor is a long time that is required in providing and integrating relevant data into the operations of the institution, the difficulty of finding a competent operator, and the size of funds and managerial resources needed to run it.

In designing information systems, besides the devices that process the data in information systems management that is an important component, designing information system that does not start from a comparative analysis of the availability of the device. Stoller and Van Horn (Certo & amp; Certo, 2006: 543) mention that in designing information systems, it should begin with an analysis of the type of decisions that will be generated in each unit manager. In all higher educations in the city of Bandung, the planning process of information systems is initiated from strategic plan. Almost all of the Colleges consider that the strategic plan of AIS is important as the basis of policy and implementation of the AIS in the institutions. The strategic plan is a reference to the process of developing a blueprint management system as a whole.

The socialization and training of the users of the AIS is also important as a part of the planning process. This is very important in the framework of the preparation and conditioning situation, then culture of AIS could begin to established systematically (Leidner and Kayworth, 2005).

2. The Implementation of AIS

Implementation of AIS dig up how far the academic information systems in the institutions is run, what kind of encountered problems, and how the process of solving them. The Data show that the implementation of the AIS in higher educations has already given you an idea of their effectiveness. There are 9 higher educations (50.0%) that are categorized into very high, 6 higher educations (33.3%) categorized into high, the 2 higher educations (11.1%) categorized into under average, and 1 higher education (5.6%) categorized into low.

Table 2. The Effectiveness of The Implementation of AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	9	50,0	50,0	50,0
	High	6	33,3	33,3	83,3
	Less High	2	11,1	11,1	94,4
	Low	1	5,6	5,6	100,0
	Total	18	100,0	100,0	

In its implementation, the academic information system in higher education is faced with many problems. Generally higher educations are able to effectively run the system. Some problems that arise related to the technical implementation of the system can be solved properly. Process that run in solving problems is conducted actively and preventive by the Manager and the full support of the leadership of the campus.

3. Monitoring dan Evaluation

Subvariable of monitoring and evaluation attempts to dig up data about the existence of a unit of work carrying out the duties and functions of the monitoring and evaluation of AIS of Institute. In addition, it is also photographed the process of monitoring and evaluation.

Considering the indicators above, note that the effectiveness of monitoring and evaluation at 13 higher educations (72.2%) is very high, while in 5 higher educations (27.8%) is still low.

Table 3. The Effektiveness of Monitoring dan Evaluation of AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	13	72,2	72,2	72,2
	High	0	0	0	72,2
	Less High	5	27,8	27,8	100,0
	Low	0	0	0	
	Total	18	100,0	100,0	

The existence of a special unit that performs the task of monitoring and evaluating system is very important in order to ensure the system is running well. Academic services efforts at both the lecturers and students will be more aware in the presence of this institution. A routine and well-planned monitoring and evaluation activities conducted periodically and thorough is a guarantee that AIS is running effectively.

4. The Quality of Data/Information Resulted by AIS

There are 5 (five) indicators describing quality of data variable/information generated by AIS of higher educations, they are:

a. Effectiveness of information;

b. Confidentiality;

c. Compatibility;

d. Readability; and

e. Reliability.

Referencing to those five indicators, it can be explained that the quality of data/information generated by AIS at 5 higher educations (27.8%) is very high, while in 13 higher educations (72.2%) is high.

Table 4. The Quality of Data/Information Resulted AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	5	27,8	27,8	27,8
	High	13	72,2	72,2	100,0
	Less High	0	0	0	
	Low	0	0	0	
Total		18	100,0	100,0	

5. The Quality of Academic Information System Program

There are four (4) indicators that are unearthed in the respondents related to the quality of academic information systems run, namely:

   a. Efficiency;

   b. Availability of data/information;

   c. Integrity; and

   d. Network security/system.

By all four indicators above, it shows that the quality of academic information systems program at 5 higher educations (27.8%) is very high, while in 13 higher educations (72.2%) is high quality

a.   Table 5. The Quality of Academic Information System Program

b.

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	5	27,8	27,8	27,8
	High	13	72,2	72,2	100,0
	Less High	0	0	0	
	Low	0	0	0	
Total		18	100,0	100,0	

A good quality information assure the confidentiality of information, according to what the user wants, readeable, and reliability are indicator of the quality of the output. Reviewed from these aspects, it appears that information products issued by AIS of higher education has already met these criteria. This is a great asset for institutional decision-making process both routine and generic.

6. The Effectiveness of Academic Information System Management

To see the responses of the respondents as a whole for the effectiveness of the management information system of academic, we must make some category at first. In Table 6 below is a recap table of the evaluation of effectiveness of academic information systems management.

In General, there are different valuation between a group of institutions, lecturers and students, except for the components of the implementation and the monitoring of evaluation of AIS. For implementation of AIS, there is a discrepancy of evaluation between the institution and the group of student-lecturers. Most of froup of institutions evaluates it into very high, while most users (student-lecturers) evaluate it into high. For monitoring evaluation, most students and institution evaluate it into high and less high.

Implementation of the automation of academic information systems in all higher educations has been well planned. Planning process is already listed in the institutional strategic plan. In addition, many people also already have a strategic plan for management information systems in General. Research college sample is already to plan the implementation of academic information systems based on ICT which is part of the institutional management information system in General.

Moreover, the process of organizing has been running well. There is a certain unit that carries out the administration of the academic information systems manually and automatically through ICT. Any organization or institutional dealing with AIS at higher education generally have an adequate organization fittings and running as what specified by institutions.

Table 6. The Recapitulation of The Evaluation of The Effectiveness of Academic Information System Management Based on Organizer, Lecturers and Students

The Component of The Evaluation of The Effectiveness of AIS Management Based on Sample Group	Very High	High	Less High	Low
a. Planning and Organizing of AIS				
▪ Institution	0,0	81,2	18,8	0,0
▪ Lecturers	2,1	64,5	33,0	0,4
▪ Students	1,9	66,5	29,5	2,0
b. The Implementation of AIS				
▪ Institution	50,0	31,2	18,8	0,0
▪ Lecturers	27,8	50,4	20,8	0,9
▪ Students	15,1	45,0	34,5	5,5
c. Monitoring dan Evaluation of AIS				
▪ Institution	12,5	50,0	37,5	0,0
▪ Lecturers	37,1	45,6	16,5	0,9
▪ Students	0,8	46,7	46,5	0,8
d. The Quality of Information Resulted by AIS				
▪ Institution	0,0	93,8	6,2	0,0
▪ Lecturers	1,9	56,2	40,9	1,0
▪ Students	1,7	64,3	33,7	0,3
e. The Quality of Academic Information System				
▪ Institution	18,8	75,0	6,3	0,0
▪ Lecturers	9,5	65,5	25,0	0,0
▪ Students	8,1	61,0	30,3	0,7
Average	16,26	66,24	17,52	0,0

Regarding the implementation of academic information systems at higher education, half of the respondents expressed that the implementation is very high. The other half spread between high and less high. This just illustrates that generally the process of academic administrative service run by the system has been running, although there are some higher educations that expressed his discontent (18.8% institution stated the implementation is less high).

On the monitoring and evaluation system, it seems that not all institutions do it well. As in the table above, it is mentioned that only half of respondents stated that the intensity of the monitoring and evaluation system is very high. Although there is 12.5% stated it was high, but there are some of them (with significant proportions of 37.5%) stated it was under average. While for quality of the information, it seems that most of the users of data/information in higher education said that it is high (93,8%), and the rest (6.3%) stated that it was under average.

While on academic information systems quality assessment in general, the reference criteria in assessing the effectiveness of the system is efficiency, availability, integrity, and security of networks/systems. In terms of the efficiency, the effective AIS is a system that is able to optimize performance even excels with fewer resources. The criterion of availability is how far does system capable in providing academic information/data needed by the stakeholders (Dean, Assistant Dean of Academic Affairs, Academic Unit, students, parents of students, or other).

Cohesiveness is a condition in which all devices associated with the system. All process such as the process of data management in all fields and units, organizing each fields and work units that deal with data/information, and resulting integrated product are managed by a certain unit. While network or system security is the ability of the system to protect itself from damage intentionaly or unintentionaly that comes from an internal or external, and being able to predict the demands of progress of software/hardware, and trend of the changes of software and hardware, as well as the policy change of institution.

By this high effectiveness of academic information systems management of higher educations, it could explain that the college already has a separate unit that handles academic administration. There are bureau, department, or certain unit affiliated in businesses that each of them has a raw data management system for academic students manually or automatically through ICT tools. In addition, academic Information management system has already and are being pioneered in all higher educations for long time. There are some status that can be attached to the higher educations that run information systems management, they are. a) Management of information systems that has already completed; b) transfer processes to the integrated information systems; and c) the automation of information system management that has just begun. Of the three status, there are only 3 higher

educations that have a complete academic information systems management in the design of integrated automation information management, while the rest are moving to the stage of an integrated system, and just begun in the process of automation. However, the manual system that has been applied by higher educations, which are not complete yet in doing their automation management information system, has been quite well established and reliable in serving academic affairs. This is one of the important achievements for institutions in maintaining the continuity of the performance that exist at the moment. This is also an asset for the higher educations to continue in improving their performance in the future. Management information systems for effective academic will provide many opportunities for institutionss to allocate more resources to other more important affairs. By an effective academic information systems management, a higher education has a great opportunity to make the right decisions and to solve the problem efficiently, able to save time, effort, and costs. A routine managerial tasks of the college was to produce information for the decision-making basis that will also be necessary for the planning process, to execute a program or to assess the effectiveness . Davis and Olson (1985) said that most employees on duty producing the information, using documents, writing reports, analyzing data to be used in the process of planing should be supported by an effective management system. Besides it, academic affair is also important. Academic Affairs are the main suppliers of the materials of the college decisions related to academic that is a core business of a college.

Management information systems need to be supported by a context that supports the effectiveness of the management of academic information systems, it is ICT culture. ICT culture gives a spirit for the people and the environment that exist in the institutional system. Belief, values or norms and customs that exist and thrive in the institution will influence people in terms of interactions and patterns of behavior (Lavonte et all, 2005; Moa et all, 2001). Academic Affairs personnels who aware to ICT literacy, aware to the importance of ICT, and are able to use of it, will affect the performance of the academic information system and will certainly have an impact on the performance of higher educations.

Concerning research results, the effectiveness of AIS in supporting performance will decrease its contribution if the facilities and ICT infrastructure means is not in adequate condition. Limitation of ICT infrastructure and facilities at a number of higher educations is examined mainly due to budget constraints in meeting the support required devices. ICT investment in the process of AIS management in cost that much though ICT investment has become a trend in every organization today (Thatcher, and Oliver, 2001). Some universities are still in the early stages of the implementation of ICT.

Other things found in the study that apparently state universities has the highest score compared to a private universities. It indicates that the effectiveness of AIS in state universities is better than that in private universities.

The development MIS in higher education, especially developed in state universities is already in extended level. A developed system is not only function as base of institutional data management institutional, but also is able to make information system management as a tool of management. MIS has been set as back office and the front desk devices that serve institution consumers (civitas academic) and stakeholders effectively. The system can become one of the internal system instruments that able to control and to report the processing and academic administrative services, and even able to give alternative solutions to the problems.

The development of academic information system by a college is one of the answers upon the demands of good and clean institutional management (good governance). Well-organized institutional data, an effective management process, and easy-accessed data will able to show a transparent institutional management process. Besides, interconnectedness and mutual dependence among sub-systems will be more effective if the data traffic exchange of data and information run smoothly. Information or data produced by academic information system is needed to run human resource, financial, fasilities and infrastructure, and performance report of higher education management system. Academic performance data is an input in decision making process in institutions. For example, merit system development that developed by institution use academic performance data produced by AIS as its reference.

In management information system, there is an academic information system developed by state universities that has been much provide facilities in determining institution strategic decisions. Clear description related to situation, condition and prediction of institution produced by a system could be mile stone in setting vision at the future and reference in making a strategy to achieve the vision. Moreover, the spirit of information transparency is also a base to develop this information system. As a public institution, higher educations must open theirself at the works or anything that need to be known by public as one of their responsibilities to the public. Fair access institution to the public has many advantages. People would be able to understand all problems faced by the institutions. In addition, the developed management information system will provide a significant contribution in good image of the institution.

In general, why state universities in Indonesia are more advanced compared to private universities? In terms of the ease of establishment, the government provides much accesses to public to participate in education particularly to higher educations, yet they can fulfill the terms. It can be conclude that most private universities just manage their money from the students, because there is a little money come from the external institution or donations mechanism, and consequently, the development of private universities strongly influenced by the amount of their student and the age of institutions and the management capability. Most private universities is still struggling with classical problems, how to get students as many as they can, compete fiercely with other colleges which is now competing to get a maximal students due to the legal entity policy.

In terms of financing, although higher education must independent in self support needs, direct and an indirect government subsidy are still large disbursed to state universities. It indicates that state universities could be unimpeded get indorsement funds to finance programmes compared to private universities.

 Moreover, to compete with private universities in obtaining funds from the government, the availability of resources physicaly or human, state university is clearly better. Good relationship of state university and the decision makers is also one non technical factor that make easier for state university to obtain fund from the third parties including from the government. As a result, it is

proven that only 44% of 84 higher educations in Bandung that has achieved ICT-based AIS. It means that is around 56 % colleges that have not use ICT as technology-based AIS management. The low utilization of technology-based AIS as the result of the great amount of investment cost. For tool procurement, tool maintenance, providing human resources, education, system updates, and the security system which need a great amount of cost. It would be a reason for some colleges to not use ICT as one of enablers in managing AIS.

The great support of fund for state university will make them easier to provide facilities and infrastructure. Thus, this explains why AIS culture and the quality of human resource in state university are better than that in private university. Besides, the capability of state university to employ their qualified human resources can also be considered high. It because the status of civil servant of their employees who run AIS is still an attraction thing for potential job seekers. A good career prospec and the better future make them safer, and automatically it will support working climate.

D. CONCLUSION AND RECOMENDATION

The effectiveness of academic information system planning and organizing in most colleges in Bandung is effective. Regarding the effectiveness of the implementation of academic information system, most of them is in good condition. However, this is different with the effectiveness of monitoring and evaluating process of their academic information system. The number of college that was ineffectual in its monitoring and evaluating system is still significant.

Regarding the output of academic information system, all colleges in Bandung are capable of producing output. Reviewed from academic information system program, all colleges have a good quality information system program. Of all data above, in general the quality of academic information system management, all colleges in Bandung is high.

For further study, it is recomended research the mature ICT of higher education. Hopefully this research will be able to answer or explain the capability of information systems to support the vision and mission of institutions. Moreover, to explain the capability of the developed system can support to improve the quality of performance of institutions.

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Marketing Education Online: A Case study of New Zealand Higher Education Institutions

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Abstract

Social Media interaction, an off shoot of web 2.0 environment has caused a paradigm shift in the way we communicate in a society. The modality of the purchase decisions has been radically influenced by this mode of communication. It is only a matter of capitalizing on this opportunity and having the best strategy in the current environment to succeed in changed market environment. Marketers should start focusing on developing high quality marketing strategies conforming to this new environment. This study investigates Social Media Marketing attributes of Higher Education institutions from New Zealand. It uses a customized tool namely *Social Media Marketing Attributes (SMMA) Analysis* to benchmark the practices from the institutions. Very little participation in using Social Media as a communication channels for marketing has been identified. A number of strategies are recommended to align the marketing with the demand and make the best use of this effective medium namely Social Media. The findings of this study have practical implications for the organizations working in this industry; where they can use the findings in developing effective customer centric marketing strategies.

Keywords: Social Media Marketing, Higher Education Institution, Services Marketing, Internet Marketing.

1. INTRODUCTION

The Internet is a medium of communication that was developed in the late 20th century. We have experienced the growth of an entire new industry that has changed the social structure, business culture and even individual attitudes because of the wide use of this medium. The communication achieved through this medium has made the world a global village. Physical distance has been conquered by using constant communication through the Internet using websites, emails, Internet phones, and lately the Social Media that provides an opportunity for two way communications between the producer and the consumers. This medium has been recognized as an important medium for marketing by many researchers in their studies (Belch & Belch, 2007; Keegan & Green, 2008) but the growth of marketing by using this particular tool has reached its highest pinnacle with the availability of Social Media through the Internet. Many businesses have started exploring this opportunity and have started playing around with the strategies to utilize this new found opportunity to achieve micro-customization of services for their customers. We have seen businesses cash in using this new found tool and achieve unprecedented communications success (Smith & Zook, 2011, p.31). We also see scepticism from corporations and managers in using this medium as a vehicle for their advertisements (Kelly, 2012). Overall, this medium has caused waves of changes in the marketing world but impacts are still uncertain and require further investigation before this can really be proven as an effective tool for marketing. Nevertheless, the enthusiasm with this medium demands in-depth analysis and exploration and many industries are trying their luck with this bidirectional flow of information. The travel, tourism and hospitality industry that was one of the first to have used this powerful tool certainly set benchmarks for the usage of this tool in marketing. The Education industry being a service oriented industry also has very similar characteristics as the Travel and Tourism industry, where the students are their customers and they opt to make their purchase decision based on the information available (Shanka, Quintal & Taylor, 2006). This gives us reason to believe that this medium might prove to be as effective as in the cases of TripAdvisor, Webjet etc. in the travel and tourism industry, where they have successfully incorporated Social Media as a tool for spreading the word and used the personal recommendations as a tool for success in their marketing efforts. This study takes into account the usage of Social Media Marketing in Higher Education institution.

1.1 Research problem statement

The extent of globalization has certainly influenced the nature of business processes in the education industry. With a history of internationalization since the beginning of the education industry; it has been a common practice to seek

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international education overseas. Many have travelled continents to seek new knowledge and entrepreneurship under the pioneers of technology, innovation and renowned scholars. The availability of technology such as Internet has made it possible for the education providers to offer educational services in an unprecedented way. Today courses are being delivered thousands of miles apart over the Internet and it is possible to follow the learning processes on a regular basis even though the learners and the teachers are geographically distant. This new form of education has not only changed in the supply side the demand i.e. the learners has also evolved and they have started considering many new factors in choosing their education destinations. Brand in the form of referrals from the people they know is a key determining factor in this process (Malmarugan, 2008). The fact that the word of mouth has been indicated as a key influencing factor in making purchases in this industry points us towards the media that are now commonly used in carrying out this task. The success and effectiveness of education providers depends on how well their marketing and public relations efforts are implemented and understood.

The importance of marketing as a key for success even in the education industry has been mentioned by Brown (1984) when he developed the model of "Steps in marketing programs". In his model, the marketing mix of a marketing strategy includes the "four Ps" factors of Product, Price, Promotion and Place in educational programmes. In the case of educational institutions it has always been a struggle to disguise these marketing efforts and putting their services at a much higher level than the commodities. The recent political changes in the world and liberalization of trades has changed this scenario and commodified education as a service (Mohammedbhai, 2002). This redefinition of the services opens up the market for education services to be exported as goods. The variation in cultural, societal, regulatory and economic aspects of the customers (students) of educational institutions makes it a big challenge for the market planners and managers to streamline the marketing efforts and find the right segment for the products they offer, the price they can offer, the channel they can use and develop the right promotional plan targeted towards the right segment of customers. In today's globalized world it is almost a fruitless exercise to come up with a global marketing plan that fits all the segments scattered all around the world. With a globalized approach in delivering their services the educational institutions need a marketing strategy that will enable them to customize the strategies at a micro level. This calls for development of tool that understand the needs and wants of the customers at an individual level.

The New Zealand Market Development Board recommended opening up the international education market following the shift from 'aid' to 'trade' approach by Australia in 1987 (Alvey, Duhs&Duhs,1999; Harman, 2004). This has remarkably transformed this sector in New Zealand and introduced a new sector for foreign currency earnings for New Zealand (Martens & Strake, 2008). Tougher competition from other providers in the English-speaking world has made it difficult for New Zealand to keep up its numbers of foreign students in recent years. There has been a declining trend in the majority of the source countries of Foreign Fee Paying students (EducationNZ, 2010). Australia-New Zealand's direct competitors for Asian students, the UK and Canada, are now improving their visa accessibility for foreign students and have invested heavily in the promotion of their educational services, particularly in the Chinese market. As a result, New Zealand could be losing its comparative advantage in this industry. Major market players in this industry are looking for ways to have paradigm shifts to reach their customers and secure their share of the global education market.

1.2 Research objectives
This research endeavors to identify the practices and expectations of the usage of Social Medium as a channel for marketing Higher Educational institutions. The research looks in to the following objectives to understand the practices of Social Medium in marketing;

- Is there a demand for Social Medium as a preferred medium of marketing communications from the consumers end?
- What is the Higher Educational institution marketers' opinion about using Social Medium as a channel for marketing?
- What are the current practices prevailing in using Social Medium in marketing Higher Educational institutions?

In considering the above mentioned objectives the research further investigates the trends in other similar industries in using the Social Medium but focuses on the education industry. New Zealand being one of the latest countries to offer international education as global destination makes it an interesting case to study since it had good opportunities to implement a Social Media marketing strategy in formulating their national marketing strategy as a preferred destination choice.

1.3 Significance of the study

Foreign students play a major role in the sustained economic growth and continue to impact positively in creating a multicultural nation in New Zealand (Bedford, 2006). A diverse student population enriches the learning environment and study experiences of the local students. But the choice of destinations now demands a higher degree of resource mobilization as it involves motivating the consumers on a one to one basis since Higher Education is considered as a high involvement choice (Gary, 1991). This study investigates a novel tool that has potential to gain a ripple effect in the market and establish a long term brand value through word of mouth. This is achieved through engaging the potential customers by mobilizing existing ones in creating this ripple. To the best of this researcher's knowledge this is one of the pioneering studies about the medium of Social Medium usage in marketing particularly by the education industry of New Zealand. The findings of this study will establish a benchmark for these highly disorganized industry standards by using this social medium in marketing. This standard might contribute towards the growth in this potential sector to compete in this highly competitive international market. The marketers need evidence that the customers of the Higher Educational institutions have gone through a paradigm shift and trust their peers more than the claims made by reputable institutions. This study provides the opportunity to collect this evidence and recommend possible strategies in this new marketing environment. This study could potentially present an advantage for New Zealand Higher Education organizations to optimize fully their Internet marketing strategy and cash-in to this opportunity as a market leader in utilizing Social Medium as a marketing tool. The findings of this study will be particularly beneficial for universities and other Higher Education institutions as it directly investigates the needs and demands for their potential customers (students). The findings of this study also indirectly influence the policies governing the market development for education industry by the New Zealand government and contribute towards their strategy formulation. The academic world also benefits by recording the application of various Social Media theories and testing various hypotheses through this conceptual framework.

1.4 Research scope and limitations

Due to limitations of time and budget, the study was only focused on a snapshot at a particular time. Any wider impacts through the development of different international factors of decision making (e.g. the world economy, culture, comparative status of the New Zealand institutions by world standards) could not be incorporated in the study.

2. Literature review

The fairly new field of Social Media Networking has created a ripple in the business world and is a subject of considerable interest among the practitioners as well as academicians as discussed in chapter one. This section aims to establish a knowledge gap in this field and propose the focus of this study through a comprehensive review of the current literature about the theories and practices in this field.

2.1 Marketing defined

The definition of Marketing is a highly debated subject among the academicians and the practitioners who actually apply the theories in the field (Hunt, 1976; Dann, 2010; Morgan, 1996). It really is a matter of conceptualizing the contextual aspects that should perhaps define the scope of a marketing effort. Wiebe (1952) for example, asks, *"Can social products be marketed?"*. If marketing is simply a process of accommodating exchanges between two or more parties (Chartered Institute of Marketing (CIM), 2005) can this be generalized for any business or social transactions? Should marketing be considered solely as a business function or can various other social behavioral theories be applied to understand the processes better and as a result relate this understanding with the phenomenal changes that are being reported by various marketing practitioners due to the availability of Social Media networks among the consumers. Is this a myth? Or are we really experiencing a paradigm shift that is redefining the processes of how we, as consumers, make our decisions of choice and purchase?

2.2 Higher Education in New Zealand

New Zealand: a player in the international education market enjoys a new entrant status among all its competitors. The economic reforms by the David Lange government in mid 1980s transformed the domestic labour market creating demands for "White collared" jobs. The skill requirement variation led more and more students to seek tertiary education resulting in new enrolments in the Higher Educational institutions. Enrolment has risen from roughly 120,000 in 1985 to 431,573 in 2011 (Education counts, 2011). This fourfold increase in the student numbers can be rationalized in two basic influences. One of course, was the increase in domestic demand due to the policy changes but the major contribution towards these additional numbers coming was when New Zealand opened up

their market for Higher Education from 1990 as a possible destination. The Higher Educational institutions including the universities, polytechnics and private tertiary educators became good candidates as destinations for international students in a globally competitive market. This new approach of delivering the services in a competitive market transformed the age old universities and their business processes. Suddenly the universities were competing for their share of the market not only internationally but also for the domestic market. Universities and other Higher Education providers had to have a strong marketing team and effective strategies to market their courses in the market. This has lead to a continuous process of innovative marketing strategies resorting towards latest technologies to reach their markets. Recent news reports shows considerable interest in using Social Media by the Higher Education institutes (Scoop, 2013) there are demands from their students. But before these claims can be generalized it is necessary to rationalize the decision through considerable research and practical studies of the return on the investment in this media. Managers certainly will be skeptic in adopting a media without testing it further.

2.3 Social Media as a vehicle for marketing
This section addresses the first research question of this study. Social Media as noted by Google (2013) makes up most of the current web traffic. Facebook followed by YouTube are the top two web sites that attract the most visitors all around the world. And the unprecedented growth of the Internet as reported by Internet World Stats (2013) of 566% over the last twelve years established this medium as one of the most accessed medium the nature of this medium being less resource demanding (cheap), accessibility (24/7 availability), ability to provide interactive communication makes it one of the richest medium for marketing. Many practitioners and market leaders have effectively used Internet to gain considerable profits through better reach and market penetration. Social Media as one of the offsets of this rich media carries all the attractive characteristics and in addition to that it introduces the novelty of interactivity and consumer generated contents to add additional value to the marketing efforts.

The theoretical framework of rationalizing the popularity of this medium has been the focus of many recent researchers (Gaudin, 2010; Contractor, 2009 and Evans, 2008). This research limits its scope of analysis with the context of Higher Educational institutions and attempts to relate the summary of their analyses with the purchase funnel of the students making their decision about destination of their study.

2.4 Student decision making on choice of institution
As a result of the transformation of educational services it is becoming a commercialized product, strongly influenced by the expectations of its consumers. The other key characteristic of educational services is it is inseparable from the service provider. This poses an extra challenge to the marketers as that will force them to bring their consumers to them or take the services to their customers. This is a life changing decision for the customers and considered as a high involvement choice (Gary, 1991; Mazzoral, 1998; Mazzoral and Soutar, 2002). The students are influenced by a complex matrix of factors that includes both intangibles and tangibles. Intangible factors may include the brand of the institution, the quality and relevance of the courses that they offer or even the reputation of the educators involved in those institutions. Lamb et. al. (2008). investigated the decision making process and proposed a few tangible elements that can be used for marketing efforts. He termed them as 'cues' that include physical facilities, staff profiles and their publications that sends the signal to the prospective learners to choose their destination institutions. Lamb et.al. (2008) proposes that these cues can be marketed aggressively to achieve the expected marketing outcome.

The focus on tangibility is perhaps an easy way of pushing the prospective students through the purchase funnel but it will not be prudent to question this strategy's affectivity when thinking about a long term competitive advantage through a well designed marketing strategy. In a high involvement purchase decision perhaps the students might put more emphases on the intangible factors as mentioned earlier. And it is perhaps the referral process through word of mouth that will be given more importance compared to the claims made by the degree offering institutions on their websites. Many researchers have identified this source of information as more credible than the latter one (Crotts, 1999; Perdue, 1993). With the availability of Social Media spreading this word has become much easier than it was in the past. One cannot emphasize more, the power of the post purchase feedbacks in an educational institution's marketing context.

2.5 Theoretical relevance of the Social Media marketing

Psychological Ownership theory

Asatryan and Oh (2008) using the example of the hospitality industry explained the affinity towards feedbacks from a Psychological Ownership Theory perspective. Consumers tend to grow an affinity towards the organizations that they receive service from and take ownership of the feedback that they leave on their sites. This comment shows justification why Social Media users might be inclined to actively spread by word of mouth, their experiences about a school if suitable platforms are provided. And this is perhaps where the greatest possibilities for Higher Educational institutions exist in gaining a long term intangible asset through the branding process from their customers, the students.

Social Exchange theory

The Social Exchange Theory formulated by Emerson (1976) considers the cost benefit analyses as the basis of any social interaction. To get involved in a social behaviour one should have vested interest within an interaction. Both the parties should feel obliged to attain a social interaction through benefits for each. The social interactive environment should be designed in the virtual world in such a way that the parties involved can identify these benefits. For example, the leading Social Media, Facebook, creates its tangible benefits through a sense of personal information sharing within their networks, LinkedIn creates the same through building professional networks. Any organization attempting to make marketing advantage should carefully consider the inner strategy of benefit design and choose the relevant media to their marketing objective.

Social Network Analysis

The traditional social network theory (Wasserman and Faust, 1994) treats the members of a community as nodes of communication and the nature of interaction between these nodes will determine the affectivity of each edge. The mathematical modelling, using this theory, will determine the reach of each of the networks. Social Media reach can be estimated using this theory.

McLuhan's Media Theory

One of the major aspects of interest for the marketers in the Social Media context is the content generated by the users of Social Media. This is important because it is the content created within a context that will have an elaborated impact in the potential market. McLuhan (1995) explained, this generation of contents by dividing the media into two distinctive categories. He explained that 'cool' media requires the viewers to make considerable effort and involvement to understand the context whereas the 'hot' media will require comparatively lesser effort. Perhaps this author's famous quote, "the media is the message" explains this best in apply this theory in a Social Media context. This why the marketers should be very careful in determining the right media for the message they are sending. One might speculate having the right media is more important than the message in it. As the messages being generated by the users will be determined by the Social Media that they are using. A "Like" and a "Comment" on the Facebook will have much elaboration compared to the 140 character limitations on Twitter. An update on class cancellation may be effective on Twitter but this might not be a very effective medium to generate interest about a particular course or service within a Higher Educational institution.

2.6 The framework for study

The above discussion using the relevant theories of Social Media clearly indicates that an existing robust framework is available for creating a basis of an exploratory study about affectivity of Social Media usage and benchmarking a standard for future practices. The discussion summarizes that a Social Media decision, in order to measure its effectiveness can be measured in three distinct areas asking the following questions:

- Firstly, effectiveness will involve whether the players will have sufficient incentive to get involved in these interactions?
- Secondly, whether the reach can be estimated of a particular media that the marketers will be using?
- Finally, whether the message that the marketers are trying to send will fit into the medium that they are trying to use?

The marketing goals will be achieved if a Social Media marketing strategy of a Higher Education institution can push the consumer through the final decision making process, i.e. purchase decision. Due to the ever changing environment of this particular sector it has become very important to understand how to employ this powerful tool, i.e. Social Media on the Internet to motivate the consumers to consume and stay competitive in the global market.

3. Methodology

The framework of this study guides the research for collection and analysis of relevant data. A customized tool was developed (Appendix I) to compare and contrast the Social Media Usage of the New Zealand Higher Education institutions. The tool was named *Social Media Marketing Attributes (SMMA) Analysis tool*. For every institution using Social Media, 1 point was allocated, and for every negative answer, 0 points were allocated. Further categorization of the institutions was carried through allocating points on the depth of involvement of these institutions in using Social Media for their marketing and communication purpose. An overall score for each institution was analysed after totalling the score for each institution. Institutions from the New Zealand tertiary sector were randomly selected from the New Zealand Qualifications Authority (NZQA, 2012) website. A simple random sampling technique was selected to ensure representation of the entire population. An overall population size was determined by simply identifying the total number of institutions listed on the NZQA website. The total number of enlisted organisations was nineteen hundred and four. The sample size decision in of the study was decided by using the table developed by Krejcie and Morgan (1970). The minimum sample size determined for the study was 320. The analysis was carried out on 349 sample institutions from this list.

4. Results

New Zealand has three types of Higher Education institutions: universities, polytechnics and private tertiary educators (PTEs). Out of this population, a sample size of 349 institutions was chosen for this study. All the university websites (8), polytechnics (13) and three hundred and twenty eight private tertiary educators' were investigated in this part of the study. The private tertiary educators were picked up randomly from the New Zealand Qualifications Authority (NZQA) website.

The representation in the sample as summarized in the following table 4-A is in line with the total population where majority of the population of Higher Education institutes are privately owned followed by a limited number of polytechnics and universities in New Zealand.

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- Table 4-A: Sample representations of different types of Higher Education institutes

Type of the Institutes	Sample representation (n)	Percentage	Mean Score
University	8	2.29 %	3.375
Polytechnic	13	3.72%	2.230
PTEs	328	93.98%	0.948
Overall	349	100%	1.05

Proportionately the types in the sample representation could be summarized as Universities: Polytechnics: PTEs = 2: 4: 94. That also reflects the population characteristics. Different types of organizations clearly demonstrated a varied performance on the scale. Out of a total score of 5; Universities scored the highest (3.375) followed by Polytechnics (2.230) and PTE scoring the least (0.948). This shows that while the universities are much more proactive in using this Medium compared to the other two groups they still can improve their performance by increasing their involvement in this Medium. Overall mean average of only 1.05 out of a total of 5.00 is considered to be a very poor performance and indicates the lack of attention and efforts to use this Medium as a mode of communication.

Further to this analysis the research was interested in categorizing these institutions based on their performance and the nature of participation within the Social Media pages. Since there are many forms of Social Media including Facebook, Twitter, Blogs, MySpace, YouTube etc. the comments recorded were generalized comments made by the surveyors on overall performance. In order to keep the comments unbiased a code book was used by all the surveyors and three surveyors were used for the same sample and results were averaged to make the assumptions as close to reality as possible.

Analysis on the usage and practices of Social Media needed further in depth look rather than just who are using this medium. Following table 4-B summarizes the nature of the usage of this medium as a communication and marketing channel. This also gives a snapshot of different categories of usage among the sample that rightly represents the population.

- Table 4-B: Social Media Marketing Attributes (SMMA) analysis of Higher Education institutes from New Zealand

SMMA Analysis of Higher Education Institutes from New Zealand		
Categories of Usage	Nos using Social Media	Percentage having Social Media
Type 1 (Score 5)	1	0.29
Type 2 (Score 4)	9	2.58
Type 3 (Score 3)	87	24.93
Type 4 (Score 2)	28	8.02
Type 5 (Score 1)	9	2.58
Type 6 (Score 0)	215	61.60
Total Counts	349	100

Out of the 349 educational institutes surveyed only 134 institutes had some sort of Social Media presence one way or another. This represents only 38.40 % of the total institutes surveyed. Since the researcher could not find any similar surveys in the literature review it could not be compared with a benchmark standard but less than half of the organizations using this easily accessible, readily available medium for marketing communications show some degree of scepticism and to some extent distrust.

Among the 134 institutes who are using this medium only 1 (0.29%) had more than one pages and the marketing department and various other departments are actively posting updates and news to influence user interaction among this channel. This reflects a clearly defined Social Media Strategy that seems to be rare in most of the organizations that have been surveyed. Another type of organization that has been identified in this survey represented a group, which had more than one page/channel on Social Medium. They posted regular updates which were being posted by different departments and they seem to have been running their efforts independently. This shows a lack of overall integrated strategy for Social Media marketing among these organizations. They represented about 2.5 % of the total organizations surveyed. The third category that was identified included organizations that had a single page/channel running on this media and the students were interacting with each other commenting on various events and news that are posted by their institutions. This represented major portion of the sample i.e. 33%. A fourth type of Social Media behaviour was observed in another category where there were initiatives by the institutes of participation in the Social Media though a single page/channel but they are used for intermittent organizational notices but are seldom noticed by the target audience and commented upon. This represented 2.5% of the samples. A fifth category that had no Social Media activities represented 215 (61.60%) who seem to be the single major portion of the sample. The following table 4-C summarizes the results described above;

Table 4-C: Categorization of the types of Institutions.

Categories	SMMA Analysis Score Schedule	Representation on the sample	Type Representation
Category 1	Actively marketing through posting regularly from the marketing department and has more than one page	0.29%	100% University
Category 2	Has more than one page that accommodates learning activities in various courses through discussion	2.58%	44% University, 22% Polytechnics and 33% PTE
Category 3	Has a single page only that accommodates interaction between students commenting on the institution	32.95%	2% University, 6% Polytechnics and 92% PTE
Category 4	Has a single page providing institutional updates but very little interaction among the students	2.58%	100% PTE
Category 5	No Social Media pages	61.60%	0.5 % University, 2% Polytechnics 97.5% PTE

In the above categorization institutions scoring of 3 and 4 in the Social Media performance were grouped together as they demonstrated very little difference in their level of involvement with the Social Media communications. Type of institutions included in each of these categories also gives a distinctive profile which can be correlated with their overall marketing efforts. Majority of the institutions from category 1 and 2 were Universities or Polytechnics having a robust administrative structure and ensured government funding that probably induces them to have a well maintained marketing team and infrastructure to use the latest medium of communications in their communication channels and marketing media. Above results when summarized indicates very little current interest in committing resources towards *Social Media Marketing.* This provides us with an indication of what the higher educational institution marketers thought about this medium as a marketing tool, our second research question. Their lack of interest clearly demonstrates the distrust on this tool.

- **5. Discussions on findings**

Extending the analysis in Table 4-C, each of these categories can be utilized to establish the types of activities that they are doing and explore a link with the Constantidines's (2004) model where he proposed that the organizations can influence their consumers' purchase decision in two basic approaches; through *Active involvement* and *Passive influence* using Social Media.

Table 5-A: Social Media Marketing Strategy Analysis of the Higher Education institutions from NZ.
- (Source : Developed by the author after Constantidines, 2004)

Category	Activities	Social Media front	Type of involvement
Category 1	PR and Direct Marketing; Reaching the new influencers; Personalizing customer experience; Tapping customer creativity; Listening in.	Blogs Twitter Facebook YouTube MySpace	Both Active and Passive
Category 2	PR and Direct Marketing; Reaching the new influencers; Personalizing customer experience; Listening in.	Facebook pages YouTube Twitter	Both Passive and somewhat active participation
Category 3	PR and Direct Marketing; Personalizing customer experience; Listening in.	Facebook page	Mostly passive a few active strategy
Category 4	PR and Direct Marketing; Listening in.	Facebook page	Passive and One active strategy
Category 5	X	X	Social Media marketing strategy absent

Table 5-A explains different types of strategies adopted by the Higher Education institutions from New Zealand. This summary indicates that there are still opportunities for this medium in this industry if the demand from the customer end can established through a research. The above section addresses the third research question of this study.

Social Media is a very interactive dynamic medium that provides with a lot of opportunities. At the same time it creates challenges for the marketers to develop conforming marketing strategies. Previous researchers have certainly supported this claim that this conformation needs to be carried out in order to stay competitive in the market (Kreutzer & Hinz, 2010; Mangold & Faulds, 2009). Affectivity of traditional media and current marketing strategies using unidirectional communications and mass marketing efforts have been questioned as the target audience seem to have lost trust on this medium (Constantinidines & Fountain, 2008). Customers seem to value this new media more through direct involvement and looks at this from a sense of ownership as they also generate the contents within them (Mangold and Faulds, 2009).

Although New Zealand Higher Education institutions compete in a global market, the findings from this study questions the current media that they are using and their effectiveness. There have been very few studies carried out in the New Zealand market that enlightening with the choice of medium for marketers in this industry. Khan & Ali (2011) claims that the choices in this market seem to be very unpredictable and often on a make shift basis that lacks overall strategic goals. This research also discovered similar trends where lack of attention towards a strategic choice might have contributed towards the low usage of this medium within the New Zealand Higher Education institutions. The greatest challenge that using interactive Social Media creates is establishing the context where the target audience are motivated enough to involve themselves in the discussion. Without their participation this medium perhaps is left with a dead effort. This is perhaps why we see, almost 36% of the samples from categories 3 and 4, although they were involved in Social Media marketing in one way or another, were failing to create the so called "Buzz" that is targeted in using this medium for marketing purposes.

The following Figure 5-A discuss a process model development based on the Grőnroos (2004) framework to work out a value creation process within these Higher Education institutions.
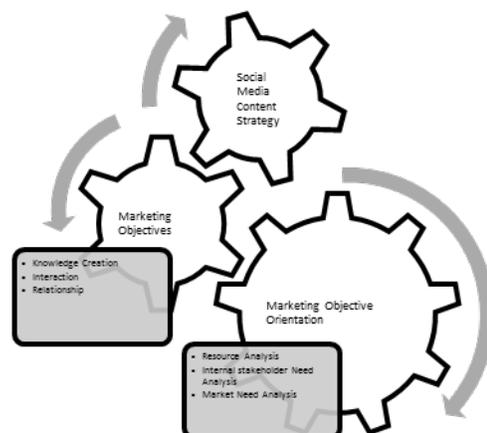
Figure 5-A: Conceptual framework for building Social Media Content strategy for Higher Education Institutions from NZ.
Source: (Developed by the author based on Grőnroos (2004).

Grőnroos (2004) describes three major elements in an effective Social Media strategy: Knowledge Creation, Interaction, and Relationship. The participants could find themselves involved in all these three aspects in order to take part in the Social Media interaction and start adding value to the marketing efforts of the institutions. These objectives are very contextual and need to be customized based on the institutions' internal stakeholder (shareholders, teachers and administrators) needs, market (students) needs. As well they are based on actual resource analysis where a practical analysis was carried out to establish the market readiness for a dynamic medium such as Social Media. If all these relationships are assessed in creating the marketing communications objectives the stakeholder participation should ensure the constant conformation of the Social Media contents which will help the choice of the right platform for the organization to communicate constantly with the prospective customers.

-
- **6. Conclusion**

The study gives a snapshot of the supply side of the information for Higher Education institutions' Social Media strategy for New Zealand. In answer to the research questions set forth, we can conclude that there is a clear demand from the consumer end for this medium to be used as a marketing channel. Higher educational institutions lack confidence on this medium thus the lack of current use. And due to the distrust and lack of commitment the resource mobilization for identifying clear effective strategy in using this medium is evidently absent among the current practices by the higher educational institutions from New Zealand.

Information gathered and analysed in this study will be a valuable resource in understanding the strategy formulation process in these institutions. But in order to establish an overall picture of this media further study is required on the demand side of this medium. The data can be used to triangulate an overall picture of the current state of strategies of Social Media marketing of these institutions. Further studies may include focuses on inter-industry comparison of Social media usage in marketing, a time series analysis of development of this medium as a marketing tool.

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Appendix I: SMMA Analysis Sheet

Categories	SMMA Analysis Score Schedule	Active/ Not Active (1/0)	Activity Score	Total Score
Category 1	Actively marketing through posting regularly from the marketing department and has more than one page		4	
Category 2	Has more than one page that accommodate learning activities in various courses through discussion		3	
Category 3	Has a single page only that accommodate interaction between students commenting on the institution		2	
Category 4	Has a single page providing institutional updates but very little interaction among the students		1	
Category 5	No Social media pages		0	

13th International Educational Technology Conference

Maternal weight gain and correlation with birth weight infants

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Abstract

Objective: Maternal weight gain affect the infant birth weight. Aim of this study was to describe maternal weight gain during all trimester of pregnancy and its correlation with the birth weight.

Methods: Pregnant women who got antenatal care in Adam Malik General Hospital and Sundari Hospital, underwent body weight measurement during routine examination at first, second and third trimester and also at delivery time at those hospital. Baby birth weight also measured after delivery.

Results: Maternal weight gain increased its peak point at the second and third trimester with overall total weight gain ranged at 5 – 20 kg during pregnancy. Baby birth on normal weight ranged at 2500 – 4000 grams (SD + 399,86). Maternal weight gain was more higher in the primi gravida group compared with multi and grandemulti gravida groups. There is correlation between maternal weight gain with baby birth weight with $p = 0,03$ ($p<0,05$, CI 95%), even the correlation was weak.

Conclusion: Maternal weight gain in the second and third trimester showed statistically significance difference with baby birth weight. Adequate total maternal weight gain based on IOM recommendation considered for resulting a better outcome and better birthweight of the babies.

Keywords: Maternal weight, infant birth weight, body mass index

Introduction

The gestational period determine the quality of human resources and depend on the intra uterine condition. Healthy pregnant women with a good nutritional status certainly improves the outcome of baby. Low birth weight rate in developing countries were higher four times than developed countries. More than 9 million babies die each year, 98% occur in developing countries and most of them caused by low birth weight. Therefore, optimal maternal weight gain is essential for better outcome.

In 1987, The Global Safe Motherhood Initiative was launched for improving the coverage of Antenatal Care and counseling around the world. This Program concentrated on Nutritional status and Maternal weight gain during pregnancy. Institute of Medicine (IOM) in 2009, issued a new revision of maternal weight gain recommendation from the earlier version of 1990 according to Body Mass Index (BMI) pre-pregnancy.

Aims of the present study were 1). To compare maternal weight gain in all trimester and total weight gain during pregnancy, 2). To evaluate the relationship between total maternal weight gain and infant birth weight.

Patients and Methods

Patients

Pregnant women who were getting ante natal care in Adam Malik General Hospital and Sundari Hospital between August 2012 and January 2013 were eligible for this study. All eligible patients were on delivery time got body weight measurement before and 24 hours after baby birth. And then, maternal weight gain during first, second, and third trimester were collected from the Antenatal record from outpatient care.

Statistical Analysis

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All data were analyzed with the Statistical Package for the Social Sciences. Correlation between maternal weight gain and infant birth weight were computerized by using Pearson test. P values < 0,05 were considered significant.

Results

Patients Characteristics

104 eligible pregnant women were get ante natal care and delivered at Adam Malik General Hospital and Sundari Hospital in Medan.

Table 1 showed distribution of subject based on age, parity, pre-pregnancy body weight, height, body mass index and gestational age. As results, most of subjects were on 20-35 years with normoweight in body mass index. Most of them were on 38 weeks of gestational age.

Table 1

Patients Characteristics

	Total (n=104)
Age (years)	
<20	7 (6,7%)
20-35	84 (80,8%)
>35	13 (12,5%)
Parity	
Primi	44 (42,3%)
Multi	59 (56,7%)
Grandemulti	1 (1,0%)
Pre-pregnancy body weight (kg)	
Mean	53,06 ($\pm$ 7,09)
Height (cm)	
Mean	155,85 ($\pm$ 5,8)
Body Mass Index	
Mean	21,78 ($\pm$ 2,06)
Gestational Age	
37 weeks	5 (4,8%)
38 weeks	54 (51,9%)
39 weeks	31 (29,8%)
40 weeks	14 (13,5%)

Table 2 showed relations of age and maternal weight gain each trimester. As results, maternal weight gain in third trimester have statistically significance difference between pregnant women from 20-35 years group, with p-value 0,01 ; 5,45 (p-value < 0,05, CI 95%). On the other hand, no statistically significance difference between maternal weight gain in the first and second trimester between age group with p-value 0,150, and 0,415 respectively (p-value < 0,05, CI 95%).

Table 2
Relationship between maternal weight gain each trimester

	Age			
	<20 (SD)	20-35 (SD)	>35 (SD)	*p-value*
Trimester				
First	0,43(1,13)	0,93(0,91)	0,92(0,93)	0,150
Second	5,00(2,84)	5,33(1,93)	4,50(2,96)	0,415
Third	4,64(2,17)	5,75(2,19)	5,45(2,05)	0,014

Table 3
Maternal weight gain each trimester

Body weight (Kg)	Minimal	Maximal	Mean	SD
Trimester I	0	3,50	0,90	0,92
Trimester II	0	10,00	5,21	2,14
Trimester III	0,5	10,50	5,45	2,24
Total increase in Weight	5	20,00	11,56	3,50

Kruskall-Wallis test p=0,0001

Table 3 showed maternal weight gain in each trimesters. As results, there is statistically significance difference between maternal weight gain in each trimester with Kruskall-Wallis test obtained $p < 0,0001$. In overall pregnancy, total maternal weight gain ranged at 5-20 kg (11,56 $\pm$ 3,5)

Table 4
Average of total maternal weight gain and baby birth weight according to gestational age

Gestational Ages		Maternal weight gain (Kg)	Anova Test P value	Birth weight (gr)	Anova Test P value
37 week	Mean	13		3430.0	
	Std. Deviation	2.72	0.351	426.61458	0.113
	Minimum	9.5		2850.00	

	Maximum	17.0	3800.00
38 week	Mean	11.23	3068.52
	Std. Deviation	3.43	316.57011
	Minimum	5	2500.00
	Maximum	20	3800.00
39 week	Mean	12.26	3127.74
	Std. Deviation	3.32	327.35006
	Minimum	6	2650.00
	Maximum	19	4000.00
40 week	Mean	10.75	3185.71
	Std. Deviation	4.27	388.00702
	Minimum	5	2500.00
	Maximum	18	3800.00

Table 4 showed average total maternal weight gain and baby birth with gestational age when delivery. As results, no statistically significance difference with ANOVA test between both of gestational age and total maternal weight gain with p-value 0,351 (p>0,05), and gestational age and baby birth weight with p-value 0,113 (p>0,05). On the other hands, we found statistically significance difference between baby birth weight and gestational age at 37 and 38 weeks with p-value 0,023 (p<0,05).

Table 5
Relationship between maternal weight gain with parity in each trimesters.

	Primi (SD)	Parity Multi (SD)	Grande multi (SD)	*p-value*
Trimester				
First	0,86(0,92)	0,91(0,93)	2,0	0,444
Second	5,51(2,13)	5,01(2,15)	3,5	0,365
Third	6,08(2,18)	5,03(2,18)	2,0	0,018

Table 5 showed relationship between maternal weight gain with parity in each trimesters. As results, there is no statistically significance difference with maternal weight gain with parity in each trimester with p-value 0,44; 0,36; and 0,018 respectively (p>0,05, CI 95%).

Table 6
Maternal weight before and 24 hours after delivery

| | Body weight(Kg) | | | |
	Minimum	Maximum	Mean	SD
Before delivery	48,0	83,0	64,75	8,85
24 hours after	42,0	78,5	59,92	8,81

paired t-test, p = 0,0001

Table 6 showed significance difference between maternal body weight before and 24 hours after delivery with average differences of 4,83 Kg from paired t-test with p-value < 0,05.

Table 7

Infant birth weight

| | Body weight (gr) | | | |
	Minimum	Maximum	Mean	SD
Infant	2500.0	4000.0	3119	399.86

Table 8

Correlation between total maternal weight gain and infant birth weight

| | Body weight(Kg) | |
	r	p
Total maternal weight gain with infant birth weight	0,213	0,03

From this study, babies were born at normal weight ranged at 2500-4000 grams as seen in Table 7. Table 8 showed that there is significant correlation between total maternal weight gain with baby birth weight with p-value 0,03 (p<0,05) but shows a weak correlation (r=0,2).

Discussion

Women with normal body mass index before pregnancy promised a better outcome for pregnancy itself, also for the outcome of baby birth. Pregnant women with inadequate maternal weight gain were often result on low baby birth weight and increase perinatal morbidity and mortality. On the other hands, over increase of maternal weight gain also resulted on poor fetal outcome and affect the methods of delivery later.

Our study shows that patient with normal body mass index before pregnancy resulted in adequate baby birth weight, as far poor prognosis can be alleviated. Our study showed that maternal weight gain increase significantly during second and third trimester, with total maternal weight gain ranged at 5-20 kg.

This maternal weight gain was proper with the IOM recommendation about maternal weight gain during pregnancy. Ota, et al (2011), and Yang, et al (2005) found the same result with our study. Maybe, it is because of decreasing emesis symptoms in second trimester and also increasing of uterine size and volume, so does the other maternal organic tissues. Maternal weight gain also affected by Leptin, a protein-like produced by adipose tissue that regulate appetite and body weight.

There is significance difference of maternal weight gain before and 24 hours after delivery. Based on parity, it seems that maternal weight gain showed significance changes in primigravida in the third trimester. Higher parity showed higher maternal weight gain compared with other groups.

Finally, our study showed there is correlation among total maternal weight gain with baby birth weight with p-value = 0,03 (p<0,05, CI 95%), but poor correlation (r=0,2). Total maternal weight gain seems predict birth weight of baby. Unfortunately, baby birth weight not only influenced by maternal weight gain, but also amniotic fluid increases, placental tissue, maternal oedema, and maternal tissue enlargement.

In conclusion, our study shows that maternal weight gain should be based on IOM recommendation and also consider optimal maternal age in order to get sufficient baby birth weight. Adequate maternal weight gain resulted on low morbidity and mortality in fetal and also maternal.

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13ᵗʰ International Educational Technology Conference

Media, moral education and professional ethics of journalists in Slovakia

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Abstract

Is the media a reflection of our times and is the world really what the media presented to be, or is it just fiction, a virtual reality? Is the image of reality with its moral problems which we watch every day in media merely a kind of virtual morality or is it morality itself, real and genuine? According to author, media "create" reality, including morality, be it real or just virtual (tele-morality), and, undoubtedly, have a great influence on modern man's way of thinking and acting including children and young generation and their moral education. A very often the influence of media is not acceptable for moral education and morality of society.

Keywords: media, morality, moral education, Slovakia, professional ethics, journalists

Introduction

"Within the past thirty years, the world has produced more information than in the course of the preceding five thousand years... A single print-out of a Sunday issue of *The New York Times* contains more information than an educated person in the 18ᵗʰ century could acquire throughout their whole life. Every day, various media (magazines, book, documents, diskettes, CD-ROM) have twenty million words of technical information printed on them. Even a reader able to read eight hours a day, a thousand words a minute would need a month and a half to go through all the information issued in one day. Within this time, he would slide back in time by five and a half years... A piece of information that, for a long time, was rare and expensive is now over-abundant and has become a source of pollution. On the one hand, the better it sells, the cheaper and cheaper it becomes; on the other hand, though, it becomes more and more contaminated" (Ramonet, 2003, p. 188). The times we live in are, thus, often justly called the information or media age.

Media and Moral Education

Information can be contaminated in many different ways. From deliberate alteration, via biased obfuscation and manipulation, the choice of information, to trivialisation of values by selection and formulation of the content of broadcasting, newspapers or magazines. Media, and especially television, show death and violence daily, be it murders, bombings, assaults, thefts, accidents, usually causing death or "at least" serious injury, or catastrophes in the form of earthquake, fire, flood, etc. which cause high casualties and huge material loss. Violence and death, in this way, become a common, everyday issue of our life; "thanks to" media and especially television, we get used to violence, criminality and various forms of violent death being a natural, or even inseparable, part of our life and present. "Television" is said to be especially "a source of entertainment, it mainly lives on blood, violence and death" (Ramonet, 2003, p. 148).

Rightfully, a question arises of what this means for ethics and morality. Is the media a reflection of our times and is the world really what the media presented to be, or is it just fiction, a virtual reality? Is the image of reality with its moral problems which we watch every day in media merely a kind of virtual morality, or is it morality itself, real and genuine? By virtual morality I especially mean the issue of morality, presented in media, mainly on television,

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in newspapers and magazines. Mark Poster is of the opinion that the start of the information age will lead to destruction or questioning existing ethical principles. In his opinion, ethics, as we know it, is questioned by its virtual influence on complicating reality. If a need for new ethical rules for media or the culture brought by media, arises, then, according to him, it would be better to remove the previous system of ethics. He claims that this problem did not exist while media were set in a certain time and space, but the birth of new technologies and their combination more and more erases the border between real and virtual relationships. Media, in the internet era, change our ethical surroundings, it can connect many things which, in real life, exist separately and transform the cultural bases of ethics by removing borders existing in time and space around local communities (Poster, 2003, pp. 181-187).

Undoubtedly, we can agree with the author in that media are able to artificially connect many things which, in real life, exist separately and, to some extent, transform the cultural basis of ethics by removing the borders in time and space. As an example to support his opinion, Poster mentions an event that was once referred to in *The Los Angeles Times*. A surgeon carried out a sex-change operation and broadcast it on the internet. Poster claims that the ethics of sex change is questioned by many people but, as long as it stays within the walls of the operating theatre, it does not incite moral emotions. According to the newspaper, the ethical problem was caused due to the existence of media which made it possible. What is important is that the action which, in a certain context, could be considered acceptable, provoked moral discussions due to media making it accessible by broadcasting it (Poster, 2003, p. 187). I do not quite agree with the author on this point, as the actual moral problem of sex-change existed independently from media broadcasting. The importance of media could lie in making the problem visible, raising a discussion around it and, another problem is, whether it was something to be put on the internet or directly broadcast by electronic media. This is what I would consider an even more serious moral problem.

Another typical phenomenon of the present media age is television "educating" us to go through intense emotions right in front of TV cameras. What was, in the past, restricted to private, intimate experience and especially sorrow, troubles or humiliation, now becomes public "thanks to" TV channels, their presenters and cameras. Protagonists present their sorrow and sadness of tragedies or loss of their relatives, strife and humiliation right in front of cameras and microphones. Presenters, in an effort to gain exclusive and spectacular shots or statements, do not hesitate to bother the participants of the tragedy in the hardest instances of their lives when they have just lost their closest relatives, the roof over their heads and, possibly, all their property. Instead of compassion, consideration and moderation towards the sorrow of the mourners, they choose an approach that is borderline scavenging, all in an effort to bring as authentic reports as possible. "Thanks to" these reports, we witness media in their misery and scavenging of television. Tears in front of cameras, sighs, voices of the victims or their relatives full of grief, shots of bloody and crippled human bodies including the actual process of dying are all offered almost live, with their exclusivity being emphasized that the channel in question has managed to capture and it is a very bad influence especially for moral education of young people. Their message for the viewer's often sounds incredibly arrogant, insensitive and inhuman: Look, we are number one in the media market because we offer shots you cannot find anywhere else. Do you want to see death live? Do not go anywhere because, after the inevitable advertisements for the newest mobile phone with the most convenient deal, fastest internet connection, best washing powder, toothpaste or hair-dye, the sexiest deodorant or perfume, etc., we will offer it exclusively even with the immediate message of the dying person to our viewers. Our viewers can exclusively hear his last words. We will interview him for the last time before he dies. It might be for the first time in his life, but that does not matter; he can enjoy his 15 minutes of fame while he is dying. Someone might find this absurd but this is reality presented by TV channels in an effort to astonish and shock their viewers. At first it could seem that this is a service they are providing the victims and their relatives with, as they incite compassion with their fate but, in the end, the outcome of this is an even higher level of ambivalence to tragedies, violence and victims as, thanks to TV channels, tragedies, criminality, and violent death are becoming an everyday reality to which our TV channels teach us to get used to directly in our living rooms.

In an effort to sustain the attention of a "fickle" viewer, they do not try to find about the causes of these tragedies, violence, etc., but only slide on the surface, look for information that has potential to become a cause-célèbre, to attract attention for a few minutes, hours or days and then, quickly, something else, new that would again astonish, shock, or incite strong emotions in viewers while the reporters are left cold-blooded and professionally ambivalent towards all this dying, death, suffering and pain of others. They only do their job. Then it becomes possible for a TV reporter to, without inhibition, stick a microphone in front of a paramedic's face, pester a doctor about the injuries of the victim in question which lead to his death and a cameraman not hesitate to film the face of a dying man scared to death. Not a bit of compassion for the dying person, not a bit of respect and human dignity for him or his family, just

a professional performance which is, however, expressive enough about the moral level of these journalists, but also those who decide about the content of these kinds of programs and those who have allowed their broadcasting.

Wolfgang Huber, with regard to this, talks about "culture of violence" spread by electronic media. He cautions that the way violence is presented on TV requires ethics not only on the side of media producers but also the consumers and their moral education. We live in a mediated reality; our image of reality is formed much more by media than our own unfiltered experience. This mediated reality is a manifestation of developed industrial societies where everybody lives in an artificially generated environment: politicians, actors, journalists, etc. Television brings death as an important part of our evening, daily into our privacy. Presentation of acts of violence and catastrophe has, however, a high rating among viewers. He cautions that media not only take away the dignity of the victims but also decrease the ethical sensitivity towards violence and affirms their bad influence for moral education in society (Huber, 1996, pp. 14-17). Media and journalists, according to Huber, have the responsibility for their actions, not the actions they bring the information of. They are responsible for the consequences resulting from their revealing and for the image of the event they are presenting. The journalists (in context their professional ethics) presenting violence for the sake of viewer ratings and publicity must be held responsible for their actions. They have to be aware of the fact that they are touching upon the integrity of people who have become a means for their success and publicity regardless of whether they are still alive or have died (Huber, 1996, p. 27). It is one of the main tasks of the professional ethics of journalists.

The American journalist Bernard Goldberg, on the basis of his long-term work for the American news channel CBS, has come to the conclusion that you must never, never underestimate how low the leadership of news channels, and especially TV channels, is willing to stoop to increase the viewer rating (Goldberg, 2002). Naturally, a distorted image of our reality, morality and life is created; life where we are constantly surrounded by tragedies, violence and death and, on the other hand, we are forced to accept tragedies, criminality and violent death as the most important phenomena which took place on a particular day or are taking place around us. In this way, virtual morality presented by TV channels is created, which tends to distort the reality we live in thanks to the power of electronic media. Just like a marketing slogan from a TV magazine: "Read what you live!" Simply, to find out what our life is like, we have to learn it from media. We could, then, slightly correct the well-known solipsistic claim of George Berkely, according to which "to be means to be perceived". At present, it could read "to be means to be on the TV screen". That means that what has not been captured by the lens of a TV camera or has not appeared on a TV screen does not seem to exist. Events gain legitimacy and historical value (real or fictional) only thanks to the TV screen. Media "create" reality, including morality and moral education, be it real or just virtual (tele-morality), and, undoubtedly, have a great influence on modern man's way of thinking and acting including children and young generation. According to Denis McQuail, the information, images and ideas provided by media can, for most people, be the main source of realizing the shared time (history) and the present social position. Media are also a store for memories and maps from which we can find out where we are at any moment (our identity); and, also, they provide us with material for future reference. Media, to a significant extent, constitute social reality (McQuail, 2010, pp. 82-83).

Media, however, only present a section of reality, several stones of the mosaic of the era we live in; nevertheless, they are presented to us in such an intense and convincing way that they have the power to impose upon the viewer or reader that events happened exactly how they were presented and that it was the most important thing that happened on that day in Slovakia or in the world. Television logic overpowers life logic. The transmission is right and truthful; it is reality that is false (Ramonet, 2003, p. 141). The role of media, with regard to its relationship towards reality, could be compared to the metaphor of the Platonian cave where, on its back wall, we can see a reflection or shadows of what is happening outside, in front of the cave. When it comes to reality or "reality" constructed by media; we, however, cannot be sure of whether it is actual reality or just its reflection having been created or mixed for us by media. Many times could we see for ourselves that media are able to present fiction as reality or to construct their own "reality" to make it more interesting, or sexier, as one of the advisors to the former British Prime Minister Tony Blair claimed, with regard to altering information about the threat posed by Iraq towards Great Britain and the world, when they wanted to convince the British public and parliament of the need for fast action against the regime of Saddam Hussein.

In the past, there were no opinion polls and in the conditions of the only state or, later, public TV channel, viewer ratings and profit were not a criterion for evaluating journalists' work; thus, news reporting and journalism paid more attention to real, or at least what appeared to be topical matters and entertainment programs were supposed to provide relaxation for the viewers or listeners. It could be said that media, in the past, fulfilled positive tasks, besides negative ones, to a much larger extent with regard to education (including moral education) and spreading culture.

At present, when the "survival" of commercial TV channels and their individual programs depends directly on viewer ratings and advertising revenue, it seems that everything and anything is allowed in media which is not directly prohibited by law or for which a TV channel has not been handed several multi-million fines by the Committee for Retransmission and TV Broadcasting. Until then, even death live or stripping at castings for a trashy reality show, etc., is possible without reasoning on their negative influence and consequences for moral education children and young people.

Evidence to the fact that we, as viewers, have accepted this game of TV channels and that we want to be seen and to medially exist is given by our willingness to go through our joy, troubles, sorrow and pain in front of cameras and, consequently, watch it and be proud we have been on TV. How else can we explain the fact that children anonymously invite their parents, or other close relatives invite each other to a TV studio to tell them that they love them (Mail for You – a popular Slovak TV program) or to quarrelling in front of TV cameras or blaming each other for an unsuccessful marriage (Wife Swap), from talking about their unfulfilled sexual desires and disagreements (Divorced with Kids – a Slovak dating show), to presenting their incompetence in bringing up their own children (Supernanny) or incompetence in producing any musical sound (Pop Idol – the world-wide syndicated talent show which is in Slovakia called "Slovakia searches for a Superstar"). It looks like many people, in this media age (and especially TV age) under the influence of television and its image of the reality we are said to live in, lose all inhibition, ability to judge the situation and be aware of the humiliation they present in front of cameras and the audience. They want to be on TV at any cost, even when it harms them as a result. Then it is possible, in some exceptional cases, that pathological individuals are able to murder someone just to be written about in newspapers and magazines or talked about on TV. Luckily enough, we have not had such a case in Slovakia but, thanks to strong Americanization of our popular mass culture we can expect this to happen any time soon. Some indication of TV channels being able to make murderers or attempted murderers into TV stars can already be seen in our country. An example can be found in the program Reflex which recently showed the story of a daughter who, during a trivial argument, tried to murder her mother and, after a period of time, they both claimed how sorry they were about what had happened and the mother pleaded for her daughter's mercy as she was pregnant. An interesting change of events: the daughter, who only through luck, did not become the murderer of her own mother, is now the one who needs compassion because her deed was due to her carelessness and she is pregnant.

Television, besides the tendency to present tragedies, criminality and violent death, also tends to trivialize our life. A dog cemetery in Prague where celebrities bury their pets, various "elite" parties where 1 or 2-year old children of celebrities are made into stars because they need to be exposed on the media scene, as well as pets of these celebrities often become the center of TV attention. TV channels, according to this pattern, produce "celebrities" out of peculiar individuals, most of whom are here today, gone tomorrow and, rarely, hang around much longer than that but, still, with a very limited shelf-life. Such attention of media and, especially, television and its durability has very negative consequences for young generation and its moral education because of fall down real moral values and emphasizing especially consumerism and hedonism in the present-day life.

Real life and everyday issues of our present are paid very little attention. Real successes of people in business, science and research, education, culture, medicine and health care, etc. is, for the present media age, not interesting enough; these common matters are not said to attract the attention of viewers or readers. Therefore, they are usually offered "appetizers" to be digested as soon as possible without any stomach irritation or constipation because they must be ready to accept many more, similarly easy-to-digest "appetizers" tomorrow, the day after tomorrow and, actually every day and, especially, stay loyal to the TV channel, newspaper or magazine in question. People, as they say, want to have fun and, thus, they should be entertained no matter what. A TV channel that, in the past, also had educational goals (including moral educational aims) in an effort to cultivate its viewers and a human personality as such has become a medium focused on providing entertainment for the broadest masses, which, as a result, means the simplest form of fun, offering escape from reality through easy solutions to what to buy, how to dress, what to cook and where to go on holiday so that TV channels sustain the highest possible ratings and, thus, have the highest profit from advertisements. Advertisements and the profit they offer is the Alfa and Omega of the present media. Petr Dvořák, the former director of the Czech TV channel Nova expressed a similar view when he said that "profit is the king" (Nádoba, 2007).

It is questionable whether it is possible to say that TV channels in Slovakia broadcast some sort of culture and education or whether it is only cheap entertainment focused on commercial success. According to Ignacio Ramonet, on present TV, mainly films, sports, games, and programs full of rudeness and vulgarity (i.e. trashy reality shows) are shown (Ramonet, 2003, p. 116). That means that it is in no way a feature specific to Slovakia but a trend which has been experienced and verified by many foreign production companies. Why is that? It seems to also reflect the

cultural and moral level of viewers but it cannot be said that it is a symptom of the decline of civilization and morality, as we can probably come across similar behavior in every era of history, although the manifestation is specific to the time.

A special chapter is formed by TV reality shows which can have various focus and content, some offer a better form of entertainment (such as dancing shows or final rounds of singing competitions) than others which only offer very questionable quality with exhibitionist performers or even shows marketed with charitable intentions (the dance show Bailando). The main aim, however, lying behind these charitable events is the profit to be gained from advertisements and SMS voting. Naturally, TV channels also promote themselves emphasizing their "good will" on the Slovak TV scene.

The objectivity of news and its content which we are offered by media is one thing but the image of the world, including morality (and moral education) around us, created by these media is, in my opinion, much more important. It is, however, questionable whether media created it at their own discretion or just feed people's interest in fairy tales. Even the story of Princess Diana, her unsuccessful marriage, love affairs, charity work and tragic death is actually a modern media fairy tale for adults (soap opera). There is, however, a much more important issue with a strong ethical and moral dimension: how is it possible that it is tabloids which have the highest costs, the highest readerships or viewer ratings? Opinion forming newspapers and magazines do not even come close in competition with tabloid newspapers and magazines. Why is it? Are we so immoral, so corrupted? Or is there a different reason? But why? We could partly agree with Ignacio Ramonet that high viewer ratings of reality shows, soap operas and similar light entertainment TV genres (and, we could also say high sales of tabloid newspapers) says more about the society who actually watches and reads them than about what they really express (Ramonet, 2003, p. 193). According to Ramonet, media are based around three main topics: death, love and humor (2003, p. 46). We could agree that it is more or less variations of these topics that we mainly find on TV. However, it is, then, questionable whether we as well, under the influence of media, do not reduce our lives to these three areas, as these three topics of life are essential in the virtual morality.

Ignacio Ramonet claims that, in the television industry, information is also a commodity (2003, p. 9); thus, its primary aim is not to be truthful but to sell well, i.e. able to create the potential to maximize profit in the short or medium term. According to him, it is not the contents that plays the decisive role in the sales figures or viewer ratings of a particular medium, but fantastic headlines (Ramonet, 2003, p. 13). Simply, people want food and fun. As people are often forgetful and impatient, or disloyal, they need to be provided with newer and newer ways of fun all the time not to be bored with monotonous offerings and make them switch to the competition. Media, and electronic media in particular, also have power, including some degree of political power which we could also witness in the 1990s. Only when the Slovak TV channel Markíza had sided with the anti-Mečiar (the former Slovak Prime Minister) opposition, formed the media party SOP (Strana občianskeho porozumenia – Citizens' Understanding Party), did the opposition manage to defeat Mečiar and his party. Similarly, in the elections of 2002, the same channel helped the ANO party (Aliancia nového občana – Alliance of New Citizens) get into parliament. Experience, however, shows that the influence on citizens' consciousness must be permanent, as political preferences are very fickle and short term. As an example, we could mention Russia where, in spite of decades of ideological propaganda, the Communists lost the very first elections in the 1990s after they had lost their ideological monopoly on television.

Media and politics have, for various reasons, a lot in common, mainly because they have the power to manipulate public opinion. Nevertheless, there are other similarities. Giorgio Agamben points out the emptiness of politics, which could also be said for media. Evidence of the emptiness of politics and the subsequent absence of ideas and values can also be seen in the unification and, possibly, trivialization of ideas and values. Or have they just been transformed in the face of the future? It is hard to say. A manifestation of this could be seen in the overlapping of public and private matters (thanks to media and politics). Agamben, with regard to this, writes about selling out human emotions and, according to him, the silence in Italian society is a consequence of the media noise. A question for psychologists, sociologists and philosophers arises as to why people want private matters to become public (tabloid media) and, vice versa, public matters to become private (politicians)? The first ones want to know about things that are none of their business and are trivial for them, the other ones do not want us to know about things that concern us and are anything but trivial. Around that a "media noise", as Agamben called it, is created. However, in most cases, the noise is nothing but dressing-up which reveals less than it covers. Have media revealed anything important in Slovakia? No, nothing. The same can be said about media as Agamben wrote about politicians: they try to pretend to be objective, impartial, to show respect and fairness, etc. In most cases, however, they are only concerned with increasing sales figures and the interest of businesses to place advertisements; thus, in the end, in the

profit for the owners or publishers (Agamben, 2000, pp. 93-95). Naturally, truthfulness of information is, in this case, a by-product which is only used when it helps to, in the case of media, increase viewer ratings and sales and, in the case of politicians or political parties, voting preferences. Otherwise, it is something that could work as a "break" or an obstacle on the way to economic or political success in the close future. In this respect, Ramonet has come to a remarkable conclusion: "In our intellectual environment, media truth is the truth that matters. What is this truth like? If print media, radio or television claim an event true, then it is considered true. Even if it is not the case. Now, the truth is what is considered true by media as a whole" (Ramonet, 2003, p. 64). His opinion on how to find out whether the information is truthful is also interesting. He suggests comparing the information provided by various media. Simple and easy, is it not? Possible problems arising from this recommendation can, however, be seen in Orwell's novel *1984*, where the task of the Ministry of Truth was to lie and alter all information in media, and even go as far as to present the newest lie as the only truth in all media. Lying, in this way, became legitimate and institutionalized into the form of one and only truth, however, only valid until the next lie appeared (Orwell, 2013).

We can fully agree with Agamben in that the predominance of information, the noise of media leads the viewers, listeners or readers to the point where they are unable to perceive the information pouring from all around about what is happening in the whole world, about where something trivial has happened such as David Beckham's new hairstyle, their first party in the home in Los Angeles, Paris Hilton's imprisonment for drunk driving and her talk show appearance after she had been released and was fined 1 million dollars, etc. This, then, leads to apathy, carelessness and resignation towards what is happening around us. We often know more about Hollywood stars or Slovakia's so-called celebrities than about our own neighbors, colleagues at work, etc. It seems we live, through media, someone else's life, or are neighbors of stars who, in various forms, come directly to our living rooms every day to "tell" us who they went with to a great party, where they went shopping, what they bought and how much it cost. This great amount of information also brings great opportunity to manipulate the viewers, listeners and readers. Is there a direct relationship between the amount of information and the degree of freedom? I think that while, during totalitarianism, the effort to manipulate individual and public opinion was realized by concealing information, as, also in Slovakia, there were a lot of areas which were never mentioned or written about; in democratic societies, there is a tendency to manipulate by superiority of information. The louder the noise, the less you can hear a sensible word. Ramonet, with regard to this, has stated that "...television is a medium of the simple and, thus, having too much information almost automatically brings some form of misinformation. A profusion of news – often raw – broadcast in "real time" often stimulates the TV viewer (or the radio listener) and provides him with an illusion he is informed. However, after a period of time, it almost always proves to be a trap" (Ramonet, 2003, p. 162).

Media are one of the strongest points of present world globalization and, "thanks to" media, the world of morality (and also moral education), or virtual morality (including virtual moral education) is also becoming globalized. Media "educate" us to experience tragedies and catastrophes in various parts of the world. Within a very short time, within several minutes, we witness floods in China and India, a mining tragedy in the USA, terrorist attacks in Iraq, a flight accident in Brazil, etc. We find out about the catastrophes that have taken place on the other side of the world sooner than we learn about many other things, having happened much closer and with a much stronger impact on our own life. Globalization makes us almost direct participants in world events; however, deprives us of experiencing our own life and living it to the fullest, and, in a way, trivializes our own life, the relationship to our relatives and the values we respect and pursue. How many of us live a life similar to that of South- or Central-American soap opera characters, American sitcom heroes, Hollywood celebrities or even Slovak glitterati? Then, we can have the impression that we do not live a life worthy of the media age because we have not managed to appear on the TV screen. This seems to motivate many individuals to look for any possible way to attract the attention of media and enjoy their Warholian 15 minutes of fame. According to Denis McQuail as long as values and ideas are concerned, in a secularized society, media tend to "take over" the influence originally possessed by parents, religion, school, siblings and friends. As a consequence, we are actually addicted to media in the whole area of our broader "symbolic environment" (i.e. "images in our heads "). And it does not matter to what extent we are able to create our own, personal version of this environment. We tend, more and more, to share the same media sources and the same "media culture", because media probably create the elements we share with others (McQuail, 2010, p. 83).

Conclusion

Denis McQuail claims that media, on the one hand, are a source of power, a means of potential influence, an environment where events of public life take place, a source of social reality interpretation, the primary key to fame and the environment which sets the publicly accepted form of normality (McQuail, 2010, p. 17). Yes, we can agree that the present Slovak media partially and, to various extents, really fulfill these implications. It is, however, questionable to what extent and by what means they, for instance, create social reality and the criteria of normality within morality in present-day Slovakia and what is their influence on moral education of young people in Slovakia. I seem to be fairly skeptical on this issue, as Slovak virtual morality interpreted by the most significant Slovak media at present is a very reduced, simplified and, to a substantial extent, distorted image of our reality and also moral education in Slovakia. We could surely agree with his opinion that media also have an indisputably positive potential, i.e. they can provide space for mutual communication within the public, pay attention to socially disadvantaged or unjustly handicapped individuals and groups, uphold the law and punish crime, support the existing moral norms and avoid what gives rise to strong public disapproval (McQuail, 2010, p. 170). Undoubtedly, Slovak media also have this potential; however, it is questionable to what extent they actually use it and whether the ability to positively influence is marginal to their interest and attention.

Acknowledgements

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Meslek Yüksekokulu Öğrencilerinin Visual Basic Programlama Dersine Yönelik Öz Düzenleme Stratejilerinin Karşılaştırılması

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Özet

Bu çalışmada Visual Basic programlama dersi alan birinci ve ikinci öğretim öğrencilerinin öz düzenleme strateji alt boyutları (öz yeterlilik, öz yansıma, yineleme, değer verme, başkalarıyla çalışma, zaman, çaba, dışsal hedef, içsel hedef, hedef belirleme, yardım, üst biliş, strateji, düzenleme, açımlama) arasındaki fark incelenmiştir. Çalışmada, Pintrich ve diğerleri (1991) tarafından geliştirilen MSLQ (Motivated Strategies for Learning Questionnaire) ölçeğinden yararlanılarak Haşlaman T.(2005) tarafından geliştirilen Özdüzenleyici Öğrenme Stratejileri Ölçeği kullanılmıştır. Elde edilen verilerin analizinde bağımsız örneklem t-testi kullanılmıştır.Birinci öğretim ve ikinci öğretim öğrencilerinin istatistik sonuçları incelendiğinde, öz yansıma ve yardım puanları arasındaki fark anlamlı bulunmuş, diğer alt boyutlar arasında çıkan fark ise anlamlı bulunmamıştır.

Anahtar Kelimeler: Öz düzenleme,Özdüzenleyici öğrenme, özdüzenleyici öğrenme stratejileri

Abstract

In this study, the difference between first class students who studying at the Department of Computer Programming in Amasya University, about Visual Programming course for the sub-dimensions of self-regulation strategies (self-efficacy, self-reflection, repetition, valuing working with others, time, effort, external target, an internal target, goal setting, help, metacognition, strategy, editing, paraphrasing) were analyzed. In this study, by utilizing MSLQ (MotivatedStrategiesfor Learning Questionnaire) which developed by Pintrich et al (1991), and so Self Organizing Learning Strategies Scale which adapted by Haslaman T. (2005) was used. Independent samples t-test was used for the analysis of the data obtained. When statistical analysis of the results of the daytime education's students and evening education's students were examined, the difference between the scores of self-reflection and help was found meaningful but others were not found meaningful.

Keywords: Self-regulated learning, self-regulated learning, self-regulated learning strategies.

Giriş

Öz Düzenleme

Bireyler, hayatlarını kontrol etme ve düzenleme gücüne sahiptir.Cüceloğlu' na göre, başarının anlamı kendi yaşamınızda var olmaktırBireyin kendi hayatını yönlendirmesi, insanın kendi hayatını yaşaması,hayatın en önemli boyutudur. Kendi yaşamında var olmayan insan mutlu olamaz. Cüceloğlu' na göre kendi yaşamımızda var olabilmek için şu özelliklere sahip olmak gerekir.

- Zamanı verimli kullanmak
- Seçimlerini bilinçli yaparak planlamak
- Hedef belirlemek
- Amacını keşfetmek
- Kendini ve yeteneklerini bilmek(öz düzenleme)

Dolayısıyla Cüceloğlu' nun bu sözlerinden, öz düzenleme becerilerinin farkında olmayan ya da öz düzenleme becerileri zayıf olan bireyin başarı kazanmasının zor olduğunu söylemek mümkündür.

"Öz" kelimesi TDK' da "varlığın aslını kuran şey; temel özellik" olarak tanımlanmıştır. Öz düzenleme ise kişinin kendi varlığının, özelliklerinin farkında olması olarak tanımlanabilir.Öz düzenleme becerileri, bireylerin eğitim bilgiye ulaşabilmesi, bilgiyi özümsemesinin yanı sıra yaşam boyu öğrenmelerini etkileyen önemli bir unsurdur.

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Ülkemizde öz düzenleme ile ilgili çalışmaların son zamanlarda yoğunlaşmasına rağmen öz düzenleme kavramı, 1986 yılında Bandura' nın Sosyal Öğrenme Kuramı sayesinde dikkat çekmiştir. Bandura (1977)' ya göre de insanların davranışları, sadece dışsal pekiştireçler ve cezalarla kontrol edilemez yani insanlar davranışlarını büyük ölçüde kendi kendilerine düzenlerler.Bireylerin birbirlerinden etkilenmesi, öz düzenleme, öz-yeterlilik, üst biliş stratejilerini kullanma gibi birçok beceri sosyal etkileşim ile şekillenmekte ve öğrenilmektedir.

Pajares' in (2002) görüşü Bandura' yı destekler niteliktedir.Bireyler davranışçı yaklaşımın aksine tepkisel organizmalar olarak değil, öz örgütleyici (self-organized), etken, öz yansıtıcı (self-reflective) ve öz düzenleyici (self-regulating) canlılar olarak ele alınmalıdır.

Öz düzenleme,Bandura'nın sosyalbilişsel kuramının dayandığı altı ilkeden birinioluşturmaktadır. Bu ilke insanların ne kadar çalışacaklarını, ne kadar uykuuyuyacaklarını, neleryiyeceklerini, neler içeceklerini ne kadarkonuşacaklarını, toplumda nasıl davranacaklarını vb.birçokdavranışlarınıkendilerinin kontrol etmesi esasına dayanır (Senemoğlu, 2004).

Sosyalbilişsel kuramcılara göre öz düzenlemeyi öğrenme, sadece kişisel süreçler iletanımlanamaz. Bu süreçlerin çevresel ve davranışsal olaylar tarafından daetkileneceği dikkate alınmalıdır. Öğrenme ve sosyal etkileşim arasındaki ilişkiyi inceleyen Greeno (2009), bilmenin bireyi, araçları, çevredeki diğer kişileri ve bilginin uygulandığı etkinlikleri içeren bir süreç olduğunu belirtmektedir ve birey ile çevre arasındaki bağıntıya dikkat çekmektedir. Öğrenmenin sosyal bir etkileşim sürecinde bireysel gelişimle oldukça ilişkili olduğunu göstermektedir.(Akt.ALTUN)

Sosyal bilişsel kuramcılardan biri olan Zimmerman (1986), öğrenicilerinkendi öğrenmesüreçlerinde meta-bilişsel, motivasyonel ve aktif olmaderecelerine göre öz düzenleyici olaraktanımlanabileceklerini belirtmiş,öğrenicilerin kalifiye bir öz düzenleyiciolabilmeleriiçin öz düzenleyici stratejilerinin kullanımına, performans becerilerindeki özyeterlik algılarına ve kendi akademik amaçları hakkındaki düşüncelerine dikkat çekmiştir. Bu tanımdaki öz düzenleyicistratejiler öğrenme stratejileri,bilgi ve yetenek elde etmekle doğrudan bağlantılıolan bilgiyi transfer etme, organize etme,yardım arama, tekrarlama gibi metotları içerir.

Pintrich (2000) öz düzenleyici öğrenmeyi öğrenenin, öğrenme hedeflerini belirlerken aktif ve yapılandırmacı bir süreç izlemesi ve ardından hedefleri doğrultusunda kendi üstbiliş, motivasyon ve davranışlarını izlemesi, kontrol etmesi ve düzenlemesi olarak açıklamıştır. Pintrich bu tanımlamayı yaparken öz düzenleyici öğrenme modellerinin hemfikir olduğu dört kabulden yola çıkmıştır. Bu kabuller;

- Öğrenenler kendi öğrenme süreçlerinde aktif ve yapılandırmacı bir süreç izler.
- Öğrenenler hedefleri doğrultusunda kendi üst biliş, motivasyon ve davranışlarını izler, kontrol eder ve düzenler.
- Sürecin olması gerektiği gibi olup olmadığı ve süreçte birtakım şeylerin değişip değişmeyeceğinin belirlenmesi için bazı kıstas ya da standartlar vardır.
- Öz düzenleme etkinlikleri bireyin başarı ya da performansı ile bireyin kişisel ve çevresel özellikleri arasında aracıdır.

Öğrencilerin öğrenmelerinin, öz düzenleyici olarak nitelendirilebilmeleri için akademik amaçlar doğrultusunda öz yeterlik algılarına dayalı belirli stratejilerin kullanımını içermelidir (Zimmerman 1989). Bu tanım öz düzenleyici öğrenme stratejilerinin, becerileri uygulamadaki öz yeterlik algısının ve akademik hedeflere bağlı kalmanın önemini vurgulamaktadır.

Öz düzenleyici öğrenme stratejileri; öğrencilerin bilgi işleme süreçlerini planlama, düzenleme, geliştirme, değiştirme gibi üst bilişsel stratejileri (Zimmerman ve Martinez-Pons, 1986; 1988); akademik görevler üzerindeki çabalarının kontrolünü ve yönetimini sağlayan stratejileri (Pintrich ve De Groot, 1990) ve öğrenmede kullanılan materyalleri anlamayı, öğrenmeyi ve hatırlamayı içeren yineleme, ayrıntılandırma, düzenleme gibi bilişsel stratejilerdir (Zimmerman ve Martinez- Pons, 1986; 1988). Özyeterlik bireyin belli bir davranışı istediği düzeyde ortaya koyma ya da kendi öğrenme kapasitesine ilişkin inancıdır (Bandura, 1986). Hedefler ise notlar, sosyal saygı ya da mezun olduktan sonra iş bulma fırsatlarını gibi davranışları içermektedir (Zimmerman 1989). Ancak genellikle bilişsel ve üst bilişselstratejilerle ilgili bilgiler öğrencilerin başarılarını arttırmak için yeterli değildir, öğrenciler bu stratejileri kullanma, kendi biliş ve çabalarını düzenlemeye güdülenmelidirler (Pintrich ve De Groot, 1990). Bu doğrultuda öğrencinin öğrenme isteğini artırma konusunda bile öz düzenleme yapabileceği ileri sürülebilir.

Öğrenenin öğrenme sürecindeki bu etkin ve lider rolü tüm öz düzenlemeli öğrenme kuram ve modellerinde görülmektedir. Bu alanın önde gelen isimleri süreçte herkesin içsel yeteneklere sahip olduğu konusunda birleşmektedirler. Buna ek olarak, bugün gelinen noktada, öz düzenlemeli öğrenmenin, öğrencilerin seçme, birleştirme ve bilişsel becerilerini en etkili şekilde düzenleme yetenekleri olduğu noktasında birleşildiği görülmektedir. (Boekaerts, 1999).

Öz düzenlemeli öğrenmenin döngüsel bir süreçtir.Alan yazın incelendiğinde, Zimmerman'ın (1998) döngüsel modelinin kavramsal açıdan temel teşkil ettiği görülmektedir. Bu modelde öz düzenlemeli öğrenme sürecinin üç evreden oluştuğu görülmektedir: Önceden düşünme (forethought), performans denetimi (performancecontrol) ve özyansıma (self- rejection).

Önceden Düşünme (Forethought)

Bu evre, öğrenenin başarısını etkileyecek inançları,yargıları ve düşünceleri içeren ve öğrenme aşamasınıhazırlayan içsel bir süreçtir.Öğrenen, herhangi bir öğrenme ünitesi ile karşılaştığında önceden düşünme evresi başlamış olur.Önceden düşünme evresinin alt süreçleri hedef belirleme, taktikselplanlama, özyeterlik inancı ve içsel ilgidir(Bembenutty ve Zimmerman, 2003).

Hedef belirleyebilme:

Öğrenenin öğrenme sürecindekullanacağı taktiklerin seçiminde öncelikli aşamadır. Öz düzenlemeli öğrenme becerisine sahipöğrenciler, öğrenme sürecinde hedeflerinive kullanılacak taktikleri devamlı olarak üretebilmekte vedenetleyebilmektedirler.

Özyeterlik inancı:

Kavramsalolarak, kişinin belirli bir işi başarmayailişkin kendi eylemlerini gözönünde bulundurarak yaptığı yargılamadır. Akademik başarı bağlamında iseözyeterlik,öğrencinin öğrenme sürecindeki bilişsel becerilerine ya da akademik çalışmaperformansına duyduğugüveni içermektedir (Pintrich, 2000).

Hedef yönelimi:

Pintrich (2000) tarafından kişinin kendi belirlediği standartlarıkullanarak bir işi öğrenmesi ve ustalaşması, bir işi yapmak için gerekli başarı notuya da başka dışsal nedenler ve kendini başkaları ile karşılaştırabilme yeteneği olmak üzereüç boyutta tanımlanmıştır.

Zimmerman (2002) ise hedef yönelimini, bir kişinin kendifaydası doğrultusundaöğrenme sürecine değer biçmesi olarak tanımlamıştır. Genelbeklenti kuramında hedef yönelimi içsel hedefyönelimi ve dışsal hedef yönelimi olarakiki başlıkta ele alınmıştır. Bu kurama göre, içsel hedef yönelimi;öğrenmeye, uzmanlaşma,mücadele etme ve merak gibi hedefler doğrultusunda yaklaşılmasıdır.Dışsal hedef yönelimi ise, öğrenmeye başarı notu, ödüller ya da başkaları tarafındantakdir edilme gibi hedefler doğrultusundayaklaşılmasıdır (Mcwhaw, 1997, 46).

Performans Denetim Evresi (Performance Control)

Performans denetim evresi iki temel boyuttan ve bu boyutlara ait alt süreçlerdenoluşmaktadır: Kendinidenetleme ve kendini izleme.

Kendini denetleme, performans denetim evresisürecindeki belirli yöntem vetaktiklerin kullanımının düzenlenmesini ve denetimini içerir. Bu kontrol sürecindekullanılan belli başlı yöntemler ise, zihinde canlandırma, kendi kendine öğrenme,dikkat yoğunlaştırma ve görev taktikleridirKendi kendineöğrenme, öğrenme sürecinde öğrencinin kendine rehberlik etmesidir(Cobb, 2003). Dikkat yoğunlaşması ise, öğrencinin öğrenme sürecinde dikkatinidağıtacaketkenlerle mücadele etmesini sağlayan taktikler geliştirmesidir (Chung, 2006). Butaktikler çok fazla çaba gerektirmeyen içsel ayarlamalardır (Cobb, 2003Akt: Özmenteş,2008).

Öz düzenlemeli öğrenme sürecinde dikkatyoğunlaşmasıgüdüsel inançlarlayakın ilişki içerisindedir. Görev taktikleri ise öncelikli hedeflerin belirlenmesinde kullanılan taktikleriiçerir. Görev taktikleri aynı zamanda öğrenme ve performansın en gerekli ve temelöğelerininanlaşılmasını sağlar. Böylece öğrenen, öğrenme sürecinde hedefe ulaşmakiçin sadece gerekli olan yolu izleme şansı bulur (Chung, 2006).

Kendini izleme, öğrenenlerin öğrenme sürecinde elde ettikleri ürünlereilişkin veri toplamalarıdır. Kendiniizlemede başarılı olan kimseler performanslarındakiiyi ya da kötü yönleri kolayca ayırabilmektedirler (Cobb,2003).

Öz Yansıtma Evresi (Self-Reşection)

Kendine yansıtma evresi performans sonrasında öğreneninperformansına ilişkin değerlendirmeve tepkilerini içerir ve kendini yargılama ve öztepki süreçlerinden oluşur.(Zimmerman, 2002;Chung, 2006).Kendini değerlendirme ve yükleme kendiniyargılama sürecinin alt süreçleridir. Kendini değerlendirme, öğrenenin izlediği performansını,kendisine ait geçmiş performanslarla, diğer kişilerin performanslarıyla yada belirgin performans ölçütleri ilekarşılaştırması ve bu konuda bir yargıya ulaşmasıdır (Zimmerman, 2002).Kendini yargılamanın bir

başkasüreci olan yükleme ise, öğrenenin başarı yada başarısızlığının nedenlerine ilişkin inançlarıdır (Zimmerman,2002).

Öztepki süreci ise kendini değerlendirme ve yüklemeler ile çokyakından ilişkili olup, özdoyum ve uyum sağlama altsüreçlerine sahiptir. Özdoyum, öğrenenin elde ettiğisonuçlardan aldığı doyum ya dadoyumsuzluktur. Özdoyumun yükselmesi güdüyü arttırırken, az olması durumuöğrenme sürecindeki çabaları zayıflatmaktadır. (Schunk, 2001'den aktaran; Zimmerman,2002).

Kısaca, Zimmerman'ın döngüsel öz düzenlemeli öğrenme modelinde öncedendüşünme evresinde öğrenenin,öğrenme etkinliklerine hazırlandığını, performans denetimevresinde öğrenme etkinliklerinin yürütüldüğü vedenetlendiğini, kendine yansıtma evresinde ise, öğrenenin performansını ve öğrenmeürünlerini değerlendirdiği evre olduğunu söylemek mümkündür.

Öz Düzenleyici Öğrenen Özellikleri

Öz düzenleme becerilerine sahip olan bireylerden beklenen bazı özellikler vardır. Bu özellikler Winne' ye (1997) göre birkaç adımda gerçekleşir. İlk adımda birey, problemle karşılaştığında ön bilgi ve becerilerini gözden geçirmeli, problem çözümü için hedeflerini belirlemeli ve hedeflere yönelik olarak bilşsel, duyuşsal veya davranışsal yöntemleri uygulayarak çözüm üretebilmelidir.

Bu çalışmada öz düzenleme stratejileri açısından Görsel Programlama dersi alan birinciöğretim ve ikinci öğretim öğrencilerinin öz düzenleme stratejileri alt boyutları arasındaki fark incelenmiş ve aşağıda yer alan sorulara yanıt aranmıştır.

1. sınıf birinci öğretim ve ikinci öğretim öğrencilerinin öz düzenleme strateji alt boyutlarından;
   o öz yeterlilik puanları arasında anlamlı fark var mıdır?
   o öz yansıma puanları arasında anlamlı fark var mıdır?
   o yineleme puanları arasında anlamlı fark var mıdır?
   o değer verme puanları arasında anlamlı fark var mıdır?
   o başkalarıyla çalışma(akran) puanları arasında anlamlı fark var mıdır?
   o zaman puanları arasında anlamlı fark var mıdır?
   o çaba gösterme puanları arasında anlamlı fark var mıdır?
   o dışsal hedef puanları arasında anlamlı fark var mıdır?
   o İçsel hedef puanları arasında anlamlı fark var mıdır?
   o hedef belirleme puanları arasında anlamlı fark var mıdır?
   o yardım puanları arasında anlamlı fark var mıdır?
   o üst biliş puanları arasında anlamlı fark var mıdır?
   o strateji puanları arasında anlamlı fark var mıdır?
   o düzenleme puanları arasında anlamlı fark var mıdır?
   o açımlama puanları arasında anlamlı fark var mıdır?

Yöntem

Çalışma Grubu

. Çalışma örneklemini Amasya Üniversitesi Meslek Yüksekokulu Bilgisayar Programcılığı Bölümü Görsel Programlama dersi alan I. Sınıf birinci öğretim ve ikinci öğretim öğrencileri oluşturmaktadır. Araştırmada yer alan 49 öğrenciden 25'i kız, 24'ü erkektir

Veri Toplama Aracı

Araştırmada Pintrich ve diğerleri (1991) tarafından geliştirilen MSLQ ölçeğindenyararlanılmıştır. Bu ölçeğin orijinal hali iseBüyüköztürk, Akgün, Özkahveci ve Demireltarafından (2004) Türkçe'ye çevrilerek geçerlik vegüvenirlik çalışmaları yapılmıştır.Ölçekte veriler; kişisel bilgiler ve özdüzenleyici öğrenme stratejileri ölçeği (ÖÖSÖ) olmak üzere ikibölümden oluşanbir form ile toplanmıştır. Kişisel bilgiler bölümünde cinsiyeti,

sınıfı,bilgisayar kullanım süresi,ailede başka bilgisayar kullanan olup olmadığı, varsa kimler olduğu, hangiprogramlama dillerini bildiği,haftada kaç saat programlama dersine çalıştığı ve en son aldığıprogramlama dersi sorulmuştur. ÖÖSÖ bölümünde ise 15alt bölüm ve 77 maddeden oluşan ölçeyuygulanmıştır. Toplam 77 maddeden oluşan ölçeğin ön denemesiHaşlaman T. (2005)tarafından Hacettepe Üniversitesi MeslekYüksek Okulu Bilgisayar Programlama Bölümü birinci ve ikinci sınıföğrencilerinden elde edilenveriler üzerinde yapılmıştır (n=98). Katılımcılar ölçekte yeralan her birmaddeye ilişkin katılma düzeylerini, "beni hiç yansıtmıyor" (1) ile "beni tam olarakyansıtıyor" (10) arasındadeğişen Likert tipi onlu derecelendirme ölçeği üzerinde işaretlemişlerdir.

BULGULAR VE TARTIŞMA

İki farklı örneklem grubunun ortalamaları karşılaştırıldığından bağımsız iki örnek T –testi kullanılmıştır. Ortalama puanlar dikkate alındığında 1.sınıf birinci öğretim ve ikinci öğretim öğrencilerinin;

- öz yeterlilik puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.36, p>.05).
- öz yansıma puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmuştur (t(47)=2.20, p<.05).
- yineleme puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=2.20, p>.05).
- değer verme puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.28, p>.05).
- akran puanlarıpuanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=2.62, p>.05).
- zamanlama puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=0.69, p>.05).
- çaba gösterme puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.36, p>.05).
- dışsal hedef puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.00, p>.05).
- içsel hedef puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.00, p>.05).
- hedef belirleme puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.64, p>.05).
- öğrencilerinin yardım puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmuştur (t(47)=2.68, p<.05).
- biliş puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.03, p>.05).
- strateji puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.48, p>.05).
- düzenleme puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.72, p>.05).
- açımlama puanları arasında bir farklılık gözükmektedir. Bu farklılığın anlamlı olup olmadığını belirlemek amacıyla T testi uygulanmış ve fark anlamlı bulunmamıştır (t(47)=1.72, p>.05).

SONUÇ VE ÖNERİLER

Birinci öğretim ve ikinci öğretim öğrencilerine uygulanan ÖÖSÖ 'nin on beş değişkenle ilgili T testi sonuçları incelendiğindeöz yeterlilik, yineleme,değer verme,başkalarıyla(akran) çalışma, zaman, çaba gösterme, dışsal hedef, içsel hedef, hedef belirleme,üst biliş, strateji, düzenleme ve açımlama puanları arasında anlamlı bir fark bulunamamıştır. Ancak gündüz öğrencilerinin gece öğrencilerine göre yardım ve öz yansıma puanlarının daha yüksek olduğunu söylemek mümkündür.

Bireysel farklılıklar göz önüne alındığındaöz yansıma ve yardım puanlarında farklılık çıkması olası bir durumdur.Ancak gece öğrencilerinin öz yansıma değerlerinin yüksek çıkması amacıyla, öğrencilerin öğrenme süreci

içerisinde aktif olabilecekleri ve kendi öğrenmesini değerlendirebileceği ortamlar sağlanmalıdır (Üredi & Üredi, 2007).

Öğrencilerin başarılı olabilmek için öz düzenleme becerilerini geliştirmeleri gerekmektedir. Bu amacı gerçekleştirmek iöin de öğrenme ortamlarının düzenlenmesi gerektiğini belirtmekte fayda vardır. Bir öğrenme ortamı iyi yapılandırılmış ise öğrencilerin öz düzenleme becerilerini geliştirmek için fazla çaba sarfetmelerine gerek yoktur(Bernacki vd diğerleri, 2011). Bu nedenle öğrenme ortamlarının öğrencilerin ilgilerini çekecek, onların süreçte aktif olmasını sağlayacak, olabildiğince anlaşılır biçimde tasarlanması gerekir.

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Mobile Augmented Reality: the potential for education

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Abstract

The rapid evolution of technology has changed the face of education, especially when technology was combined with adequate pedagogical foundations. This combination has created new opportunities for improving the quality of teaching and learning experiences. Until recently, Augmented Reality (AR) is one of the latest technologies that offer a new way to educate. Due to the rising popularity of mobile devices globally, the widespread use of AR on mobile devices such as smartphones and tablets has become a growing phenomenon. Therefore, this paper reviews several literatures concerning the information about mobile augmented reality and exemplify the potentials for education.

Keywords: Augmented reality; mobile augmented reality; education

Introduction

Basically, a traditional method of education was carried out through face-to-face instructions where the knowledge and learning activities were all arranged and conveyed by the teacher (de Freitas, Rebolledo, Liarokapis, Magoulas & Poulovassilis, 2010; Liu, 2010). In addition, the learning material were also based on static material such as papers (Chao & Chen, 2009; Huang, Wu & Chen, 2012; Taketa, Hayashi, Kato & Noshida, 2007) in which static materials do not show any information in a dynamic way such as motion or continuous movement (Craig & Grath, 2007; Kühl, Scheiter, Gerjets & Gemballa, 2011). Although sometimes these existing methods work effectively, however there is an increasing interest of educators and researchers in introducing more useful methods to improve the teaching and learning experiences. As technology becomes increasingly widespread in the past few years, the integration of technology has influenced and revolutionized the way we teach and learn.

The transformation of teaching and learning caused by technology has certainly provides an exciting opportunities to design learning environment that are realistic, authentic, engaging and extremely fun (Kirkley & Kirkley, 2004). Besides, researchers also found that technology have always held a great promise for increasing student engagement and level in understanding the learning content (Di Serio, Ibáñez, & Kloos, 2012; Kreijns, Acker, Vermeulen, & Buuren, 2013; Roca & Gagné, 2008) among the key elements that leads to better academic results. Therefore, there has been a considerable concern over the use of emergent technology to support learning process. Indeed, there are many different technologies that have been integrated in the educational arena, among others such as the use of computer, multimedia, internet, e-learning, social web, simulations and more recently mobile devices and immersive environments such as games, virtual worlds and augmented reality (Dror, 2008; Martin, Diaz, Sancristobal, Gil, Castro & Peire, 2011).

As mentioned by the Emerging Technology Initiatives of New Media Consortium (NMC) in the most recent Horizon Reports (NMC 2010, 2011 and 2012), Augmented Reality (AR) is one of the emerging technologies that might have potential and impact on learning and education. Besides that, the emergence and widespread ownership of mobile devices has lead to an increased interest to integrate the benefits of mobile learning and AR applications. The advancements of AR is now a growing rapidly on mobile device, reflected by the increase in handheld computing usage in recent years across the world and resulted in creating a subset of AR: mobile AR. Due to the

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fact that educational research concerning mobile AR learning system is in its infancy and in an embryonic stage (Martin et al., 2011), this article is intended to provide an overview on information about Mobile Augmented Reality (MAR) and its potential used in education.

2. Understanding Augmented Reality

2.1 Definition and Taxonomy

Educators are always looking for a new way to teach students and Johnson, Smith, Willis, Levine and Haywood (2011) argue that AR is one of the new technologies which considered as having potential for pedagogical applications. Although in recent years AR is becoming increasingly widespread and has garnered much attention, the term AR has been defined in different meanings by researchers. Early on, as mentioned by Milgram, Takemura, Utsumi and Kishino (1994), they defined "augmented reality" into two approaches: broad and restricted approach. In term of broad sense, AR was defines as "augmenting natural feedback to the operator with simulated cues" while restricted approach highlight and defined AR as "a form of virtual reality where the participant's head-mounted display is transparent, allowing a clear view of the real world". Researcher such as Azuma (1997) tended to present a definition of AR based on a system that fulfills three basic criteria: (1) combination of real and virtual, (2) interactive in real time, and (3) 3D registration of virtual and real objects. A similar definition is proposed by other researchers (Höllerer & Feiner, 2004; Kaufmann, 2003; Zhou, Duh & Billinghurst, 2008), who define AR based on its features which the real and computer-generated information are combined in a physical world, interactively in real time, and display virtual object intrinsically align to real world orientation.

Besides that, Klopfer and Squire (2008) give an even broader perspective on AR, stating it as a situation in which a real world context is dynamically overlaid with coherent location or context sensitive virtual information. A less inclusive definition is provided by Martin et al., (2011) who indicated that the term AR is a system that is basically merging information such as images with video streamed from a webcam while as El Sayed, Zayed, and Sharawy (2011) states in their recent article, they describe AR as technology of adding virtual objects to real scenes through enabling the addition of missing information in real life. Even though a number of available AR experiences and applications have been increasingly receiving attention and continues to grow at an accelerating rate however, a consistent definition of AR does not exist (Mehler Bicher, Reiß & Steiger, 2011). Therefore in order to define AR, the commonly accepted definition by relevant studies always refers to a helpful visualization called "Milgram Reality-Virtuality Continuum" (see Fig 1.) by Milgram et al. (1994).

Milgram Reality-Virtuality Continuum is a scale ranging from a completely real environment (reality) which we can observed when viewing a real world to a completely virtual environment (virtuality). Within this continuum the space between real environment and virtual environment is called mixed reality (MR). It is straightforward to define MR as an environment where the real world and virtual world are blending together. As we can see from Fig. 1, MR consists of two main elements: one side is augmented reality and the other side is augmented virtuality (AV). AR is a combination of real and virtual object and contains a small amount of virtual data while AV is a concept where elements of reality being added to a virtual environment and contains more digital data.
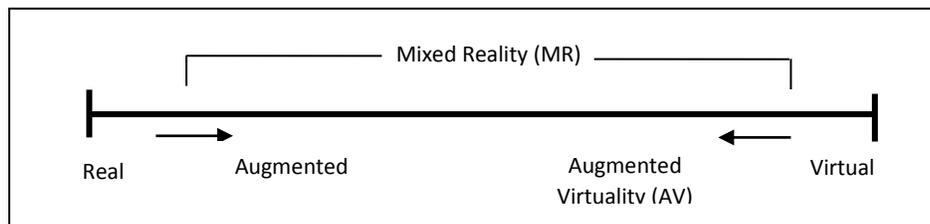
Fig. 1. Milgram Reality-Virtuality Continuum

2.2 Affordances of AR

Although AR is a new technology but the affordances and benefits to support learning were worth to mentioned and discussed. According Chien, Chen and Jeng (2010), AR has an ability to encourage kinaesthetic learning. Furthermore, since AR use 3D registration of virtual and real objects, it could allow user to view the learning

content in 3D perspectives. This affordance can help students who usually encounter difficulties to visualize the phenomena that are not possible to view in real world or complex concept. AR can support students by inspecting the 3D object or class materials from a variety of different perspectives or angles to enhance their understanding (Chen, Chi, Hung, & Kang, 2011). Squire and Klopfer (2007) also suggested that AR in a form of games can stimulate student' prior knowledge and increase the student level of engagement in academic activities. Moreover, AR also can enhance collaboration between students-students and also student-instructors (Billinghurst, 2002) as a result the transfer of learning can be maximized (Kaufmann & Schmalstieg, 2003). Additionally, in Di Serio et al., (2012) study, AR technology also has showed a positive impact on the motivation of middle-school students. It's proved that AR environments could boost students' motivation and interest, which in turn could help them to develop a better understanding in learning contents.

3. Mobile Augmented Reality

3.1 Introduction

In the present day, in conjunction with widespread use and emergence of mobile devices such as smartphones and tablets from a decade earlier provides individual people with communication, work, entertainment, internet access and even learning and instruction. A number of studies have found that mobile devices play a major role in education nowadays and sees the impact and advantages of these device in regards to the potential for pedagogical perspectives (Chen, Kao, & Sheu, 2003; Denk, Weber, & Belfin, 2007; FitzGerald, Adams, Ferguson, Gaved, Mor & Thomas, 2012; Hwang, Yang, Tsai, & Yang, 2009; Uzunboylu, Cavus, & Ercag, 2009; Zurita & Nussbaum, 2004). Interestingly, because of the development and rapid increase in mobile phone usage have made mobile augmented reality (MAR) possible (Azuma, Baillot, Behringer, Feiner, Julier, & MacIntyre, 2001; Papagiannakis, Singh & Thalmann, 2008) and beginning to expand rapidly. Therefore, in the next section, we want to introduce and discuss about some of the exemplary uses of MAR in education.

3.2 Mobile Augmented Reality application in Education

In 2006, Wagner, Schmalstieg, and Billinghurst developed an educational game based collaborative handheld called Virtuoso. Besides the AR version, the game was also implemented in Macromedia Flash on a desktop PC and as a paper game without any technology. The aim of this game is to sort a collection of artworks according to their date of creation along a timeline with 3 different conditions: a paper, a PC and a PDA. The results showed that although the players were tested with 3 different game conditions, there was no significant differences in educational outcomes were found. Interestingly, the players have paid more attention toward the conditions is in how space was used which players preferred paper and PDA version because of it allow them to collaborate more effectively over than PC version. Besides that, they also chose the PDA interface as the most enjoyable among the three conditions (Wagner et al., 2006)

The CONNECT is a project that use MAR technology based system developed to support students learning science both in the formal and informal learning environment. The CONNECT concept required student to wear a head mounted display (HMD) and related computer-mediated learning platform in order to visualize and interact physically and intellectually with learning environment that deal with instructional materials, through "hands on" experimentation and "minds on" reflection. In addition, student can also perform experiments that are not possible in school. To evaluate the usability and effectiveness of the CONNECT project, a study have been conducted with learners with physical disabilities (Arvanitis, Petrou, Knight, Savas, Sotiriou, Gargalakos, et al., 2007). The interesting finding from the study was that comparing the tests of the disable students with able-bodied students showed that they had almost the same results and this finding provides some support for the conceptual premise that the CONNECT project have the potential to improve the landscape of education especially for disabilities students

Schmalstieg and Wagner (2007) introduced Studierstube as a framework for the development of handheld Augmented Reality. Two mobile AR games were developed: "medien.welten" and "Expedition Schatzsuche". In medien.welten case study was designed for a target group of high school students aged 12-15. For this game, a group of players (two or three students) receiving one handheld that show a map of the exhibition and specify the current position of the players and lists of solved and remaining tasks. In Expedition Schatzsuche game, each of the subjects had been given their own handheld to play the game. The game concept was to answer the quest composed of puzzles and other tasks related to the exhibits. The evaluation was conducted through interview, observation, and

logging data in a case study with 12 students, all at age 12 years old who used handheld devices to discover historical artifacts. The results indicate that the students were very motivated and highly satisfactory (Schmalstieg & Wagner, 2007)

Squire and Klopfer (2007) collaborate with environmental science faculty at Massachusetts Institute of Technology by developing an augmented reality simulations called Environmental Detectives. This game required student to play the role as an environmental engineers and to give students experiences in conducting the environmental investigation in real world. Each pair of students can see their location on a map since there were given a mobile device equipped with GPS. After they used the application, its showed that Environmental Detectives can assists students to understand the socially situated nature of scientific practice.

In 2009, Dunleavy, Dede and Mitchell designed Alien Contact!, a MAR game that focus to teach math, language arts, and scientific literacy skills to middle and high school students. Alien Contact! was designed based on Massachusetts state standards and nurtures multiple higher-order thinking skills. In Alien Contact! as the students move around to their spot fields for example, a map on their handheld will displays virtual objects and people that exist in AR world superimposed on real space. The concept of the game is based on the scenario that aliens have landed on earth and working in a teams (four students per team) which consist of four roles: Chemist, Cryptologist, Computer Hacker, and FBI Agent. The students can interview virtual characters, collect digital items and solve science, math and language problems to answer the question and determine why the aliens have landed on earth. The objectives of this research are to determine how teachers and students feel toward teaching and learning within AR simulation environment and how they used the application. The results obtained from the study documented high student engagement across the three case study sites (Dunleavy et al., 2009)

In 2009, Ardito, Buono, Costabile, Lanzilotti and Piccinno presented a MAR game called Explore! with the aim to support during a visit and explorations of middle school students to archaeological sites in Italy. This game was played by groups of 3-5 middle school students in which each group was given 2 cell phones and the site's map on a paper. The concept of the game required students to explore important places in the sites supporting by some hints given on the cell phone by the game application. They can also discover the 3D reconstruction of how the places may have looked by using cell phone. The evaluation of field study using Explore! involved for a total of 42 students where19 students played the paper-based version of the game and another 23 students, played the mobile version. From the result of the study, its show those students enjoyed playing the game with Explore! but in term of learning, there are no significant differences were found between the two versions.

In 2009, Huizenga, Admiraal, Akkerman, and Dam have conducted a research by integrating the MAR games called Frequency 1550. This hybrid reality game was developed by The Waag Society to facilitate children to gain historical knowledge about Medieval Amsterdam. The research seeks to address student engagement in the game, historical knowledge, and motivation for History in general and the topic of the Middle Ages in particular. In order to answer their research questions, the children in 10 of the classes played the mobile history game whereas the children in the other 10 classes received a regular, project-based lesson series. For children who played the mobile history game, the game procedure start by forming a group of four or five children and divided into 2 teams: a city team (CT) consisting of two or three pupils who walk through the city and a headquarter team (HQT) consisting of the other two or three pupils who operate from behind the computer in the main building. They switch places after lunch so that each child has participated in both the CT and HQT at the end of the day. From the results of the study, they found that children who played the game to be engaged and to gain significantly more knowledge than those who received regular project-based instruction. For motivation aspect, no significant differences were found between the two groups.

Juan, Alem and Cano (2011) presented mobile AR game, ARGreenet that aim to increase people awareness of how important of recycling is and how to do it. In their study, they compared the ARGreenet with the basic mobile phone game for recycling topic. The participants involved in this study involved a total of 38 children where all of them experienced both games but in a different order. The evaluation aspects consist of the knowledge of recycling that the children perceived, the level of engagement, fun and easy to use, perceived willingness to change behaviour and comparison toward AR and non AR games. Based on the results of the study, there is no significant difference between the two games; however 69.4% of the children preferred the ARGreenet game, which they perceived it as easy to use and more engaging and fun than basic mobile phone game. In addition, the findings also show that the games had a positive influence on their intentions to change behaviours (Juan et al., 2011)

In a recent article, Tang and Ou (2012) carried out an experiment using AR and mobile technologies as an assistant tool for learning butterfly ecology. By integrating AR in this project, students can breed their own virtual caterpillars on host plants using the programs on their smart phones, and become familiar with butterfly's life cycle

by observing their growth. The campus AR butterfly ecological learning system was designed based on the learning unit of "Butterfly's Life Cycle" in nature science for the fourth-grade students in elementary schools. After using the AR system, the participants were randomly selected and assigned to experimental group and the control group. The statistical tests indicate that the learning effectiveness of experimental group was better than the control group. Therefore, it was shown that by using the AR butterfly ecological learning system can effectively help students enhance their learning.

Santoso, Yan and Gook (2012) from Institute of Ambient Intelligence (IAI) work together with Sungsan Elementary School (SES) by developing a Digital Edutainment Content based on Tangram toy as an existed edutainment media. The tangram toy edutainment content was used because of its value that can enhance student spatial cognitive ability. The application was developed using ipad version where the built-in camera will be activated automatically once the user chooses an AR session. After that, user needs to point the camera to the colourful marker on the book then the software will start looking and track the marker and displays the 3D virtual object of each marker.

Since history maybe considered as one of the hardest subjects for students, Martín, Díaz, Cáceres, Gago and Gibert (2012) presented an educational application called EnredaMadrid to cope with this complexity. The objective of EnredaMadrid is to teach the history of the city in the 17th century to students in the activity through previous online training and a later physical technological gymkhana. This application was built using mobile device based on geolocalisation and AR technology. The evaluation session toward the technology used in EnredaMadrid was carried out through questionnaire and the results indicate that AR is the most positive element in EnredaMadrid. Moreover, students stated that AR definitely contributes to make learning more fun and motivating and they believe that AR is the most appropriate tool to learn the history of the city (Martín et al, 2012).

Table 1. A summary of selected studies on MAR

Researcher	Application	Participant	Topic
Wagner et al. (2006)	Virtuoso	48 participants (aged 20- 43)	Art
Arvanitis et al (2007)	CONNECT	5 disabilities students (aged 15-18)	Science
Schmalstieg and Wagner (2007)	medien.welten	19 students (aged 12-15)	Historical
	Expedition Schatzsuche	12 students (all at age 12)	Historical
Squire and Klopfer (2007)	Environmental Detectives	two phases : university student (58 students) high school (18 students)	Environmental
Dunleavy et al. (2009)	Alien Contact!	80 middle and high school students	Math, language arts, and literacy skills
Ardito et al. (2009)	Explore!	42 students (aged11- 13)	Historical
Huizenga et al. (2009)	Frequency 1550	458 children (aged12-16)	Historical
Juan et al. (2011)	ARGreenet	38 students (aged 8-13)	Recycling
Tang and Ou (2012	Butterfly Ecological Learning System	60 students (elementary school)	Science
Martín et al. (2012)	EnredaMadrid	65 people (aged over 36)	Historical

4.0 Conclusion

As information technologies transform, educators have always looked to adopt new technologies into their classroom to enhance student learning experience. AR is one the growing technologies that have a great pedagogical potential and have been increasing recognized by educational researchers. With capabilities of merging virtual and real worlds together have give birth to new possibilities in improving the quality of teaching and learning activity. The effectiveness of AR can be further extended when it combine with other type of technologies such as mobile device. When AR is connecting to innovative technology such as mobile device, the term Mobile Augmented Reality (MAR) arises.

As has been presented earlier, MAR learning based systems are more focus mostly on games or simulation and with the ability of mobile devices which has the features and properties such as portability, social interactivity, connectivity, context sensitivity and individuality (Huizenga et al., 2009) have make a learning experience more meaningful. Based on the previous studies that has been discussed previously, most of the participants had never experienced an AR and MAR, however overall participants felt motivated, enjoyed and the research show a positive educational effects on participants that leads to students to achieve higher levels of engagement in learning performance.

In conclusion, although most of previous studies showed a positive impact and encouraging results, it is advisable to focus also on pedagogical and learning theory when implementing and developing the AR application since the educational value of AR are not solely based on its features. Expect that there will be many more research on AR and MAR in the future because this technology has a vast potential implications and benefits especially in learning environment.

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Mobile Learning: A Good Practice

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Abstract

With advances in learning technology and communication, information is growing rapidly. In the past, books and teachers were the most frequent sources of information; nowadays there are many resources through which information can be accessed from the Internet, PCs and mobile devices.
Mobile learning can be defined as the use of mobile devices as mediator in the process of learning and teaching. The term learning from mobile implies the use of mobiles devices as tool to deliver learning materials. The learning with mobile indicates the use of mobile devices as tool/cognitive tool to promote higher order thinking skills, as discussed in more detail somewhere in this paper.

Keywords: Mobile learning; constructivist approach; instructional desgin

Introduction

With advances in learning technology and communication, information is growing rapidly. In the past, books and teachers were the most frequent sources of information; nowadays there are many resources through which information can be accessed from the Internet PCs and mobile devices. Such sources are widely available, and are easy to access.

Mobile devices such as personal digital assistant (PDA), mobile phone, and Tablet PC are nowadays more user friendly and user convenient than before. They are coming with major improvement in memory storage, interactivity features and high data transfer speed.

Mobile devices are neutral to teaching and learning theories; they can be used with traditional learning theories such as behaviorism and new learning theories such as constructivism. For example, in the application of the field of behaviorism, which focuses on repetition in the curriculum content, studies show drill and practice learning materials have a positive role in helping students to learn (Ally, 2004 and Quinn, 2000). However, many researchers in technology, as well as the author view the optimum utilization of mobile devices is in the uses in developing of higher thinking skills and problems solving. Strommen and Lincoln (1992) state, "The key to success lies in finding the appropriate points for integrating technology into a new pedagogical practice (constructivism) so that it supports the deeper, more reflective self-directed activity children must use if they are to be competent adults in the future." Ehrich, McCreary, Ramsey, Reaux, & Rowland (1998) contend that technology integration can effectively support constructivism. The author presumes that constructivism is the proper theory for the activating of the role of technology in the learning process and see technology is the best way to apply the principles of constructivist learning. Herrington, Herrington, Mantei, Olney and Ferry (2009) maintain that despite the significant potential of

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mobile technologies to be employed as powerful learning tools in higher education, their current use appears to be predominantly within a didactic, teacher-centered paradigm, rather than a more constructivist environment. The purpose of this paper to shed light on the practice of using of mobile phones as a cognitive tool to enhance students' learning in frame of constructivist approach.

2. Mobile learning

Mobile learning can be defined as the use of mobile devices as mediator in the process of learning and teaching (Alexander, 2004). In general this use can be seen as learning from mobile and learning with mobile. The term learning from mobile implies the use of mobiles devices as tool to deliver learning materials specially designed to this purpose. The learning with mobile indicates the use of mobile devices as tool/cognitive tool to promote higher order thinking skills, as discussed in more detail somewhere in this paper.

3. Practice aims and scope

The aim of this practice design was to develop innovative pedagogies using mobile technologies, to enhance teaching and learning in higher education and to make further recommendations for teaching staff professional development. Specifically the study looks at the possibility of using mobile devices in the students' hands to enhance teaching and learning, implement resource based learning activities over a period of 4-8 weeks in teaching communicative language teaching course for forth year English teachers at Sohar University in Oman.

4. The Country and the University Context

Oman, with a population of only two million people is a small but nonetheless progressive and developing nation in the Middle East. With fossil fuel reserves dwindling in the foreseeable future the government has decided to strive to attain a knowledge-based economy to reduce dependence on the current resource based economy. By far the biggest factor currently holding us back is the lack of a well-grounded educational system in the country. The public school system in the country has only been in existence for the past forty years. Before that Oman only had three primary schools.

There are universal primary and secondary education for both boys and girls. University attendance is on the increase. Currently Sohar University has over five thousand students registered in Diploma, Bachelor and Masters programs in five faculties staffed by more than two hundred and seventy lecturers and professors. Fully 70% of our students are young women seeking to gain their rightful place in the new society that Oman is building.

Technology is in its way to be integrated into teaching and learning at Sohar University. Moodle, the most popular Learning Management Systems (LMS) is used under names SULMS and it is recommended to teachers to use in their teaching. Most students at Sohar University have computers/laptops and have at least a mobile device (mobile phone). For example, the snap shot survey for mobile device ownership by the students in the study shows that twenty students own one mobile, sixteen own two mobiles and ten have three mobiles. However, mobiles usages are not supported during classroom teaching sessions due to the absence of pedagogies, instructional method and lack of ability to integrate technologies into teaching.

5. Constructivist-mobile learning environment

5.1 Method of instruction: constructivist approach

Constructivism, in general, maintains that knowledge is constructed by the individual from within rather than being transmitted to the learner from another outside source. Therefore, learning is seen as a process of actively constructing knowledge by integrating experiences into the learners' prior knowledge; the learner plays an active role in building his/her knowledge. Vygotsky (1978), the founder of social constructivism, emphasizes the importance of the interaction with the others such as peer, teachers and parents to build knowledge. He also emphasizes the need for tools such as language and computer to mediate knowledge construction. Campbell (2004) argues that the best learning occurs in the middle of social interaction. The adoption of constructivist approach in rich-technology environment, promotes the full potential of technologies in enhancing learning. The following section sheds light on technologies that are best serve the constructivist approach.

The proposed constructivist-mobile learning environment is characterized by new roles of teacher and learner, specially designed learning activities and use of mobile as a tool. Switzer and Csapo's (2005) maintain mobile devices allow learner opportunities for collaboration in the creation of products and for sharing them among their peers. Patten, Arnedillo, Sanchez and Tangney (2005) argue that the advantages of mobile learning can be gained, through collaborative, contextual, constructionist and constructivist learning environments.

5.2 New roles for the teacher and the learners

Constructivist-mobile learning environment imposes new roles for the teacher. Unlike traditional "top-down" teaching, Vygotsky (1978) would advocate a bottom-up teaching approach where the teacher facilitates, as opposed to directs, what and how students learn concepts both in and out of the classroom. In the learning setting with the use of mobiles, the teacher should contribute a major role in establishing the learning environment for her/his students. Teacher' role is as facilitator, coacher and co-learner. Her/his responsibility is to help and guide learners throughout their knowledge acquisition. Such a role of providing guidance for learners is, according to Vygotsky, to motivate learners to excel beyond their current skills level (i.e. activating learners' zone of proximal development.); learners are viewed as knowledge constructors.

5.3. Learning activities

The useable knowledge is best gained in learning environments which feature the following characteristics:

- authentic contexts that reflect the way the knowledge will be used in real-life,
- authentic activities that are complex, ill-defined problems and investigations,
- access to expert performances enabling modeling of processes,
- multiple roles and perspectives providing alternative solution pathways,
- collaboration allowing for the social construction of knowledge,
- opportunities for reflection involving meta-cognition,
- opportunities for articulation to enable tacit knowledge to be made explicit,
- coaching and scaffolding by the teacher at critical times and

- authentic assessment that reflect the way knowledge is asses in real life (Herrington and Oliver, 2000).

The activities used in the practice depict some of the above-mentioned characteristics of authentic learning activities. They afford the learners to interact with the e-learning materials and interact with the others in cooperative manner seeking knowledge. The activities promote learners to use the cognitive thinking skills, especially the higher ones, as in Bloom's Taxonomy and enhance their motivation. Riischoff (2009) maintains that "learning activities are always social activities with learners cooperating and working together."

5.4. Instructional events design

The design of learning environment events was based on constructivist principles and with the use of activities as above mentioned. Jonassen (1994, p.35) proposed that knowledge construction may best be facilitated by constructivist learning environments that:

- provide multiple representations of reality, which avoid oversimplification
- focus on knowledge construction, not reproduction
- present authentic tasks (contextualising rather than abstract instruction)
- provide real world, case based learning environments rather than pre-determined instructional sequences
- foster reflective practice
- enable context- and content-dependent knowledge construction
- support collaborative construction of knowledge

The following brief events of instruction were implemented in the practice. In each session, the participants, first, were introduced to the session topic; divided into groups. Each group was assigned a task separately. The students were given time to discuss the tasks among themselves in groups and the instructor provided guides and clarification, when needed. The students brainstormed required information to do the activities and used their mobile phones while performing tasks. At the end of each session, the students presented and shared their findings with class and discussion was elicited. The works were posted in SULMS (Moodle), as resources to be used in future.

6. The practice Design and instrumentation

To gain a clearer picture of how mobile phone was used in this practice as a tool to enhance students' learning in Communicative Language Teaching (CLT) course, a questionnaire was developed to provide information on the frequency of the following themes:

1. Students' ICT backgrounds
2. Mobile phones use in classroom and out classroom
3. Mobile phones promote of thinking skills
4. Mobile to support cooperative work
5. Problems faced while using Mobile phones

7. Findings

This section aimed to find out how students use their own mobiles inside classroom session and outside classroom for the purpose of learning the course materials. It looks at the findings of the above-mentioned themes.

7.1 Students' ICT backgrounds

7.1.1 Students' ICT skills

The participants seem to have good commands of ICT skills. For examples, as in table (1), Nineteen (19) of them have both IC3 certificates and computer course, Eleven Table (11) of them have ICT3 certificates, Eight (8) of them have computer course, see the table for more detail.

Table 1. Students' ICT skills

ICT Skills items	No of Students
ICT3 and Computer courses	19
ICT3	11
Computer Courses	8
ICT3 and ICDL*	1
Nothing	1

* ICDL: the International Computer Driving License

7.1.2 Use of Social Interaction Technologies

The table (2) shows that the participants are familiar with some social interaction technologies such as FaceBook and email. For examples, all of the students have emails, 25 of them have FaceBook accounts and 13 of them have Twitter Accounts.

38. Table 2. Social Interaction Technologies

	A blog	FaceBookt	Twitter Account	Website	An email
No of students	1	25	13	4	40

7.1.3 Ownership of Mobile Phone

As mentioned somewhere in this paper, there were 40 students participated in the practice. Twenty percent of the students own one mobile, sixteen percent own two mobiles and ten percent have three mobiles, see table (3). However, mobiles usages are not supported during classroom sessions. The table below shows the bands of mobile devices owned by the participants.

39. Table 3. Ownership of Mobile Phone

Samsung	Nokia	BlackBerry	iphone	Sony
22	20	11	4	2

7.2 Mobile phones use in classroom and out classroom

Overall, respondents were overwhelmingly used their mobile phones in their learning to do the assigned course activities. Table (4) and table (5) show that most use of mobile phones is to: search for information, access dictionary and look for vocabulary, and less use to read articles and access SULMS (Moodle). On average, the students used their mobile phones to translate texts and check their spelling. It is interesting to note that there is no significant difference between in-class use and out-class use of mobiles, see table (6).

Table 4. Mobile phones use in classroom

In classroom use items	Mean	S. D.
Read articles	2.78	1.14
Access SULMS (Moodle)	2.93	1.33
Translate texts from Arabic to English and vice versa.	3.08	1.37
Check spelling	3.7	1.32
Access information	3.78	1
Look for vocabulary	3.95	1.13
Search for information	4.07	1.02
Access dictionary	4.1	0.98

Table 5. Mobile phones use outside classroom

Outside classroom Items	Mean	S. D.
Access SULMS (Moodle)	2.75	1.3
Read articles	3.05	1.3
Check spelling	3.53	1.22
Translate texts from Arabic to English and vice versa.	3.55	1.32
Access information	3.72	1.11
Look for vocabulary	3.95	0.96
Access dictionary	4.05	0.99
Search for information	4.1	0.98

Table 6. Difference in use

Paired Samples Test	t	df	Sig. (2-tailed)
IN-CLASS - OUT-CLASS Mobile Use	-0.309	39	0.759

7.3 Mobile phones to promote of thinking skills

Table 7. Mobile phones and thinking skills

Thinking skills Items	Mean	S. D.
To rearticulate (paraphrase) information	3	1.11
To critique what is available on the net	3.23	1.14
To remember information better	3.4	1.08
To organize my information/answer	3.45	1.24
To use the acquired information in activities	3.47	1.06
To scan and scam for needed information	3.58	1.01
To memorize something and repeat it.	3.6	1.15
To understand ideas/concepts better	3.68	0.94
To produce a good work	3.7	0.94
To select the right information	3.75	1.06

The participants do think that mobile phones some extent have a role in helping them with thinking skills, as show in table (7) mostly helped them in selecting the right information. For example, table (8) shows that most students see the mobile phones have helped them memorizing and repeating materials; memorization and reparation are low thinking skills.

Table 8. Mobile phones and memorization

To memorize something and repeat it.	Not at all	A little	Some	Quite a bit	Very Much
No of response	1	7	10	11	11

In addition, table (9) shows most students indicate that mobile phones contributed to produce good works for their activities. The ability to produce a good work is considered to be higher order skill.

Table 9. Mobile phones and good work

To produce a good work	Not at all	A little	Some	Quite a bit	Very Much
No of response	1	2	13	16	8

7.4 Mobile to support cooperative work

This section surveyed the ways students use the mobile phones to cooperate and collaborate with each other during course activities. Table (10) shows that above average, the students viewed their mobile phones have allowed and facilitated cooperation among them such as such sharing, exchanging information, developing new ideas and communicating better.

Table 10. Mobile Phone and cooperative work

Cooperative work items	Mean	S. D.
Fill the gap for missing information	3.4	1.19
Explain something to someone	3.8	0.97
Learn different viewpoints from my class mate	4	1.01
Discuss information with my friends/group	4.1	1.24

Correct my understanding/information	4.1	1.01
Find more information from others	4.13	0.91
Share information	4.18	0.96
Exchange information with friends	4.18	1.01
Have new ideas	4.22	0.97
Communicate with the others better	4.3	0.97

7.5 Problems faced while using Mobile phones:

This question gauged students' perceptions on the some problems facing them while using mobile phones. Table (11) shows that the participants ranged the slow internet connectivity (bandwidth) as the first problem and the lack of available content specifically designed for the course as last problematic.

Table 11. Problems with mobile phone

Problems items	Ranking
Slow internet connectivity (bandwidth).	1
Inconvenient word input	2
Hard to use the keyboard	3
Charges for mobile connectivity.	4
The lack of available content specifically designed for the course	5

8. Discussion

The picture produced from practice data seems to indicate that there is a majority of students, who engage in more active roles and cooperative and cooperative tasks using their mobiles phones during learning activities of the courses. With a good and simple design, it was possible for the students to use their own mobiles into their learning constructing their own knowledge and understanding of the course materials with the instructor's guide and support.

8.1 Mobile phones use in classroom and out classroom

The ability to use of mobile phone as tools is an important factor when implementing technologies into constructivist approach. It seems that students have used mostly mobile phones to research knowledge and accessing dictionary. Online dictionaries are considered as cognitive tools helping students to better understanding of prose. Interestingly, there a moderate use of the mobiles by the students to access SULMS and access information that require fast data transferring speed.

8.2 Mobile phones to promote thinking skills

One main point can be taken from this practice's results with regards of promoting thinking skills. Mobiles have helped the students with their thinking skills, higher ordered thinking and low ordered thinking skills. Though constructivist approach with use technologies promotes higher ordered thinking skills, however, the lower ordered thinking skills are not undervalued, here.

8.3 Mobile to support cooperative work

Among the other uses of mobiles in study, use of mobiles was in supporting students' cooperation and collaboration become the highest identified. A good explanation for the high use can be put forward. WhatsApp Messenger is available for free; the students send and received multimedia messages and at different length at no cost.

9. Conclusion

Within Sohar University, it seems that at least in the sample of this study, all students are acquainted with technologies and use them frequently. In this practice, students used their own mobile devices as tools to acquire knowledge enthusiastically. It shows a successful attempt of integrating technologies and constructive learning approach during the teaching of CLT course. The students reported mobile phone helped them to manage the course information, to promote more of their thinking skills and to cooperate with each other.   This simple practice design might be applied by other instructor to integrate technologies into teaching in similar or different situations.

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Nature exquisiteness based digital photography arts project for creativity enhancement among low achievers students. (PROSFD[ak])

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Abstract

This study was conducted to examine the effectiveness of project-based learning in digital photography for creativity enhancement among a group of low achievers students in a secondary vocational school. Drawing on the Isman Instructional Design Model as the module design process, this study employed a quasi-experimental method. A group of 40 low achiever students were selected as sample of a single case study design in this study and it was conducted in 16 R & D sessions within 3 weeks. Researchers modified the project module PROSFak using the modules of Curriculum Plan; picturing Peace: Creative Digital Photography Project by ArtsBridge. The implications of the study for the Ministry of Education (MOE), teachers and students were also discussed.

Keywords: Photography digital, creativity, project based-learning, Isman instructional design model, quasi-experimental

Introduction

Nature exquisiteness based digital photography arts project (PROSFD[ak)] is a project-based learning that is design aptly to suit the need of vocational secondary school students who have difficulties in academic learning. Using digital cameras, students are able to produce works of photography to express the value and beauty of the environment. This art project is potentially powerful in attracting and motivating students who have less focus on the conventional teaching and learning activities in schools.

The purpose of PROSFD[ak] is to facilitate students in developing skills and competencies on information and technology, such as basic skills and skills of the digital age in order to equip them to face a better future (Chan, 2010). In addition, this project-based learning assists students to understand and apply the knowledge in their own field. Through these skills, students are able to manage their learning independently and in more effective ways. Furthermore, PROSFD[ak] is able to build students' awareness of environmental conservation through encouragement on aesthetic appreciation of beauty of nature.

Photography is the process of producing images by the action of light or image using the tools; recorder, which is recognized as a camera. As a technique, photography was first introduced in 1839 with the invention of the daguerreotype by Louis-Jacques-Mande Daguerre (Mary, 2010). The original term words of photography was from British, photography is a use from two Greek words, namely *phos* mean light and *graphic* mean painting brush, or *graphe* which brings meaning 'painting with light' (John Ingledew, 2005). This implies painting with light is to understand the stem of photography.

Today, the growing technologies changed film photography to digital photography with first digital cameras production in 1981 by Sony Mavica and Kodak in 1991. Nowadays, the use of a digital camera is to use electronics to record light rather than using light sensitive paper and exposing the paper to sunlight (Mary, 2010).

Before photography exists, the medium of communication is through imagination and existing experience. Photographic documentation of the ingredients should be easy, fun and makes a story easily understood. A professional photographer, Joseph Meehan (2008) says the content of photography may bring a story, make a fact, convey feelings, control atmosphere with a more expressive power than the dramatic results of digital imaging use technology today. What we understand is that there are traits in photography from the aspect of the delivery of notice, as if it has been equalled, even rivalling delivery system that uses text.

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Digital photography is one of the visual culture elements that is based on visual media such as images, sculptured and art of dance. Since the 18th century, photography has become a medium to capture image as memory and the proof of existing (Sontag, 1977). Photography communicates through images, various information and meanings may be found in a picture. Mary (2010) argues that a photographer uses the medium to inspire or to elicit information for record storage, journalism, and scientific documentation.

Photography has the potential to assist students' learning particularly in spurring their interest to learn. This is because, unlike the conventional learning tools, the images or subject was made directly through slides, film and another visual tools via photography (Mitchell & Weber, 1999). Photography also teaches students ethics and experiences through pictures such as pictures depicting the battle of remorse, cruelty, fear and human civilization. The words that we often hear; "a picture tells a thousand stories."

In 2000, the Malaysian Ministry of Education released a circular letter of the promotion of photography activities among school children. The purpose of the promotion of photography activities among school pupils is to make room for the pupils in the school to develop their potentials in a holistic and integrated manner to produce individuals who are intellectually, spiritually, emotionally and physically balanced. Guided by the circular letter, the researcher uses photography as a subject of learning to encourage students' creative work in appreciation of art education.

PROSFDak enhances students' understanding and achievement in terms of learning basic digital photography techniques, elements of design, discussion and understanding of pictures through digital photography module guides. Therefore, the present study investigates the impacts of PROSFD[ak] on the understanding and achievement of low achiever students on arts and creativity.

Through this digital photography arts project, students can communicate through pictures as a non-verbal communication. With non-verbal communication, the meaning from the messenger can be easily understood by the recipients (Hashim, Mohammed Isaac and David, 2009). In this project, the students will go through several processes namely understanding, interest, desire, individual sensitivity, communication skills and ethical responsibility. This project also will attract students to understand and have interest in Visual Arts Education, as where exciting learning frameworks will be highlighted to attract students in arts education session. This is aligned with the learning of Visual Communication; Graphic Design, Posters, Music, Logo and Mascot, Calligraphy, Typography, Packaging, Environmental Graphics, Illustration, Computer Graphics, and Multimedia in KBSM Visual Arts syllabuses (2006).

Arts education encourages students to explore various mediums, use their imagination and take a risks in intellectually, forming visual intelligence, engage in self-instructional projects, explore the symbolic function in art, have dialogue with others about the creative process and the results of their work, and build self assessment skills (Cromwell, 2000). Other benefits of arts education is to appreciate nature, appreciate the grace of God, sharpen the mind, good emotions shape, and build multi-sensory skills (Ghazie Ahmed Hashim Osman Ibrahim, 2007). Therefore, nature exquisiteness is chosen as a theme for this digital photography project.

Aminudin (2004) argues that students who are active in extra-curricular activities are more likely to have good academic achievement. Thus, participation in PROSFDak could encourage low academic achieving students to be active in extra-curricular activities. Activities participated by the students will not have a negative impact on their academic achievement. Co-curricular activities are aimed to diversifying the knowledge and experience to intellectual development of students, talents, body and also to development student leadership, aesthetic value, self-esteem and positive social values (the National Education Policy, Ministry of Education, 2012). Arts Education will produce students who are independent, develop students' talents, able to express their views, practice good values in society and realize the career opportunities in the arts field.

2. The Aim of Research

The aim of this research is to enhance creativity among a group of low achievers students and to determine students' creativity and interest in the field of digital photography. The study also aims to investigate the impact of PROSFDak on the academic achievement of students' technical skills through the examination of test scores, literacy and oral language skills. By focusing on the lack in literature, photography technical gives potential and benefit to art education specifically for social aspects to ensure the effectiveness in students' development and learning in school life (Albertson & Davidson, 2007). This study will use some aspects of photography for students to learn as process and practice approaches in teaching studio environment, cultural and historical context to understand art and photography. This study also uses design process by employing the Isman instructional design model for teaching and learning.

To achieve this aim, the researchers have set four research objectives. The first objective is to investigate to what extent the project-based learning in digital photography is effective in enhancing creativity among a group of low

achievers students. The second objective is to examine possible differences in terms of creativity in the production of works of art in nature exquisiteness based digital photography arts project from boys and girls. The third objective is to find to what extent the nature exquisiteness based digital photography arts project is effective in cultivating students' interest in art education. The fourth objective is to investigate possible significant differences in students' ability to create images using creative imagination by pre and post-activities design.

3. Significance of the Study

Guided by the goal of art education, the findings of the study will manure and shape the younger generation understanding in culture, have high aesthetic values, to be imaginative, critical, creative, innovative and inventive. These also contribute to the development of self, community and nation to meet the government's intention to provide an educational career path more clearly to students. To achieve this, the government proposes to rebrand vocational secondary schools to vocational colleges. Not only that, this transformation also involves changes in technical and vocational curriculum, the learning, the certification, trainers, and infrastructures. The result of the study can also be used by educators to improve the technical and vocational education in development pupils' creativity through Vocational and Technical Transformation (VOCTEC) on technical schools and vocational schools in Malaysia.

4. Scope and Limitations

In this study, a group of 40 students in a vocational secondary school in the state of Johor was randomly selected. This study was conducted over 16 sessions of teaching and learning activities, and 3 weeks to allow 8 measurements, there are 2 sessions for each measurement for the completion of this entire lesson plan.

5. Instruments

Researchers used two instruments in this study; questionnaires and rubric assessments. Questionnaires are used for identifying students' achievement and information related to the art of digital photography and the effects of PROSFD[ak] learning module. Researchers used Likerts scale, interpretation of Cronbach Alpha (α) to measure the reliability of the items and questionnaires. The instruments were administered to 40 form four technical students. The second instrument is a Rubric assessments form used for Pre-activity and Post-activity. The rubric of students' creativity measurement is based on photographic basic technique and composition principles of digital photography. This rubric is used by researchers as a process to determine, obtain, and provide useful information for researchers to make judgments about further action (Siti Hayati, 2011). Rubric assessment that is used as a system or process covers the activities of gathering information about the strategies and teaching and learning activities for researchers to analyze and decide accordingly to plan activities more effectively. To determine the validity of the content in the rubric of pre- activity and post-activities, three experts in the field of art and photography education validated an instrument that was adapted and built.

The teaching and learning of this single treatment group is done through both indoor and outdoor classes using the PROSFD[ak] project module which was modified from Curriculum Plan; picturing Peace: Creative Digital Photography Project by ArtsBridge (2005). Researchers used method of discussion, practical and technical skills, problem solving skills, as well as medium and appropriate instructional media research. Researchers make a full use of media and technology equipment such as digital cameras, flash-lights, computers, software editing Photoshop, lighting and studio equipment.

6. Theoretical Framework

Isman Model

This study employs the Isman Model to formulate PROSFD[ak] module in teaching and learning activities to enhance creativity among low achieving students. The major goal of Isman model is to plan, develop, implement, evaluate, and organize fully learning activities to ensure the effectiveness of PROSFD[ak] module in improving students' performance (Isman, 2011). This model is designed to store information into long-term memory and respond to the form of environmental conditions to motivate students through active experience and contents.

The Isman model was also used and implemented in a study by Norlidah, Saedah, Mohd Khairul Azman & Zaharah (2013) on the effectiveness of Facebook based learning in enhancing creativity among Islamic Studies students in the secondary educational setting in Malaysian. The findings of the study suggest that there were significant differences between the treatment group and the control group, which imply that Facebook based learning, has enhanced students' creativity level in writing, problem solving and producing missionary motto.

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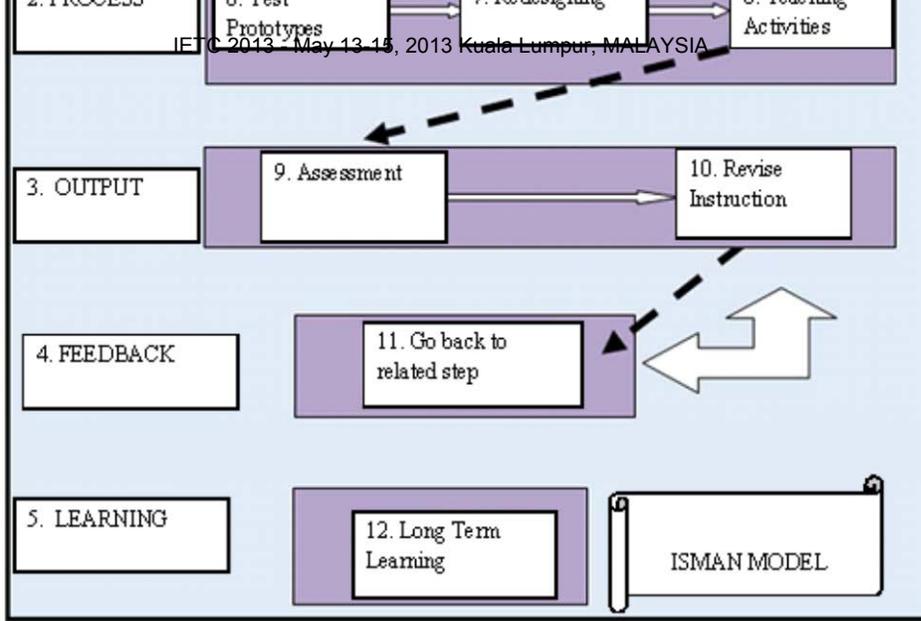
Figure 1: Isman Instructional Design Model (Isman, 2011, p.139)

Appendix
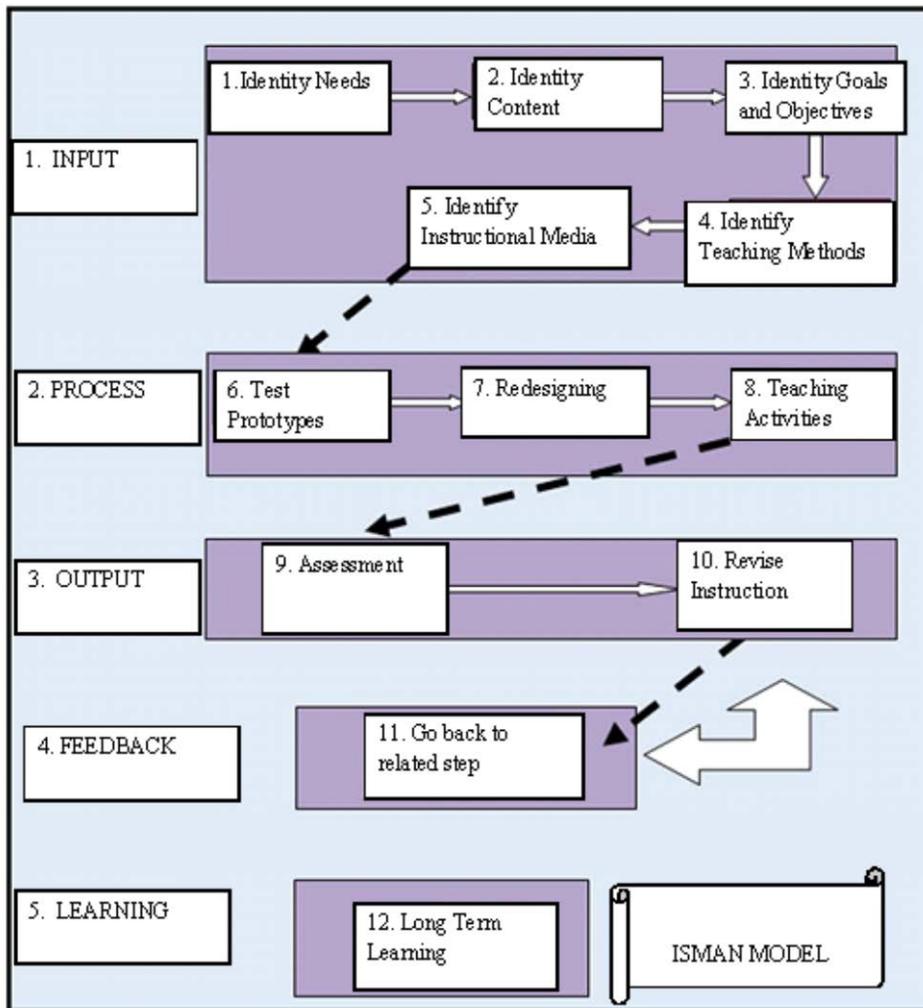
Figure 1: Isman Instructional Design Model (Isman, 2011, p.139)

Table 1
The use of Isman model to design and develop the effectiveness of the Isman model in nature exquisiteness based digital photography arts project for creativity enhancement among low achievers students (PROSFD[ak].

Steps	Work log	Descriptions
Step 1 Input	Identify needs Identify contents Identify goals-objectives Identify teaching method Identify evaluation materials Identify instructional media	Designing module based on exquisiteness based digital photography arts project for creativity enhancement among low achievers students (PROSFD[ak]).
Step 2 Process	Redesigning of rubric assessments.	Using validity and expert panel to redesign the PROSFD[ak] module for creativity enhancement among low achievers students.
Step 3 Output	Rubric post-activity Analyze results	Measured and analyze finding PROSFD[ak] module based on model *Picturing Peace* by ArtsBridge. Lesson from PROSFD[ak] module for creativity enhancement among low achievers students and teacher also.
Step 4 Feedback	Examine	Examine rubric finding analysis: 1) Pre-activities rubric 2) Implementation of real R & D 3) Post-activities rubric 4) Measurement
Step 5 Learning	Learning and teaching process R & D Teaching PROSFD[ak] modules	Pre-and post-activities have been conducted to test the effectiveness of PROSFD[ak] learning modules to enhance creativity among low achievers students.

7. Findings and Discussion

The effectiveness of nature exquisiteness based digital photography arts project for creativity enhancement among low achievers students (PROSFD[ak]) was analyzed based on early finding from pre-activities and post-activities of PROSFD[ak] learning modules. The result of the post-activities shows that average creativity level score are 40. After the treatment of PROSFD[AK] module lesson, data from post-activities were analyzed by comparing mean achievement score between the pre-activities and post-activities. The independent sample *t*-test was performed to trace if there exists any enhancement in creativity level after treatment. The results show that there is significant enhancement in creativity level after treatment. Next, the researchers compared the creativity in production artwork according to gender and effectiveness of digital photography arts project in students' interest for art education. The module suggests that was no difference for enhancing creativity in producing art works between of both genders.

The effectiveness of PROSFD[ak] module based learning in enhancing creativity among low achievers students also analyzed across creativity level in post-activities. A *t*-test was performed to determine if there were significant differences in ability to create images using creative imagination before and after the learning of PROSFD[ak] modules. Findings from the experiment conducted among 40 participants suggest that PROSFD[ak] module based learning has enhanced creativity level among low achievers students. Table 2 to Table 5 show the results of t-test comparison of pre/post-activities towards across enhance creativity level used PROSFD[ak] learning modules.

Findings from experiment conducted among 40 participants in the single group suggest the effectiveness of nature exquisiteness based digital photography arts project for creativity enhancement among low achievers students (PROSFD[ak]).

Table 2

t-test Comparison of Pre-Activities and Post-Activities Achievement in Creativity used PROSFD^{ak} Module Lesson

Group	n	Mean	SD	*t*	Significance Value
Pre-Activities	40	19.3	4.5	-14.97	.05
Post-Activities	40	39.1	7.2		

Table 2 shows that the pre-activities mean score for achievement (n = 40) is 19.3 (*SD* = 4.5), while post-activities (n = 40) is 39.1 (*SD* = 7.2). The difference in mean score between pre-activities and post-activities is 19.8. This indicates that PROSFD^{ak} module lesson is able to increase achievement in creativity among low achieving students. Hence, there is significantly higher score with value *t*(78) = -14.97, *p* <.05.The finding shows that the null hypothesis is rejected. Therefore there is a significant difference in creativity achievement used PROSFD^{ak} module lesson.

Table 3

t-test Comparison of Post-Activities Achievement in Creativity production artwork by gender

Group	n	Mean	SD	*t*	Significance Value
Male	19	41.2	7.4	1.78	.05
Female	21	37.2	6.7		

Table 3 shows that post-activities achievements mean score for creativity production artwork by gender male (n = 19) is 41.2 (*SD* = 7.4), while gender female (n = 21) is 37.2 (*SD* = 6.7). The different in mean score between gender male and female is 4. This indicates that PROSFD^{ak} module lesson is able to increase achievement in product creativity artwork among low achieving students. Hence, there has higher significantly score with value *t*(38) = 1.78, *p* <.05. The finding shows that the null hypothesis is accepted. Therefore there is a no significant difference in creativity achievement production artwork by gender.

Table 4

t-test Comparison of Post-Activities toward Interest in Art Education

Group	n	Mean	SD	*t*	Significance Value
Post-Activities	40	39.1	7.2	30.4	.05
Interest in art education	40	4.4	0.6		

Table 4 shows that the post-activities mean score for achievement (n = 40) is 39.1 (*SD* = 7.2), while interest in art education (n = 40) is 4.4 (*SD* = 0.6). The difference in mean score between post-activities and interest in art education is 34.7. This indicates that PROSFD^{ak} module lesson is able to increase interest in art education among low achieving students. Hence, there is significantly higher score with value *t*(78) = 30.4, *p* <.05.The finding shows that the null hypothesis is rejected. Therefore there is a significant difference in post-activities and interest in art education.

Table 5

t-test Comparison of Pre-Activities and Post-Activities Achievement in Ability to Create Creativity used PROSFD[ak] Module Learning

Group	n	Mean	SD	t	Significance Value
Pre-Activities	40	19.3	4.5	-14.97	.05
Post-Activities	40	39.1	7.2		

Table 5 shows that the pre-activities mean score for achievement (n = 40) is 19.3 (SD = 4.5), while post-activities (n = 40) is 39.1 (SD = 7.2). The difference in mean score between pre-activities and post-activities is 19.8. This indicates that PROSFD[ak] module lesson is able to increase students' ability to create creative imagination using PROSFD[ak] module learning among low achieving students. Hence, there is significantly higher score with value $t(78)$ = -14.97, $p < .05$. The finding shows that the null hypotesis is rejected. Therefore there is a significant difference in ability to create creative imagination using PROSFD[ak] module learning.

8. Implication and Conclusions

This paper has examined the nature exquisiteness based digital photography arts project for creativity enhancement among low achievers students (PROSFD[ak]) by employing the Isman model. The effectiveness of the modules was tested and it was found that the module was effective for low achievers students. In addition, it was found that the three null hypotheses were rejected because there were significant differences in achievement between pre-activities and post-activities using the PROSFD[ak] module learning. The outcome of this study will hopefully enhance the process of teaching and learning in art education particularly in vocational secondary school through the promotion of the use of photography lesson to enhance creativity among students and for career opportunities in the arts field.

Acknowledgements

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Need For Mobile Learning: Technologies and Opportunities

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Abstract

Along with the fast developments in mobile technologies, the need to learn mobile learning has become more important. The easy usage and easy accessibility of these mobile devices have made them more significant than ever. This study gains importance in extend of the need for mobile learning and meeting the new learning conditions. In addition, handling the current and the future mobile learning and suggesting some new ideas about it are also considered as important topics.

Keywords: mobile learning, mobile devices, mobile technologies, augmented reality

INTRODUCTION

Along with the development of information and communication technologies, their positive impacts particularly on universities and their extensive use, new and strategic methods have been developed related with them. The inclusion of e-learning in the learning process and its becoming widespread as a component of traditional education has caused positive changes in extend of pedagogical, technological and economic aspects (Birch & Burnett, 2009). The need to access to the information regardless of time and place has increased the effects of mobile technologies and mobile learning, and it has also brought new strategies to learning process (Uysal & Gazibey, 2010).
A great number of researches have been done and plenty of methods that can facilitate learning have been developed for years. In fact, the Chinese Philosopher Confucius summarized learning 2400 years ago as his following quote:
　　"I hear and I forget. I see and I remember. I do and I understand."

The fact that learning through mobile technologies we mostly use nowadays as a means of getting the necessary information comply with Confucius' description of learning suggests that these devices should be used in learning environments and they should be given more importance. Particularly, using mobile telephones more than the computers and their accessibility to the popular pages such as Facebook, Youtube, and Twitter indicate that they have the potential to be used in learning environments. In recent years, the efficiency of constructivism learning method, the transition from computer based learning to web based learning and the improvement in technologies have made mobile learning as one of the most popular learning styles (Yamamoto, 2011).
The researches show that the data transferred through mobile networks have increased dramatically. This increase in data transferring points out that people are using mobile technologies more often and they usually prefer to use these environments in order to access information. In Figure 1, the uploading and downloading traffic in mobile devices can be seen clearly.

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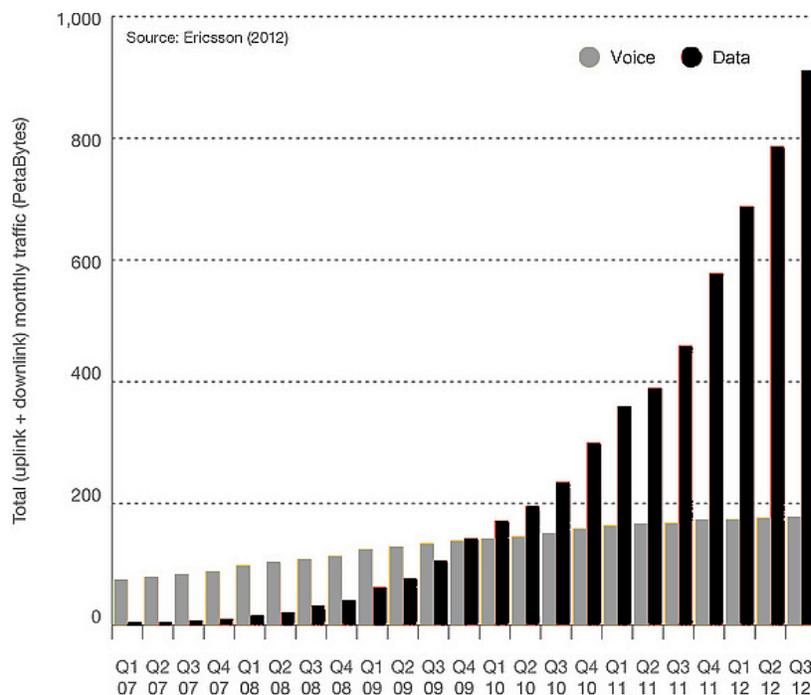
Figure 1.2007-2012 Global Traffic In Mobile Networks (Ericsson, 2012)

Definition of Mobile Learning

Along with the fast developments in mobile and computer technologies, new methods in this area have also emerged besides traditional ones. As a result of this, mobile learning methods and especially web based distance learning have gained importance (Yildirim, Goktas, Temur, & Kocaman, 2004).

Distance education is a method that has appeared as a result of the distance between teachers and students (Moore, 1973). On the other hand, Bates (2006) suggested that distance education is neither good nor bad, but trying to get the benefit of educational technologies is an important subject. Distance education is an educational method rather than a philosophical approach. It is a method that students study on their own wherever they want without coming face to face with teachers. This education method has developed correspondingly with technology since its emergence. With the developments in technology, the lack of interaction in the distance education system has started to disappear, and the trends of both individuals and governments towards distance education have changed immensely. Therefore, the technology with its changes has influenced the individuals in distance education environments (Bates, 2006). E-learning and distance education has been supported by governments due to the economic competition, lifelong learning, social equality and accessibility, better education, cost effectiveness, commercializing of education and geographic reasons (Bates, 2006). Bates (2006) has also suggested that neither e-learning nor distance education can solve the problems, but they perpetually go on developing (Bates, 2006). One of the methods used web based distance education is mobile learning. There is no definite explanation for mobile learning in education; however, it can be defend as easy and flexible learning due to the fact that it occurs regardless of time and place using portable mobile devices (Kıcı, 2010). Keagen (2005) stresses the mobility of mobile learning while defining it. Mobile learning enables students to learn outside the class through mobile phones or tablet PCs, and it can be accepted as perfect form of flexible learning (Seppala& Alamaki, 2003). In general, mobile learning can be defined as a type of learning that takes place through portable devices which provide its users to meet their needs within seconds in terms of accessing ever-changing data and communicating with others without sticking to anything and anywhere.

Mobile Devices

Along with the developments in information technologies, wireless communication and mobile devices have been started to be used in order to support the traditional learning (Wang at al., 2004).

Wireless communication techniques may help student obtain the necessary information. Besides this, it also teachers and the learning systems can direct students to the information by using these techniques. Therefore, students can use their mobiles or PDAs (Personel Digital Assistant) in order to access to the information they need (Wang, Liu, Horng, & Chen, 2003).

In our modern life, it is possible to outline the mobile devices used in mobile learning as the following:

a) Laptop: Laptops and another kind of it, known as notebook, are some of the portable devices that are mostly used in our daily life. These laptops can have all the properties of a normal PC. Due to being manufactured through advanced technology, being made up of valuable pieces of this technology, and their difficulty during installation, their cost is quite high. These laptops enable users to obtain the information they want by means of such wireless connection types as USB, wireless network, Bluetooth and infrared devices independent from time and place.

b) Tablet PC: Tablet Pc is the most popular computer of our time which is a portable personal computer typically smaller than a notebook computer but larger than a smart phone, and it is easy to transfer the data by means of its internet and memory device. It is a kind of computer usually having 7 or 10.1 inch-touch screen.

c) PDA (Personal Digital Assistant): Personal Digital Assistant, also known as palmtop computer, is a mobile device that functions as a personal information manager such as keeping addresses or names. It has the ability to connect to the internet and, it is also portable. With the developments in electronics and computer technology, the size of computers has become smaller and features of them have increased. The production of computers having the features of camera, video and GPS have expanded, but it has also started to give its place to smart phones.

d) Smart Phone: It is a kind of communication device that has been designed by adding the features of PDA. Due to the fact that smart phones have mobile operating system and many applications, they are very common devices used actively in all areas for different purposes. As it can be seen from the Figure 2, the number of smart phone users is increasing day by day.

Mobile Technologies

In order to provide the mobile devices with online communication or communication with the other mobile devices, there are four different communication or connection technologies used, and these are *GPRS*, *Wireless(Wi-Fi)*, *Bluetooth* and *Infrared*. These communication technologies are available in some mobile devices. The mobile devices that do not have these technologies are supplied with communication ability by using one of the transferring technologies such as USB, Compact Flash Card and PC Card (PCMCIA). *Wi-Fi,* which is mostly preferred in mobile devices, is a technology that provides devices such as personal computers, play stations and digital audio players with wireless internet. The other technology that increases the applications and efficiency in mobile devices is *Augmented Reality (AR)*. AR technology, having developed in a very short time, has proved to be innovative and efficient technology in order to solve some kinds of problems. AR can be defined as an interactive device between human and computer, which has been developed by a computer in real world environment (Nee,Ong, Chryssolouris, & Mourtzis, 2012).

AR technology can be used in smart phones (Android, iPhone), tablet PCs (Android, iPad), desktops and internet-based applications. It is though that AR technology will be used actively in mobile applications and it will bring different approaches in learning. Traditionally, orientation educations are given by tour guides or they are given on line. However, these methods do not erect conscious learning. With AR technology, the mobile learning carried out by means of smart phones that include video camera and internet connection or thorough a GPS technology makes learning conscious, easy and unlimited. The AR technology is very important technology in terms of being user-centered, visualizing the processes it does and providing real-time feedback. This technology arouses interest among learners and reinforces learning (Chou,& ChanLin, 2012).

Mobile Cloud Computing technology is a kind of service that provides common data sharing among the data processing devices through its performance to deliver data online. MCC offers a wide range of opportunities for mobile service sector by making computing recourses available in mobile devices on a data network (Yang, Cao, Tang, Li & Chan, 2012). Mobile learning devices and technologies instantly provides interaction between the learners and the teachers, among classmates or with learning systems (Wang, Liu, Horng, & Chen, 2003).The learning devices are able to be used intensively in managerial and educational processes in many associations, and

they also play an important role in developing interaction within the classes or outside the classes in educational institutions. Ericsson, being one of the leading communication technology companies in the world, estimates in the report published in 2012 that the number of people using mobile devices will exceed 4 billion in 2018 (Ericsson, 2012). It is possible to see in Figure 2 that the use of mobile devices has been widespread particularly in recent years.
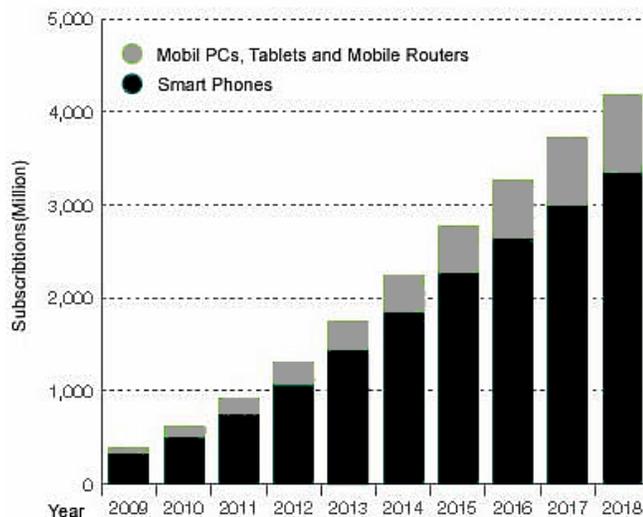
Figure 2.Smartphone, PC, Mobile Routers and Tablet Subscriptions with Cellular Connection 2009-2018(Ericsson, 2012)

It is thought that however much mobile technologies and devices improve, it is not possible to get to the expected performance and success as long as they are not used in learning environments depending on the theoretical base. Therefore, the design of mobile learning environments and environment becomes more of an issue.

The design of mobile learning environments

The researches carried out for years in the realm of education have been done in order to provide effective, productive and permanent learning. Besides this, mobile learning, which has recently been one of the main focuses of the educators, is believed to have influenced the learning process. Mobile learning environments have importance in providing effective learning according to such certain approaches as Knowledge Objects and Learning Objects. According to Trifonova, mobile learning should support and guide students and teachers about when and where the learning situations are necessary (Trifonova, 2003).The technologies to be used in mobile learning environment should have the following components as showed in Figure 3 (Dickersen & Browning, 2009):
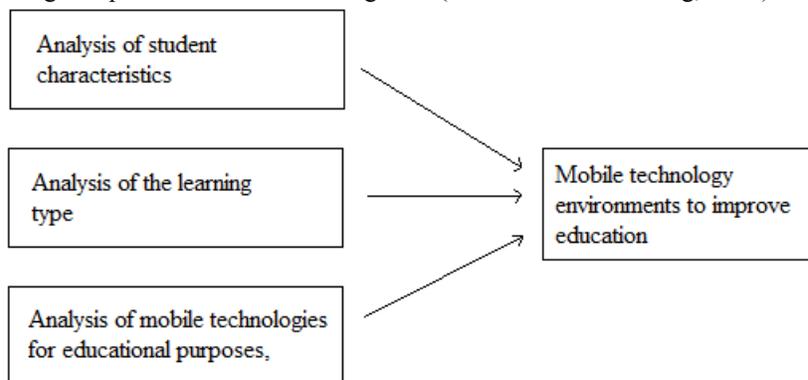
Figure 3.Educational Development Components (Dickersen & Browning, 2009)

Not being lost in hyperspace in the process of accessing to the required data is very significant issue in terms of practicality for the users.   Not being lost in hyperspace is defined as the users know where they are on the net and know how to get the intended pages (Conklin, 1987). Using surfing items and tools that will help the users find the information they want, paying attention to the individual differences among them and using simple interfaces are important aspects in the extend of preventing users from getting lost in hyperspace (Conklin, 1987).

Mobile usage is a developing field. The researchers studying on computer-human interaction suggest that to understand the psychological, agronomical, collaborative and social factors which define how the human-being work in order to produce computer systems are important (Kukulska-Hulme, 2007).

Before attempting to use the mobile technologies in education, the other aspect that is supposed to be studied is technology roadmap. By using this technology roadmap, it is possible to practice and implement the predictions about the mobile technologies, to provide long term planning and management, and also to increase the effectiveness and productiveness. This effectiveness and productiveness will increase the quality of education, as well. Therefore, a technology roadmap is needed. This roadmap will play an important role as a bridge in accessing to future targets in mobile learning in terms of product, service and technology (Uysal & Gazibey, 2010).

The features of Technology Roadmap may include the processes shown in Figure 4:
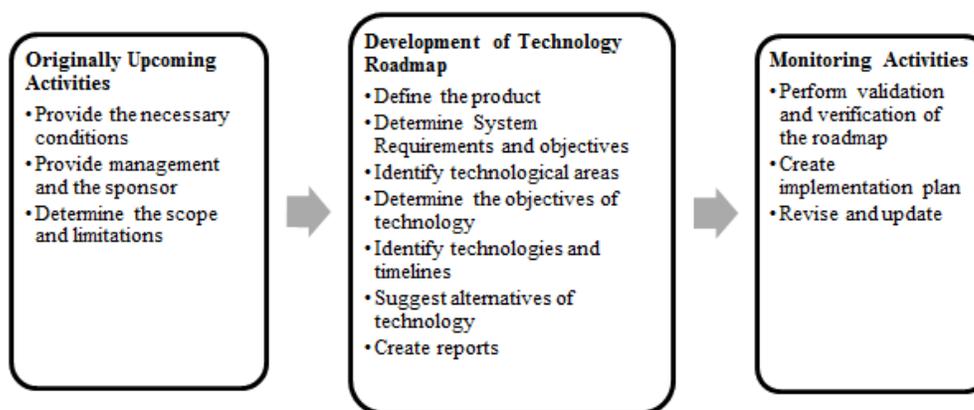
Figure 4.The Phases of Technology Roadmap(Garcia, & Bray, 1997)

Mobile Learning Applications

When looking at the developments in mobile technology, it is possible to see METIL (Mixed Emergenging Technology Integration Lab) that has put the mobile applications such as Microsoft Mobile Learning Project, Mobile Sports Pulse, TUSK, Johnson & Johnson, Allogy, which were all established in the USA in 2006 in order to research and develop modern technology, into effect.

Besides this, many mobile learning projects have been put into practice in Europe for teachers' education, pedagogical development, and educational support and research.

*Table 1.*Some Mobile Learning Projects in Europe *(Unesco, 2012)*

FIELD OF INTEREST	INSTITUTION	COUNTRY
Teachers' Education and Pedagogical Development	MoLeNET	England
Management Support	UnivMobile	France
	Mobilskole	Norway
	Yorkshire Coast College, Mobile Oxford	England
Instructional Support	Mobile in Salford, University of Leeds Medical School, Priory School, Apps for Good	England
	Distance Learning for Apprentices	Turkey, Spain, Portuguese germany and Denmark ,
	REACH	Turkey, Italy, Norway and Spain
	Presemo	Finland
	WapEduc	France
	ENVI GAME	The Czech Republic
	BlackBerry Academic Program	In many Countries
Research	MOTILL	Hungary, Ireland, Italy, England

In Turkey, some universities, companies, and public institutes have been developing and using some applications about mobile learning. By means of the project called Fatih Project in Education (2006-2010) prepared by Ministry of National Education, it is thought that mobile devices will be used more extensively, the tendency to mobile learning will increase and also the objectives mentioned in Table 1 will be implemented.

Table2.Objectives of Fatih Project in Education (MEB, 2012)

OBJECTIVES OF FATIH PROJECT IN EDUCATION
• To develop life-long learning, make the individuals improve themselves through e-learning, to improve the e-content they use
• Every student graduating from a high school should have the ability to use information technology and basic knowledge
• By means of using internet effectively, one out of every three should get the benefit of e-education services,
• Offering every individual opportunity to use and learn information and communication technology
• One out of two should be internet user
• To make the internet a safe environment for all the community

The Advantages of Mobile Learning

Lifelong learning, peripheral learning, learning when needed, autonomous learning, situated learning and learning depending on the conditions, which are known to be applied through distance learning, were not be able to implemented completely due to some difficulties and limitations. Therefore, Mobile Education have helped a great deal to these learning situations and types (Bulun, Gülnar, &Güran, 2004;Sharples, 2000; Vavoula ve Sharples, 2009). According to Sharples, the more the learning becomes student-centered and individualized, the better and the more personalized the new technologieswill be (Sharples, 2000).In Table 3, the implementation and realization of lifelong learning through new technologies has been shown.

Table 3.Comparing Communication and Information Technology to Lifelong Learning (Sharples, 2000)

Lifelong Learning	New technology
Individual	Personal
Learner-centered	User-centered
Static	Mobile
Collaborative	Network
Available everywhere	Available everywhere
Lifelong	Permanent

Mobile learning provides students with individual study and online resource opportunities. Being easy updateable, being assessed by the students and providing feedback can also be considered as some of its advantages (Jacob&Issac, 2008). It is possible to support the activities of students and teachers thanks to the developments in mobile technologies. (Trifonova & Ronchetti, 2004).It is a great freedom for the learners to start and stop or even interrupt learning process whenever and wherever he/she wants. Until recently, it was common to experience some problems such as cable need in order to access to web-based learning environment, nondurable batteries and difficulty to access to the internet. Thus, it was almost impossible to create the desired free atmosphere for learning (Bulun, Gülnar, & Güran, 2004). However, today, by means of the tablets whose functionality has increased, more developed smart phones, durable batteries, accessing to the internet easily have made mobile devices more usable.

Results and Discussions

In this information age, the importance of information is increasing more and more, and this has led the institutions to look for new methods in order to access the information. Some experts define the devices, especially the internet which plays an important role in the process of transferring information as a technology so as to implement different approaches in education. However, it should be known that these technologies are not produced for educational purposes or transferring information. Otherwise, it is possible to encounter some problems such as time loss in education due to the fact that they will be directly implemented in education without analyzing, determining a technology roadmap, assessing its suitability for education. On the other hand, even if these technologies have been developed with the imperialist approach, they have an important role in education in terms of efficiency and making learning an enjoyable activity after being aware of the fact that they know how to take the advantage of them.

In recent years, the projects that have been carried out for the purpose of both instructional support and increasing the functionality have increased the interaction between the teachers and students.

Using mobile learning environment gives learners an opportunity to access the information whenever and wherever they want. Therefore, mobile devices which are sometimes criticized as one of the learning tools and which are developing in extend of size and features have recently been used intensively and they have increased the effectiveness of learning environments. To adopt mobile technologies simply as a means rather than a target while preparing plans and programs will provide more effective usage. It is predicted that Augmented Reality will develop and it will increase the efficiency of mobile learning, and also it will be very common in educational institutions. In order to get the benefit of mobile devices, the first thing that should be done is to have one. Thus, along with obtaining these devices easily through some institutions and companies, getting a place in the culture shows that mobile learning applications can be applied to a wide mass. There have been many researches on distance education, e-learning and mobile learning for years. These researches have concluded that these kinds of learning have supported learning, increased the interaction and contributed to the persistency in learning; however, it has also been concluded that it is on its own, never adequate for learning.

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Nursing Professionals' Evaluation in Integrating The Computers in English for Nursing Purposes (ENP) Instruction and Learning

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Abstract

This study was designed to examine the pre- and in-service nursing professionals' perceptions of using computers to facilitate language learning as a way of consideration for future English for nursing purposes (ENP) instruction. Participants were 197 students in a nursing college in southern Taiwan. Findings revealed the differences in the student participants' overall perceptions of using computer technology to facilitate language learning, including (1) the participants felt benefited using computers to aid their language learning mostly in the area of reading skills development, followed by vocabulary skills, listening skills ,and writing skills.; (2) statistical significance was noted in terms of students' perceptions of computer-mediated learning in English speaking based on their division/rank using an ANOVA test; (3) a Pearson Product-Moment Correlation analysis revealed a statistically significant, positive association between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency.

Keywords: Computer-Mediated Langue Learning; Nursing Education; English for Specific Purposes

Background & Introduction

1.1 Challenges Facing Nursing Communities

As good knowledge and good communication are essential, nurse education, and nursing communities are faced with several dilemmas and challenges in terms of discipline-specific language learning and pedagogy. At school, the majority of subject-specific textbooks and professional journals are written in English, though many more have been translated into local language(s) for better comprehension. In addition, many academic lectures are delivered via the means of English. Students are urged to read and write in English as they will be expected to do so in the future. Consequently, those who receive more adequate language education/training can be a value added readiness as soon as they enter the workforce. At the work place, nursing professionals are counted on reading and following doctors' orders, writing nursing notes, and entering records, often times in English. Nurses who are proficient in English language can better address their patients' needs via effective communication. Both the student and in-service nurses recognize the necessity of English and how unequivocal important it is for professional success, better job opportunities, and updating their medical knowledge.

In the process of acquiring abilities and knowledge of the second language (SL) or foreign language (FL), similar to many other professional disciplines, English learners in the nursing communities often have to make switches between what have been described as the goal-oriented needs (Belcher, 2009). That is, what they need to know with their knowledge in order to succeed in their school subjects and/or professional careers. The former is known as the EAP, English for academic Purposes and the later is known as the EOP, English for Occupational Purposes (Dudley-Evans & St. John, 1998). The best fitted EOP for nursing professionals is the English for Nursing Purposes, or ENP, that can be furthermore divided into pre-experience, in-service, and post-service types. Perceived needs and perceived effectiveness of the English language by the pre- and in-service professionals seem to have been driving the current research on English for Nursing Purposes.

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1.2 Purpose of the Study

This study was designed to provide insight into how pre- and in-service nursing professionals' demographic profiles contributed to their perceptions of computer-mediated language learning, how participants' perceived effectiveness of computer-mediated learning impacted their English learning, and how self-evaluation of English proficiency impacted their perceptions of using the computer to facilitate language learning.

1.3 Research Questions

The researchers sought answers to these following questions:

1. Are there any meaningful relationships between students' perceptions of computer facilitated learning and computer facilitated *language* learning?
2. Are there any significant differences in students' perceptions of computer facilitated language learning based on demographics?
3. Are there any meaningful relationships between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency?

Literature Review

2.1 Computers and the Nature of Teaching/Learning

It is not uncommon to see computer uses in disciplines such as foreign languages, mathematics and sciences, just to name a few. For instance, in an English composition class the computer can be used for providing and receiving useful and just-in-time feedback that can contribute to the quality of student writing. It can also be used for facilitating the process of writing so that students and teachers or students and students can interact with the content in meaningful ways that are difficult with pencil and paper in a traditional classroom (student engagement/ skill mastery). The technology used in linguistic expression, be that speech or text, is expanding our capabilities to interpret, understand and infer ideas in other symbol system (Kozma & Johnston, 1991). Taking advantage of today's virtual reality technology, students in Asia are able to take an interactive field trip (Yu, et al., 2008) to The Franklin Institute Science Museum in Philadelphia, Pennsylvania, USA, without having had to travel one-half way around the globe. Educational uses of technology cannot go unnoticed, and the list of technology coming to classrooms can't be overstated.

Because technology continues to advance in capacities and capabilities (Yu et al., 2008), the computer is gaining popularity in mainstream classrooms. Students are getting accustomed to reading electronic texts on a e-reader or on a personal computer, a mobile device, and have found themselves closer to home by sharing and exchanging files and scholastic ideas through familiarized instant messengers (IM), web blog, bulletin board systems (BBS), and/or, if not "the" most popular, social networks. Every day computers become more capable of storing, processing, and analyzing larger amounts of data faster and in a much more effective and organized manner. Teachers can easily craft and/ or edit their lesson plans and tests and can generate more complex yet meaningful student records with computers. By doing so they may even be able to cut down on the paper consumption! In addition, Yu et al (2008) and Vogel & Klassen (2001) state that the adaptive nature of computer technology permits teachers to cater to students' learning needs, addressing a variety of learning styles and abilities. Software companies have also been striving to produce more affordable, yet high-quality programs to meet the needs in a diverse environment. Teachers who teach with technology seem to be able to better promote the emerging educational trends of collaborative (partnering) learning, cooperative learning, and autonomous (individualized) learning (Annand & Haughey, 1997; Kozma & Johnston, 1991; Vogel & Klassen, 2001; Wheeler, 2001).

2.2 Computer-Facilitated Language Learning

In the early 1980s, technology and personal computers became more accessible and affordable to most people; educators (Phillips, 1987; Underwood, 1984) believed that computer-mediated language learning for instructions should be used more widely in language classrooms. According to Girard, Mandera and Marchini (2001), computer-mediated language learning can be defined as a strategy of learning combined with technology, and language application software to enhance learners' language proficiency by allowing students to manipulate utterances, encourage problem-solving skills, and create simulated learning environments through Internet service providers. Second language learning needs to be integrated with the computer because it promotes (1) learning with vast language data, (2) simulates real-life situations, (3) encourages interaction in class, and (4) promotes individualization in a large class (Warschauer & Healey, 1998). Lai and Kritsonis explained that computer-mediated language instruction can also (a) improve practices for students through experiential learning, (b) encourage learning

motivation, (c) enhance student achievement, (d) increase authentic materials for study, (e) encourage greater interaction between teachers and students and students and peers, (f) emphasize individual needs, and (g) enlarge global understanding" (Lai & Kritsonis, 2006). Despite some of the disadvantages and challenges of using technology and computers as supplementary learning tools in teaching, educators believe that technology and computer-mediated learning instruction help language learners to discover the target language at their own pace and have the potential for promoting communication and teamwork among students (Chen, 1995; Cavalier & Klein, 1998). As technology becomes more advanced, many ESL instructors are now incorporating language lessons with multiple media into their classrooms. Yu, Williams, Lin, & Yu (2007) revealed that "the potential of multimedia is to foster the level of interactivity as a form of learning and to offer many possibilities for enriching the knowledge" (p.219). As Teririll (2000) stated "[English as a second or other language] ESOL teachers and learners across the country are integrating computers, Internet and multiple media with ESOL instruction. The world has changed because of the Internet [and other electronic devices] and ESOL has changed with it" (p. 2).Using computers and multimedia, such as Internet, web page and streaming audio, with a web-based instruction, provide a learning environment that facilitates positive interdependence and collaborative team work for students (Lee, 2000).

The usefulness of computer-mediated language learning to second language learners in education has been widely studied. In 2003, Zha et al.(2006) examine ESL learners' communicative competence in a computer-mediated language learning environment. They used both qualitative and quantitative statistical methods to analyze 956 electronic discussion messages that were posted by those elementary ESL students. The results of this study suggested that electronic discussion boards can be used to promote language learners' writing skill as well as the target language usage. Kang (1995) conducted a study on the effectiveness of different instructional approaches on Korean students' English vocabulary learning. The results indicated that students performed significantly higher in a retention test when using a computer-based context instructional approach and concluded that a computer-mediated learning environment would enhance learners' vocabulary learning. Warschauer (1996) concluded that "electronic discussion can be a good environment for fostering use of more formal and complex language, both lexically and syntactically" (p. 22). The World Wide Web (WWW) and electronic mail (e-mail) communication media also have a tremendous impact on enhancing students' language competency. In 1996, Rosen conducted a study on how students used computers with Internet access as the language learning medium to improve their English language proficiency. The result indicated that students using the Internet as a primary tool in learning English scored slightly higher on the TOEFL test compared to students using the direct instruction method in learning English. Wang (1996) investigated the effectiveness of using e-mail as a writing tool for dialogue journaling. Fourteen students who were enrolled in intermediate level reading and writing class participated in this study. The findings indicated that students in the e-mail group generated more language functions in each writing session than students in the paper-and-pencil group and concluded that using e-mail as a language learning tool facilitates language learning.

Even if some might argue, the teaching of English for Specific Purposes is well developed in the Western countries. In non-English speaking countries, there has been a recent increase in the number of higher education institutions and in increase in the number of students attending there institutions. This increase in the number of university structures, especially of scientific and technological expertise, is not accompanied by any development in teaching programs, and in particular as pertains to the teaching of English for Specific Purposes. The current situation regarding the teaching of this specialty at vocational or technical faculties in the non-literary institution is characterized especially by a lack of human recourses and adequate teaching material (Harrabi, 2010). In a what is typically regarded as a medical/nursing science oriented academic institution, very little time is available for English courses. The primary goal of teaching/learning English is to enable students to read medical and/or scientific texts written in English. Thus, the reading skill is always the most emphasized, whereas the writing skill is ranked second, listening skill being the third, and the least attended speaking skill.

Since the nature of computer technology has granted enormous as well as exciting opportunities for health care education, it is imperative for us to investigate English learners can make effective of computer technology for their academics that further leads to much more successful careers.

Methodology

3.1 Research Design
This quantitative study involved a combination of descriptive and correlational research. A descriptive design was used to identify the differences in the student participants' overall perceptions of computer facilitated teaching/learning and their perceptions of using computer technology to facilitate language learning. A correlational (associational) design was also used to help investigate the possible relationships between the variables under study. In this study, the variables were: 1. participants' demographics, 2. participants' overall perceptions of computer facilitated teaching/learning, 3. participants' perceptions of using computer to facilitate language learning, and lastly, participants' self-evaluation of their macro English proficiency.

3.2 Sampling of the Participants
The accessible student population for the study was approximately 2000 nursing major students enrolled in a regional campus of Taiwanese Nursing Institute during the 2010-2011 academic year, fall semester. These students were fairly evenly divided into 40 classes, 22 classes of which were 4-year and 2-year college students and the remaining 18 classes were continuing education students. The researchers used a convenient sampling technique to select the subjects for the study. In the end, 197 students participated in this study, accounting for approximately 1/10 of the overall population. The participants varied in their age, the length of their professional work experience, experience of using computers for learning, and were at different stages of their degree, as far as their class rank was concerned. Mass majority of the participants were female nursing students, accounting for nearly 93% (183 of 197). The youngest participant was 18 years old, with the oldest participant being 32. The mean age of the students in this study was 20.56 years. Nearly all of the participants were full time students and one tenth of the participants were employed either full-time or part-time as nurses. Most of them had worked in the range of 0~5 years.

As shown in Table 1, three quarters of the participants were 4-year college students, and less than a quarter of them were continued education students.

Table 1. Frequency and percentage analysis of the participants by division/rank

Division/Rank	Frequency	Percentage
4-yr College Freshmen	49	24.90
4-yr College Sophomores	36	18.30
4-yr College Juniors	34	17.30
4-yr College Seniors	32	16.10
Continued Education	46	23.40
Total	197	

3.3 Instrumentation
A fairly large scale self-report survey was used to collect data for this study. The instrument was developed by the researcher based on information obtained from the review of literature in the area of computer-facilitated instruction/learning (Mazdayasna & Tahririan, 2008; Kenny, 2000; Kern, 2006), using the three abovementioned research questions as a guide:

The questionnaire was made available monolinqually in student's native language, Mandarin Chinese in order to avoid receiving any false response due to misinterpretations of the item(s). It contained 47 itemized descriptions that are made up of a number of sections:

First section included a mix of multiple-choice and open-ended questions. Participants was asked to specify demographic variables such as gender, age, class rank, grade point average (GPA), employment status, their experience in computer use for learning.

The remaining questions were in four-point Likert scale format, with number 1 being Strongly Disagree (SD) , number 2 being Disagree (D), number 3 being Agree (A), number 4 being Strongly Agree (SA), and Not Applicable (NA). Subsequent sections measured the perceptions of computer-facilitated teaching/learning, the perceptions of

using computer technology to facilitate language learning in the area of English Listening, Speaking, Reading, Writing, and Vocabulary learning. Last section asked the students to self-evaluate of their macro English proficiency.

3.4 Validity and Reliability of the Instrument
In order to establish the content (face) validity of the instrument, the researchers presented it to a panel of experts, who were asked to validate the content of the survey instrument by ensuring the overall inclusiveness of all the variables under investigation and to verify that it addressed all the research questions. The experts were also asked to review the survey for things such as unclear instructions, confusing, ambiguous or repetitive items, and overly complex or difficult sentence structure. The researchers then revised the instrument based on the constructive feedback received from the reviewers.

To establish the reliability of the survey instrument used, the researchers employed a test/retest method using 25 students, the number of students in a regular class size. These students were not the subjects for this reported study. The identical survey was completed by the participants twice. There was a waiting window of one week between the first and second administration of the instrument. In addition to the test/retest method, the researchers also performed Cronbach's Alpha reliability test. Cronbach's Alpha values for various sections of the instrument ranged from 0.82 to 0.91.

3.5 Data Collection, Procedures & Analyses
The researchers asked selected students to participate in the study. Upon arrival to each class, the researchers introduced themselves, explained the purpose of the visit, emphasized that participation was totally voluntary, and then administered the questionnaire to the participants. Voluntary participation was ensured both through explicit verbal and written explanations. The participants could withdraw from the study at any time and that their participation would in no way influence their academic standing in the class where the questionnaires were distributed. Participants were informed verbally and in writing that they could decline to answer any items on the questionnaire. The subjects gave their consent by completing and returning the questionnaire. Data analyses included the used of summary descriptive statistics, cross tabulations, test for equality of variance, t tests, correlations, ANOVA and post hoc tests.

Findings

4.1 Survey Responses
A total of 240 students were enrolled in the selected classes. Among which, 197 students participated in the time of the study, resulting in a participation rate of 82%.

In this study, the means for Likert scale items were interpreted using the scale shown in Table 2.

Table 2. Interpretation of Likert Scale Mean Score Values

Interpretation of Mean Score Values	
Scale	Description
1.00-1.49	Strongly Disagree
1.50-2.49	Disagree
2.50-3.49	Agree
3.50-4.00	Strongly Agree

4.2 Results

Research Question 1: Are there any meaningful relationships between students' perceptions of computer facilitated learning and computer facilitated language learning?

Perceived Effectiveness of CML & CMLL
The overall mean score of students' responses for items, which were used to assess the participants' perceived effectiveness of computer-mediated learning, was 3.21, indicating students in general held an "agreed" view of the overall effectiveness of computer-mediated learning. And the overall mean score of their perceived effectiveness of computer mediated language learning was 3.23. Similarly, students in general held an "agreed" view of the overall effectiveness of computer-mediated learning.

Table 3 shows the Pearson Product- Moment Correlation of students' perceived effectiveness in the area of computer-mediated learning and computer mediated language learning (r = .55, p. < .01). The result revealed that there was a statistical significant, *moderate* positive association between the two variables.

Table 3. Pearson Product-Moment Correlation of Students' Perceived Effectiveness of Computer-Mediated Learning and Computer-Mediated Language Learning

Variables	Computer Mediated Learning
Computer-Mediated Language Learning	.55*

* Correlation is significant at the .01 level (2-tailed).

Research Question 2: Are there any significant differences in students' perceptions of computer facilitated language learning based on demographics?

An independent sample T-test did not reveal a statistical significant difference between male students and female student, $t(197)$ = 0.116, p > .05, for survey items intended to solicit male and female students' perceptions about computer facilitated language learning. Their mean scores nearly stood identical (Male=3.24 vs. Female=3.23).

Table 4 shows the result of the homogeneity of variance assumption for the participants' perceived effectiveness of computer-mediated learning in English *speaking* based on division/rank. The test score indicated that the assumption was not violated with $p.$ > .05.

Table 4. Test Score for the Homogeneity of Variance Assumption of the Participants' Perceived Effectiveness of Computer-Mediated Learning in English Speaking Based on Division/ Rank

Levene's Test Statistic Based on GPA	p
1.49	.208

As illustrated in Table 5, a one-way analysis of variance (ANOVA) was used to examine if there were significant differences of participants' perceived effectiveness in computer-mediated learning in English speaking among groups based on their division/rank. The results indicated that there was a significant difference among groups F (4, 192) = 3.08, $p.$ < .05.

Table 5. ANOVA Test of Participants' Perceived Effectiveness of Computer-Mediated Learning in English Speaking Based on Division/Rank

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Groups	2.94	4	.74	3.08	.02*
Within Groups	45.95	192	.24		
Total	48.89				

*$p \le .05$.

In order to identify where the difference identified by the ANOVA occurred, the researcher performed a Tukey HSD post hoc test shown in Table 6. The test revealed that freshman students were significantly different (M = 3.01), from junior students (M = 3.33). Students with higher rank tended to perceive higher the overall effectiveness of Computer Mediated Learning in English speaking than students with lower rank.

Table 6. Post Hoc Test (Tukey HSD) of Participants' Perceived Effectiveness in Computer-Mediated Learning in English Speaking Based on Division/Rank

Base Group	Base Group Mean	Compare Group	Compare Group Mean	Mean Difference	p
Junior	3.33	Freshman	3.11	.22*	.03

*$p. \leq .05$.

Research Question 3: Are there any meaningful relationships between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency?

Self-Evaluation of Macro English Proficiency
The overall mean score of students' responses for items that asked students to self-evaluate their macro (Listening, Speaking, Reading, Writing & Vocabulary skills) English proficiency was 2.45. Students in general held a "Disagreed" or "Conservative" view.

Table 7 shows the Pearson Product- Moment Correlation between the two variables (r = .28, p. < .01), indicating a statistical significant, *low* positive association.

Table 7. Pearson Product-Moment Correlation of the Perceptions of Using Computers to Facilitate Language Learning and Self Evaluation of Macro English Proficiency

Variables	*Perceptions of Using Computers to Facilitate Language Learning*
Self-Evaluation of Macro English Proficiency	.28*

*Correlation is significant at the .01 level (2-tailed)

Discussion & Conclusions

This study supports researchers' claims that conducting classes in a computer-mediated learning environment can effectively facilitate students' knowledge construction (Kasper, 2002) and that adequate use of computer technology can strengthen learners' higher cognitive skills and complex thinking skills (Rakes, Fields & Cox, 2006) by providing significant evidence via students' responses agreeing that effective computer-mediated learning allows knowledge building (that helps relate facts to reality) and promotes in-depth and advanced learning. This finding also supports Cooper & Hirtle's (1999) observation as they reported that through a constructivist pedagogical approach, students could not only obtain the intended skills but in addition, acquire other skills necessary to solve the real world problems.

ANOVA analyses did not reveal any significant differences based on gender. It might be interpreted that there were no variant views about the effectiveness of computer-mediated teaching/learning among the participants in this female predominant (93%) industry. No significant differences were found among groups of employment as nurses and length working as nurses may have suggested that the great majority (90%) of the participants were full time students in school. Even the remaining students had been employed as either full-time or part-time nursing workers, almost all had accumulated experience of less than 5 years.

This study adds to the literature that there was a statistically significant, moderate positive association between students' perceived effectiveness of computer-mediated learning and computer mediated language learning. Correlational analyses between individual items of the two variables revealed that this association especially holds true between students' views of computer mediated learning and their believing that effective computer-mediated learning provides best help in the area of *English Listening*.

More specifically, itemized correlational analyses indicated a statistically significant positive association between "Computer mediated teaching/learning enhances the conventional face-to-face classroom experience" and "With the help of the computer technology, I think I can become more proficient in English in listening to instructions in real

situations (hospitals/clinics)." Similarly, the study found a significant positive association between "Computer mediated teaching/learning enables effective communication with the teacher and peers" and "With the help of the computer, I think I can become more proficient in English in listening to patients, colleagues, and fellow students." The possible explanations for the findings could be that the computers help stretch teaching/learning as well as communications beyond conventional classrooms. Aside from acquiring additional benefits and skills which were not intended for the purpose of the class(es), students are likely to choose more authentic learning tasks that are especially related to academics and practices.

Statistically significant, positive relationships were found between participants' perceptions of using computer to facilitate language learning and their self-evaluation of their macro English proficiency. Further correlational analyses revealed that computer mediated learning in English *writing* received the highest correlational scores whereas computer mediated learning in English *reading* had the lowest score, suggesting that the higher the participants' rated their own English abilities, the more they believe that the computer can facilitate more successful English learning in writing. The likelihood shifted downward in the case of English reading.

The mean score (M=2.45, "Disagree") for students' self-evaluation of their macro English proficiency was quite significantly lower than that in other categories, perceptions of computer mediated learning (M=3.21) and perceived effectiveness of computer mediated language learning (M=3.23), respectively. One possible explanation for this tangible finding was that students in Southeast Asia have always been taught to be humble or not to be overly confident. On the flip side of the coin, it might well be that students were simply too unconfident to manifest their true English abilities.

In summary, many factors other than those presented in this study might and could influence students' perceptions, as well as their perceived effectiveness of computer-mediated instruction/learning. It takes explicit knowledge, support and cooperative efforts among administrators, teachers and students to ensure teaching and learning are indeed benefitting from the computer technology.

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Öğrenme Nesneleri Üzerine Bir İnceleme

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Abstract

A Review on Learning Objects. Learning tools and learning environments have been changing with technology integrated learning and teaching approaches. One of the results of the changes is to utilize learning objects in learning environments. The previous studies in the field of education demonstrated the importance of using learning objects by placing emphasis on its characteristics which are considering learners' individual characteristics, reusability, improvability, portability. In this study, a literature review was conducted to examine studies on learning objects in Turkey. This study will contribute to the literature by identifying the need for development of using learning objects and helping researchers who would like to carry out study associated with learning objects.

Keywords: learning objects, learning object repository, instructional materials

Özet

Eğitime yansıyan çeşitli teknolojilerle öğrenme araçları ve öğrenme ortamları farklılaşmaktadır. Bu değişimin yansımalarından biri olan öğrenme nesneleri öğretim ortamlarında yer almaktadır. Eğitim üzerinde yapılan çalışmalarda bireysel özellikleri göz önünde tutabilme, tekrar kullanılabilme, geliştirilebilme, taşınabilme özelliklerinden dolayı öğrenme nesneleri ön plana çıkmaktadır. Araştırma kapsamında Türkiye'de yapılan öğrenme nesnelerine kapsamındaki çalışmalar incelenerek bir literatür taraması yapılmıştır. Çalışma öğrenme nesnelerine dönük yapılabilecek çalışmalar açısından ve öğrenme nesnelerinde geliştirilmesi gereken alanları ortaya çıkarmak açısından literatüre katkı sağlayacaktır.

Anahtar kelimeler: öğrenme nesnesi, nesne ambarı, öğretim materyalleri

Giriş

Eğitime yansıyan gerek teknolojik gelişmeler gerekse değişen öğrenme ortamları birçok etkenden dolayı farklılaşmaktadır. Eğitim ortamında meydana gelen farklılıklar öğrenme ve öğretme ortamlarına da yansımaktadır. Bir diğer farklılaşma ve değişim ise öğretim teorileri çerçevesinde gerçekleşmektedir. Birçok ülkede eğitime yönelik geleneksel bakış açısı hızlı değişime uğramaktadır (Koper, 2003). Değişimi ortaya çıkaran sebepler ise şu şekilde ifade edilebilir:

- Öğrenme için daha bireysel yaklaşımlara ihtiyaç talebi,
- Bireysel farklılıklara göre bilginin uzun süreli hafızada kodlanması,
- Ürüne dönüklük, tartışmaya ve işbirliğine olan ihtiyaç,
- Bilgi yığını meydana getirmek, depolamaktan çok, analiz etme, eleştirel yaklaşım gibi daha karmaşık becerilerin edinilmesine olan ihtiyaç,
- Edinilen, öğrenilen becerilerin geçerliliği, akreditasyonu ve hayat boyu öğrenme gerekliliği.

Eğitim ortamlarında meydana gelen değişiklikler eğitim araçlarında da kendini göstermektedir. Eğitim - öğretim kurumlarının birçoğu eğitimin kalitesini, etkiliğini ve verimliğini artırmak için gelişen teknoloji ve yaklaşımlardan faydalandıkları ve destek aldıkları görülmektedir. Bu yaklaşımlara örnek olarak çeşitli teknolojileri

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kullanarak bireyin eğitim ortamına getirilmesi yerine; bireye özgü eğitim ortamını, bireyin istek ve ihtiyaçlarına göre şekillendirerek bireyin dahil edilmesi uygulamaları verilebilir. Bu yaklaşımdan yola çıkarak etkili, hızlı ve kalıcı öğrenmeyi gerçekleştirebilecek, oluşturmacı bir eğitim ortamı sağlayacak, yaşam boyu eğitim yaklaşımına katkı sağlayacak ve bireyselleştirilmiş öğrenme ortamlarını destekleyecek bir yapıya ihtiyaç duyulmaktadır. Böyle bir ihtiyacı cevaplama sürecinde geleneksek eğitim ortamında yer bulan "eğitim-öğretim materyalleri" bir değişime uğramış dünyada kabul gören "Öğrenme Nesneleri" adını almıştır(Türel, 2008). Öğrenme nesnesini Wiley (2000) "Öğrenmeyi desteklemek için yeniden kullanılabilen dijital kaynaklardır" olarak ifade etmiştir. Diğer bir tanımda Rehak ve Mason (2003) "Teknoloji destekli öğretim süresince kaynak teşkil eden, kullanılabilen veya yeniden kullanılabilen dijitalleştirilmiş nesneler" olarak ifade etmiştir.

Bir diğer açıdan DLNET(gidital Library Networkfor Engineering an Technology) öğrenme nesnelerinin, öğretimi ve öğrenmeyi kolaylaştıracak biçimde yüksek kalitede bilgi içeren yapılandırılmış kaynaklar şeklinde ifade etmektedir. Yapılandırılmış ifadesi ile öğrenme nesnelerinin geçerli bir hedef içermesini ve hedef kitleye yönelik olması gerekliliğini ifade etmektedir. DLNET öğrenme nesnesini tanımlarken "öğrenme" ve "nesne" kavramlarında içerdikleri özellikler şunlardır:(DLNET,2001; Aktaran:Karaman 2005);

- Konu gerçekliği ve doğruluğu.
- Öğretimsel değer.
- Hedefe ilişkin kaynaktaki bilgilerin ilgililiği.
- Kolaylıkla bulunması ile öğretmen ve öğrenciler tarafından kullanımı gibi dağıtım sonrası faydalarını ortaya koyacak nesne özellikleri.
- Öğrenme nesnesinin teknik olarak güvenirliği.

Öğrenme nesneleri hedeflenen ve amaçlanan kazanımlara odaklanılan küçük öğrenme birimlerini temsil eden bir ders, ünite yada bölümden daha küçük öğeler olarak ifade edilebilir(Macromedia, 2003). Örneğin tarihi bir olayı anlatan video, ders içerisinde konuya dönük egzersiz alıştırmaları derste kullanılan bir öğretmen, öğrenme nesnelerini öğretim ortamında yer vermiş olur(Van Lee ve diğerleri, 2002:Aktaran Karaman, 2008).

Öğrenme nesnelerinin tekrar kullanılabilirlik" ve "Üstveri" (metadata) özellikleri bu nesnelerin sürdürebilir bir şekilde kullanılabilmesini sağlamaktadır. Öğrenme nesneleri içerdikleri üstverilerle birlikte nesne paketleri oluşturmaktadır. Üstveri ise nesneyi tanımlayan, ifade eden, açıklayan ve konumunu ifade eden bir tanıtımsal bilgidir(Karaman,2005). Öğrenme nesnelerinin üsteveri (metadata) bilgileri içerik hakkındaki bilgileri de bize sağlamaktadır. Dilimler halindeki bilgilerin sunulduğu öğrenme nesnesleri en önemli ve güçlü yanı tekrar kullanılabilir özelliğini barındırmasındır(Duval ve diğerleri, 2011). Ayrıca SCORM uyumlu ve Üstveri yapısını içeren yapıda öğrenme nesnelerinin tasarlanması ve hazırlanması modüler eğitime, web tabanlı eğitime ve uzaktan eğitime entegre edilebilen, öğrenme araçları oluşturulmasını sağlamaktadır(Northrup, 2007). Öğrenme nesnelerinin eğitim öğretim ortamlarında tekrar kullanılabilir ve kolay ulaşılabilir olması açısından bu nesneler "öğrenme nesnesi ambarı" olarak isimlendirilen birikim alanlarında toplanmaktadır. Öğrenen bireyler öğrenme nesnelerine "Öğrenme nesnesi ambarları" üzerinden doğrudan ulaşarak da öğrenmeler gerçekleştirebilirler veya öğreticiler bu veritabanlarında bireysel olarak öğrenme nesnelerinden yararlanabilirler(Barritt & Alderman, 2004)

Öğrenme Nesnelerine Dönük Yapılan Çalışmalar

Güler (2010) "Öğrenme Nesnesi Tasarım ve Geliştirme Süreci: Bir Tasarım Tabanlı Geliştirme Örneği" isimli doktora tezinde öğrenme nesnesi geliştirme süreci gerçekleştirilerek bu süreçte yaşanan sorunların belirlenmesi, belirlenen sorunlar doğrultusunda sürecin tekrar tasarlanarak gerçekleştirilmesiyle sorunlara öneriler getirilmesi, bu önerilerin sınanması ve değerlendirilmesi amacıyla gerçekleştirmiştir. Öğrenme nesneleri geliştirme süreçleri tasarlanarak süreçte yaşanan sorunlar, sürecin etkililiği, çalışma grubunu oluşturan öğretmen adaylarının bu süreçteki öz yeterlilik algıları ve öğrenme nesneleri hakkındaki bilgileri ölçülmüştür. Literatür kapsamında önce öğrenme nesnesinin tanımına, kapsamına, özelliklerine ve kullanılabildiği ortamlar açıklanmış; öğrenme nesnelerinin tasarımı, kullanımı, geliştirilmesi ve değerlendirilmesiyle ilgili çalışmalara yer almıştır. Araştırmanın yöntemi tasarım tabanlı araştırma olarak belirtilmiştir. Araştırmanın çalışma grubunda öğretmen adayları yer almıştır. Çevrimiçi görüşmeler, sistemin forum kayıtları, sistem kayıtları, değerlendirme işlemine yönelik video kayıtları, eğitim yazılımı geliştirme öz-yeterlik algısı ölçeği ve öğrenme nesneleri hakkında bilgi belirlemeye yönelik ölçme aracı de veri toplama aracı olarak kullanılmıştır. Çalışma kapsamında tasarım, geliştirme, uygulama, değerlendirme ve tekrar tasarım basamaklarına yönelik veri analizleri ayrı ayrı belirtilmiş ve incelenmiştir. Araştırma bulgularından, öğrenme nesnesi geliştirme sürecinin, öğretmen adaylarının eğitim yazılımları geliştirme öz-yeterlik algıları ve öğrenme nesnesi hakkındaki bilgileri üzerinde anlamlı bir etkisinin olduğu sonucuna

ulaşılmıştır. Değerlendirmeler sonucunda, geliştirilen öğrenme nesnelerinin teknik anlamda ve içerik anlamında başarılı bulunduğu ifade edilmiştir.

Cebeci (2003) "Öğrenim Nesnelerine Giriş" isimli çalışmasında öğrenme nesneleri genel olarak tanıtımına, avantajlarına ve özelliklerine yer vermiştir. Öğrenme nesnelerinin farklı tanımlarına ve isimlerine yer verildikten sonra üzerinde uzlaşılan bir tanımının olmadığı belirtilmiş, tanımların geneline bakıldığında öğrenme nesneleri şu biçimde özetlenmiştir: "Bir öğrenim nesnesi, (learning object), bir kitabın bölümü, bir harita, bir etkileşimli bilgisayar yazılımı, bir video, bir şematik çizim, bir simülasyon gibi bir şeyleri öğretmek veya öğrenmek için kullanılabilen ayrışık veya bağımsız bilgi parçaları olup sanal olarak veya elektronik olarak kullanılabilir durumda olan herhangi bir şeydir". Öğrenme nesnelerinin temel yapısının iki bölümden oluştuğu belirtilmiş, bu bölümler şema ve örneklerle açıklanmıştır. Bu bölümlerden biri olan "tanımlayıcı bilgi" (metadata) üzerinde durulmuş, öğrenme nesnelerinin yeniden kullanılabilirlik, üretilebilirlik, uydurulabilirlik, satılabilirlik, esneklik, güncelleme-arama ve içerik yönetim kolaylığı özellikleri açıklanmış, öğrenme nesnelerindeki içeriklerin özelliklerine değinilmiştir. Öğrenme nesnelerinin kolay bir şekilde paylaşılması için tanımlamaların ve SCORM gibi standartların geliştirilmesi gerektiği vurgulanmıştır, yaygın kullanımı için ise çok farklı çeşitlerde öğrenme nesnelerinin üretilmesi ve öğretmenlerin bu konularda eğitilmeleri gerektiğini ifade etmiştir. "Eğitimciler, öğrenim nesnelerini kullanma konusunda rahatlık duymalı ve öğrenim nesnelerini bulma ve oluşturma konusunda çalışma ihtiyacı hissetmelidirler" şeklinde öğrenme nesnelerine dönük fikrini belirtmiştir.

Arslan (2011) "Flash ile Reusable Mobil Öğrenme Nesneleri Üretimi" isimli çalışmasında Flash CS5 programı kullanılarak yeniden kullanılabilir yani "reusable" öğrenme nesneleri üretiminin nasıl yapılabileceği bir örnekle yer vermiştir. Yazar önce neden bu programı seçtiğini anlatmış, sonra da kullandığı yöntem ve araçları belirtmiştir. XML dilini kullanarak, Flash'ta bir defa ürettiği içeriğin diğer dersler için basit bir şekilde çoğaltılabileceğini ve yeniden kullanılabilirliğinin artacağını ifade etmiştir. Ayrıca çalışmada geliştirdiği programı ve geliştirme aşamalarına yer vermiş, bu türde yeni öğrenme nesnesi şablonlarının oluşturulması önerisinde bulunmuştur.

Acun (2009) çalışmasında, öğrenme ve araştırmayı desteklemek için tasarlanan kaynakca.info sitesinin tasarımını ve uygulamasını ele almıştır. Çalışma kapsamında önce öğrenme nesneleriyle ilgili temel kavramlara ve Türkiye'deki uygulamalara yer verilmiş, sonra da sitenin tasarım ve uygulaması incelenmiştir. Bulgularda da site istatistikleri verilmiş, sitenin aylara göre ziyaretçi sayıları ve üye sayısı belirtilmiş, üye profillerinden bahsedilmiştir. Türkiye kaynakçası adı verilen sitenin Türkiye'de bir ilk olması ve sosyal- beşeri alanları içermesi yönüyle değerli olduğu belirtilmiştir.

Akkan ve diğerlerinin (2009) çalışmasında yaklaşık yüz adet öğrenme nesnesi içeren bir öğrenme nesnesi ambarı tasarlanmış, sonra da bu nesne ambarının teknolojik ve pedagojik açıdan değerlendirmesini araştırma kapsamında yapılmıştır. Araştırmada içerisinde öğrenme nesnelerinin tanımından ve avantajlarından bahsedilmiş, öğrenme nesnelerinin uygun tasarlanmalarının önemi literatürden örnekler gösterilerek vurgulanmıştır. Nesne ambarının pedagojik ve içerik açısından değerlendirmesini 64 eğitimci; teknoloji açısından değerlendirmesini ise 46 materyal ve web tasarım uzmanı gerçekleştirmiştir. Tasarlanan öğrenme nesnesi ambarının değerlendirilmesi amacıyla iki farklı anket geliştirildiği belirtilmiş, anketlerin güvenirlik katsayıları verilmiştir. Anketlere verilen cevaplar yüzde, frekans ve ortalama olarak değerlendirilmiş, sonuçlar tablolar halinde sunulmuştur. Bulgular incelendiğinde pedagojik açıdan nesnelerin sayı olarak yeterli görüldüğü, içerik geliştirme sisteminin daha sade olması gerektiği, öğrenme nesnelerinin etkileşimlerinin yeterli seviyede olduğu, matematiksel ilişkilerin keşfedilmesine ve eğlenceli bir öğrenme ortamının oluşturulmasına bu öğrenme nesnelerinin katkı sağlayabileceği ifade edilmiştir. Tasarım açısından ise nesne ambarı sade ve kullanımı kolay olarak ifade edilmiş, güncellenmesi ve sürekliliği açısından uygun özellikler taşıdığı belirtilmiştir. Öğrenme nesnesi ambarlarının pedagojik ve teknolojik açıdan incelenmesi önerisine yer verilmiştir.

Ceylan (2008) "Öğrenme Nesnelerinin Tasarımı ve Öğrenme Süreçlerinde Kullanımının Öğrencilerin Başarı Düzeylerine Etkisi İle Öğrenme Süreçlerine Katkıları" isimli yüksek lisans tezinden öğrenme nesnelerinin kullanışlılığı, eğitim süresince kullanımının başarıya etkisi, öğrencilerin kullanıma yönelik duygusal tepkileri ve kullanım sürelerini araştırmıştır. Literatürde önce öğrenme nesneleriyle ilgili kuramsal çerçeve ifade edilmiş, öğrenme nesnelerinin yapısı, özellikleri ve tarihi gelişimi belirtilmiş, ardından yurtiçi ve yurtdışından konuyla ilgili araştırmalar örneklendirme yapılmıştır. Araştırmada nicel ve nitel yöntemler birlikte kullanılmıştır. Deney ve kontrol grubuna ön test ve son testler yapılmıştır. Ayrıca çalışmadaki deney grubuyla ayrıca görüşmeler yapılmıştır. Veri toplamak için uygulama sınavları, raporlar, öğrenme nesnesi değerlendirme formu ve görüşme formu kullanılmıştır. Deney ve kontrol grubu arasında başarı açısından anlamlı bir farklılık oluşmamış, öğrencilerin öğrenme nesnelerini kullanırken sorun yaşamadıkları, olumlu bir tavır sergiledikleri belirtilmiştir.

Atasayar (2008) "Kavram Öğretimi Sürecine Yönelik İçerik Geliştirme Aracının Tasarlanması ve Kullanışlılığı" isimli yüksek lisans tezinde kavram öğretimi için hazırlanan öğrenme nesnelerinin üst verilerinin

belirlenmesi ve içerik geliştirenlere yardımcı bir öğretim aracının geliştirilmesi amacıyla gerçekleştirmiştir. Çalışmada kavram öğretimiyle ilgili yaklaşımlar ve kavram öğretiminin aşamaları belirtildikten sonra öğrenme nesneleri tanıtılmış, öğrenme nesnelerinin etiketlenmesi ve paketlenmesiyle ilgili standartlara ve araçlara yer verilmiştir. Araştırmada üstveri standartları, içerik paketleme aracı ve aracın kullanışlılık değerlendirmesine yer verilmiştir. Araştırmanın çalışma grubunu, öğrenme nesnesi yaklaşımlı içerik geliştirmekten sorumlu 3 kişi oluşturmuş, kontrol listesi, gözlem ve görüşme formları kullanılmıştır. Araştırma bulguları yorumlanarak, öğretmenlerin KÖSİG aracını kullanmak isteyecekleri ve içerik geliştirme sürecinde hazırlık sürecinin gerekli olduğu ifade edilmiştir.

Çağıltay ve diğerleri (2001) "Tekrar Kullanılabilen Öğrenme Nesneleri (TEKÖN) ve Örnek Bir Çalışma" isimli çalışmasında tekrar kullanılabilir öğrenme nesnelerinin kullanılma nedenleri, sağladığı yararlar ve eğitim açısından önemi vurgulanmıştır. Eğitim sistemlerinde bilginin bileşenlerinden ve öğretme- öğrenme stratejilerinden bahsetmiştir. TEKÖN'lerin çevrimiçi bir eğitim sisteminde kullanım örneğine yer verilmiş, Amerika'da Türkçe eğitimini hedefleyen bir yazılımı öğretme-öğrenme stratejileri doğrultusunda değerlendirerek konuya bir örnek ifade edilmiştir. Çalışma sonuçları şu şekildedir;

- Öğrenme nerede ve ne şekilde gerçekleşirse gerçekleşsin günümüzdeki modern bilgi teknolojilerinin etkin olarak kullanımı sayesinde desteklenebilir ve kalitesi arttırılabilir.

- Öğrenme nesneleri, bir öğrenme sistemi içindeki, SÖYLE ve GÖSTER işlemlerine ve SOR ve YAP eylemlerine yönelik olarak tanımlanmalıdır. Bu durumda tanımlanacak olan öğrenme nesnelerinin bir kısmı sistemin veritabanını oluştururken, diğer kısmı sistem üzerindeki insan ve bilgisayar iletişimine yönelik fonksiyonları ve sistemin kullanımına yönelik bilgisayar arayüzlerinin belirlenmesini sağlayacaktır.

- Bu aşamaların her birinde nesneye dayalı bir yaklaşımın izlenmesi mümkündür ve bu tür bir tasarım sistemin bütünü açısından, öğrenme nesnelerinin yaygınlaştırılmasını ve sistemin esnek bir yapıya kavuşturulmasını sağlayacaktır.

Çakıroğlu ve Baki (2006) "E-Öğrenme Ortamları İçin Tekrar Kullanılabilir Öğrenme Nesneleri Tasarımı" isimli çalışmasında tekrar kullanılabilir öğrenme nesneleri geliştirmek için tasarım öncesinde ve tasarım aşamasında neler yapılması gerektiğine yer vermişlerdir. Giriş bölümünde öğrenme nesnelerinin kullanılma sebepleri, öğrenci ve öğretmenlere sundukları olanaklar, öğrenme materyallerinin taşıması gereken özellikler, öğrenme nesnelerinin farklı tanımları ve sunduğu avantajlardan bahsedilmiş, eğitimde nasıl kullanıldığıyla ilgili örnekler verilmiştir. Öğrenme nesnelerinin tekrar kullanılabilmesini sağlamak için geliştirme aşamasından önce nesnenin hangi konularda kullanılabileceğinin öngörülmesi ve buna göre senaryo üretilmesinin gerekliliğinden bahsedilmiş, bu doğrultuda bir senaryo geliştirilmiş, farklı derslerde kulanılabilecek öğrenme nesneleri örnekleri verilmiştir. Ardından öğrenme nesnelerinin tasarım ve geliştirme aşamasında XML, Java gibi yazılım dillerinin kullanımının getireceği avantajlardan bahsedilmiş, tekrar kullanılabilirliğin nasıl sağlanacağı üzerinde durulmuştur. Öğrenme nesnelerinin pedagojik uygunluğunun eğitim bilimciler tarafından sürekli izlenmesi gerektiği belirtilmiş, farklı e-öğrenme ortamlarının geliştirilmesi gerektiği vurgulanmıştır.

Gürol ve Türel (2007) "Öğrenme Nesnelerinin Tasarımı" isimli çalışmasında öğrenme nesnelerinin tasarımında dikkat edilmesi gereken konular ve tasarım problemleri tartışılmış, çözüm önerilerine yer verilmeye çalışılmıştır. Öğrenme nesnelerinin sınırlılıklarının ve yaşanan sorunların genelde tasarım hataları sonucu ortaya çıktığı ifade edilmiş, öğrenme nesnelerinin yeniden kullanılabilirlik, parçalara ayrılabilirlik gibi özellikleri dikkate alınarak oluşturulması gerektiği vurgulanmıştır. Öğrenme nesnesi tasarımında öğretim tasarımının rolü ifade edilmiş, öğretim tasarımı teorilerinin öğrenme nesnesi tasarımına olumlu ve olumsuz etkilerine yer verilmiştir. Sadece öğrenme nesnesi tasarımına yönelik geliştirilen Cisco RLA Modeli ile Sallas ve Ellis'in "anlat, göster ve yap" model önerisi anlatılmıştır. Brown ve Voltz'un aktivite, senaryo, dönüt, iletim/sunum, bağlam ve etki prensiplerini barındıran tasarım yönergesi ile Morris'in tasarım yönergesi ifade edilmiş, Vercoustre ve McLean'ın nesne tasarımını ele alış şekli gösterilmiştir. Hem oluşturmacılık, hem de davranışçılık dikkate alınarak ileri sürülen nesne tasarımı önerileri yer alan çalışmada, nesneye yardım özelliğinin eklenmesine, önce öğretim hedefinin açıklanmasına, kontrolün öğrencide olmasına, öğrencinin çalıştığı yeri ya da aldığı notları daha sonradan görebilmesine, gezinti düğmeleri gibi tasarım öğelerinin benzer şekilde oluşturulmasına, farklı düzeylere hitap eden tasarımlara, konuyla ilgili materyallerin nesneye eklenmesine dikkat çekilmiştir. Nesne tasarımlarında klasik öğretim tasarımı modellerine bağlı kalmak yerine bu modellerin nesnelere yönelik uyarlanmış şekillerini ya da doğrudan nesneler için geliştirilen yeni tasarım modellerini uygulamalarda temel alarak çalışmak gerektiği vurgulanmıştır.

Karaman (2005) "Öğrenme Nesnelerine Dayalı Bir İçerik Geliştirme Sisteminin Hazırlanması ve Öğretmen Adaylarının Nesne Yaklaşımı İle İçerik Geliştirme Profillerinin Belirlenmesi" isimli doktora tezi

çerçevesinde bir öğrenme nesnesi ambarı (Atanesa) tasarlanmış, öğretmen adaylarının bu sistemi ve öğrenme nesnelerini nasıl kullandıkları ve bu konu hakkındaki görüşleri belirlenmeye çalışılmıştır. Araştırmanın ilk aşamasında nesne ambarı (AtaNesa) ve NYS adı verilen nesneye dayalı yazarlık aracının bulunduğu bir sistem hazırlanmıştır. İkinci aşamasında ise öğretmen adaylarının bu nesne ambarındaki nesneleri birleştirerek ders içeriği üretmeleri sağlanmış, bu doğrultudaki görüşler ve kullanım şekilleri incelenmiştir. Literatür kapsamında önce nesne yaklaşımı ve öğrenme nesneleri hakkında genel olarak bilgi verilmiş, nesne ambarlarının tanımlarından, işlevlerinden ve pedagojik boyutlarından bahsedilerek nesnelerin paketlenmesi ve içeriğin sıralanması ile ilgili genel bilgilere yer verilmiştir. Nitel ve nicel yöntemlerin birlikte yer aldığı araştırmada kimya bölümü öğretmen adayları ile uygulama gerçekleştirilmiştir. Çalışma neticesinde elde edilen bulgular doğrultusunda daha fazla ulusal ve özel nesne ambarı geliştirilmesi, nesne ambarlarının farklı kriterlerde arama yapmaya imkan sağlaması, geliştirilecek yazarlık aracının mümkün olduğu kadar basit olması, hazırlanan içeriklerin biçimsel ve anlamsal olarak tutarlı ve kaliteli olması, hizmetiçi ve hizmet öncesi eğitimlerde teknoloji kullanımı ve dijital kaynaklara erişim konuları üzerinde daha fazla durulması gerektiği önerileri yer almıştır.

Karaman ve diğerleri (2007) "Öğrenme Nesnelerinin Pedagojik Boyutu ve Öğretim Ortamlarına Kaynaştırılması" isimli çalışmada öğrenme nesnesi yaklaşımı ile davranışçılık, oluşturmacılık ve durumlu öğrenme yaklaşımları arasındaki ilişkiyi araştırılmıştır. Çalışmada öğrenme ortamlarına bu nesnelerin nasıl dahil edilebileceği, nasıl kullanılabileceği yönünde bilgilere de yer verilmiştir. Öğrenme nesnesi yapılanmasına dönük düşünler çalışmada aktarılmıştır:

- "Öğrenme nesnesi yaklaşımında öğretim, öğrenme nesnelerinin bir araya getirilmesiyle oluşur. Bu yüzden öncelikle öğrenme yaklaşımları temel alınarak bu nesnelerin nasıl bir araya getirileceğinin ortaya konması gerekir (Baruque ve Melo, 2003). Aslında en iyi sonucu verecek pedagojik bir modelin bulunmaması, öğrenme nesnelerinin kullanımı yönündeki en büyük problemlerden biridir (ADL, 2003)."

- "Nesneler, öğretmenler için iki şekilde faydalı olur. Birincisi daha az zaman harcadıkları için öğrencilerin bireysel ihtiyaçlarıyla ilgilenmeye daha çok zaman ayırabilir ve ikincisi ise gama ışınları ya da dopplerefekti gibi gerçek hayatta tasviri zor ya da imkânsız olan karmaşık kavramların sunumunda dijital simülasyonlar şeklindeki öğrenme nesneleri kullanabilir (Chapuis, 2003a)."

- "Öğretmenlerin öğrenme nesnesi bulma ve kullanmasına yardımcı olmak amacıyla onların örnek uygulama ve siteleri görme imkânına sahip olacağı oturumların düzenlenmesi, bu oturumlarda ortak çalışmalara karar verilmesi ve öğretmenlerin bu konuda çevrimiçi dersler almaya ikna edilmesi gibi çalışmalar yapılabilir (Bratina ve diğer., 2002)."

Yazarlara göre öğrenme yaklaşımlarının hemen hepsi öğrenme nesneleri modeliyle uygulanabilir prensipler içerir. Öğrenme nesnelerinin davranışçılıkla doğal bir uyum içerisinde olduğunu belirten yazarlar; bunun sebebini küçük adımlar, öğrenmenin aşamalılığı, dönüt ve tekrar gibi ilkelerin nesnelerin kullanıldığı ortamların tasarımına ve nesnelerin kullanımına rehberlik etmesi olarak belirmişlerdir.

Koplay (2005) "Çevrimiçi Eğitimde İçerik Yeniden Kullanımına Çözüm Olarak Bir Web Tabanlı Öğrenme Nesnesi Geliştirme Aracının Tasarlanması ve Gerçekleştirilmesi" isimli yüksek lisans tezinde öğrenme nesnelerinin yeniden kullanılabilirliğini sağlamak amacıyla bir üniversite ortamında web tabanlı eğitim için içerik geliştirmeye yönelik bir çözüm geliştirilmeye çalışmıştır. Kurum düzeyinde içerik geliştirmek için bir sistem geliştirilmiştir. Böylelikle öğrenme nesnesi geliştiren kişilerin sadece içeriğe dönük çalışmalarını amaçlamıştır. Literatürde yeniden kullanılabilirlik yönüyle öğrenme nesneleri ele alınmış, öğrenme nesnesi geliştirme yaklaşımlarından ve içerik modellerinden bahsedilmiştir. Kurumda uygulanan sistemin uygulama aşamaları anlatılmış, sistem özelliklerine yer verilmiştir. Bu sistem sayesinde konu uzmanlarının diğer teknolojilerden mümkün olduğunca soyutlanarak sadece kendi uzmanlık alanı olan konuya yoğunlaşabilmelerine imkan verilmiştir.

Türel (2008) "Öğrenme Nesneleri İle Zenginleştirilmiş Öğretim Ortamlarının Öğrenci Başarıları, Tutumları ve Motivasyonları Üzerindeki Etkisi" isimli doktora tezinde öğrenme nesnelerinin kullanımının, öğrencilerin akademik başarıları, tutumları ve motivasyonları üzerindeki etkisini araştırmıştır. Sürece ilişkin öğrenci ve öğretmenlerin görüş ve algıları değerlendirilmiştir. Literatürde öğrenme nesnesinin tanımından, avantaj ve sınırlılıklarından bahsedilmiş, öğrenme nesnelerinde olması gereken özellikler ve öğrenme nesneleri modelleri tanıtılmıştır. Hem nicel, hem de nitel yöntemlerin kullanıldığı bu araştırmada 7. sınıflara yönelik Fen ve Teknoloji dersi materyalleri Moodle sistemi üzerinden yayınlanmış; öğrencilerin akademik başarıları başarı testiyle, tutumları tutum ölçeğiyle, motivasyonları ise Keller'in geliştirdiği motivasyon ölçeğiyle ölçülmüştür. Araştırmadanın nitel veri toplama sürecinde ise öğrenci öz değerlendirme formlarından, öğretmen haftalık değerlendirme formlarından, gözlem ve görüşmelerden yararlanılmıştır. Bu uygulamanın avantajlı ve dezavantajlı yönleri ergonomi- ortam

açısından, ilgi ve motivasyon açısından, öğretim açısından ve teknik açıdan ele alınmış ve şekillendirilmiş, bulgular ışığında bu veriler analiz edilmiştir. Araştırmada öğrenme nesnelerinin akademik başarıyı ve öğrenmede kalıcılığı olumlu yönde etkilediği tespit edilmiş, tutum üzerinde sınırlı da olsa olumlu bir etkiye sahip olduğu belirtilmiş, motivasyonu da olumlu etkilediğine yer verilmiştir. Araştırma sonuçları çerçevesinde uygulama ortamına, öğretmenlere, Milli Eğitim Bakanlığına, öğrenme nesnesi tasarımına ve araştırmacılara yönelik önerilere yer verilmiştir.

Yalvaç ve Bayraktutan'ın (2004) "Elektronik Öğrenme Nesnelerine Erişim ve Metadata" isimli çalışmasında, öğrenme nesnelerinin tanımı yapılmış; temel yapısına, biçimine, getirdiği avantajlara değinilmiş ve metadataların sağladığı yararlar ifade edilmiştir. Konuyla ilgili öğrenme, e-öğrenme, nesne, erişim, metadata tanımlarıyla giriş yapılmış, metadata türleri tanımlayıcı, yapısal ve yönetimsel olarak vurgulanmıştır. Öğrenme nesnelerinin içerik geliştiriciler açısından sağladığı kolaylıklar özetlenmiş, öğrenme nesneleri örneklendirilmiş ve öğrenme nesnelerinin farklı biçimleri üzerinde durulmuştur. Elektronik öğrenme nesnesi verileri ve metadatanın birleştirilmesinin içerik geliştirmede sağladığı olanaklar maddeler halinde belirtilmiş, bu olanakların eğitimi modüler bir yapıya kavuşturacağı ve büyük kolaylıklar sağlayacağı ifade edilmiştir. Öğrenme nesnelerinin tanınması ve standartlaşması için geliştirilen Gateway to Educational Materials, Öğrenme Nesnesi Ambarları, IMS, ADLNet gibi uygulamalardan bahsedilmiştir. E-öğrenme nesnelerinin metadatalarının ulusal ve uluslararası standartlara uygun şekilde belirlenmesinin gerekliliği üzerinde durulmuş, bu sayede daha etkin ve verimli öğrenmelerin gerçekleşeceği vurgulanmıştır.

3. Sonuç

Literatürde öğretmenlerin, öğretmen adaylarının öğrenme nesneleri kullanım durumlarını gibi öğrenme nesnelerine dönük birçok çalışmanın yer aldığı görülmektedir. Ayrıca öğrenme nesnesi ambarı oluşturma çalışmaları da yer almaktadır. Fakat Öğretmenlerin öğrenme nesnesi üretim durumları ve sebepleri; öğrenme nesnesi ambarı kullanım durumları ve sebepleri üzerine çalışmalara rastlanamamıştır. Öğretim ortamında öğrenme nesnesi kullanımının etkin bir şekilde yapılabilmesi için öğretmenlerin öğrenme nesnesi üretim durumları ve sebepleri araştırılmalıdır. Ayrıca öğrenme nesnelerinin temel özelliği olan "tekrar kullanılabilirlik" ve "üstveri" yapılarının işlevsel bir hale gelmesi için öğretmenlerin bu özelliklerin etkin bir şekilde kullanıldığı öğrenme nesnesi ambarlarını kullanım durumları ve sebepleri üzerinde araştırmalara ihtiyaç vardır.

Ülkemizde pilot uygulaması başlayan FATİH (Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi) projesi ile birlikte standardize olmuş, öğretimsel nesnelere ve bunların biriminin, paylaşımının yapıldığı ortamlara ihtiyaç artacaktır. Öğrenme nesnesi üretimi, tasarımı, standartının yapılması gerekliliği gerek öğrenme ortamları açısından gerekse bireysel öğrenmeler açısından önemini daha da artıracaktır. MEB bakanlığı teşvik edici hizmet içi eğitimler, öğrenme nesnesi geliştirme kursları ve öğrenme nesnesi yarışmaları gibi etkinlikler düzenlemesi bu sürece olumlu katkı sağlayacaktır.

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13th International Educational Technology Conference

Okulda Dışlanmışlık Ölçeği Geliştirme Çalışması

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Özet

Bu çalışmanın amacı eğitim kurumlarında öğrenim gören öğrencilerin okulda dışlanmışlıklarını ölçmeye dönük bir ölçme aracı geliştirmektir. 19 maddeden oluşan ölçeğin nihai formu Gaziantep il merkezinde eğitim-öğretim gören başarı ve sosyo-ekonomik düzeleri düşük, orta ve yüksek olmak üzere 3 lisenin 402 öğrencisi üzerinde uygulanmıştır. Elde edilen veriler üzerinden ölçeğin geçerliğine ilişkin bilgi elde edebilmek için döndürülmüş temel bileşenler analizi kullanılmıştır. Bu analiz sonucunda ölçeğin iki alt faktörlü bir yapıya sahip olduğu belirlenmiştir. Bunlar araştırmacılar tarafından bireysel dışlanmışlık ve sosyal dışlanmışlık olarak adlandırılmıştır. Madde geçerliğine kanıt olarak madde test korelasyonları hesaplanmıştır. Yapılan istatistiksel işlemler sonucunda ölçeğin bireysel dışlanmışlık alt faktöründe en yüksek madde yükü ,738 en düşük madde yükü ,416 iken sosyal dışlanmışlık alt faktöründe en yüksek ,771 ve en düşük ,538 olarak elde edilmiştir. Ayrıca ölçeğin güvenirliğine kanıt sağlamak amacıyla test tekrar test sonucu ,744 iken Crα güvenirliği ,918 olarak hesaplanmıştır.

Anahtar Kelime: Okulda Dışlanmışlık, Sosyal Dışlanmışlık, Bireysel Dışlanmışlık, Ölçek Geliştirme

Exclusion at school: development of a scale

Bayram ÇETİN   Azmi TÜRKAN

Abstract

The purpose of this study is to develop a scale for assessment of exclusion at school which is experienced by the students attending educational institutions**.** The final scale composed of 19 items which were applied to the 402 students from 3 high schools. These students are studying at schools in the centre of Gaziantep, and their levels of success and socio-economic background are low, medium and high. The principal component analysis rotated to varimax rotation was used to obtain evidence for validity of the scale. As a result of this analysis, it was found that the scale has a structure composed of two factors; a) individual exclusion and b) social exclusion. As evidence of the validity of the test, item correlations were calculated. As a result of the statistical procedures, it was revealed that the highest load factor in individual exclusion is ,738 and the lowest load factor is ,416. On the other hand, the highest load factor in social exclusion is ,771 and the lowest load factor is ,538. Furthermore, to give evidence in terms of the validity of the scale, the re-test and Crα reliabilities were calculated and these were found to be (re-test) ,744 and (Crα) ,918.

Keywords:Exclusion at School, Social Exclusion, Individual Exclusion, Scale Development

Giriş

İnsanoğlu yaradılışı gereği çevresiyle uyum içerisinde olmak, türünün devamını sağlamak amacıyla kendini bir gruba ait hissetmek ve kendi dışındaki bireylerle ilişki içinde olmak zorunda hissetmiştir. Bireylerin bir gruba ait olma ihtiyacını Twenge ve Baumeinster (2005), birinci dereceden yaşam ihtiyaçları olan barınma, yeme ve içme ihtiyaçlarının karşılanmasından sonra en temel gereksinim olduğunu dile getirmiştir. Diğer insanlarla bir arada

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olabilmeye ilişkin bu temel ihtiyaç, başkaları tarafından, gruptan veya toplumdan dışlanma durumlarında karşılanamamaktadır.

Dışlanma, ilgili literatürde faklı şekilde ifade edilirken, bir bireyin etrafındaki gruba dahil edilmemesi veya başka bireylerle ilişki kuramaması durumunun anlaşılması konusunda ortak bir kanıya varılmıştır (Leary, 2005). Diğer bir ifadeyle bir grup üyesinin ait olduğu grubun dışında tutulması, mevcut bir gruba bireyin kabul edilmemesi veya oluşmakta olan bir gruba dahil edilmemesi olarak nitelendirilebilinir.

Dışlanma kavramı bir çok kavramla birlikte veya bir çok kavramla aynı anlama gelecek şekilde kullanılabilmektedir. Bunlardan en sık kullanılanı sosyal dışlanma, psikolojik dışlanma ve sosyal reddetme kavramlarıdır (Williams, 2007). Bu kavramların aynı anlama geldiğini belirten bir çok araştırmacının (Ferris, Brown, Berry ve Lian, 2008; Oaten, Williams, Jones ve Zadro, 2008) olmasının yanı sıra farklı anlama geldiği görüşü de mevcuttur.

Dışlanma kavramın sosyal boyutta ilk olarak 1960'larda Fransa'da ekonomik kriz ve gerileme sonrası kullanılmaya başlanmıştır. Bu bağlamda dışlanma kavramı daha çok ekonomik bir olgu olarak karşımıza çıkmasının yanı sıra bireylerin fiziksel ve zihinsel engel durumu, suçlu ya da hüküm yemiş olması, hasta ve bakıma muhtac olması, uyarıcı madde kullanması ve asosyal olması gibi kavramlarla özdeşleştirilmiştir. Benzer şekilde Levitas ve diğerleri (2007) İngiltere'de dışlanma kavramının bir çok nedenin olduğu gibi daha çok ekonomik bir unsur olarak kullanıldığına vurgu yapmaktadır. Ayrıca Behrman'ın (2003) Latin Amerika ve Karayipler'de yaptığı çalışmaya göre dışlanmışlığı etnik, dini, coğrafi bölge farklılığı, sosyoekonomik gibi kavramlara dayandırmaktadır.

Dışlanma bir çok alan veya çevrede olduğu gibi eğitim kurumlarında da sık sık karşılaşılan bir durumdur. Marshall ve Calderón (2006) göre eğitimde dışlanmanın üç temel nedeni vardır. Bunlardan birincisi; bireyler arasındaki eşitsizlik. Bu eşitsizliği ekonomik gelirin düşük olması, etnik köken farklılığı gibi etmenlerle temellendirmektedir. İkinci önemli neden ise bazı marjinal grupların çıkarları için devletin bilinçli ve kasıtlı olarak uyguladığı politik tavırlardır. Son olarak bölgeler arası gelir eşitsizliğini göstermiştir.

Bireyler arasında oluşturulan rekabet ortamı, bireylere gelişimsel anlamda en çok katkının sağlandığı okullarda dışlanma kavramını doğurmaktadır. Yani bireylerin en verimli olabilecekleri ortamlar, oluşturulan sistemlerle bireyler arası rekabet duygusunu arttırarak bireylerin birbirleriyle iletişimini en aza indirgeyi hedeflenmektedir (Barro ve Xala-i-Martin, 1995).

Dışlanmışlıkla ilgili çalışmalara bakıldığında genel anlamıyla sosyal dışlanmışlık üzerine yapılan çalışmalar ağırlıkta yer almaktadır (Catanese ve Tice, 2005; DeWall ve Baumeister, 2006; Şahin, 2008; Twenge ve Baumeister, 2005). Ayrıca eğitimde sosyal dışlanma ile ilgili yabancı literatüre rastlanmaktadır (Marshall ve Calderón, 2006; Behrman ve diğerleri, 2003; Wang, 2011 ve Popkewitz ve Lindblad 2000).

Bu çalışma, eğitim kurumundaki öğrencilerin okuldaki dışlanmışlıklarını belirlemek için "Okulda Dışlanmışlık Ölçeği" nin geliştirilmesi amacıyla yapılmıştır.

2.Yöntem

Bu bölümde, araştırmanın modeli, araştırmanın yapıldığı çalışma grubu, veri toplama aracının geliştirilmesi, verilerin toplanması ve çözümlenmesine yer verilmiştir.

2.1.Araştırmanın Modeli

Araştırmacı tarafından geliştirilen Okulda Dışlanmışlık Ölçeğini lise düzeyindeki öğrencilerin dışlanmışlık düzeyin ölçmeyi amaçlayan araştırmada betimsel tarama yöntemi kullanılmıştır.

2.2.Çalışma Grubu

Bu çalışmada amaçlı örnekleme yöntemlerinden başarı ve sosyo-ekonomik düzeylerine göre tabakalandırılmış örneklem seçme metodu kullanılmıştır. Araştırmaya 2012-2013 eğitim-öğretim yılında Gaziantep ili Şehitkamil ve Şahinbey ilçelerine bağlı başarı ve sosyo-ekonomik düzeleri düşük, orta ve yüksek olmak üzere 3 liseden toplam 402 öğrenci katılmıştır. Çalışma grubunda yer alan öğrencilerin cinsiyetleri ve sınıf düzeylerinin dağılımı Tablo 1'de gösterilmektedir.

Tablo 1. Cinsiyet-Sınıf Dağılımı

	Sınıf				Toplam
	1.sınıf	2.sınıf	3.sınıf	4.sınıf	
Erkek	84	71	34	29	218
Bayan	53	61	51	19	184
Toplam	137	132	85	48	402

2.3.Veri Toplama Aracının Geliştirilmesi

Okulda Dışlanmışlık Ölçeği (ODÖ)

Alan yazından elde edilen bilgiler dikkate alınarak araştırmacılar tarafından toplam 35 maddeden oluşan bir ölçek oluşturulmuştur. Ölçeğin deneme formunun hazırlanması aşamasında, yazılan tutum ifadeleri için bir ölçme ve değerlendirme, iki uzmandan görüş ve bir dil uzamının görüşü alınmıştır. Uzmanlardan, ölçekteki maddelerin, okulda dışlanmışlık düzeyini ölçmeyle ilgili maddelerin açıklamadaki yeterliğini ve kullanılan dilin açık ve anlaşılırlılığını değerlendirmeleri istenmiştir. Görüşler doğrultusunda, sözü edilen ölçütler dikkate alınarak ifadeler gözden geçirilmiş 35 maddeden oluşan ölçekten 5 madde çıkartılarak toplam 30 maddelik ölçek pilot uygulamaya hazır duruma getirilmiştir. Pilot uygulamada yer alan 30 maddenin her birini katılıp katılmama durumuna göre '5' Her zaman, '4' Genellikle, '3' Bazen, '2' Nadiren ve '1' Hiçbir zaman biçiminde 5'li likert olarak derecelendirilmiştir. Bunun yanı sıra ölçeğin başına, ölçeğin amacı ve maddelerin yanıtlama biçimi anlatan bir yönerge konulmuştur.

Kişisel Bilgi Formu:

Kişisel bilgi formu araştırmacı tarafından hazırlanmış olup cinsiyet, yaş, okul türü ve sınıfı sorulmuştur.

Okulda Dışlanmışlık Ölçeği Formu (ODÖF):

Öğrencilerin okulda dışlanmışlık düzeyini ölçebilmek için ODÖF geliştirilmiştir. Form 30 maddeden oluşmaktadır. Bu maddelerin 3'ü olumsuz iken, 27'i ise dışlanmışlıkla ilgili olumlu maddelerdir. Ölçekte olumlu ve olumsuz ifadeler karışık olarak sıralanmıştır.

2.4.Verilerin Toplanması ve Analizi

Araştırmaya, 2012–2013 eğitim-öğretim yılı içerisinde Gaziantep ili Şehitkamil ve Şahinbey ilçelerinde bulunan toplam 3 okulda öğrenime devam eden 402 öğrenci katılmıştır. Araştırmacılar tarafından geliştirilen "Okulda Dışlanmışlık Ölçeği" ilgili okullarda uygulanmıştır. Verilerin çözümlenmesinde temel bileşenler analizi kullanılmıştır. Temel bileşenler analizine ait değerlerin yorumlanmasından önce, bu analizin varsayımları olan örneklem büyüklüğünün yeterliği konusunda bilgi veren KMO (Kaiser-Meyer-Olkin) değeri ve değişkenler arasında korelasyon olup olmadığını test eden Barlett Testi (Barlett Test of Sphericity) sonuçları incelenmiştir. Ayrıca analizde faktör özdeğeri (eigenvalue) 1'den büyük olan faktörler dikkate alınmış ve faktör yüklerinin en az 0.40 olan maddeler alınarak asıl ölçek için seçilmiştir. Elde edilen veriler SPSS.20 ve İTEMANN 3.50 paket programları kullanılarak analiz edilmiştir.

3.Bulgular ve Yorum

3.1.Güvenirlik Çalışması

Ölçeğin yapı geçerliğine ilişkin kanıtlar için temel bileşenler analizi kullanılmış, güvenirlik içinse İTEMANN programında madde toplam test korelasyonu ve içtutarlılık anlamında bilgi veren Cronbach Alfa değeri hesaplanmıştır. Ayrıca 2 hafta arayla test tekrar test uygulaması SPSS 20 programıyla yapılmıştır.

Test-tekrar-test uygulaması 2012-2013 eğitim öğretim yılında Gaziantep il merkezi ve merkez ilçelerde bulunan toplam 85 öğrenci üzerinde yapılmıştır. Test tekrar test uygulamasına katılan öğretmenlerin cinsiyetlerinin ve sınıflarının dağılımı Tablo 2'de gösterilmektedir.

Tablo 2. Cinsiyet-Sınıf Dağılımı

		Cinsiyet		Toplam
		Erkek	Bayan	
	1.sınıf	14	16	30
	2.sınıf	12	8	20
Sınıf	3.sınıf	8	10	18
	4.sınıf	10	7	17
Toplam		44	41	85

Ölçeğin boyutlar bazında ve genel iç tutarlık (Cronbach Alfa) değeri ve test tekrara test sonuçları Tablo-3'te verilmiştir.

Tablo 3. Okulda dışlanmışlık ölçeğe ait iç tutarlık ve test-tekrar-test güvenirliği sonuçları

	İç tutarlık(Cronbach Alfa)	Test-Tekrar-Test
Bireysel	,855	,774
Sosyal	,882	,534
Genel	,918	,744

ODÖ için her bir maddenin madde-test (toplam) korelasyon katsayıları hesaplanmıştır. 30 madde için Cronbach Alfa değeri .891 hesaplanmıştır. Analiz sonucunda korelasyon katsayısı .20'nin altına düşen maddeler elenmiştir. Bu katsayılar aynı zamanda; madde ayırıcılık indisine eşittir. ODÖ ölçeğinde 13., 14. madde ve 16. maddelerin madde-test korelasyonu .20'nin altında kaldığı için ölçekten çıkarılmıştır. Tablo-3'te kalan 27 madde için hesaplanan genel iç tutarlık (Cronbach Alfa) katsayısı **.**918 olarak bulunmuştur. Ayrıca Tablo-3'te görüldüğü gibi iç tutarlık bireysel dışlanmışlık alt faktörü için ,855 ve sosyal dışlanmışlık alt faktörü için ,882 olarak hesaplanmıştır. Yine Tablo-3'te genel test-tekrar-test değeri ,744 bulunmuştur. Bireysel alt faktörü için test-tekrar-test ,774 iken sosyal alt faktörü için ,534 hesaplanmıştır. 27 maddeden oluşan ölçek güvenilir çıkmıştır.

3.2.Okulda Dışlanmışlık Ölçeğinin Faktör Analizi ile İlgili Bulgular ve Yorumlar

Temel bileşenler analizine ait değerlerin yorumlanmasından önce Kaiser-Meyer-Olkin (KMO) Testi ve Barlett Testi kullanılarak örneklem büyüklüğünün yeterliği ve normallik varsayımı kontrol edilmiştir. Tablo 4'de KMO ve Barlett Küresellik Testine ilişkin istatistikler verilmektedir.

Tablo 4.Okulda Dışlanmışlık Ölçeğinin KMO and Bartlett's Testi Sonuçları

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,897
Bartlett's Test of Sphericity	Approx. Chi-Square	4874,744
	Df	496
	Sig.	,000

Tablo-4 incelendiğinde analiz sonucunda elde edilen değer 0.897'dır. Bu değer, örneklem büyüklüğünün analize devam etmek için iyi düzeyde olduğunu göstermektedir. Veri setinin normallik varsayımını karşılayıp karşılamadığı ise Barlett Küresellik Testi ile kontrol edilmiştir. Elde edilen değer, veri setinin normallik varsayımını karşıladığını göstermektedir.
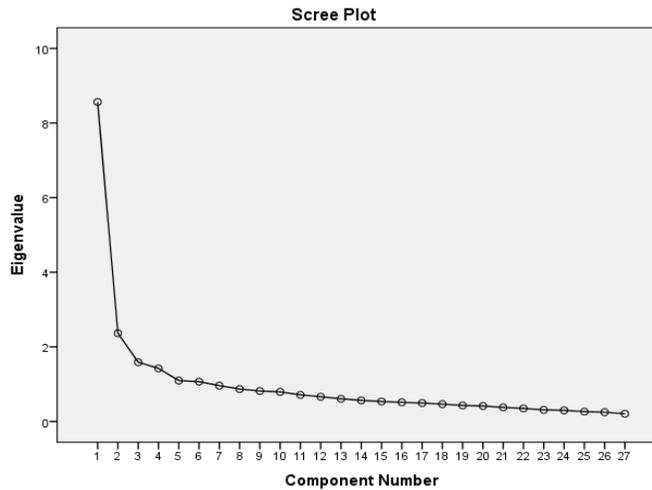
Şekil 1. Okulda Dışlanmışlık Ölçeğinin Scree Plot (Çizgi grafiği/Yamaç Eğim Testi) Grafiği

Şekil-1'de de görüldüğü gibi, üçüncü noktaya kadar keskin düşüş devam etmektedir. Üçüncü noktadan sonra çizginin eğimi yatay bir seyre geçmektedir. Üçüncü noktaya kadar olan nokta aralıkları sayıldığında bunun iki olduğu görülür. Buna da dayanarak ölçeğin iki alt faktörlü olabileceğine karar verilmiştir.

Yapılan temel bileşenler analizi sonucunda; iki faktör altında toplanan maddelerin faktör yük değerleri incelenmiş ve faktör yük değeri 0.40'ın altında olan 1., 9., 11., 18., 23. ve 26. maddeler sırasıyla ölçekten çıkarılmıştır. Ayrıca ölçekte her iki boyutta yük değeri olan 15. ve 17. binişik maddeler ölçekten çıkarılmıştır. İki faktör altında toplanan 19 madde toplam varyansın %49,87'sini açıklamaktadır. Temel bileşenler analizi sonucunda iki faktör altında toplanan ve ölçekte kalmasına karar verilen maddelere ait faktör yük değerleri aşağıdaki Tablo-5'te gösterilmektedir.

Tablo 5. Okulda Dışlanmışlık Ölçeğinin Maddelerinin Faktör Yükleri

	Boyutlar	
	Bireysel Boyut	*Sosyal Boyut*
D5 Etrafımdakilerin çoğu bana uzak durmaktadır.	,738	
D4 Kimsenin beni anlamadığını ve bundan dolayı benimle konuşmak istemediğini düşünüyorum.	,737	
D3 Sosyal çevrem tarafından dışlandığımı düşünüyorum.	,710	
D10 Duygularımı (sevinçlerimi, hüzünlerimi..vb.) paylaşmak istediğimde kimse bunları duymak istemez.	,668	
D2 Arkadaşlarım benimle konuşmadıkları için içime kapanık biri olduğumu düşünüyorum.	,667	
D6 Arkadaşlarım benim problemlerimle ilgilenmezler.	,630	
D8 Etrafımda hiç arkadaşım yok.	,586	
D12 Düşüncelerimi rahatça ifade etmeme fırsat verilmez.	,577	
D7 Bir konu hakkındaki düşüncelerimi paylaşmama imkan tanınmaz.	,416	
D19 Marka kıyafetlerim olmadığından arkadaşlarım beni aralarında görmek istemezler.		,771
D29 Kültürel farklılığımdan dolayı okulda kimse benimle arkadaş olmak istemez.		,744
D24 Herhangi bir özel yeteneğim (Futbol, basketbol, resim..vb.) olmadığından dolayı arkadaşlarım beni aralarına almazlar.		,728
D20 Maddi yetersizliklerimden dolayı arkadaşlarımın beni aralarına almadıklarını düşünüyorum.		,702
D25 Derslerimdeki başarısızlığımdan dolayı genellikle dışlanırım.		,702
D28 Konuşma biçimimden dolayı arkadaşlarım benimle alay eder, beni aralarına almazlar.		,697
D21 Dünya görüşümden (insan hakları,çevresel duyarlılık…vb.) dolayı arkadaşlarım beni aralarına almazlar.		,671
D22 Siyasi tartışmalar yarattığımdan dolayı arkadaşlarım tarafından pek sevilmem.		,587
D30 Ailemin maddi durumu dolayısıyla her arkadaş grubuna dahil olamıyorum.		,538
D27 Fiziksel görünümümden dolayı arkadaşlarımın benden hoşlanmadıklarını düşünüyorum.		,538

Tablo-5 incelendiğinde ölçeğin bireysel dışlanmışlık alt faktör 2,3,4,5,6,7,8,10,12. maddeleri olmak üzere toplam 9 maddeden oluşmuştur. Bireysel dışlanmışlık en düşük madde yükü ,416 iken en yüksek madde yükü ,738 olarak hesaplanmıştır. Sosyal alt faktörü 19,20,21,22,24,25,27,28,29,30. maddeleri olmak üzere toplam 10 maddeden oluşmuştur. Bu alt faktör altında en düşük madde yükü ,538 ve en yüksek madde yükü ,771 olarak hesaplanmıştır.

Tablo-6: Boyut-Ölçek Korelasyonu

	Bireysel Dışlanmışlık	Sosyal Dışlanmışlık	Ölçek
Bireysel Dışlanmışlık	1	,569	,896
Sosyal Dışlanmışlık	,569	1	,875
Ölçek	,896	,875	1

Tablo-6'da her bir boyutunun ölçek ile olan korelasyonu incelenmiştir. Ölçeğin Bireysel dışlanmışlık alt faktörüyle olan ilişkisi ,896 Sosyal dışlanmışlık alt faktörüyle ilişkisi ,875 olarak hesaplanmıştır. Ayrıca boyutların birbiriyle ilişkisi ,569 olarak hesaplanmıştır.

4.Sonuç ve Öneriler

Eğitim ve öğretim sürecinde öğrenci başarısına üzerinde bir çok değişken vardır. Bu değişkenlerden bir tanesi de bireyin kendini bir gruba dahi hissetmesi yada grubun dışında kalmasıdır. Eğitim ortamlarında bu durumun tespit edilmesi için oluşturulmuş ölçek bireysel boyut ve sosyal boyut olmak üzere 2 alt faktörden oluşmuştur. Yapılan temel bileşenler analizi sonucunda ölçeğin bireysel boyutunda 9 ve sosyal boyutunda 10 olmak üzere toplam 19 madde bulunmaktadır. Ölçeğin iç tutarlılık güvenirlik katsayısı 0.918 olarak hesaplanmıştır. Ölçeğin geçerlik ve güvenirliğine ait bulgular, eğitim kurumlarında öğrenim gören öğrencilerin okulda dışlanmışlık düzeyini belirlemek üzere kullanılabilir nitelikte olduğunu işaret ederken, farklı bölgeler için ölçeğin geçerlik ve güvenirlik kanıtlarının elde edilmesi gerekmektedir. Geliştirilen Okulda dışlanmışlık ölçeğinin ilgili araştırmalar ve kurumlarca kolaylıkla kullanılacağı düşünülmektedir.

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Online Social Networking-based Health Education: Effects on Students' Awareness and Practice of Laboratory Safety

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Abstract

This study examined the effects of integrating instructional materials in Facebook on students' awareness and practice of laboratory safety. A quasi-experimental pretest-posttest two-group design was used in the study. The results indicate: 1.) The exposure to online social networking-based health education (OSNBHE) can improve students' awareness of laboratory safety (ALS) ($p < 0.05$); 2.) The exposure to OSNBHE can improve practice of laboratory safety (PLS) ($p < 0.05$); and, 3.) The ALS does not predict PLS ($R^2 = 0.09$, $CI = 95\%$).

Keywords: Online social networking; Health education; Awareness of laboratory safety; Practice of laboratory safety

Introduction

The discourse of academic disciplines in academic institutions can be an astonishing yet hazardous learning endeavor (NIOSH, 2006, p. 1). In scientific discourses, theoretical concepts and empirical applications of the scientific theories are both included. The latter involves experimentation either in "in-situ" or naturalistic settings or in "in-vitro" or laboratory settings. Experimentation is an essential scientific activity that aims to concretize the theoretical concepts in a scientific discourse (Brooker, Widmaier, Graham & Stiling, 2008, pp. 14-17; Catris & Salandanan, 2001, p. 9). The activities done in a scientific experimentation can range from simple (e.g., filtration of suspensions) to complex, (e.g., electrophoresis). Whether simple or complex, nearly all scientific experimentations and the use of apparatus, chemicals and facilities associated thereto are hazardous (Dyer & Andreasen, 1999). Furthermore, the amount of hours of laboratory activities that its users (viz., laboratory students) are allotted with can be tantamount to the length of time that these users are exposed to the various hazards in the science laboratory.

In the Philippines, a fraction of the allotted 200-220 hours for biology and chemistry in high school may be allocated for the conduct of scientific experimentation (IQAS, 2007). In the tertiary level, the number of hours allotted for scientific experimentations varies with the science course a student is enrolled in (CHED, 2005; CHED, 2007). Most of the students who are exposed to scientific experimentations in biology and chemistry are those in the secondary and tertiary levels of education. These students have ages ranging approximately from 12-22 years, hence are considered adolescents (Cabigon, 1999). These adolescent students have essential roles both in the causation and prevention or minimization of accidents as they have direct participation in laboratory activities which subsequently predispose them to various hazards and to the perennial effects of accidents arising from these hazards in the laboratory (Dyer & Andreasen, 1999; NIOSH, 2006).

The increasing prevalence of accidents involving students in the science laboratory calls for efficient measures to eradicate, or if not, lessen accident occurrences. One of these measures is the development of awareness and practice of laboratory safety. Harvard University (2012) emphasized, "....awareness is the most fundamental rule of safety". Thus, the provision of information on the awareness and practice of laboratory safety among students is seen as a primordial step in the attainment and maintenance of an accident-free laboratory (Dyer & Andreasen, 1999; Georgia State University, 2008; Harvard University, 2012, Penker & Elston, 2003; Zhao, Li, & Wen, 2007). Safety

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promotion, through health education, among adolescent students can be done in various teaching and learning approaches (Dyer & Andreasen, 1999; Syrek, 2011; Towner, 1995). However, studies have found out that more students are supplementing or replacing lectures, seminars, and course materials with educational resources that they can access via the World Wide Web or the Internet (Katz, 2008; Liu, 2010). Hence, contemporary learners are said to belong in a "Net-centric" (Baird & Fisher, 2006), "Digital Natives" (Prensky, 2001) and "Web 2.0" (Liu, 2010) generation.

Lenhart (2009) reported that 93% of teens use the Internet. In the Philippines, social networking is the single most popular online activity among Filipino Internet users, with about nine in ten (89%) have ever used online social networking sites like Facebook or Friendster (Labucay, 2011, p.12). In addition to its social utility, various studies have documented the positive effects of online social networking on learning outcomes such as improvement on interpersonal skills (Yu, Tian, Vogel & Kwok, 2010), acquisition of knowledge on medicine (Weicha, Cheti, Pollard & Shaw, 2006) and development of self-regulation which includes motivational factors in learning (Mario, 2009).

Statement of the problem and research hypotheses

This study investigated the effects of online social networking-based health education on the students' awareness of laboratory safety (ALS) and practice of laboratory safety (PLS). Specifically, it sought to answer the following questions:

Question 1:	Do students exposed to online social networking-based health education (OSNBHE) have higher posttest scores in the Awareness of Laboratory Safety Test (ALST) than of those not exposed?
Question 2:	Do students exposed to OSNBHE have higher posttest scores in the Practice of Laboratory Safety Test (PLST) than of those not exposed?
Question 3:	Does ALS positively and significantly predict PLS?

The research hypotheses of the study are the following:

Hypothesis 1:	The students exposed to OSNBHE have higher posttest scores in the ALST than of of those not exposed.
Hypothesis 2:	The students exposed to OSNBHE have higher posttest scores in the PLST than of those not exposed.
Hypothesis 3:	ALS positively and significantly predicts PLS.

Methodology

3.1. The Sample

The sample consisted of 16 college students, 6 males and 10 females, with the mean age of 18 years. They were enrolled in a chemistry laboratory course in a private college in Pasay City, Metro Manila, The Philippines, in the 1st semester of Academic Year 2012-2013. They were randomly assigned to either OSNBHE or NOSNBHE group. There were 10 students in the OSNBHE group, 4 males and 6 females. The NOSNBHE group had 6 students, 2 males and 4 females.

3.2. Research Design

The study utilized a quasi-experimental pretest-posttest two-group design to determine the effects of OSNBHE on students' awareness and practice of laboratory safety. Visually, the design is as follows:

$$\text{EG:} \quad \text{A} \quad \text{P} \quad \text{X} \quad \text{A'} \quad \text{P'}$$
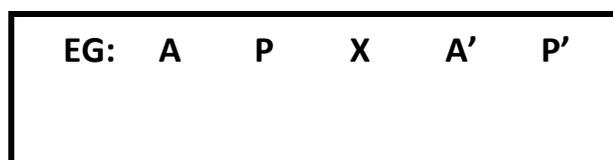
Fig 1. Research design of the study

Where;
EG: experimental group
CG: control group
A: Awareness of Laboratory Safety pretest for the experimental and control groups
P: Practice of Laboratory Safety pretest for the experimental and control groups
X: exposure to Online Social Networking-Based Health Education (OSNBHE)
-X: exposure to Non-online Social Networking-Based Health Education (NOSNBHE)
A':   Awareness of Laboratory Safety posttest for the experimental and control groups
P':   Practice of Laboratory Safety posttest for the experimental and control groups

3.3. The Instruments

The instruments used in the study were the Awareness of Laboratory Safety Test (ALST) and the Practice of Laboratory Safety Test (PLST). The construct and contents of the instruments were validated by three experts in the field of chemistry and laboratory safety. The instruments were also pilot-tested to chemistry laboratory students in a different university. Furthermore, the internal reliability of the both instruments was calculated utilizing Cronbach's alpha. The obtained reliability was 0.80 which suggests a satisfactory internal consistency and reliability (George, 2000).

3.3.1. Awareness of Laboratory Safety Test (ALST)

This is a researcher-developed checklist on the components of a laboratory design and their safety conditions and safe practices in the laboratory. This was utilized to assess the awareness of the students on the actual presence of physical hazards in their chemistry laboratory and their awareness on the ideal and safe practices during the conduct of experimentation. This consisted of 20 items on the awareness of safe laboratory conditions and 15 items on the awareness of safe laboratory acts -- both of which are answerable by yes or no.

3.3.2. Practice of Laboratory Safety Test (PLST)

This is a researcher-developed checklist on fundamental safe laboratory practices. This was used by the licensed chemist, the chemistry laboratory instructor of the respondents and the researcher, to evaluate the actual performance of safe laboratory practices of students during their conduct of laboratory experimentations. This is composed of 15 questions on the fundamental safe laboratory practices which are answerable by yes, no or N/A (not applicable).

3.4. Data Collection Procedure

The duration of the data collection procedure lasted for two weeks for both OSNBHE and NOSNBHE groups, from the administration of the pretests to the posttests of the ALST and PLST. The ALST and PLST pretests were administered on the first and second days of data collection for the OSNBHE and NOSNBHE groups, respectively. A licensed chemist also used the ALST to evaluate the presence of physical hazards in the laboratory anytime between the administration of ALST pretest and posttest. The answers of the chemist in the ALST served as the standard to which the answers of the OSNBHE and NOSNBHE respondents in the ALST pretest and posttest were compared with for correctness. Furthermore, the OSNBHE respondents provided their Facebook account names on the ALST pretest. In the PLST, the respondents of both groups were evaluated by the licensed chemist, the chemistry laboratory instructor of the respondents and the researcher on their actual performance of safe laboratory practices during the conduct of three chemistry laboratory experimentations (viz., Solubility, Acids and Bases, and Metals and Acids). The three experiments (i.e., one in the pretest and two in the posttests) that were performed were similar in both groups. The respective scores of each respondent on the PLST as graded by the three evaluators were averaged.

Once the two groups' scores were found comparable in the ALST and PLST pretests, the teaching methodologies were implemented to both groups. The OSNBHE respondents were invited to visit the researcher-made Facebook group page account entitled, "Awareness and Practice of Laboratory Safety", where discussions (thread), photos and videos on the awareness and practice of laboratory safety were incorporated/ uploaded in. The respondents were given a 48-hour period to accept the invitation to be officially part of the OSNBHE group. Furthermore, they were instructed to like the discussions, photos or videos after viewing any of these in order for the researcher to monitor their access to and use of the instructional materials. On the other hand, the NOSNBHE group was facilitated with a lecture-seminar on the promotion of awareness and practice of laboratory safety. The contents and presentation of the lessons in the lecture-seminar were similar to those on the Facebook group page for the OSNBHE group. To control teacher factor, the researcher facilitated both the lecture-seminar for the NOSNBHE group and video presentations and discussions in the group page for the OSNBHE group. Furthermore, the duration of the lecture-seminar was also similar to the duration of the video uploaded in the group page.

The PLST posttests were administered twice during the conduct of two laboratory experimentations of the respondents one week after the implementation of the teaching methods (viz., lecture-seminar for NOSNBHE group and visit to the Facebook group page account for the OSNBHE group) to evaluate the retention and application of the knowledge on the awareness and practice of laboratory safety of the students in each group. The ALST posttest, on the other hand, was administered on the second week of data collection after the two posttests of PLST had been administered to both groups. For the OSNBHE group, the survey-checklist on the OSNBHE was administered after the administration of the ALST posttest.
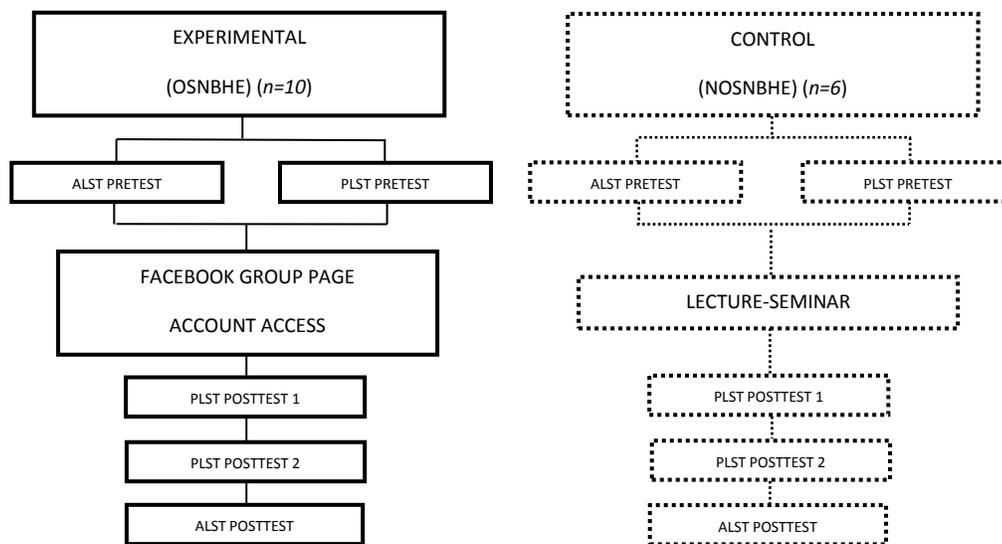
Fig. 2. Flowchart of data collection procedure of the study

Fig. 3. Photograph of proper laboratory decorum used in the OSNBHE.

Results

4.1. Awareness of Laboratory Safety

Table 1 enumerates the posttest scores of the OSNBHE and NOSNBHE groups in the ALST. A directional Wilcoxon rank sum test for the ALST posttest scores of the two groups concludes that the ALST posttest scores of the OSNBHE are not higher than the scores of the NOSNBHE group in the ALST posttest ($p = 0.0559$).

Table 1. Wilcoxon rank sum test for the ALST posttest scores of the OSNBHE and NOSNBHE groups.

NOSNBHE			OSNBHE		
Student	ALST posttest score (%)	Rank	Student	ALST posttest score (%)	Rank
A_1	89	9.5	B_1	94	15
			B_2	94	15
A_2	71	2	B_3	89	9.5
A_3	83	6	B_4	91	12.5
			B_5	94	15
A_5	89	9.5	B_6	74	3
			B_7	91	12.5
A_5	80	4.5	B_8	66	1
			B_9	89	9.5
A_6	80	4.5	B_{10}	86	7

To evaluate if there is a significant difference between the pretest and posttest scores of the OSNBHE group in the ALST, a nondirectional Wilcoxon signed rank test was performed on the said two scores. The result suggests that there is a significant difference between the two tests ($p < 0.05$). Hence, the exposure to OSNBHE can be inferred to have positively influenced the level of awareness of laboratory safety of the respondents in the experimental group. However, since the ALST posttest scores of the OSNBHE group are not higher than the ALST posttest scores of the NOSNBHE group and no significant difference is noted between the ALST posttest scores of the two groups ($p = 0.1118$), it can be deduced from the study that both the exposure to the lecture-seminar of the NOSNBHE group and the visit to the Awareness and

Practice of Laboratory Safety Facebook group page of the OSNBHE group were effective in increasing the level of awareness of laboratory safety.

4.2. Practice of Laboratory Safety

Table 2 shows the mean scores of the OSNBHE and NOSNBHE groups in the two PLST posttests. A directional Wilcoxon rank sum test for the PLST posttest scores of each respondent in the two groups indicates that the PLST posttest scores of the OSNBHE group are higher than the PLST posttest scores of the respondents in the NOSNBHE group ($p < 0.05$). Hence, it can be deduced from the result that the students exposed to OSNBHE performed laboratory experimentations more safely than the students exposed to NOSNBHE.

Table 2. Wilcoxon rank sum test for the PLST posttest scores of the OSNBHE and NOSNBHE groups.

NOSNBHE			OSNBHE		
Student	PLST posttest score (%)	Rank	Student	PLST posttest score (%)	Rank
A_1	60	5.5	B_1	71	8.5
A_2	60	5.5	B_2	71	8.5
			B_3	73	11
A_3	40	1	B_4	72	10
A_4	59	4	B_5	83	16
			B_6	69	7
A_5	46	2.5	B_7	74	12
			B_8	76	13.5
A_6	46	2.5	B_9	82	15
			B_{10}	76	13.5

A directional Wilcoxon signed rank test result indicates that there is a significant difference between the pretest and posttest scores of the OSNBHE in the PLST ($p < 0.05$). Thus, the experimental group improved significantly in their performance of safe laboratory practices on two laboratory experimentations after their exposure to OSNBHE. Furthermore, it can be inferred from the findings that the incorporation of instructional materials (e.g., discussions, photos and videos) in the Facebook group page can positively influence and is more effective in promoting practice of safe laboratory practices among students as compared to the conventional method of lecture-seminar.

Table 3. PLST pretest and posttest scores of the OSNBHE group.

Student	PLST pretest score (%)	Mean PLST posttest score (%)	D= post-pre	I D I	Sign of D	R
B_1	65	71	6	6	+	3
B_2	62	71	9	9	+	4.5
B_3	64	73	9	9	+	4.5
B_4	58	72	14	14	+	6
B_5	81	83	2	2	+	1
B_6	66	69	3	3	+	2
B_7	58	74	16	16	+	7.5
B_8	60	76	16	16	+	7.5
B_9	64	82	18	18	+	9
B_{10}	53	76	770	23	23	+

Through the utilization of nondirectional Wilcoxon signed rank test, it was found out that there is a difference between the PLST mean pretest scores and mean posttest scores of the respondents in the NOSNBHE group (p < 0.05). The difference, however, is not positively significant since the PLST mean posttest scores are lower than the PLST mean pretest scores.

4.3. Awareness and Practice of Laboratory Safety

The study further investigated if the awareness of laboratory safety (ALS) influences and predicts practice of laboratory safety (PLS). Since the OSNBHE and NOSNBHE groups' ALST posttest scores are comparable, both were included in the analysis. The posttest scores in the ALST of both groups were subjected to simple linear regression analysis with the mean posttest scores in the PLST of both groups.

The linear regression equation for the PLST score in terms of ALST score is: PLST score = 28.21 + 0.4460 (ALST score). Results of the simple regression analysis indicate that the variation in the ALST scores does not significantly predict the variation of the PLST scores ($R^2 = 0.087$, $CI = 95\%$). Thus, it can be deduced from the findings that ALS does not significantly influence and predict PLS.
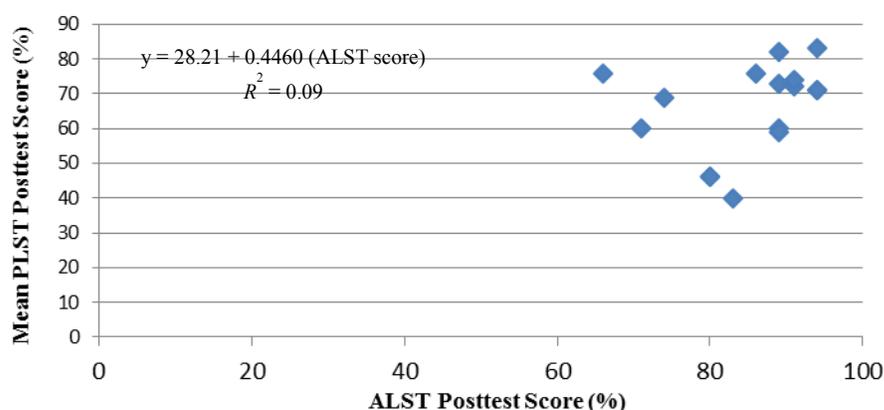
Fig. 4. Linear regression analysis of the ALST and mean PLST posttest scores of the OSNBHE and NOSNBHE respondents

Discussion

Various studies have suggested that online social networking can directly influence social learning and can positively influence academic learning and learning outcomes (Mario, 2009; Weicha, Cheti, Pollard & Shaw, 2006; Yu, Tian, Vogel & Kwok, 2010). This study investigated the effects of the use of Facebook as a medium of instruction on the development of awareness and practice of laboratory safety among adolescent students. The results of the study suggest that online social networking can significantly improve students' awareness and practice of laboratory safety. This positive effect can be influenced by various factors characterized by and can be offered to users by online social networking.

According to the study by Yu and Tian et al., (2010, p.1), online social networking applications, such as Facebook, offer an efficient platform for college students' socialization by expanding their network scope and maintaining close relationships. Apart from its social significance, Facebook has been posited to contribute essentially in the educational sector. Thus, online social networking is bi-faceted: social and educational. Online social networking sites (SNS) users learn social or interpersonal skills facilitated by the SNSs features or configurations that can enable users to: enhance and maintain friendships, build social networks/establish virtual relationships, diminish barriers to making friends, follow peer trends, share photos, for fun and leisure and to keep in touch with family. On the aspect of learning, Facebook allows connectivity of the faculty and other students in terms of friendship/social relationship, provide comments to peers/share knowledge, share feelings with peers, join Groups established for subjects, collaboration: notification, discussion, course schedule, project management calendar and to use educational applications for organizing learning activities (Yu et al., ibid.).

This study suggested at least equivalence, if not superiority, of the online method of instruction against the face-to-face method of instruction--a finding consistent with other recently published, well-controlled studies evaluating effectiveness of online learning in medical education (Weicha et al., 2006). In addition, this study posited the multi-faceted effects of online social networking on learning and self-improvement as confirmed by

related studies. In addition to its significance on the improvement of learning outcomes, social networking has been found out to essentially improve one's physical and psychological health. Recent research has illustrated that young people's online social networking behavior can bring them physical and psychological well-being (Ellison, Steinfield & Lampe, 2007; Steinfield, Ellison, & Lampe, 2008). Furthermore, several studies have investigated and affirmed the positive effects of online-based instruction to students' self-regulation, which includes metacognitive, motivational, and behavioral factors of one's learning process (Mario, 2009).

Lastly, this study contributed on the areas of theory, research, policy and practice on the use of online social networking as an alternative medium of instruction as compared to the teaching methodologies existent in an orthodox learning milieu. With online-based resources, students can have more opportunity to access, review and mimic lessons they uncover from these resources. Thus, the physical and time constraints a conventional classroom teaching is endowed with are overcome by the use of learning resources online. In the lecture-seminar method, students can only have a single opportunity to learn and interact with their mentor, thus the attainment of the retention of practice of laboratory safety among students poses to be a limitation in this method (Daniel, 1997; Lewis, Alexander & Farris, 1997).

Conclusion

After the treatment the following conclusions were obtained: 1.) The exposure to the OSNBHE can improve students' awareness of laboratory safety; 2.) Students exposed to OSNBHE performed laboratory experimentations more safely than students exposed to NOSNBHE; and, 3.) The awareness of laboratory safety does not influence and predict practice of laboratory safety.

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Open Wonderland: A Potential 3-D MUVE for Teaching and Learning

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Abstract

The use of 3-D MUVEs in education is still in its infancy in Malaysia, particularly in Universiti Teknologi Malaysia. In order to promote the utilization of this technology, this article revolves around the features of 3-D MUVEs which are highly beneficial in teaching and learning, where some of the features are not offered in most of 2-D applications that are commonly used today. Additionally, this article also focuses on promoting the use of an open source 3-D MUVE, Open Wonderland as an alternative for infamous Second Life virtual world as an appropriate platform for conducting virtual learning activities.

Keywords: 3-D MUVE; virtual world; virtual learning environment; Open Wonderland

Introduction

Online learning with 2-D applications

Learning activities have experienced many levels of changes. In the past, it was conducted in the classroom, where teacher and students meet each other face-to-face (Zhang, Zhao, Zhao & Nunamaker Jr., 2004). However, this scenario began to change when technology became available as a medium for teaching and learning since late of the 20th century. This is due to the increment of current technology capability, particularly the Information and Communication Technology (ICT) (Mahmud, Ismail, Abdul Rahman, Kamarudin & Ruslan, 2012).

* As we all know, ICT has produced tones of applications that can be utilized in teaching and learning. It has being said that among those applications, there are several which are quite popular among educators, namely online chat (Sins, Savelsbergh, van Joolingen & van Hout-Wolters, 2011), online forum (Rienties, Giesbers, Tempelaar, Lygo-Baker, Segers & Gijselaers, 2012) and social networking site (Baker, Wentz & Woods, 2009). These applications, which are categorized as the Web 2.0 technologies, have given a bunch of benefits to the learning process. It is due to its capabilities in facilitating and accelerating the process of communication, information's searching and sharing, and also enable learning activities to be conducted anytime and anywhere, which cannot be accomplished through the conventional methods (Bennett, Bishop, Dalgarno, Waycott & Kennedy, 2012; Chiu & Hsiao, 2010; Petrakou, 2010).

Inadequacy of 2-D applications

Despite of having well-known capabilities that are highly beneficial for teaching and learning, those online 2-dimensional (2-D) applications are still lacking in certain ways. This issue had been raised by many researchers and can be segregated into several categories. In term of communication, it has been said that multi-user 2-D applications were depending too much on the use of text as a medium of communication (Omale, Hung, Luetkehans & Cooke-Plagwitz, 2009). Furthermore, learning activities that take place in a virtual learning environment (VLE) generated by those 2-D applications mean that face-to-face communication became limited or no longer available for students and educators (Chiu & Hsiao, 2010). Thus, without the use of body languages, face expressions and even voice tones as a mean to convey message among each other, Sutcliffe and Alyares (2012) have referred this as a lack of non-verbal communication. Other than communication, interactivity in 2-D applications is also an issue that has been

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brought up. Surely it is undeniable that 2-D applications are all interactive compared to face-to-face learning, yet it is still not good enough to support certain type of learning, especially collaborative learning. As mentioned by Bronack, Riedl and Tashner (2006), learning activities are limited in this kind of environment. Hence, it is not surprising when learning activities by the use of 2-D application are considered by the students as boring and do not stimulate their experience (Sutcliffe & Alyares, 2012) and also could lead them to experience dissatisfaction with their learning (Bouhnik & Marcus, 2006; Wu, Tennyson & Hsia, 2010).

Being aware about all the weaknesses that have been mentioned before, educators nowadays have been shifting towards the use of new application with the form of 3-dimensional (3-D), or 3-D Multi-User Virtual Environment (3-D MUVE) to be precise, for teaching and learning (Duncan, Miller & Jiang, 2012; Hew & Cheung, 2010). In the next section of this paper, we will discuss further about the unique features of 3-D MUVEs which are valuable for teaching and learning activities, the type of 3-D MUVEs currently being used by the educators around the world, and follow up by our justification of the Open Wonderland as an appropriate 3-D MUVE to be used for teaching and learning.

Three-Dimensional Multi-User Virtual Environment

Background

Based on the history of its development, 3-D MUVEs or also known as virtual world, said to be rooted from virtual environments of role-playing games, for instance, a multi-player online games (MMOGs) (Duncan *et al*., 2012). Nevertheless, the major difference which differentiated a 3-D MUVE from a MMOG is that most of the 3-D MUVEs were developed without any specific objectives of storylines. It is an environment that grant users freedoms to completely control the environment (Warburton, 2009). In other word, the user himself or herself can determine the objective or storyline for the virtual world. Just as the online multi-user 2-D applications, 3-D MUVEs can also be accessed by numerous users at the same time (Gamage, Tretiakov & Crump, 2011). However, thing that made 3-D MUVEs unique is the sort of application that came with the ability to generate a virtual environment which consist of height, width and depth (McKerlish & Anderson, 2007), which is completely different from the VLE created by any 2-D applications. Besides, 3-D MUVEs also comprise of some unique features which can be utilized in teaching and learning that are rarely found in other 2-D applications, which will be discussed further in the next section. Hence this has attracted educators from around the globe to construct online learning activities in 3-D MUVEs. As a result, it popularity as a medium for teaching and learning, as stated by Duncan *et al*. (2012) has increased significantly in the past few years. This scenario has been mentioned as well in the Horizon Report of 2008, Australia-New Zealand Edition by the New Media Consortium (Johnson, Levine & Smith, 2008). The recent improvement of technologies' capabilities have also became one of the ignition for this scenario to occur (Choi & Baek, 2011).

Features of 3-D MUVE and its impact on learning

As stated in the previous section, there are several features of 3-D MUVEs which can be beneficial for teaching and learning. From the previous literatures, we have extracted some of the features that we assume as noteworthy. The features are as stated below.
- Offer a realistic and immersive virtual environment (Ibáñez, García, Galán, Maroto, Morillo & Kloos, 2011)
- Provide a flexible and persistent environment (Girvan & Savage, 2010)
- Represent user with 3-D avatar as an online identity (Peterson, 2005)
- Support verbal and non-verbal communication (Andreas, Tsiatsos, Terzidou & Pomportsis, 2010)
- Allow user to create and manipulate the world and virtual objects, and also let them adjust the camera to view the world from different perspectives (Dalgarno & Lee, 2010)

Thus, in a learning session that is conducted in 3-D MUVE, students generally learn by means of exploring the virtual world in order to obtain information, creating and manipulating virtual object based on the task and also interact with each other through their avatar (Gamage *et al*., 2011). According to de Freitas, Rebolledo-Mendez, Liarokapis, Magoulas and Poulovassilis (2010), this type of learning bestow students with an immersive experiences. By having that sort of features, the usage of 3-D MUVEs has given some positive impact on learning as stated in previous researches. For instance, the usage of 3-D MUVEs helps created an enjoyable virtual learning environment for students (Apostolos, Andreas & Thrasyvoulos, 2010). It is likely due to the game-like environment

of this technology. Moreover, 3-D MUVEs are also able to create an environment which encouraging one of the most important elements in online learning, that is sense of presence (Chen, Warden, Tai, Chen & Chao, 2011). It seems that some of the factors which affecting the sense of presence are the utilization of avatars as users' online identity, the options to communicate by using not just text but other medias as well, and the level of abstraction of the virtual world. As a result, the application of 3-D MUVEs in online learning has been reported to increase students' engagement (Bouta, Retalis & Paraskeva, 2012), satisfaction (Jestice & Kahai, 2010), interactions and motivation as well (Beltrán Sierra, Gutiérrez & Garzón-Castro, 2012).

Open Wonderland

Types of 3-D MUVE

There are at least two categories of 3-D MUVE, as stated by Apostolos *et al.* (2010). Those categories are proprietary 3-D MUVE and open source 3-D MUVE. The first category, the proprietary 3-D MUVE, is an application where the user must pay in order to access some features in that particular virtual world. Second Life, Active World and There are some of the 3-D MUVEs which fall into this category. Whereas the next category has been labelled as open source 3-D MUVE. Unlike the other category, the open source 3D-MUVEs can be used by any user for free and give them full control of the environment as well. Examples of open source 3-D MUVE are Open Wonderland and Croquet. Bear in mind that there is no category that is superior to another, because each of them have its own advantages and disadvantages. However, among both categories, there is one 3-D MUVE which has been considered as a mature 3-D MUVE for teaching and learning, namely Second Life (Warburton, 2009). It's popularity among educators as an online teaching and learning platform has been stated by Girvan and Savage (2010), where most of recent literatures are focusing on the utilization of Second Life.

Why choose Open Wonderland?

"If Second Life is an excellent 3-D MUVE, why do we need to shift to Open Wonderland?". That is perhaps a question which will arise from several educators and researchers. Yes, we also acknowledged the fact that Second Life is the most powerful 3-D MUVE around, where it can bring a lot of benefits for teaching and learning processes. Nevertheless, there are certain things about Second Life as written in previous literature which we believe are quite problematic for certain communities, especially for us and our university, also for our country as well. In our future research, these things have became factors that lead us not to use Second Life. We will discuss about these factors together with reasons of why Open Wonderland is the best 3-D MUVE for our research and perhaps for other researchers with a similar background as well.

The first factor is about the budget. As stated by Apostolos *et al.* (2010), a proprietary 3-D MUVEs like Second Life requires the user, who want to fully access the world, to pay for certain amount of cash to the developer. The fee is pretty expensive (Sutcliffe & Alrayes, 2012), particularly for research team with low budget like ourselves. Fortunately, there is a free version of Second Life offered by Linden Labs, the developer of this 3-D MUVE. However, it only allows users to explore certain places and use some basic functions and controls (Tsiatsos & Konstantinidis, 2009). Moreover, there are also some issues of privacy regarding of the free version of Second Life. As reported by Petrakou (2010), she spotted an outsider who suddenly appeared during the lecture that was conducted in the virtual world. Luckily for her that the students did not really get distracted by the appearance of the outsider. As for that case, we believe that privacy is an important thing in order to conduct teaching and learning in virtual world, especially for an open virtual life like Second Life which can be accessed by many people around the world that are not related to our research. However, only money can buy privacy in this commercial virtual world. To put this into a simple word, we need a private virtual world with many unrestricted functions and can be used for free. Does this kind of virtual world really exists? Yes it does. The name of that virtual world is Open Wonderland, which is formerly known as Project Wonderland (Joshi & Gardner, 2012).

Unlike Second Life, Open Wonderland is a Java-based open source 3-D MUVE (Ibáñez *et al.*, 2011). In other word, it can be used by any people for free. It was originally developed by Sun Microsytems before it became a fully independent and open source virtual world (Kaplan & Yalenkovish, 2011). This nature of Open Wonderland has made us believe that it is the best 3-D MUVE for our research. However, we did not simply select this virtual world just because it is free. There are other criterions of Open Wonderland that we took into consideration. Firstly, is about the privacy and control. As we stated before, we need privacy in order to conduct learning activities of our

research and the full control of our world. Open Wonderland is a 3-D MUVE which provide a privacy for the user without any charges applied and it allows user to completely control the virtual world (Chen *et al*., 2011). In other word, the user who is also the admin is the master of the world. He or she can control who is legal to access the virtual world, so that means no outsider is allowed. Plus, the admin also can control properties of some elements in the virtual world. For example, the admin is able to make some object visible to one group of students where the rest cannot see it (Arroyo, Kloos, Espiga, Calle, Rodríguez & Hernández-Leo, 2010). Furthermore, the extensible nature of the Open Wonderland provides the admin with opportunities to modify and extend it functionalities, especially for someone who is an expert with Java technology (dos Santos, Guetl, Bailey & Harward, 2010). As for the other user, mainly the students, they can freely control their avatar and use any tools available that are not restricted to them. Thus, we can assume that Open Wonderland is not just a free to use 3-D MUVE, it also a flexible and private virtual world.

Second criteria of a Open Wonderland that we paid attention to is its characteristic as a learning tool. According to Dalgarno and Lee (2010), there are 2 categories of characteristic of a 3-D VLE, which are representational fidelity and learner interaction. Each of those categories comprises of several characteristics. After we made a comparison between those characteristics and characteristic of Open Wonderland, we found that both characteristic mostly match with each other. First of all, to be able to display a realistic environment is one of the characteristic of 3-D VLE, and Open Wonderland has this characteristic as well. As in the research conducted by Ibáñez *et al*. (2011), they have successfully build a environment which is similar to the real town for language learning. However we believe that realistic here does not means that it should look exactly like the real things, as long as it can make each user feels immerse with the environment should be fine. Then the next characteristic of 3-D VLE which matched with Open Wonderland is the use of avatar as representation of every users. Open Wonderland provides an option for the users to use custom avatar or create their own avatar (Chen *et al*., 2011). Although it is quite limited compared to what the users can do to their avatar in Second Life, Open Wonderland is still allows them to modify many aspects of their avatar, such as hair colour, clothes, shoes and many more. We assumed this is good enough to provide students with sense of presence in the virtual world. Speaking of sense of presence, audio is one of elements that can increase that sense (Dinh, Walker, Song, Kobayashi & Hodges, 1999) and spatial audio is also included in the list of characteristics for 3-D VLE. Therefore by using Open Wonderland which also wield the spatial audio characteristic (Kaplan & Yalenkovish, 2011), not only we can let students communicate using their voice and put some sound effects in our virtual world for them, but we also can simultaneously stimulate their sense of presence.

Furthermore, the availability of avatar and spatial audio in Open Wonderland indirectly suggested that this 3-D MUVE has met another characteristic of 3-D VLE as listed by Dalgarno and Lee (2010), which is support the verbal and non-verbal communication. For example, Open Wonderland allows the users to make use of the chat box and voice over function in order to communicate with each other verbally, and also let them communicate using the non-verbal methods for example by exploiting the gestures provided for the avatar. The next characteristic on the list is known as embodied actions, such as view control, navigation and object manipulation. From our viewpoint, this one is quite important to considered if we intend to conduct learning activities in a 3-D MUVE. If the 3-D MUVE does not support those actions, there is a high probability that the learning process will be hindered. As for Open Wonderland, we found that this 3-D MUVE supports all those actions such as it let the users change the viewing angle in order to view the world from different perspective. Moreover, Open Wonderland also let the users control their avatar to explore the virtual world and allow them to create and manipulate an object and also interact with other objects (Arroyo *et al*., 2010). In fact, there are other characteristics of 3-D VLE which match with Open Wonderland that we have not discussed in this article, because we feel that what have been discussed here are sufficient enough to inform our readers about the capabilities of this 3-D MUVE.

Apart from that, the recent capability of our nation ICT particularly in our university is not as great as what they have in every modern country. This has became one of the factors that preventing us from using Second Life. Based on our observation, the internet speed of our faculty, which is crucial for running a 3-D MUVE, is not good enough to run Second Life smoothly. There is a solution to tackle this problem, which is by subscribing to any local internet provider for faster internet connection. However, this solution also means more money need to be spent. Thus, that is why we plan to use Open Wonderland in our research. With this 3-D MUVE, we can create a small virtual environment with less objects in it. We also can control the number of users who have access to our virtual world and make sure that the numbers are not too big. Therefore, our virtual world can be accessed smoothly by our students even with the standard internet speed of our faculty.

Last but not least, the next factors is about sensitive issues. Article written by Chen *et al*. (2011) has made us to take this matter seriously into our consideration. Most of the residents in Malaysia are Muslims, and we found that

some culture presented in Second Life are not suitable for our culture, especially to the students. For example, some of the avatars in Second Life are too sexy to watch. By using Open Wonderland, we can prevent this issue because the avatar only provided with normal or formal clothes for men and women, and its customization is also limited. Another sensitive issue that probably will arise while using Second Life, especially the free version of it is the interference, disturbances or harassments from other users to our students. In Second Life, they will meet lots of people from around the world with different backgrounds. If we look at the positive side, this provides an opportunity for them to know each other. However bear in mind that not all people is Second Life is good people. Some of them might be a bully, a rascal or someone who always swears and talks with inappropriate words. So we do not want our students to get involved with such people. Thus by utilizing Open Wonderland, we can restrict the access to our world. Only students of our own have the permission to enter the world. In other word, we can create a safe and secure environment for the students.

Conclusion

In conclusion, we can say that Open Wonderland is indeed a potential 3-D MUVE for teaching and learning. Because of that, we think it is better for us not to use Second Life and use Open Wonderland instead to conduct our learning sessions in our future research, although Second Life is the popular 3-D MUVE for teaching and learning that has been recognized by many educators. It is not because of Open Wonderland is better than Second Life, and we also did not mean to condemn Second Life as well, but it is due to the factors that have been discussed before. From our point of views, it is not a big problems to make use of Open Wonderland because from the previous literatures and also from our observations, most of the features provided by Second Life are also provided by Open Wonderland, but they are still quite different. Moreover in some circumstances, Open Wonderland can become the most suitable 3-D MUVE to conduct teaching and learning activities, just like our case. Hence, we recommend that any researchers who intend to do research in this field of study, but at the same time face the same problems like we do, just choose Open Wonderland as a 3-D MUVE for your research. Although it is still not mature enough as a tool for education, but Open Wonderland is a very promising 3-D MUVE.

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Participatory Development Communication for Natural Resources Management in Ratchaburi Province, Thailand

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Abstract

The participatory development communication is a key process of bringing stakeholders together to cooperate towards addressing the problem of dissolution of the environment and natural resources. It let them work together towards a sustainable social change away from individual behaviour change. It is a set of techniques to make people change their knowledge, attitudes, and practices that allow people to voluntarily engage in the activities related to natural resource management. In the case of natural resources management, multiple stakeholders are involved in administration and implementation. The model of this study assumes that all levels of participatory development communication will relate knowledge, attitude and practice of stakeholder's concerning natural resources management.

Ratchaburi province is a major agricultural area in Thailand. The area is prone to severe natural disasters in the past few years such as drought, inundation, hurricane and conflagration due to climate change. The government of Thailand allocates an increasing budget for natural resources management in the area, but this does not solve the problem alone. The government needs an effective strategy in mitigating the problems. The participatory development communication in community based natural resources management can help the government in formulating effective strategies to alleviate future disasters. This means that the community where the disasters occur helps in solving and mitigating the problems caused by natural disasters and natural resources degradation respectively.

The study centers the following variables; the levels of participatory development communication which is   (1) information sharing, (2) consultation, (3) collaboration, and (4) empowerment and knowledge, attitude and practice. The research assumes that the levels of participatory development communication affect the knowledge, attitude and practice of stakeholders. Which means higher the level of participatory development communication corresponds to higher knowledge, attitude and practice measure on natural resources management. Considering the relationship between these variables and the need to address the growing problem on natural resources management, it is important that the government using participatory development communication explore the different ways in conserving nature and lessen its expenses on unprepared disasters. The result assumes that levels of participatory development communication are correlated to stakeholder's knowledge, attitude and practice measure. There is a relationship between stakeholder's knowledge, attitude and practice towards natural resources management and participatory development communication practice. Particularly it puts into assumption that: (1) participatory development communication is directly correlated to knowledge, attitude and practice, which means that as participatory development communication level increases, knowledge, attitude and practice among stakeholders also increases, and (2) participatory development communication levels are inversely correlated to knowledge, attitude and practice, thus, as participatory development communication increases, knowledge, attitude and practice decreases or vice versa.

Looking at the situation of Ratchaburi province, the increasing budget on natural resources management can be lessen if there is proper communication and participation between stakeholders and the government. Thus, study will give a new government approach towards natural resources management and increasing knowledge, attitude and practice of stakeholders.

Keywords: participatory development communication; community based natural resources management

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INTRODUCTION

Development communication plays a major role in information distribution in developing countries and other parts of the world. Communication does not to inform but also influences the behavior of the receiver of information. Effective development communication should motivate people to participate in planned activities. Participatory development communication means moving from a focus of informing and persuading people to changing their behaviour or attitudes and focus on facilitating exchanges between different stakeholders to address a common problem. Participatory development communication has been used in several development projects such as land and water conservation or natural resources management and poverty alleviation. Of the two, natural resources management is one of the major problems in Thailand. Thus, participatory development communication in natural resources management is an essential component of the participatory research and development process suggests shifting away from informing stakeholders in order to improve their knowledge, attitudes, and practice. It integrates communication, research, and action in an integrated framework, and involves researchers, extension workers, community members, and other stakeholders in the different phases of the development process.

OBJECTIVES OF THIS RESEARCH

The research aims to 1) identify the status and problems of natural resources management in Ratchaburi Province; 2) analyze the relationship between of participatory development communication levels and knowledge, attitude and practice on community based natural resources management**.**

REVIEW OF RELATED LITERATURE

Participatory Development Communication

There are many arguments about the meaning of participation. Participatory communication is under rural development as a shift from the dominant paradigm of top-down to self-development wherein villagers and urban poor are the primary stakeholder. Self-reliance and building on local resources are also emphasized in the process. Participation is the exchange of information from both parties the people and organization. In this process, the people or grassroots identifies the problem and the solutions to those problems. The people are given the opportunity in the decision-making. In interactive participation stakeholders take part in the analysis, which result in action plans and formation of new institutions of existing ones. Stakeholders get the chance to have practices and take control over local decisions. The last type of participation is self-mobilization. It is characterized by being independent of external institutions. This process allows the development of external contracts for resources which gives technical advice and construct how resources are used. Accordingly, Aycrigg (1998) divided level of participatory communication to four levels using the following: 1) Information Sharing, one way communication basically, people are included by informing them about what is being done; 2) Consultation, primarily one way communication with a stronger emphasis on feedback. Stakeholders provide their input but do not have a significant say in the decision making process; 3) Collaboration, two way communication supporting open interaction in decision making-input in decision making is balanced; and 4) Empowerment, transfer of control over decisions and resources. Two way communications ensures shared decision making.

In a development communication research, the one idea about the approach to undertaking a preliminary situation assessment in participatory communication programs for natural resource management is the participatory rural communication appraisal. It helps change agents in the following way in getting information needed in developing effective communication programs, materials and methods in natural resources management to ensure suitability to the stakeholders. Listening and understanding stakeholders better so they can plan together. Promoting involvement of stakeholders in decision-making that affects their livelihood; and planning communication programs for new development efforts.

Participatory Development Communication in Natural Resources Management

The communication is a key process of bringing stakeholders together to cooperate towards addressing the problem of dissolution of the environment and natural resources. Thus, participatory communication is a tool for stakeholders. It let them work together towards a sustainable social change away from individual behaviour change. Participatory development empowers local communities to discuss and address natural resource management and engage stakeholders in building an improved policy environment. The terminology has been used in the past by a number of scholars to stress the participatory approach of communication in contrast with its more traditional diffusion approach. Others refer to similar approaches as participatory communication for development, participatory communication or communication for social change. Though used frequently, participatory communication should first be defined in this study. Participatory communication in natural resource management is not just a set of techniques to make people change their knowledge, attitudes, and practices but the people should voluntarily engage in activities in natural resource management as part of a process of gaining critical understanding of why they are doing so. If people understand why and voluntarily change their practices and activities, such changes are likely to be more long lasting. In social change, people work together in agreement to make some changes happen at the community or societal level. Natural

resource management research needs to be conducted in a multidisciplinary and interdisciplinary way and should be participatory and community based. In the actuality, the primary concerns of the local communities and to have an effective management of the natural resource base, community participation is a basic requirement. Participation should be community-wide, since it is the responsibility of the entire community to undertake strong efforts towards natural resource protection. Given the data above, approach to development communication research should not be linear. The increasing interconnectedness today assumes that communication is visible in every aspect of our daily lives. Participation is innate but proper research participation is yet to be perfected**.** Participatory development communication is a way of enabling people to increase community involvement, to have a unified decision over something that is shared by the community. Thus, determining the levels of participatory development communication is important in doing participatory research, to determine the gap between knowledge, attitude and practice.

RESEARCH METHODOLOGY

This research follows a qualitative method. Data gathering involves reviews of secondary data and available information about the research site, and personal inquiries analyzed using thematic analysis.

RESULTS AND CONCLUSION

1. The status and problems of natural resources management in Ratchaburi Province

The result shows that farming practices evolved through time, which is generally brought about by the dynamic needs of the population and the threats to production effectiveness. Thailand's agriculture sector has developed mechanisms to fight its major threats. Though efforts have been done, natural resources management still faces problems. Ratchaburi province is a major agricultural area in Thailand. Majority of its land area is forested and cultivated. The area is prone to severe natural disasters in the past few years such as drought, inundation, hurricane and conflagration due to climate change. The government of Thailand allocates an increasing budget for natural resources management in the area. In 2007, an amount of 529, 028 USD was allocated mainly for the effects of severe drought. The following year, 301, 956 USD was allocated for inundation. The next two years (2009-2010) drought, but in 2011, severe inundation hit Ratchaburi province. The government allocated 1,700,310 USD restoration and management for that incident (Land Development Department of Thailand, 2009).

Increase budget allocation cannot solve the crisis alone. The government needs an effective strategy in mitigating the problems. The participatory development communication in community based natural resources management can help the government in formulating effective strategies to alleviate future disasters. This means that the community where the disasters occur helps in solving and mitigating the problems caused by natural disasters and natural resources degradation respectively. The community as well as the local government should work together to determine ways to protect the degraded and sensitive ecosystem. Natural resource management will require the participation of the local government units, non-government organizations, and institutions. It will serve as a stimulus in the technology adoption and policy support implementation.

Sustainable Development Foundation in Thailand (2003) studied issues and problems in natural resource management in Thailand. The result of studied can be summed as follows:

1. There is a fragmentation in the management of the government units and a monopolization of natural resources through centralized laws and policy. Responsibility in natural resource management is granted primarily to one specific government department creating issues of efficiency in governmental operations

2. The concept on natural resource management is piecemeal rather than holistic. Natural resources are viewed as trade commodities and only serve as production inputs

3. Natural resource management principles remain fragmented and continue to emphasize the use of natural resources for economic development

4. Different organic laws do not correspond with the constitution and the actual circumstances on the ground level due to a lack of participation from the people who are affected by such laws. Additionally, there is a lack of transparency, resulting in an overlapping of interest and benefits

5. Community's rights and people participation in natural resource management have not been recognized and accepted

2. Analyze the relationship between of participatory development communication levels and knowledge, attitude and practice on community based natural resources management

Participation in development and communication is often presented as a normative principal. Maximum participation carries an assumed status of maximum benefit. Development communication involves planned change in knowledge, attitude and practice, which influence not just an individual but other part of the system as well. Any new practice such as participation is also part of a system. What is needed in organizational behaviour is gradual enrichment of participation to the entire socio-technical systems to make agencies more responsive to people and their goals. System theory considers the interrelationships among subsystems as well as interactions between the systems and their supra-systems. A system is considered an organized unitary whole composed of two or more interdependent parts or components and delineate by identifiable boundaries from other systems. The systems theory provides a means of understanding in the interrelationships of organizations and its operations.

In the case of natural resources management, multiple stakeholders are involved in administration and implementation. The model of this study assumes that all levels of participatory development communication will relate knowledge, attitude and practice of stakeholder's concerning natural resource management. Which means higher the level of participatory development communication corresponds to higher knowledge, attitude and practice measure on natural resources management. Considering the relationship between these variables and the need to address the growing problem on natural resources management, it is important that the government using participatory development communication explore the different ways in conserving nature and lessen its expenses on unprepared disasters.

The conceptualized model of the study further suggests that levels of participatory development communication are correlated to stakeholder's knowledge, attitude and practice measure. The study then hypothesizes that there is a significant relationship between stakeholder's knowledge, attitude and practice towards natural resources management and participatory development communication practice. Particularly it puts into assumption that: (1) participatory development communication is directly correlated to knowledge, attitude and practice, which means that as participatory development communication level increases, knowledge, attitude and practice among stakeholders also increases, and (2) participatory development communication levels are inversely correlated to knowledge, attitude and practice, thus, as participatory development communication increases, knowledge, attitude and practice decreases or vice versa.

Figure 1. Framework showing stakeholder's Participatory Development Communication levels correlated knowledge, attitude and practice

Looking at the situation of Ratchaburi province, the increasing budget on natural resources management can be lessen if there is proper communication and participation between stakeholders and the government. Thus, study will give the government a new approach in dealing with natural resources management and increasing knowledge, attitude and practice of stakeholders.

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Personalized learning and learning style among upper secondary school students

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Abstract

In the learning process, learning materials is one of the main factors to be considered by the instructor because it can contribute to the acceptance of students of knowledge presented. Learning material can consist of various forms and formats depending on whether teaching methods using technology or conventional. Learning materials format is related to the learning styles as students will inclined to a learning material based on their learning styles. Because of individual has a different learning style, then the needs of learning materials are also different. Hence a study was conducted to study the format of learning materials that match students' learning styles based on Kolb's learning style model. A total of 39 students were involved as respondents in this study. To determine students' learning styles, instruments LSI (Learning Style Inventory) were used. Whereas, to determine the formats of learning materials, interviews have been conducted on the students according to their learning style. Although Kolb learning styles are divided into four groups, however, this study showed that students' learning materials format is divided into two groups only.

Keywords: personalized learning; learning style, learning materials format

Introduction

In this decade, a variety of issues regarding personalized learning has attracted many researchers especially from two different fields i.e. computer science and education, Tseng, Chu, Hwang & Tsai (2008). Personalized learning is the learning process conducted in accordance with the diversity of students' personal characteristics, Leung & Li, (2007). For example, from various personal features, there is a group of students who have same personal characteristics which are easy to remember things or information based on what they hears. Therefore, teachers need to provide the student, a set of learning materials that involving audio.

There are various methods that have been used by previous researchers in categorizing students either in learning styles, thinking styles, cognitive styles and many more. Categorizing students according to groups with certain features are important to help teachers and educational researchers to better understand the characteristics of the students, Tseng *et al.* (2008). When students are categorized according to the similar characteristic, researchers can investigate in more detail about the students.

Personalized learning

Personalized environment is becoming increasingly important in many areas such as e-commerce, e-tourism and cultural heritage, digital libraries, e-learning and many more, Carmagnola & Cena (2009). In education, personalized environment more synonymous with technology-based learning compared to conventional learning. Often found researchers focuses personalized learning environment with e-learning and social media such as blogs, facebook, twitter etc, McLoughlin & Lee, (2010).

In general, personalized learning is flexible learning that allows students to interact with the learning material that suits with their needs, Green *et al.* (2011). Personalized learning was introduced because of increased awareness among researchers about the diversity of students from various aspects such as learning styles, attitudes, interests, behavior, thinking skills, ability to learn, and so on.

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Advantages of personalized learning is able to optimize students' learning process as well as help students acquire knowledge more efficiently and effectively, Mohamad (2009). In fact, according to Clarke (2003), when we provide students with personalized learning environment, they will be more active in learning, using their knowledge that they know and strive to discover more information. There are some implicit ideas behind personalized learning:

- Introduced by the tendency of individuals so that each individual student involved in the learning process.
- Teachers get to know the strengths, weaknesses and interests of each student.
- If practiced consistently, students will become independent and can manage their own learning.
- Compared to normal learning methods, personalized learning makes students able to set goals and measure the success of their own learning.

(DiMartino, 2001)

Personalized learning environments can be provided by any differences in tendencies towards the students such as cognitive style, thinking style, learning style and many more. In this study, the differences that are selected are according to students' learning styles. The chosen model of learning style is Kolb's learning style model.

Learning style

Each individual usually has their own learning style. Studies show that individuals will learn the different methods and have their own preferences and ways to receive and process information, Kumar, Kumar & Smart, (2004). Most of the learning style has been developed to enable students to be classified as a specific group. There are various models of learning styles have been introduced by researchers such as Honey & Mumford, Grasha-Reichermann, Felder & Silverman, Myers-Briggs, Kolbs and many more. Based on several considerations, the researcher chose Kolb learning style model in this study.

Kolb's learning style model is divided into four classifications of learning styles as follows:
- *Diverger* (learn with view)
- *Assimilator* (learn with listen)
- *Converger* (learn with processing the text)
- *Accommodator* (learn by doing)

Background of Problems

Each individual different from each other in terms of learning goals, prior knowledge, learning styles, thinking skills and cognitive style, Papanikolaou, Mabbott, Bull, Grigoriadou (2006); Tseng et. al (2008); Graf, Liu, Kinshuk, Chen, Yang (2009). Because of this difference, teachers and educational researchers should figure out how to ensure individual preferences and needs of each student can be fulfilled. In the classroom teaching, only experienced teachers can differentiate and adapt teaching and learning methods according to students' needs, Zajac (2009). However, not all teachers able to do so, and this condition requires highly careful observation by the teacher for each student.

Teacher can use any inventory or instruments to measure student learning styles according to some theories. When knowing the specific learning styles of students, teachers will be able to recognize, understand and meet the needs of all their students more effectively. For example, knowing the learning styles of a group of students, it was found that there were some students who tended to learning materials in graphic forms. This will help teachers to prepare learning material in graphic form for the students.

However, this is difficult to do if the process of learning occurs in the traditional manner (face to face) in the classroom. This assertion is supported by Graf, *et al.* (2009) which states that it is difficult to fulfill the needs of all students in the face-to-face sessions in the classroom especially for the class that has the high number of students. In fact, it is more relevant to use technology facilities to fulfill the needs of the students because it is more flexible and low cost Mohamad, (2009). There are advantages if student's learning styles are consider and they are given learning materials that suits to the learning style. According to Peter, Bacon & Dastbaz (2010), if teachers give students appropriate learning materials with their tendencies; this will increase the overall potential students in their learning.

In general, this study intends to find out format of learning materials that are appropriate to students according to their learning style. The format of learning materials will be developed in electronic form in order to facilitate

researchers and thus save costs. Although this kind of research was conducted by Yang and Wu (2009), but these studies remain carried out due to curriculum and educational background that differs between the two studies.

Research Objective

Objective of this study are:
(1) Identify the learning styles according to Kolb's learning style model.
(2) Determine the format of learning materials based on Kolb's learning style model.

Research Methodology

Research design

This study is a mix method because it involves quantitative and qualitative data. The student's learning styles are identifying by using an instrument. The data obtained in quantitative form as it involves the number of students and learning styles only. After knowing student's learning style, interview was conducted and the data obtained in the interview involves qualitative data.

A total of 39 students were selected from a secondary school in Temerloh, Pahang. This student is Form 4 students from two different courses which are Accounting and Pure Science. This study utilizes an instrument of LSI and a set of semi-structure interview questions.

Sampel of study

A total of 39 students were involved in this study as respondents and they consist of Form 4 students from two different classes, 4A (Accounting students) and 4B (Pure Science students) in a secondary school. Accounting students are about 22 people and Pure Science students are about 17 people.

Instrument of study and data analysis

In this study, researchers used instruments LSI (Learning Style Inventory) developed by David Kolb. This instrument contains 12 items and uses a nominal scale of measurement. Apart of LSI instrument, this study also use interview questions that provided in semi-structure. There numbers of question for the interview session are 16 questions.

Quantitative data for the student learning styles were analyzed descriptively. The qualitative data of the interview were recorded using a tape recorder and then transcribe by the researchers before translated it into quantitative data.

Result

Analysis demography data

Table 1 displays basic information about the students who participated in this study. Based on the data in Table 1, it found that the majority of students are female (64.10%), while male only 35.90% with majority of the respondents are Malays (66.67%).

Table 1. Demography Data

Respondent Information		Frequency	Percentage
Sex	Male	14	35.90
	Female	25	64.10
Race	Malay	26	66.67
	Chinese	10	25.64
	Indian	2	5.13
	Orthers	1	2.56
Course	Accaunting	22	56.41
	Pure Science	17	43.59

*N = 39

Learning style analysis based on Kolb's Learning Style

According to Kolb's learning style, the students are divided into four type of learning styles which are converger, diverger, assimilator and accommodator. Table 2 displays the frequency and percentage of students according to the learning style. The findings shows majority of students are group from accommodator learning style (43.59%).

Table 2. Number of the students according to the learning style

Learning Style	Frequency	Percentage
Converger	6	15.38
Diverger	7	17.95
Assimilator	9	23.08
Accommodator	17	43.59

*N = 39

Analysis based on the learning material format Kolb's learning style

After identifying each student's learning style, they were interviewed in groups according to their learning style. The interview was conducted in the form of semi-structured. The purpose of this interview carried out is to determine format of learning materials corresponding to students' learning styles. Interview questions were designed based on the findings of the research conducted by Yang and Wu (2009) - refer Table 3. Based on their study, the formats of learning materials have been divided into four types: text, graphics, video and XML covering all four categories of Kolb are learning styles.

Table 3. Yang and Wu (2009) findings

Learning Style	Format of learning material
Converger	Text (word, power point, excel)
Diverger	Graphics (image, chart, symbol)
Assimilator	Video (audio, animation)
Accommodator	XML (Web, SCORM, LOM)

A total of 16 questions were asked to all students in the interviews. Among the questions that have been put forward in the interview are:

"Between novels and comics, which one do you prefer?"

This question was asked to find out whether students' like text or graphics.

Other questions posed are as follows:

"In the History assignments, you should get a lot of information. What kind of method do you prefer between find reference books at the library or looking for material at the internet?"

This question was asked to know students' interests in learning material format either in text or XML.

At the end of the interview session, all students are shown with four types of learning material formats which were texts, graphics, video and web. They were asked to choose only one format of the learning material that most preferred. Although students give options to choose learning material format that shown to them, the researchers also analyzed their answers during the interview session to confirm the selected learning materials are not influenced by other factors.

Results of this study, based on the interview that was conducted, it was different from the findings done by Yang and Wu (2009). For students from converger group, a total of 5 of 6 students (83%) who prefer learning material in the form of text. Same as converger group, the students from diverger also prefer learning material in the form of text, it is about 6 out of 7 people (86%). Out of 9 students from assimilator group, 7 students (78%) prefer learning material in the form of video. While for the accommodator group, 12 out of 17 students, (71%) prefer video as their learning material format.

In conclusion, the data obtained from this study showed, students from group converger and diverger select text as their option, while assimilator and accommodator students choose learning materials in video form.

Table 4. Preferred formats of learning materials according to learning styles

	Learning material format	Text	Graphics	Video	XML	Number of students
Learning style						
Converger		5	-	-	1	6
Diverger		6	-	-	1	7
Assimilator		-	1	7	1	9
Accommodator		1	3	12	1	17

*N = 39

Discussion and Conclusion

From the results obtained, it turns out to be different from the findings of the research conducted by Yang & Wu (2009). There are several factors that influence the findings of this study compared to the study done by Yang & Wu (2009). Among these are:

- Educational background of students is different because Yang & Wu (2009) conducted a study in Taiwan, while the study is carried out in Malaysia.
- Methods of data collection. Yang dan Wu (2009) uses the attributes-ant algorithm while this study using interviews method.

Table 5. The differences result between Yang and Wu (2009) with this study

Learning Style	Yang and Wu (2009)	This study
Converger	Text	Text
Diverger	Graphics	Text
Assimilator	Video	Video
Accommodator	XML	Video

Based on Yang and Wu (2009) findings, there is a skepticism about the format of learning materials in the form of XML. This is because in the opinion of the researchers, XML can include all three other (text, graphics and video) formats of learning materials. Because of those concerns, this study was conducted to ensure that there are significant differences between the three learning materials formats.

From the findings of this study, only two types of learning format that filled student's inclinations which are video and text. When compared against the study done by Yang and Wu (2009), students from the accommodator was originally inclined to learning materials in the form of XML has changed to learning materials in the form of video. This may be due to the format in the form of XML itself. According to Salminen and Tompa (2011), XML is not a component of the learning material itself, but instead is a learning platform that contains various learning components such as web, graphic, metadata, text and video.

Limitation and Future Study

The limitations of this study were identified and one of it is the norm of students in Malaysia, especially the students at the school level that are still lack vulnerable with computer based learning environment. This makes them not comfortable when asked questions related to learning that involves the use of computer. Even so, researchers strive to ask them in the interview session not to reveal the question is about computer-aided learning. Instead, the questions posed were made to look like natural talk about their daily lives. For example, to find out whether the students like the video or not, the question asked is: "In your free time, do you like to watch television or play computer games?". Expected with form a natural question will make the students more honest to answer all questions in an interview session.

The suggestion for the further research is a complete learning system with several formats of learning materials should be provided directly to the students. Students will not be interviewed. In contrast, observation will be conducted to determine the formats of learning materials most preferred by each individual student according to their learning style. This situation will occur more naturally without any interruption or influence by external factors.

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Plastik sanatlar öğretiminde internet ve bilgisayar destekli elektronik ekipmanların öğrenme düzeylerindeki değişimi

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Özet

Bilim ve teknolojinin gelişimine paralel olarak bilgi çağının üretim, eğitim ve iletişin aracı olan bilgisayar, internet ve buna bağlı elektronik donanımları günlük yaşamımıza girmesiyle birlikte her alanda olduğu gibi sanat ve sanat eğitimi alanında da önemli bir yere sahip olmuştur. Daha önce zorlu şartlarda sanat eserlerinin renkli baskılarını yâda röprodüksiyonlarını görüp bunlar üzerinde sanatçıları tanıma, sanat eseri hakkında bilgi edinme, eleştirip değerlendirme durumunda kalan öğretmen ve öğrenciler bugün bilgisayar ve internet sayesinde daha kolay sanatçıları ve sanat eserlerini sanal ortamda görebilme, sanatçılarla konuşabilme imkânına kavuşmuşlardır. Bunun yanında hızlı ve güncel bir şekilde kütüphanelere, müzelere, sanat galerilerine ve sanatçı stüdyolarına girebilme, inceleyebilme ve sanal ortamda gezebilme olanaklarına sahip olmuşlardır. Bu durum öğrenci ve öğretmenlerin güncel sanat gelişimlerini yakından takip edilebilme ve uygulama şansını elde edebilmişlerdir. Araştırmamızın amacı da bu alanda geri kalmış bölgelerde internet ve bilgisayar destekli donanımların çok kültürlü sanat alanındaki gelişimini ortaya koyabilmesidir. Araştırma Ağrı İlinde yapılmıştır.

Anahtar Kelimeler: Sanat, müze, galeri, çok kültürlü sanat.

The change of internet and computer aided electronic equipments in plastic arts education on learning levels

Abstract

Parallel to the improvement of science and technology, computer and internet which are devices for production, education and entertainment of information age and their electronic equipmenthave been included in our everyday lives and acquired an important place in the field of art and art education like in other fields. Teachers and students who had to observe color printing or reproductions of artworks under tough conditions and acknowledge artists on them, acquire knowledge about artwork, criticize and evaluate them now have the opportunity to see artworks in virtual environment easily and have conversations with artists due to computer and internet today. Apart from this, they had the opportunity to enter, observe and visit libraries, museums, art galleries and artists' studios in virtual environment in a fast and current way. In this way, students and teachers could follow and apply current

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artistic developments closely. The aim of our study is to put forward the effect of internet and computer aided equipment on development of field of multi-cultural art in backward regions.

Keywords: Art, museum, gallery, multi-cultural arts**.**

Giriş:

Gelişmekte olan Türkiye Cumhuriyeti Devleti, geçmişte olduğu gibi günümüzde de bilimde olduğu gibi sanat ve sanat eğitimi alanında da Avrupa'da uygulanan çağdaş yöntem ve teknikleri alarak bunları kendi bünyesinde uyarlamada başarılı politikalar uygulayan ülke olmuştur. Bu sebeple 1877'de İtalyan Corrado Ricci ile başlayan çocuk resimleri tarihi Georg Kerschenteiner, Franz Çizek, Viktor Lowenfeld, Rouma Jean Piaget, John Bannister Goodenough'un 1944 yıllarında sanat eğitimi alanındaki özgürlükçü yaklaşımı ışığında "alan ve çocuk odaklı" sanat eğitimi yaklaşımlarını 1998'li yıllara kadar sanat eğitiminde belirleyici olmuştur (KIRIŞOĞLU, Olcay Tekin. 1996). Ayrıca D. Person, R. Arnheim, E. Eisner, H. Gardner, G. Clark D. Feldman ve E. Zimmerman'ın sanat eğitim çalışmaları 1998 yılından sonra ülkemiz okullarında uygulamaya başlayan "disiplin odaklı" sanat eğitimi anlayışımızın düşünsel temellerine kaynaklık etmektedir.

Plastik sanatlar resim ve heykel alanında; bilim ve teknolojinin gelişiminde paralellik sağlaması, bilgi çağının kaçınılmaz gereksinimlerindendir. Bu bağlamda bilgisayar, donanımları ve internetin günlük yaşamımıza girmesiyle birlikte her alanda olduğu gibi sanat ve sanat eğitimi alanında da önceden tahmin edilemeyen görsel yenilikler ortaya çıkmıştır. Daha önceleri sanat eserlerinin renkli baskılarını ya da röprodüksiyonlarını görüp bunlar üzerinden sanatçıları tanıma, sanat eseri hakkında bilgi edinme, eleştirip değerlendirme durumunda kalan öğretmen ve öğrenciler, bugün bilgisayar ve internet sayesinde sanatçılar ve eserlerini sanal ortamda görebilme, sanatçılarla konuşabilme olanaklarına sahip olmuşlardır. Yine sanat eğitiminde önemli bir yere sahip olan müzeler, sanat galerileri, sanatçı stüdyoları gün ışığına çıkmıştır. Sanat dünyasına ait tüm etkinlikler dijital ortamlarda gününde izleyebilme önemli bilgi-belge ve dokümanları elde etme imkânları ortaya çıkmıştır. Bilgisayar ve internet sayesinde, ortaya çıkan bu fırsatlar sanat eğitimi veren kurumlar arasında fiziksel farklılıkların ortadan kalkmasına neden olmuştur. Kurumlar arasındaki nitelik farkı bu sayede en aza inmiştir. Sanat eğitimi alanında yapılan tasarımlar, ödevler, projeler, ders etkinliklerine bağlı kimi yöntem ve teknikler bilgisayar ve bilişim teknolojileri ile yapılır hale gelmiştir. Dijital fotoğraf ve kamera makineleriyle kaydedilen görüntüler siyah-beyaz veya renkli baskılar anında yapılır hale gelmiştir. Daha öncesinde karanlık odalarda uzun süren uğraşılar sonucu yapılan siyah-beyaz veya renkli baskılar artık tarihe karışmıştır. El işçiliği yerini fikir işçiliğine bırakmaya başlamıştır. Buna bağlı olarak bilgisayar ve bilgisayara bağlı donanımlarla yapılan sanatsal çalışmalar ve ürün oluşturmada süreç kısalmış olup, sanatçıya artı zaman sağlandığı görülmektedir.

XX. yüzyılın sonları ve XXI. Yüzyılın başlarında YÖK/Dünya Bankası Milli Eğitimi Geliştirme Projesi Öğretmen Eğitimini Yeniden Yapılandırma programı ile eğitimi çağdaşlaştırma çabaları için önemli adımlar atılmıştır. Bu duruma yönelik hazırlanan Eğitim Fakültesi Öğretmen Yetiştirme Lisans Programları içinde yer alan Güzel Sanatlar Eğitimi Bölümü Resim- İş Öğretmenliği Lisans Programı "Disiplinler Arası Sanat Öğretimi"ne

yönelik değiştirilip yeniden düzenlenmiştir. Bu eğitim; Sanat Tarihi, Estetik, Eleştiri, Uygulama gibi dört disiplin alanında temel bilgi ve becerileri kapsamaktadır. Böyle bir sanat eğitimi anlayışı ile öğretmen adaylarının; genel sanat anlayışlarının geliştirilmesi, sanatın doğasının tartışılması ve sanat eğitimi doğrultusundaki yanlış anlaşılmaların düzeltilmesi, görsel algı, sanatın dili ve araştırıcı sanat eleştirisi süreçleri; uygulamalı çalışma bilgisinin geliştirilmesi, estetik bilgi edinme yöntemleri, belli başlı sanat kuramları ve biçimler hakkında "derin yaklaşım" sergilenmesi amaçlanmıştır (KIRIŞOĞLU, Olcay Tekin. 1996).

Geçmişe yönelik sadece uygulamaya dayalı sanat eğitimi anlayışı böylece eleştiriye uğramıştır. Bu yüzden günümüz sanat eğitiminde kimi teknikler, amaçlar, içerikler hızla değişmek zorunda kalmıştır. Sanat eğitimi veren kurumlarda klasik atölye düzeni ile birlikte içinde bilgisayar ve internetin yanı sıra tarayıcılar, dijital kameralar, yazıcılar, geniş çalışma masaları, projeksiyon cihazları, çeşitli kaydediciler, istendiğinde karanlık hale gelen perdeli sınıf ve atölye özel öğretim alanları oluşturulmuştur (ÖZSOY, Vedat. Ankara, 2002). Tüm bu gelişmeler karşısında öğretmen adaylarının bir yandan konu alanındaki dersleri öğrenmeleri, diğer yandan öğretmenlik formasyonu dersleri ile öğretmenlik mesleğine ve anlayışına hazırlanmaları, bilgi teknolojilerini yakından tanımaları ve kullanmaları günümüzde daha önemli hale geldi. Nitekim YÖK/Dünya Banası Milli Eğitimi Geliştirme Projesi kapsamında öğretmen yeterliliklerinden bazıları şöyle tanımlanmıştır.

1. Elektronik araçlar ve bilgisayar yazılımları gibi bilişim teknolojilerinden yararlanma. ,
2. Öğretme- Öğrenme araç ve gereçlerini uygun ve etkili kullanma.
3. Dersi çeşitli öğretme – öğrenme etkinliklerinden yararlanacak şekilde planlama.
4. Gerekli oldukça alanında bilgileri daha üst düzeylere çıkartma (YÖK, Dünya Bankası,1997)

YÖK ve Dünya Bankasının bu projesinin amacı içerisinde uygulanan Ağrı İbrahim Çeçen Üniversitesi Eğitim Fakültesi Güzel Sanatlar Eğitimi Bölümü Resim-İş öğretmenliğinde okuyan öğretmen adaylarının Disiplinler Arası Sanat öğretimine yönelik konu alan dersleri ile öğretmenlik formasyonu kazandıran dersleri etkili kılmada bilgisayar, internet ve bunlara bağlı elektronik araç ve gereçlerin kullanımıyla ilgili olarak öğretme - öğrenme düzeyleri değerlendirilmiştir.

Örneklem

YÖK ve Dünya Bankasının proje kapsamında Ağrı İbrahim Çeçen Üniversitesi Eğitim Fakültesi Güzel Sanatlar Eğitimi Bölümü Resim-İş Öğretmenliği Anabilim Dalı lisans öğrencilerinin ders etkinliklerinde bilgisayar ve internetin yanı sıra yazıcı, dv video, dijital fotoğraf makinesi ve projeksiyon cihazı gibi elektronik araç ve gereçlerin kullanımı ile ilgilidir. Resim-İş öğretmenliği lisans programında yer alan uygulama ve teorik derslerin yanı sıra öğretmenlik formasyonu kazandırmaya yönelik derslerin tasarım, ödev, proje, mikro öğretim uygulamaları ile bunlara yönelik süreç dosyası oluşturma, sergileme, kişisel arşiv oluşturma gibi öğretme-öğrenme etkinliklerinde elektronik araç ve gereçlerinden yararlanma amaçları tespit edilmektedir.

Öğretmen adaylarının konu alanındaki dersleri öğrenip kendilerini geliştirmede ve öğretmenlik formasyonu dersleri ile Disiplinler Arası Sanat Öğretimine yönelik öğretmenlik formasyonu kazanabilmede bu araçları

kullanmanın önemli olduğu bilincinin yerleştirilmesi için öğrencilere rehberlik edilecek, bu araçların kullanımındaki eksiklikler belirlenecektir.

Araştırmanın Kapsamı İşleniş Planı

Bu çalışmanın kapsamı Ağrı İbrahim Çeçen Üniversitesi Eğitim Fakültesi Güzel Sanatlar Eğitimi Bölümü Resim-İş Öğretmenliğinde lisans eğitimi gören öğrenciler için bilgisayar, internet ve bunlara bağlı elektronik donanımların yer aldığı, kapsamlı Özel Öğretim Sınıfı (laboratuar) kurmak ve Disiplinler Arası Sanat Öğretimi konu alanı ve öğretmenlik formasyonu derslerine yönelik bu araçların kullanımıyla ilgili çalışmalar ve değerlendirmeler yapmaktır. Bu nedenle daha önce alt yapısı hazırlanmış olan ve içinde on adet internete bağlı bilgisayar, birer adet slayt makinesi, tepegöz, episkop, tv gibi ekipmanlar bulunan Özel Öğretim Sınıfına ek olarak, yazıcı dijital fotoğraf makinesi, veri tarayıcısı (scanner), dijital kamera ve projeksiyon cihazı alınacaktır.

Öğrencilerin disiplinler arası sanat öğretimini öğrenme-öğretme sürecinde yazarak, düşünerek, çizerek, boyayarak, araştırarak öğretme ve öğrenme sürecinin bitmeyeceği bilinciyle öğrendiklerini sorgulayan bireyler olarak yetişmeleri için kendilerine rehberlik edilecektir. Ayrıca özel öğretim sınıfında (laboratuarında) eğitsel etkinliklerin tümünü izlemeye ve değerlendirmeye yönelik veri saklama (arşiv) oluşturulacaktır.

Konunun Güncel Ve Evrensel Boyutunda Ulaştığı Teknolojik Nokta

Bilgi çağının baş döndürücü bir döneminde yaşamaktayız. Toplumların plan yapan, karar veren ve sürekli önüne gelen verileri yorumlayan, üstüne bilgi inşa edebilen, sosyal, teknik, sanatsal sorunları düşünen bireylere ihtiyaç vardır. Toplum olarak çağı yaşama ve yaşatmak zorunluluğundayız. Bunun için öğretmenlerin kendilerini çağın gereklerine göre donanımlı yetişmeleri ve yeni nesillere bilginin nasıl öğretileceğini öğrenmeleri gerekmektedir. Böyle bir yaklaşımda öğrenci ve öğretmenlerin eğitsel etkinliklerin yürütülmesinde ve geliştirilmesinde iş birliğine dayalı bir ilişkiye girmelerine ihtiyaç vardır. İş birliğine dayalı, öğrenci merkezli, teknolojik araç ve gereçlerin kullanıldığı, çağdaş eğitim, yöntem ve tekniklerin uygulandığı eğitim süreci ile programdaki beklenen hedeflere ulaşmak mümkün olacaktır. Bu zamana kadar imkânsızlıklar içinde de olsa elektronik araç ve gereçlerle yapmış olduğumuz mikro öğretim uygulamalarında, grafik tasarımlarında, ödev ve projelerde öğrencilerin öğrenme-öğretme, ürün vermede isteklendirme ve başarı düzeyi beklentilerin çok üzerinde olmuştur. Öğretmen adayları, bu proje kapsamında, eksikliklerini giderecek ilerisinde asıl görev alanları olan ilköğretim ve liselerde Resim-İş öğretimi alanında mevcut sorunları çözebilecek ve Disiplinler Arası Sanat Öğretimi'ni verebilecek öğretmenlik yeterliliğine sahip olabileceklerdir.

Sonuç ve Öneriler

Bu çalışma ile birlikte internet, bilgisayar, projeksiyon cihazı ve diğer elektronik ekipmanların kullanılabildiği, klasik atölyelerde olduğu gibi geniş çalışma masaların yer aldığı, duvarlarında tablo, levha, afiş kavram haritalarının bulunduğu atölyelerin etkin kullanılması sağlanmıştır.

Mikro öğretim uygulamaları, uygulamalı anasanat ve yardımcı (seçmeli) sanat atölye derslerinde yapılan çalışmaları sergileme, süreç dosyası oluşturma gibi etkinliklerin dijital ortama kayıtları yapılmıştır. Öğrenme ve öğretme etkinliklerinde dijital araç ve gereçlerin kullanılması, bu süreç içinde çağdaş öğretim yöntem ve tekniklerin uygulanması, öğretmen adaylarının sanatsal biçim dili oluşturması ve görsel sanat kültürü kazanmaları yönünde önemli katkılar sağlamıştır. Bu sayede öğrencilerin eğitsel etkinliklere yönelik motivasyonlarının artığı gözlemlenmiştir.

Sanat tarihi, estetik, eleştiri ve uygulamalı çalışmalara yönelik ödev, proje, levha, afiş, kavram haritaları sanat eleştirisi, çalışma kâğıtları hazırlama, anasanat ve yardımcı (seçmeli) sanat atölye çalışmalarının tasarım sürecinde internetin yanı sıra; word, paint, photoshop, sketchup, dynamic auto, painter gibi bilgisayar programlarını etkin olarak kullandırılmıştır. Bu araç ve gereçler kullanılarak yapılan çalışmalarda ürün verme süreci kısalmış, ürünlerin yapımında işçilik-ustalık gibi el becerileri yerini fikir işçiliği ve tasarım düşüncesine bırakmıştır. Bilgisayarla yapılması mümkün olan kimi uygulama çalışmalarını öğrencilerin istekli yapmadıkları tespit edilmiştir. Örneğin; tezyinat tasarımlarında form artırımına yönelik birim motif tekrarlarına ya da renk çemberi ve tangram çalışmaları, bilgisayar ortamında yapılması zorunlu hale gelmiştir.

Edmund Feldman'ın geliştirmiş olduğu betimleme, çözümleme, yorumlama ve yargılamaya yönelik öznel yönden sanat eleştirisi ile Louis Lankford'un sistemleştirmiş olduğu yansıtmacı, dışavurumcu, işlevsel ve biçimci sanat kuramları bağlamında yerli ve yabancı ressamların başyapıtları atölye ortamlarında yansıtılarak, bunlar renk, şekil ve uzam yönünden benzer ve farklı yönleri eleştirilerek tartışılmıştır. Renkli dijital baskıların görüntüleri çalışma kâğıdına aktarılması sayesinde, özellikle eğitimde önemsediğimiz yansıtmacı ve dışa vurumcu sanatla ilgili kavramlar sorgulayıcı, araştırıcı, öğrenci merkezli bir yöntemle eleştirilip değerlendirilmiştir. Bu durum öğrencilerin sanat eğitiminde kültürel okur-yazarlık kazandırmada etkili olduğu ve öğrenme düzeyini istendik düzeyde geliştirdiği tespit edilmiştir.

Proje kapsamında gördüğümüz başka bir veri ise okul öncesi öğretmenliği, sınıf öğretmenliği, resim-İş öğretmenliği anabilim dallarında okuyan öğrencilerin önemsediği en önemli derslerden birisi, çocuğun sanatsal gelişimi dersi olduğudur. Bunun nedeni ise; bu derste yapılmış olan çocuk resmi analizleri ve "bir adam çiz" testi uygulamaları ile geçen yüzyılda sanat ve bilim çevrelerinde çocuk resimlerinin ilgi odağı haline geldiğine yönelik örneklerin ortaya konulmuş olmasıdır. Örneğin; Pablo Picasso, Joan Miro Ferra, Paul Klee, Marc Chagall, Raoul Dafy, Jean Dubuffet gibi ressamların çocuk resminden ilham aldıklarına yönelik örneklemlerin perdeye aktarılıp çocuk resimlerinde görülen karakteristik özellikleri ile kıyaslanması ve çocuksu kavramının anlaşılır hale getirilmesi öğretmen adaylarının çocuk resmine ve eğitimine ilgilerini artırmıştır.

Disiplinler arası sanat öğretimi bağlamında, Louis Lankford tarafından sistemleştirilen yansıtmacı, dışavurumcu, işlevsel (araçsal) ve biçimci sanat kuramlarının öğretiminde, öğrencilerin internet sayesinde sanatçıların biçem dilini görme, algılama ve ayrımsama yapabilme; bunlardaki teknik, estetik bağlantıları değerlendirebilmeleri, eski dönemlerdeki öğretim yöntemleriyle kıyaslanamayacak düzeyde öğrencilere sanat alanında kısa sürede kültürel okur-yazarlık kazandırmıştır. Yine bu kapsamda, eğitim ve öğretim sürecinde optimum

düzeyde sınıf ve atölye yönetim becerisi gösterilip çalışmalar öğretim sürecinde gözlem fişleriyle somut olarak takip edildi. Öğrencilerin yapmış olduğu ödev, proje ve uygulamalar not ile derecelendirilmesi sonucu üstün ve mükemmel başarı düzeyi tespit edildi. Bu başarı düzeyini test etmek için Resim-İş, Okul Öncesi, Sınıf Öğretmenliği bölümlerinin II. ve IV. sınıflarında öğrenim gören 140 öğretmen adayına, on sorunun yer aldığı bir anket çalışması uygulandı. Ankete katılanlara, ankette yer alan sorulara evet, hayır ve kısmen seçeneklerinden birisinin işaretlemeleri istenildi. Anket sonuçlarına göre öğrenme ve öğretme düzeyine yönelik %90 oranında evet cevabı alındı. Bilgisayar ve internet imkânlarının olmadığı dönemlerde ki başarı % 50 oranındayken internet, bilgisayar ve ekipmanlarını kullanımından sonra başarı düzeyinin % 40 oranında arttığı tespit edilmiştir. Bu anket sonuçları 2012-2013 eğitim ve öğretim döneminde ankete katılan öğrencilerin notla derecelendirme puanlarıyla paralellik göstermiştir.

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Plus Minus of ICT Usage in Higher Education Students

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Abstract

Information and Communication Technology (ICT) was created in hopes to help people communicate more efficiently and effectively, including the production, dissemination and understanding information. The effectiveness of ICT in education is demonstrated by the achievement of communication objectives, while efficiency is showed by saving cost, time and effort. In use in the educational process, theoretically, ICT would bring positive benefits. For all education participants, both teachers and students, ICT helps to provide a huge and various knowledge as well as up to date and easily accessible in a relatively rapid and in some cases even is free of charge. ICT also help academic community to fulfill one of the obligations of education is to distribute/ communicate science to the public for prosperity. ICT helps distribute knowledge very quickly, with an unlimited geographical coverage, and in some cases it is also free of charge. However, what is the use of ICT in higher education always brings positive benefits? This article describes the use of ICT does not always bring positive benefits or utilized. It was discovered in the institution of higher education in Indonesia, that there is a minus value of the use of ICT. This is due to several reasons but the important one is mental attitude among the leaders of educational institutions, which are associated with organizational policy and student's mental attitudes related to the use of ICT. The result is a low quality of science, the relation between teacher and student is bad, and of course the quality of graduates is low.

Keywords: ICT usage, ICT literacy; attitude; effectiveness; efficiency

Background

Modernization is characterized by the inclusion of technology in human life. It begins with the belief that technology always brings positive benefits to human being. Technology gives such good promises of freedom and happiness, that in fact, both of these are intrinsic values of *humanity*. Therefore, the technology has always been associated with humanity. In social life right now, this belief eventually evolved into the dependence of human to the technology. Its consequence is the establishment of human dependence on technology. It results people behavior are not freewill but rather controlled by technology. This dependence does not correspond precisely with the ultimate goal of freedom that technology created. Furthermore, because there is no freedom, it is difficult to create happiness. Furthermore, in this era the technology has high power. It is equal to or even exceeded the power held by political leaders in the political structure (Feenberg, 2000:131-147). It determines the social and cultural changes, including the social values. So then, technology brings both plus and minus effects on humanity and human life. There is a dialectics of technology.

This article describes the dialectical usefulness of Information Communication Technolgy (ICT) – one kind of technology- in the educational process, particularly in the learning process in higher education institutions in Indonesia, using the case of the University of Atma Jaya Yogyakarta. Dialectics has become very interesting to discuss because Indonesia is still included in the developing countries, which have not been fully or completely recognize and adopt this technology. Traditional values in education are still owned by some of the education community. Some of the traditional values are somewhat inhibiting ICT adoption and innovation. Even the middle class of this country has begun to know and use ICT, the very fast process and accelerated modernization makes an efficiency and effectiveness of ICT usage could not be achieved and in turn the goals of education could not also

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fulfilled. The assumption of this article is the effective use of ICT in education will be achieved if only certain conditions fulfilled, both at the level of the academic community (actor) and education institution (system-structure), including the policy (rule). If these conditions are not met, then the use of ICT has led to the inefficiency and ineffectiveness, including the emergence of *ICT dependency* that leads to the emergence of dehumanization of education.

ICT Usage in Higher Education Institution

There is nothing new about the benefits of ICT in education, especially in higher education. Most of the discussions state that the potential benefits of ICT-based teaching and learning strategies, based on the following two propositions: (1) ICT offers economical efficiency for the organization of education and the academic community, (2) ICT is able to generalize students, enabling the institution to accommodate individual differences such as goal learning, teaching style, comfort learning for both students or university anytime and anywhere (Massy and Zemsky, 1995, Pavlik 1996). In Indonesia, one variable for education quality assessment is the usage of ICT, especially of Information Technology (IT). Ministry of Information and Communications and Ministry of National Education of the Republic of Indonesia formulate 7 strategic roles of IT usage, namely (1) as a repository of knowledge, (2) a learning tool, (3) educational facilities, (4) the standard of competence, (5) supporting educational administration, (6) management tool, and (7) education infrastructure (Indrajit and Djokopranoto, 2006:375-388). Seven strategic roles of IT can be summarized in two major; (1) the functions of management/ administration (back office functions) and (2) learning function (front office functions) (Indrajit and Djokopranoto, 2006:343). Based on the Regulation of Education 2003 Article 1, paragraph 15, the Government encourages education institusion to use ICT to conduct a distance education *(e-learning)*. It shows the technology is recognized to have tremendous positive benefits for the effectiveness of education. It encourages higher education are competing to adopt ICT, even it becomes the important key to create good image and win the "market". Not only do adoption, improving IT and ICT using skill are also part of the curriculum that is perceived very marketable. In fact, it is not only in science-related fields but also in other scientific fields, such as social sciences. Some fields of study even are conducted rebranding by adding the word "industry" or "technology" is certainly associated with the use of ICT, eg 'Biotechnology'- in the past its name is the "faculty of biology", 'industrial sociology' – in the past its name just "sociology". Not only label study program or field of study but also on subjects such as online journalism, e - public relations, and online marketing and advertising. Rebranding and restructuring of the curriculum is believed to be able to build the image and education quality, including encouraging "market" becomes more passionate.

Bates and Wulff, as quoted by Siahaan (2004) mentions some of the advantages of learning by using Internet-based ICT shown in the following: (1) increase the level of interaction between student and teacher or instructor (enhance interactivity); (2) can be done anywhere and anytime. The nature of internet technology that does not require synchronicity allow it; (3) very capable of reaching a broad and global audience, and (4) easy and fast in updating learning materials and storing data or documents. Pavlik (1996) in his study mentions education by utilizing IT in education is more effective and beneficial than the use of conventional instruction technology, in terms of: (1) 30% savings of time, (2) 30% - 40% cost savings, and (3) improving student achievement.

But on the other hand, some papers also mention that the use of ICT will promote the effectiveness of education and learning along supported by a number of conditions, namely: (1) positive attitude of people in ICT, which is indicated by the large number of users and Internet-based ICT services provider, (2) price of ICT devices are relatively cheap and can be purchased by the general public, (3) the ability of the technology to process data quickly and large storage capacity, and (4) the extent of access or communication network / internet (Siahaan, 2004). Rankin and McCracken (Siahaan, 2004) also wrote that the effectiveness of the use of ICT in learning is determined by the ability of lecturers to explain the technological skills that must be possessed by students, and facilities and equipment needed in the ICT learning. On the other hand, students also must meet the requirements such as (1) have a high motivation to learn independently, (2) enjoy reading and like freedom, and (3) still having motivation to pass the grade eventhough fail in a conventional lecture. Perbawaningsih (2005:312) states to be able to conduct ICT-based learning and to achieve the learning effectiveness, we need (1) ICT tools, such as hardware, software and dataware with standardized operational capabilities; (2) human resources that have a positive attitude to technology and high ICT literacy; (3) institution has positive attitude and conducive organizational climate.

How do the conditions in Indonesia? What are the factors that determine the effectiveness of the use of ICT in education and learning? From the aspect of ICT tools and technology applications for education, the government of Indonesia already has positive commitment. This is demonstrated by the providing of ICT *backbond* of Higher

Education. The project is prepared to build the ICT infrastructure of all universities in Indonesia (Riandi, 2010). From a technical aspect, Indonesia is well advanced. It is shown by the following infrastructure developments (Purnomo, 2009):

1. 1999-2000: Network Internet (Jarnet)
2. 2000-2001: Network Information School (JIS)
3. 2002-2003: City *Wide Area Network* (WAN cities)
4. 2004-2005: *Information and Communication Technology Center* (ICT Center)
5. 2006-2007: *Indonesia Higher Education Network* (Inherent)
6. 2007-skrg: National Education Network (Jardiknas)
7. 2008-skrg: *Southeast Asian Education Network* (SEA EduNet)

Along with the development of the ICT infrastructure of the many educational institutions begin to develop *e-Learning*. At the level of higher education, some universities have develop their own *e-learning platform,* including UGM (http://elisa.ugm.ac.id/), Unissula Semarang (http://www.unissula.ac.id/sinau /), AMIKOM jogja (http:// *e-Learning.* amikom.ac.id /), and others. Several other PT *MOODLE platform,* including: ITB (http://kuliah.itb.ac.id/), UNPAR (http:// *e-Learning.*unpar.ac.id /), Gunadarma (http:// *e - Learning.* gunadarma.ac.id /), ITS (http://share.its.ac.id/), UB (http://inherent.brawijaya.ac.id/vlm/), Unitomo (http:/ / *e-Learning.*unitomo.ac.id), IST AKPRIND (http:// *e-Learning.* akprind.ac.id /), and other (Sutanta, 2009). But on the other hand, Public Sector Director, Microsoft Indonesia Teja Kusmana assess the Indonesia is still lack of Information and Communication Technology (ICT). One of the major reasons is the limited government budget for the ICT sector. "The cost of government budgeted for the ICT sector is quite limited because they have to share with other sectors is a priority, such as education and health," said Teja in PAD 28 Bar, Bistro and Coffee Corner, SCBD, South Jakarta (retrieved from Okezone, 11/13/2012). However, when referring to the quote above Sutanta, despite the government's budget for ICT is not much, the ICT budget allocation for education is quite large. That is, the commitment of the government and the private sector to promote the use of ICT is quite strong. But what do about the conditions in Indonesia on aspects of human resources or users of ICT? Are they have sufficiently mental and skill?

ICT Literacy and the Influencing Factors

The degree of ICT literacy is indicated by knowledge, attitude and behavior toward the information and technology. Lowest degree is shown by having low knowledge about ICT, seeing ICT is unimportant thing, and not using ICT at all for daily life activities, whereas high degree of ICT literacy is characterized by high knowledge, positive attitude and ICT usage for all daily life activities. In this degree, people are called have information culture and become a part of information society. Based on these indicators, the degree of ICT literacy of Indonesian people is low. This group is precisely the generation now holding the power that determines the future (Indrajit and Djokopranoto, 2006:318) and thus, the adoption of ICT innovation in this nation lags behind other countries. In 1998 a study showed that the level of ICT usage among college lecturer in Yogyakarta, Indonesia is quite high. However, the older generation of teachers, the level of ICT usage is lower, even if they have a positive attitude. It is caused by the inability to operate this technology. It is often called the technology illiterate. In the group of lecturers, ICT is more widely used for word processing. Only a minority of lecturers interact Internet-based communications such as an electronic mail*,* create a blog, transactions via online (Perbawaningsih, 1998). In 2012, Sungiardi, Indonesia computer expert claimed that only 10% of the total population of Indonesia who have truly technological literacy. Even in Indonesia there are about 80 million Internet users, but it is limited to the use of social networking Facebool and Twitter (www.tempo.co , retrieved on March 8, 2013). This meant that there were 23.9 million people of Indonesia who have a high level of ICT literacy, and most of them are having high educational background. Other references show that there is 63 million Indonesian people use internet or 24.23% from the total of population. It means that Indonesia is the country with the eighth largest in the world internet users. While the use of twitter Indonesia is in fifth position in the world. The Internet usage is 3 hours a day per person (Intisari, April 2013). However, there are only 23.9 million people of Indonesia who have a high level of ICT literacy, and most of them are of high educational background. Indrajit and Djokopranoto (2006:325) stated that most of the researches in Indonesia showed that the main issue of the various aspects of the digital divide focuses on the quality of human resources. In other words, the level of individual competence or skill in using ICT in everyday life is still low. Thus, the accumulation of these individuals forms a digital blind society or blind of technology.

In recent years, studies have shown that *ICT literacy* in high school and college is quite high (Sutanta 2009, Wahyono and Pujiriyanto 2010). This is due to the amount of the institution's commitment to the two cases above to take advantage of Internet-based ICT for education and learning. The adoption of innovation by the organization is then followed by the adoption of innovation at the individual level. On the other hand, the study also noted that the characteristics and individual attributes play an important role. Wahyono and Pujirianto's research (2010) states that a high socioeconomic class and achievement associated with ICT Literacy are also high.This study did not differ from the results of research Perbawaningsih (1998) which states that a positive attitude and a high level of ICT utilization is determined by several factors such as the degree of familiarity on ICT, the degree of ICT information seeking and the types of needs. If you refer to this study, it becomes difficult to rank ICT literacy. In the group that did not require a lot of applications of ICT in support of the work, the degree of ICT literacy is likely to be low. However, this low degree should not be understood as digital technology illiterate or blind.

Perbawaningsih (2013) update the results of research in 1998 on the level of attitudes and level of use of ICT on higher education students. This research takes the case of students of Communication Studies University of Atma Jaya Yogyakarta. This research found that ICT literacy students are high. Almost all students have computers in their homes, with a fairly high technology and newest specifications. Most of them said that their computers are connected to the Internet. It can be said that the students have a good access to seek data and information. In another aspect indicated that half of the students use and able to operate multiple applications, such as word processing, data/statistical processing, photoshop, movie maker, including social media applications. Level of use and the ability to use ICT is even beyond the expectations of faculty. However, the level and type of application usage are apparently different in different types of needs and demands related to the completion of tasks or study. They also considered that the use of ICT is quite help complete these tasks more easily and quickly. They also feel the considerable benefits of ICT, namely ease of obtaining data or information related to the science assignments or scientific papers or for a presentation in class.

The same study shows ICT literacy of lecturers in the high category despite the tendency of ICT literacy is lower than the students. Lecturers who ask their students to use ICT to accomplish tasks typically have the ability to use ICT. In learning process, lecturers or instructures are also using ICT. Use of the Internet in the classroom is frequently used to download learning materials. It encourages student interest in the course, including to the teachers. Also common, lecturers are using social media to interact and discuss the learning materials to the students. However, the use of ICT by teachers in the course is not related to final grades students on the course.

Referring to these studies it can be concluded that the level of skills and the use of ICT in education (teachers and students) are quite high. It is influenced by several factors, namely (1) individual characteristics, (2) support of organizational commitment, including the demands of the faculty, and (3) the availability of facilities either individually or institutionally. However, this finding might not be used to generalize the ICT literacy of students and lecturers in Indonesia, especially universities in rural areas. It is caused by the economic/ financial viability of each university is different and varied. The universities that exist in these areas tend to have difficult access to education networks (Internet-based) as well as the technical ability of the *hardware, software* and *dataware,* the small number of ICT instructors, and low levels of commitment to the needs of the organization or the adoption of ICT. It is strengtened by the fact that teachers in rural areas in Indonesia rarely used ICT for distance learning (Kompas, May 28, 2012).

Minus Factors of ICT Usage

When one of the factors supporting ICT literacy is not met then the effectiveness of education tend to decline or even become ineffective. Malfunctions of ICT is also one thing that happens, especially when the mental attitude of the user and not appropriate with the nature or purpose of ICT adoption. One form of facility malfunction of "copy and paste" is plagiarism. The ease and speed of getting data - or even paper - pushing students to simply download, without mentioning the source citations that paper or paper is just a collection of quotations obtained from *browsing* the internet. Implications of Internet-based ICT utilization is an abundance of knowledge. This will result in a very high ambiguity for education community. A certain students would likely avoid exposure to information due to the ambiguity caused cognitive discomfort. This situation is certainly not conducive to the achievement of learning objectives. In this case, the lecturers still have an important role as a facilitator to select and sort, and if necessary to reduce the information and frame or reframe the interpretation of the information. However, for other certain students the efforts can be interpreted as an attempt to limit the freedom of students to construct their own knowledge. On the other hand, ICT also provides convenience and speed of data analysis. On other case, as a consequence of the convenience offered by ICT is a presentation in class activities,

such as using a pointer system. This presentation system encourages students to understand the material, but generally, not on detail, partially and superficially. Similarly, when teachers use this system to deliver the material in class, students are more focused on the look of the presentation rather than an explanation or a more *comprehensive* description of the teachers. At the final evaluation, students tend to rely on the material in the presentation rather than reading thoroughly. Teaching using multi-media presentations, such as playing an audio-visual program, either directly downloaded from the Internet or using a video or DVD player, it does draw attention, but it does not help students to better understand the material as a whole. This is caused by the simplification process description / narrative material into the form of a film which also reduces the detail of the material.

On the other hand, the use of statistical software applications such as *Software porgram for Social Statistics (SPSS)* also encourages students to get instant results but do not understand the data processing. They tend to be a reliable technician but not a thinker/scientist who understand in depth the reasons theoretical/ academic behind any works created by ICT. On the other hand, ICT offers the convenience of Internet-based communication without the constraints of time and place, with a very cost efficiency, but it brought the situation to the relation between students and teachers has only rely on the sense of sight and hearing to obtain symbolic data. Potential differences in interpretation or misperception in conversation is very possible because of the losing data because of the function of the senses of taste, touch and smell can not be enabled. The relationship of teachers and students look like a relationship between robots or between machines because of the lack of emotion and affective factors that are easier to present when there is direct physical interaction. Furthermore, the purpose of the relation between students and teachers tend to be pragmatic, so that values personal such as togetherness that usually characterizes education in Indonesia it becomes difficult to achieve. The learning process that aims to build character and affection, and moral integrity are difficult to realize. In the aspect of reducing the burden due to be replaced by ICT teachers are not always responded positively. Reduction political role also means authority and power reduction. The reduction of the role of the teacher can also be interpreted as a financial reduction. There are many teachers were still comfortable in his position as "boss" for the students, and the presence of ICT actually be a threat. Cost efficiency is a mainstay of the use of ICT is also the potential will not be achieved when technological innovation adoption is not followed by the optimalization of function. As described earlier, the use of ICT with all the facilities offered - this certainly is comparable to the price offered- just more for word processing and communicating via social media.

It can be concluded that the ICT values such as faster, cheaper and better lead to education community emphasize on the achieving pragmatic goals rather than understand the idealism or critical values. ICT capability to produce and reproduce a huge number of the academic papers bring consequences on the process of industrialization that sometimes if it is not careful will bring the education community ignore their idealism. The values brought by technology that is efficient, if achieved, will encourage the abandonment of quality of a process. Orientation of students in learning is no longer a desire to deepen their knowledge and develop the science, but rather on the high grades and finish more quickly. Similarly, higher education also tend to ignore the ideals and compete to produce scholars as much and as quickly as possible. However, in some cases, the efficiency of the use of ICT can not be achieved. Not to mention when ICT literacy and then get stuck on the concept of reliance on ICT for all learning activities, educational and even everyday life. This dependency causes people to lose their independence when ICT is suddenly not working. This is a minus factor of the use of ICT, when: (1) all supporting factors are not met, and (2) when the adoption of ICT ignores or does not consider the characteristics or values that were developed in education and educational organizations. This condition occurs in Indonesia.

Conclusion

The use of ICT in learning in Indonesian higher education can improve the effectiveness and efficiency of learning and education. This is caused by the following factors: (1) ICT literacy in Indonesia in particular students in urban area or cities is already high enough. Not only does ICT literacy, but also the ease of access to ICT. This is shown by most of the students have ICT devices in their homes, and colleges were also providing the facility with excellent and adequate technical skills, (2) commitment to higher education, including policy-makers to make optimal use of ICT in learning and education; and (3) support the government by providing an electronic network that allows the implementation of distance learning as well as education and information science at the higher education. This suggests that the human factor (actor), the policy at the level of organization (system) and commitment of the Indonesian government (supra-system) is quite positive in the process of adoption of ICT innovation in higher education whereas in the same time, they -students- have negative attitude toward ICT. Abuse (malfunctions) ICT resulting in a failure to achieve the educational goals, that is creating qualified human resources, or human who master the science and technology to create nation welfare and prosperity .***

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Potential of Twitter in Post-reading Activities Among Community College Students in Malaysia

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Abstract

Since its introduction in 2006, many studies have been made on the use of Twitter as learning tool especially in language classrooms. These studies, however, tend to look at the use of Twitter as language learning tool in the school, college or universities and rarely in the community college environment. Although it is one of the higher education institutions in Malaysia, community colleges do have vast differences with other institutions in terms of students' educational background and learning motivation, lecture duration and semester, mission and vision and lecturer expertise. Thus, this paper describes a survey study using a Fuzzy Delphi method to investigate the potentials of using Twitter for post-reading activities among Malaysian community college students. The main focus of this study was to get experts' consensus on the future of Twitter and its usage in language learning in the future for community college students. Experts consisted of experienced community college English lecturers and curriculum developers and academic specialists from the Community College Department, Ministry of Higher Education. Findings indicated that low level of Twitter usage among lecturers and students make Twitter as a learning tool rather vague in the future. This article discusses the reasons behind the moderate level of Twitter usage and the direction for future research in implementing Twitter in the language learning classroom.

Keywords: Twitter; post-reading; community college; Fuzzy Delphi.

Introduction

The use of Twitter for educational purposes has been of interest to many researchers and they have produced many studies showing positive correlation between Twitter and various aspects of education (Borau, Ullrich, Feng & Shen, 2009; Junco, Heibergert & Loken., 2010; Veletsianos, 2011). However, most of these studies are focusing more on the current state of technology and education and giving less focus to its future potential. There are even fewer studies that relate educational function of Twitter and how it can benefit community college students in developing their reading skills.

Due to the nature of the course and the emphasis on skills and training, English is given less attention by the community college students and it leads to poor proficiency especially reading skills. While one of the objectives of the community college is to create a knowledgeable community (*k-community),* reading fluently in the target language will definitely help to achieve the objective mentioned above. Thus, Twitter is seen as the most suitable learning tool for community college students to use the target language effectively, effortlessly even outside their classroom. Our main concern, however, is how long can Twitter potentially serve as a language learning tool? With the increased awareness and uses for other microblogging services such as Tumblr, Pownce and Jaiku and recently Edmodo (Holotescu & Grosseck, 2009), is the use of Twitter as the language learning tool for community college students still relevant for the next 10 years?

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We begin by looking at a few studies showing the benefit of Twitter in education. Since its launch in July 2006, many studies have been conducted to understand the functionality of Twitter and its benefit to educators (Stevens, 2008) but there are few yet growing numbers of studies to investigate the relationship of Twitter and language learning situations (Lomicka & Lord, 2011). Several studies also show that not only students can benefit from educational usage of Twitter; scholars can also participate and use their social network for professional purposes. Veletsianos's finding indicated seven themes of scholars' Twitter practices and activities and one of the themes is "*expanding learning opportunities beyond the confines of the classroom*" (2011). Compared to Facebook, another popular social networking site which is more popular and commonly used by college students, Twitter primary functions as microblogging platform and ongoing public dialogue has attracted educators to use it as part of their college courses (Antenos-Conforti, 2009, Ebner et al., 2010; Grosseck & Holotescu, 2009; Junco et al., 2011; Schroeder et al., 2010; Smith & Caruso, 2010). This is reinforced with the findings from Junco et al., (2011) research where a group of students who use Twitter showed higher semester GPA than a group who did not; while a study conducted by Kirschner and Karpinski (2010) showed that Facebook users having lower GPA. Dunlap and Lowenthal (2009a, 2009b) stated that Twitter also has instructional benefits which are "*enhancing social presence, maintaining relationship, supporting learning, writing concisely and for an audience, addressing issue in a timely fashion, and connecting classmates and instructor*". With all the findings from the few studies above we can conclude that even though many studies have been done on the topic, still not much research exists on the potential of Twitter in the future. This research is significant because previous work has shown that positive attitudes are usually shown toward new technologies (Beauvois, 1998; Chen et al., 2004; Ducate & Lomicka, 2009; Ushida, 2005). We need to see the potential of Twitter in education and language learning as the novelty wears off and its survival with the emergence of new educational microblogging sites such as Edmodo.

Apart from these studies focusing on current technologies and the education scenario, most of the literature is usually directed to Twitter and its benefit to the communicative and cultural competence of the language (Borau et al., 2009). It would be interesting if there are many studies that show correlation between Twitter and how it can develop reading skills in a second language. Existing studies on community colleges also tend to investigate the current issues such as the most appropriate teaching method to teach certain courses and the effectiveness of the programs offered in providing and preparing student for employment (Hassan, 2011; Madar et al., 2009). Since community colleges in Malaysia are relatively new compared to other countries and doing research is not necessary for its educators, it is considered an urgency to build a body of knowledge that can help improve the quality of this institution in the future.

By looking and examining potentials of Twitter in education; and how it can develop reading skills among community college students, educators can adapt and apply Twitter into their lesson if this paper can prove that Twitter does have potential in developing reading skills. Policy makers and curriculum developers in the Community College Department in the Ministry of Higher Education can encourage educators to use Twitter not only for their lessons, but among educators in all 80 branches of community colleges in Malaysia. This can help educators to share ideas, request assistance and offer suggestions and to connect and network among educators in similar or different fields of teaching. Administrators can plan and provide internet connection, computers or any technological equipment and staff to facilitate the implementation of Twitter in language courses at all community colleges.

1.1 Twitter in Education

In line with an effort to foster and produce more autonomous learners, computer-assisted language learning (CALL) is seen as the best way to help achieve this aim. Blogs, for example have been used widely in classrooms to provide diversity in language learning, depending on pedagogical purposes (Lee, 2011). Lee stated that by writing blogs, learners can decide what, how much and when they want to publish their work (2010). Students can also develop their "*ability to plan, understand and regulate their own language learning*" (Baggetun & Wasson, 2006; Ward, 2004, as cited in Lee, 2011). Microblogging however, is a service that allows users to post their thoughts, share pictures, videos or links but with limited characters and smaller file size. Oulasvirta et al. (2009, as cited in Veletsianos, 2011) defined microblog as a service that allows users to write updates by using either mobile devices or personal computers and publishing them on the Web. A few microblogging tools falling under the category of Web 2.0 such as Jaiku, MySay, Hictu, Edmodo exist but the most popular of these tools is Twitter. With the increasing number of smartphone users from all levels of society, from toddlers to senior citizens, it is not surprising if Twitter is seen as a new medium that can help provide diversity in language learning. What set Twitter apart from

other microblogging tools or weblog is its features as part microblogging tool – part social networking tool that can enable users to access freely on the Web (Stevens, 2008 as cited in Bicen & Cavus, 2012). McFedries (2007) as well as Holotescu and Grosseck (2011) stated that microblog is different from weblog because of its social network structure feature. In short, Twitter is more interactive, allows user to be more creative with words (due to limited characters in a post), gives instant feedback, can be accessed easily and helps users to connect with people all around the world. It is not surprising that Twitter made its way into education and language learning, given that the number of tweets per week average around a billion (Smith, 2011). When an increasing number of language teachers and educators started implementing, assimilating and using Twitter as part of their teaching and learning, many studies have been done on the correlation of Twitter in language learning and education in many different aspects.

Research done by Lomicka and Lord (2011) proved that Twitter can help language learners form a collaborative community where they can learn, share and reflect. The sample consisting of thirteen students enrolled in an intermediate French course in a south eastern university in the United States and twelve native French speakers enrolled in an intermediate-high English conversation course in France shows that Twitter allows learners in both languages to develop a sense of community. They also learn a new language in a fun and interactive way.

A study conducted by Borau et al. (2009) to analyze the usefulness of microblogging (Twitter) in second language learning shows that Twitter can help second language learners to train in communicative and cultural competence. This is because the traditional language teaching method rarely gives the learner the chance to produce the target language actively and as a tool of communication. Junco et al. (2010, 2012) in his researches focused more on Twitter and student engagement. His research proved that Twitter, if using in educationally relevant ways, had a positive effect on student engagement, as well as having positive effects on students' grades. Junco et al. also proved that to improve student collaboration, engagement and success, faculty has to be actively participating and integrate Twitter into the course.

Few researchers have tried to look Twitter and its benefit to the educators. Veletsianos (2011) indicated that higher education scholars participate and use twitter for seven reasons. First, to share information, resources, and media related to their profession. Second, they use Twitter to share information about their classroom and students, followed by to request assistance and offer suggestions to others. Other reasons are to engage in social commentary, engage in digital identity and impression management and seek to network and make connections with others. Finally, higher education scholars use Twitter to highlight their participation in online networks other than Twitter such as YouTube and Facebook.

Bicen and Cavus (2012) summarized Twitter as a "*part social networking – part microblogging tool, freely accessible on the Web*". In their research on Twitter usage habits of undergraduate students, they have found that the majority of students spent their time using Twitter to share quotes, photos, videos, music, news, IT news and magazine news while educational material were least frequently shared by students. This gives a new insight of Twitter use in a classroom and the move to produce autonomous learners. This is because educators might wonder whether students' participation when Twitter in being used in the course is voluntary or because it is graded. This doubtful thought is being supported by a research done by Haytko and Parker (2012) where their research confirmed that students actually do not see any social networking sites; be it a Twitter or Facebook, as appropriate tools to be used in the university setting. Many students might create a new Twitter account for educational purposes if Twitter is part of their course requirement.

Elavsky, Mislan, and Elavsky (2011) in their study tried to see the effectiveness of Twitter in a different perspective; which is to explore the outcomes of Twitter usage in large-lecture hall. This is referring to the general courses where the students come with diverse backgrounds, perspectives and knowledge sets. The outcomes shows that Twitter usage in large-lecture hall is generally positive and can help improve students' impressions, participation and enthusiasm.

1.2 Reading Stages

There are four language skills that are considered important in order for a learner to acquire a second language. Those skills are reading, writing, speaking and listening. Reading, however, is seen as the most important skill for a

student to master (Carrell, 1998; Eskey, 1973, as cited in Mohd. Zin & Rafik-Galea, 2010). Teaching reading involves three stages; pre-reading, while reading and post-reading; each has its characteristics and benefits.

Post- reading stage is the last stage in teaching reading. The main purpose is to ensure learner's comprehension and retention of the information of the text that they have already read. It is also to develop and clarify learners' interpretation of the text and help them remember what they have created in their mind individually about the text. Post reading is done in many ways in a language classroom. Some are follow-up by teachers, discussion among learners or doing a graphic organizer and guided reading and discussion. All these strategies can help learners develop their reading skills as well as giving them the needed time to practice in the target language. It is also helpful if the reading material is authentic and written by a native speaker. Guo's (2012) study shows a strong relationship between extensive reading and vocabulary development. This means second language learners can learn better and faster if they have a certain amount of exposure to the target language and not only learning confined in the four walls of the classroom. This leads us to how Twitter can help second language learner learn the target language better.

Usually, a language teacher has limited teaching time in a classroom and can only rely on the students' response as how they understand something they read earlier. Anxiety also hinder students from perform well in the reading classroom thus affecting their reading performance (Mohd. Zin & Rafik-Galea, 2010). Since post-reading is an important stage to ensure learners' understanding of the topic learnt and a way to check their reading skills, due to students' anxiety and limited teaching duration, many teachers choose to ignore this stage. Some teachers gave comprehension activities to achieve the objectives, but it is difficult for them to determine whether the answers are individually written or copied from each other.

By using Twitter where response is quick, communication is interactive and individuality can be seen by individual tweet, teachers can determine and see indirectly which one of their students already developed reading skills, understand the text studied in the classroom and develop their own meaning and perception of the text. There are of course, certain things that teacher should be cautious when using Twitter to help learners develop their reading skills. Teachers should encourage participation from all learners. For example, participation should be graded. Teacher can also fully-use Twitter applications such as hastag, retweet and favorite to make interaction about a reading text more interactive. This is parallel to Bromley's study that develops the idea of the future of reading and writing. In his study, he proposed that pens, pencils and paper will soon be artifacts of the past, electronic reading and writing will be pervasive, collaborative and social events and lastly, speech will replace most writing.

Research Design

Community College is one of the four higher learning institutions for school leavers in Malaysia. The others are public universities, private universities and polytechnics. Contrary to popular beliefs, community college is not for school leavers who do not have outstanding academic achievement, but rather the main objective of community college is to create the lifelong learning environment in Malaysian society. To date, there are 80 branches of community colleges all around Malaysia; these are usually located in rural areas. The major difference between community colleges and all other higher learning institutions is its flexible study mode. Students can opt to study continuously for 20 months until they get the certificate (*Sijil Kolej Komuniti* or *SKK*) or study by module for about three to six months to get *Sijil Modular Kebangsaan*. The difference between the two certificates is that students who opt to do the latter can always complete a module for 3-6 months, continue or look for a job and continue a module again until they finished all 60 credits to get the *SKK*. They are also offered short courses which take less than month, sometimes a day to complete. As for entry requirement, no outstanding academic achievement or any academic certificate is necessary for acceptance.

Thus, given the variety of the duration of the courses and students' background and learning motivation, teaching English is considered as a real challenge in community colleges. English lecturers found it difficult to maintain interest, relationship, and enthusiasm because of several factors such as students' perception toward the language itself, student motivation, constantly changing students and timetable and the emphasis given on the technical subjects.

Methodology

The aim of this study is to examine the possibility of using Twitter for post-reading activities to community college students in order to develop their reading skills. In other words, the purpose of this paper is to study the potentials of using Twitter for post-reading activities among community college students. Studying the potentials of Twitter in the future of language learning involves subjective value judgement and great debate; therefore this study employed the Fuzzy Delphi Method (FDM). FDM is a great method to use when a study needs an effective tool to gather data generated from opinion where these opinions are always imprecise and uncertain. By using FDM, subjective data can be transformed into quasi-objective quantitative data and can facilitate decision making of controversial issues (Tang & Wu, 2010). It is a combination of traditional Delphi Method and the fuzzy set theory. Chang et al. (2000, as cited in Tang & Wu, 2010) explains that FDM can "*processes fuzziness in relation to forecast item and the information contents of respondents*". It also allows researchers to elucidate individual attributes of participants because fuzzy forecasts are utilized and preserved. It is not only a mean generated mechanically but an agreeable score based on the "acceptable value ranges" given by respondents.

This first stage of this study is to conduct interviews with several experts regarding teaching reading, Twitter and community colleges. Experts consist of active Twitter users, language experts from government schools and community colleges, curriculum developers from the Department of Community Colleges and Education and Information Technology experts. The rationale for selecting the experts was based on the assumption that they are experts who understand and active Twitter users themselves, experienced in language teaching, understand the potentials and barriers in the community college curriculum and have deep understanding of how to make Twitter or any electronic devices work in community colleges. The second stage of this study involved distributing questionnaires to 25 English lecturers at community college that have sound knowledge about their subject and have basic knowledge of Twitter. Some of them have a Twitter account, know the function but rarely used it while the others are considered as regular users (5-6 tweets a week). Questionnaires are either emailed, posted or conducted face-to-face.

Results

The main purpose of the interviews was to gather experts' opinions on how Twitter can be potentially used in post-reading activities in English lessons at community colleges. It is also to determine lecturers' attributes that can help achieve this motion and what are the state of facilities and technology needed for this to happen. Six main determinants were identified from the literature as well as experts' answers. The determinants are the future of Twitter, the future of Twitter in the language learning classroom for community college students, the current facilities in the community college, the current technology used in the community college, English lecturers' comprehension and attitude toward reading theory and English lecturers' comprehension, attitude and expectation towards Twitter. Only 30 out of 47 variables of six determinants achieved the experts' consensus. Measures percentage below 75% were crossed out. The final variables were then arranged according to percentage as shown in Table 1.

Table 1: Final variables from Fuzzy Delphi technique arranged according to percentage

No.	Item	Minimum Value	Maxsimum Value	Most Reasonable Value	Score	Ranking
The Final Ranking System						
1	**The Future of Twitter**					
1.4	Twitter will be more accessible with the increased use of smartphones.	9.20	17.20	13.20	13.20	1
1.1	Twitter will remain as the most popular social networking site for the next 20 years.	8.20	16.00	12.00	12.07	2
2	**The Future of Twitter in the Language Learning Classroom for Community College Students.**					
2.1	Twitter will be the most popular social networking site among community college students.	7.20	14.80	10.90	10.97	1
3	**The Current Facilities in the Community College**					
3.5	Community college should upgrade its internet and computer facilities regularly.	10.40	14.40	18.40	14.40	1
3.3	All community colleges are equipped with the internet connection.	9.40	13.40	16.50	13.10	2
3.2	All computer equipment is maintained regularly and in good condition.	8.10	16.00	12.00	12.03	3
4	**The Current Technology Used in the Community College**					
4.4	All community college staff and lecturers like to implement the latest technology in their work.	9.20	17.00	13.00	13.07	1
4.5	All community college staff, lecturers and students are open to the introduction and use of technology for learning purposes.	9.10	17.00	13.00	13.03	2
4.3	All community college staff and lecturers do not have problem using technology for work purposes.	9.00	16.80	12.80	12.87	3

4.2	Technology is used extensively in all community college lectures.	8.80	16.80	12.80	12.80	4
4.6	The current technology used in the community college is sufficient for the development of community college in the future.	8.50	15.50	12.40	12.13	5
4.1	Technology is used extensively in all community college administration.	8.10	15.10	12.00	11.73	6
5	**English Lecturers' Comprehension and Attitude towards Reading Theory.**					
5.5	All English Lecturers agree that reading skills should be emphasized in English lessons at community college.	10.20	18.20	14.20	14.20	1
5.9	All English Lecturers should always look out for ways to improve the quality for their teaching.	10.20	18.20	14.20	14.20	1
5.4	All English Lecturers always look for new methods and ideas in teaching English to their students.	9.80	17.80	13.80	13.80	2
5.2	All English Lecturers fully understand the concept of pre-reading, while reading and post-reading.	9.70	17.60	13.60	13.63	3
5.8	All English Lecturers do not have problem in preparing and giving post-reading activities to students.	9.50	17.40	13.40	13.43	4
5.6	All English Lecturers are creative in preparing reading materials for students.	9.40	17.40	13.40	13.40	5
5.7	Post-reading activities is significant for students to enable them to read in English	9.20	17.20	13.20	13.20	6
5.1	All English Lecturers in community college have TESL (Teaching English as a Second Language) qualification.	9.00	16.80	12.80	12.87	7
5.3	All English Lecturers apply post-reading activities in their lessons.	8.50	15.50	12.40	12.13	8
6	**English Instructors' Comprehension, Attitude and Expectation towards Twitter.**					

6.3	All English Lecturers should have Twitter account and connect with their colleagues.	8.50	16.20	12.20	12.30	1

Discussion

According to the arranged results, summarized in Table 1 in the Twitter and Language Learning determinant, Twitter will be more accessible with the increased users of smartphones. The experts agreed 100% about the usage of Twitter among community college students using smartphones. Nowadays, at this time almost all teens use smartphones in their daily lives. This is a trend for teenagers. They are willing to buy inexpensive smartphones. So, Twitter usage will be easy with smartphones. Moreover, the government had given a 200 ringgit rebate for teens who want to buy a smart phone (beritasemasa.com., Sept 29). The second highest ranking is Twitter will remain as the most popular social networking site for the next 20 years. The experts agreed 95% about this matter because twitter is easily handled by students with smartphones and unlike Facebook where we need a laptop to access it. The other two items have not reached consensus among experts. The items are there will be no social networking sites that can replace Twitter for the next 20 years and Twitter will remain popular because it is easy to set up a Twitter account and use all its features. We predict that most probably, Twitter will be considered outdated like Friendster nowadays. Most of the experts did not master in Twitter features.

Conclusion

Given the nature of Twitter and the current practices in community colleges, it is fair to say that there is still a long way for Twitter to be potentially used in not only post-reading activities but for all academic activities in Malaysian Community Colleges. While almost all English lecturers at the community college are armed with the language knowledge, skills and experience, many still not sure and certain how Twitter can be best used in facilitating language lessons. Not many of them are fans of Twitter, thus making it difficult for Twitter to get its way into the language classrooms. Current technology and facilities are also one of the issues for Twitter to be taken seriously as a language learning tool. Since community college students mostly are part-timers and live in rural areas, the number of students who can afford a smartphone and the mobile plan is also questionable. The point of using Twitter is students can learn anywhere even if they are not in the community college area, but while the internet connection at the college is what we can categorize as mediocre, the objectives are hard to achieve if students can only have access if they are within the community college grounds.

Twitter has always been overshadowed by Facebook and it is only a matter of time for a new social networking site to replace Facebook in a few years' time. If by promoting Twitter today to be used in community college results in lukewarm results, it is better for curriculum developers to look for and try a better, newer social networking site to be developed as part of the requirement of the English course. This way, lecturers and students can learn and explore a new technology together. As such, a final recommendation is to suggest for English lecturers at community colleges to embrace the current and new social networking site and try to look for the best way to use it in the classroom since it is easier than changing the modular study mode.

Given the exploratory nature of this study, the main challenge is to find English experts in community colleges who are active users of Twitter. Further study is required to see the acceptance of new technology among English lecturers and community college students to determine how best to integrate any latest technology or Web 2.0 tools in a language lesson.

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Potential of Video Games in Learning Bahasa Melayu Vocabulary Among International University Students in Malaysia: A Meta Analysis of Selected Journals

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Abstract

This study uses a meta analysis to analyze several current articles published by selected journals by focusing on studies related to the potential of video games in Bahasa Melayu vocabulary learning by international students. Among the aricles are those in journals such as *Computers and Education*, *Computers in Human Behavior*, *Education Technology Research Development*, *Procedia Social and Behavioral Sciences*, *Australian Journal of Language and Literacy*, *Computer Assisted Language Learning*, *Educational Technology & Society*, and *Scandinavian Journal of Educational Research* published between 2003 and 2011. For this study, only 15 articles were focused on out of 33 articles in journals published between 2003 until 2011. Nevertheless, only 9 articles were identified using the key words video games and language learning. In terms of methodology, most of the articles were literature reviews followed by case studies and experimental studies. Some articles combined quantitative and qualitative approaches. Findings from all the articles reviewed show that video games have potential as effective teaching aids and are capable of motivating students in language learning.

Keywords: Video games, Vocabulary, Language learning, Meta Analysis

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1. Introduction

Commercial video games have long been in the market since they were first introduced in 1958 such that today they represent various types or genres (Kudler, 2007). Each genre of video game has its story line or narrative in various levels and characteristics. Part of the traditional video game contains genres such as '*first-person shooter*', '*role-playing*', '*action*', '*adventure*', '*sports*', and racing as well as strategy.

If seen from reality and research carried out in the west, many agree that video games have educational value and the potential for use as effective and enjoyable teaching aids as stated by Papastergiou (2009) and Moreno (2008). Discussion related to the potential of video game in education was done by Prensky (2001, in Papastergiou, 2009); the conclusion was that electronic video games have attracted the interest of academics who see the potential of video games as giving motivation to teenagers if the games are integrated with learning activities as stated by Prensky who had introduced electronic games as "digital game-based learning".

Studies by researchers in curriculum and instructural technology have found that computer and video games are among the most popular in designing video games suitable for learning needs (Squire, 2003). The views of other researchers such as Jenkins dan Klopfer (2003) on video games is that one way to enhance motivation and quality in learning is through use of video games as a learning tool (Moreno, 2008). Video games represent an enjoyable and attractive element and this advantage should be absorbed in learning.

Papastergiou (2009) stated that several researchers agreed that the learning climate with video will be more enjoyable and effective compared with the traditional learning environment. Oblinger (2004) as cited by Papastergiou (2009) stated that video games have potential in changing the learning environment to one that is better based on several reasons; a) such games are multi-sensory, active, offer novel experiences, and problem based learning; b) give and increase experience and existing knowledge; c) provide fast feedback for hypothesis testing and learning based on action research; d) give opportunity to students to undertake self-assessment through scores; and e) enhance the social interaction environment between players or students.

Gamers can learn how to interact among themselves through their environment such as forming player groups online or "game-related information and resources" (Papastergiou, 2009). Several studies that have evaluated the use of video games in various academic disciplines such as mathematics, science, language, geography, and computer science have shown positive effect on student motivation and effective learning for achieving curriculum objectives (Papastergiou, 2009).

Furthermore, Tuzun (2008) stated that the future scenario for trends in video game technology in geography education is the application of 'MUVEs.' Researchers also have combined 'three-dimensional (3D) environments' in designing computer video games in geography learning. Virvou, Katsionis dan Manos (2005) in Tuzun (2008), for example, have created the computer video game VR-ENGAGE for teaching geography subject to grade four students.

Besides that,the effectiveness in designing educational video games must be achieved by balancing the educational value with enjoyment in learning. According to Moreno (2008) this is because the teaching and learning process (T&L) requires effective teaching techniques to achieve learning objectives.

Three types of initiatives were suggested by Moreno to achieve effectiveness are: 1) multimedia approach is very much related to content presentation; 2) using existing video games in the market for learning; and 3) existing video games that have been developed must be balanced between education and enjoyment or pleasure in learning.

Hence, the learning of Bahasa Melayu now must change in the application of the latest technology so that it is aligned with developments in video game technology that has been integrated with various academic disciplines. With the use of this teaching aid, language learning can be implemented more effectively besides increasing student motivation.

2. Background on Bahasa Melayu subject for International Students

Rusdi Abdullah (2001) stated that the flood of foreign students who some here for further studies in public (IPTA) and private (IPTS) tertiary institutions in Malaysia is more pronounced. Consequently, the Education Act Amended 1995 clearly states that Bahasa Melayu is compulsory to be taught to all foreign students undergoing studies in IPTS. The above teaching is aimed at exposing students to the basics of Malay language such as phonology and spelling system, basic vocabulary, casual conversation, sociolinguistic aspects, reading and understanding simple examples and writing. According to Rusdi also, adult foreign language students have exceeded the critical period in the language learning process especially in mastery of sound (phonology) but they have advantages in other language aspects. Their knowledge of their mother tongue can help facilitate the learning process such as analysis of morphology aspects, syntax, and semantics of the language.

Awang Sariyan (2006) viewed that the Bahasa Melayu teaching program for international students is to fulfill the needs arising from the role of bahasa Melayuas a language that is studied in various centers of learning all over the world. BahasaMelayu has its own position in the development of major world languages until there is a need for its teaching to foreign language learners although not as widely as the teaching of English.

Based on the experience of the International Islamic University Malaysia (IIUM), the BahasaMelayu course for foreign students is compulsory for all foreign students at the university. According to Siti Baidura Kasiran and Nurul Jamilah Rosly (2011) in the context of Malay language learning, many foreign students taking first degree courses at IIUM learn BM as a third language. These students not only have to learn BM, they must pass it as a requirement for graduation. The Bahasa Melayu course for foreign students was made compulsory for all foreign students at IIUM as decided by the Senate Meeting in April 1991.

This course was split into two levels, Bahasa Melayu I for Foreign students (LM 1010) and Bahasa Melayu II Course for Foreign Students (LM 1011). The credit hours for this course is 50 minutes for every meeting/class and classes are held twice a week (Siti Baidura Kasiran & Nurul Jamilah Rosly, 2011).

Fai'zah Abd.Manan, Mohamad Amin Embi and Zamri Mahamod (2010) stated that the National Accreditation Council (LAN) or now called Malaysian Qualification Agency (MQA) has created the National Language Syllabus specially for foreign students. Among the aims and objectives of teaching bahasa Melayu to foreign students in IPT di Malaysia are to enable them to master the basic skills in Malay language. Among the aims and objectives are:

i. Know the speech system, rumi spelling system, vocabulary and grammar of Malay language;

ii. Able to listen to and understand conversations in various daily situations;

iii. Able to speak and understand simple reading materials and;

iv. Able to express ideas and feelings in verbal and written form.

3.   Statement of the Problem

Fai'zah Abdul Manan et al. (2010) noted that most foreign researchers of BM in Malaysia who follow the BM course in tertiary institutions found such courses to be facing problems, weak, and fail to impart the requisite BM skills in the stipulated period. The present group of researchers quote the statement (Asmah, 2003; Fai'zah et al., 2009; Marzalina, 2005) that in many higher education institutions the method of teaching BM to foreign students still uses conventional teacher-centered approaches. According to Awang Sariyan (2006) in Fai'zah Abdul Manan et al. (2010) such approaches are deemed successful and can be determined as effective approaches after categorization by level and grouping according to the aims and needs of the foreign students who are learning BM.

Several researchers in Malaysia and the west concur that BM is a difficult language to master as a foreign language if the student learning it is not interested and lacking in confidence, has no need or motivation for the BM being learned (Jyh Wee Sew, 2005; Metzger, 2009; Pogadev, 2005,in Fai'zah Abdul Manan et al., 2010).

Based on the above problem situation, the BahasaMelayu subject for international students is very much in need of teaching aids that are effective in overcoming the disadvantages in the use of conventional approaches in teaching and learning. Similarly with the problem of bahasa Melayu that is said to be difficult to master resulting in students lacking in confidence, not wanting and not being motivated; all these might be overcome using video games as effective teaching aids capable of enhancing student motivation.

In Malaysia, many video games of various genres are in the market for commercial use and such games are the trend for teenagers and children today. In fact, the development of video game has crept into bahasaMelayu learning especially for foreign students. The potential of video game in the curriculum has been studied at length by researchers and curriculum experts in the west who have long developed video games in education (e.g., Gee, 2003; Moreno, 2008; Papastergiou, 2009; Prensky, 2001; Squire, 2003).

Behind the debate on the issue of video game playing lacking potential in education as stated by Van Eck (2006, as cited by Moreno, 2008) who touched on the cost of developing video games, the difficulties in integrating video games into the curriculum; and Michael dan Chen (2006) who touched on the need to evaluate the quality of video games in the learning process; Moreno (2008) suggested several alternatives or new approaches in focusing on a design for video games. Many video games of various genres in the industry have been identified as suitable for education. Existing commercially available video games also have potential for adaptation for use in learning; for example, the video game known as '*SimCity'* dan '*Civilization Sagas'*.

In the context of language learning, studies on video games have been done by many researchers(e.g., Laleh & Nasrin, 2011; Muhammet Demirbilek, Ebru Yilmaz & Suzan Tamer, 2010; Piirainen-Marsh& Tainio,

2009; Ranalli, 2008; Walsh,C, 2010;Yildiz Turgut & Pelin Irgin, 2009) and these have touched on the types of video games such as *The Sims*, *Massively Multiplayer Online Role Playing Games* (MMORPGs) and effectiveness of video games in language learning especially in English as a Second Language or English as a Foreign Language. Most research studies by the researchers mentioned were in the form of literature reviews and discussions. Studies have to be carried on with design of video game or developing video game prototype suited to language learning other than *The Sims*, MMORPGs and online video games.

Nevertheless, in Malaysia there exists a study byKamisah Osman and Nurul Aini Bakar (2011) on the implementation and limitations of computer video games in Malaysia from the perspective of Chemistry subject, showing that curriculum design in video games is still new and in the research stage in Malaysia.

Video game in language learning was done on Arabic subject by Muhammad Sabri Sahrir and Nor Aziah Alias (2011). Their findings show that online video games succeeded in enhancing achievement, motivation and positive attitudes of students toward Arabic language learning. However, the video games developed were still limited; students hoped that these video games will continue to be used as teaching aids in Arabic language learning.

Because studies on video game playing in language learning were done mostly on English and Arabic, and because the approach for teaching BM to foreign students is stillconventional in nature, we feel that this study is necessary to investigate the potential of video games in the aspect of BM vocabulary learning among international students. Hence, this study anticipates video games will become effective learning aids capable of enhancing the motivation in learning of Bahasa Melayu among international students.

4.   Objectives

In general, this study is aimed at investigating the potential of video games in Bahasa Melayu vocabulary learning for foreign students. Shih, Feng, and Tsai (2008) stated that meat analysis is the best way to identify articles veruy much related to the field of study.

This study is implemented to answer the following research questions:

1.   What is the percentage of research papers related to the chosen topic?

2.   What were the titles of selected articles related to the potential of video games in learning Bahasa Melayu vocabulary for international students?

3.   What methods were used in the selected articles related to the topic of research?

4.   What is the comparison in research findings obtained from the articles?

5.   Methodology

This study uses meta analysis to evaluate past research articles. Besides qualitative analysis, this study uses descriptive statistics to analyze data. According toLipsey dan Wilson (2001) meta analysis is a systematic technique for describing, analyzing, making conclusions on quantitative studies for some topic or question.

This study analyzes several current articles published with focus on studies related to the potential of video game in the Malay language (BM) curriculum for intgernational students. Among the articles obtained were those from the journals*Computers and Education(CE)*, *Computers in Human Behavior(CBH)*, *Education Technology Research Development(ETRD)*, *Procedia Social and Behavioral Sciences(PSBS)*, *Australian Journal of Language and Literacy(AJLL)*, *Computer Assisted Language Learning(CALL)*, *Educational Technology & Society(ETS)*, dan *Scandinavian Journal of Educational Research(SJER)*. Among the reasons for choosing these journals were: the articles in the journals were categorized under the jurnal articles of the Institute for Scientific Information(ISI) and development article and the articles were related to the theme title namely video game technology and curriculum or language learning. Meanwhile, only 15 articles were chosen from 33 articles published in the journals from 2003 until 2011 to be focused on in this study. However, only 9 articles were obtained using the key words video game in language learning.

6.   Findings of the Study

7.1. Analisis of articles

The research shows a total of 15 aricles out of 33 published in eight journals between 2003 and 2011 were related to the potential of video game in vocabulary learning of Malay language for foreign students. Data were analyzed according to year of journal publication as shown in Table 1.

Table 1

Percentage of 15 Published Articles According to Selected Journals in the Meta Analysis (2003- 2011)

	2003	2007	2008	2009	2010	2011	Total(%)
CE	1(6.7)			1(6.7)			2(13.3)
CHB			1(6.7)				1(6.7)
ETRD		1(6.7)				1(6.7)	2(13.3)
PSBS				1(6.7)	2(13.3)	1(6.7)	4(26.7)
AJLL					2(13.3)		2(13.3)
CALL			1(6.7)		1(6.7)		2(13.3)
ETS						1(6.7)	1(6.7)
SJER					1(6.7)		1(6.7)
Total	1(6.7)	1(6.7)	2(13.3)	2(13.3)	6(40)	3(20)	15(100)

*Note.***CE**– *Computers and Education,* **CHB** – *Computers in Human Behavior,* **ETRD**- *Education Technology Research Development,* **PSBS** - *Procedia Social and Behavioral Sciences,* **AJLL**- *Australian Journal of Language and Literacy,* **CALL** - *Computer Assisted Language Learning,* **ETS** - *Educational Technology and Society,* **SJER** - *Scandinavian Journal of Educational Research*

Based on Table 1, the journals CE, ETRD, AJLL and CALL each recorded 13.3 percent, while CHB, ETS and SJER recorded 6.7 percent, followed by PSBS at 26.7 percent. From 2003 until 2011, the year 2010 recorded the highest percentage for articles in the selected journals, as much as 40 percent. Among all the eight journals selected, PSBS recorded the highest percentage of published article son the topic, namely 26.7 percent.

7.2 Titles of selected articles related to potential of video games in learning of Bahasa Melayu vocabulary for

international students at Malaysian higher learning institutions

Subsequently, the title of the article was analyzed according to category. Studies were analyzed according to themes for categories in the articles reviewed. Among the categories derived from articles are:

7.3 Designing video games in education

Several views of researchers regarding video games with video educational value and enjoyable were stated by Aldrich (2004) in Moreno (2008); Aldrichstated that feedback receievd from students on video games was positive; students said the games enhanced their motivation. For example, 'The monkey wrench conspiracy'was of the type'first-person shooter'that used computer as a teaching aid. The same with 'Virtual Leader'that focused on teaching a complex subject such as the role of a leader. Video games in the form of'action' such as 'Slow Pace', 'Reflection', 'Study of Environment', 'Problem-solving make point' and 'Click adventure games' are relevant from the pedagogical perspective.

Moreno et al.(2008) suggested that design of video game should balance the pedagogical needs with the enjoyment factor that is difficult tto understand; the second aspect is an issue more in the high profile entertainment industry. According to Moreno (2008) in general design of games can support pedagogical approaches with several characteristics: adaptation to real time, suited to learner needs, evaluation and grading in play as well as integration with online learning.

Brett dan Jon (2011) said design of educational video game can enhance motivation of students especially grade 9 students in English subject. Ricardo Rosas et al.(2003) observed that design of video game showed positive effect on student motivation through use of video game as an experimental tool in the experimental group for the subjects of mathematics, reading, and English language comprehension and spelling.

7.4 An Interactive Learning environment

Video games are one of the channels of interactivity through the virtual world. A new learning environment has been shaped through video games online or through the internet. Ahmer Iqbal, Marja Kankaanranta and Pekka Neittaanmaki (2010) opined that the virtual world is able to enhancethe need for interaction through social networks and heighten the experience of video game play.

Apperley (2010) suggested that cyber text shapes complex interactionor an action allowed in video games. According to Apperley, video games allow students to shape a wider social context. Besides that, application of virtual 3D through 3DVWs is able to expose students to interactive and collaborative learning environments (Ibanez et al., 2011).

7.5 Video Games Enhance student motivation

Dickey (2007) noted thatMassively multiplayer online role-playing games (MMORPGs) are able to enhance students' intrinsic motivation. Dickey is supported by Peterson(2010) who found that MMORPGs showed enhancement of motivation and enjoyable learning in students through videogame-based interaction.

Papastergiou (2009) stated that video games based on physical and health education subject have the potential to motivate students to adopt a healthy and active lifestyle. Laleh Aghlara and NasrinHadidiTamjid (2011) meanwhile found that students from their experimental group who learned language using video games were more motivated as compared to the control group taught using conventional methods.

7.6 Video games in language learning

Based on findings of the study, aspect of video games in language learning proved that video game plying has the potential to be an effective learning aid. Walsh (2010) noted that experiential learning shows that students as players practised systematic literacypractices through video game play in learning English curriculum. YildizandPelin (2009) endorsed the effectiveness of video game playing in teaching based on online video technology based environment especially in learning vocabulary skills).

The use of video game as instructional support tool can also give positive effect on the way computer games are used in learning, the characteristics of play, appliances and class software infrastructure as well as the perception and attitude of teachers and students toward computer video games (Muhammet Demirbilek, Ebru Yilmaz & Suzan Tamer, 2010).Ranalli (2008) stated that computer simulation games such as *The Sims*have potential for use in language learning programs especially in learning English as a Second Language (ESL) for students with varied backgrounds. Students are actively involved in collaborative video game activities in language subjects having flexible resources and students can undertake self learning in operating and experiencing playing of the video game (Piirainen-Marsh & Tainio, 2009).

7.7 Methods used in selected articles

Data analysis of 15 articles found that all used one out of 5 methods consisting of literature review, case study, interview, experiment and mixed method.

Based on Table 2 there were 5 articles using literature review methodology, representing 33.3 percent of articles selected in the study; case study and experiment were represented by three articles or 20 percent respectively. Only two articles used the interview and mixed methods, representing 13.3 percent respectively.

Table 2: Methodology Used in 15 articles

No.	Methodology	Percentage (%)
1.	Literature review	33.3
2.	Case study	20
3.	Interview	13.3
4.	Experiment	20
5.	Mixed method	13.3

7.8 Comparison of Research Study Findings

Based onTable 1, analysis showed the percentage of research findings obtained from the 15 articles. The findings obtained found that there were 8 types of potential video games discussed by the researchers in the articles. From the analysis, motivation recorded the highest percentage (40%), followed by interactions in social networks and experience of the students (13.3 % respectively), followed by otehr potentials such as pedagogy and enjoyment, effectiveness of online video games, positive instructional support tool, potential for use of computer simulation in teaching & learning (T&L) and interactive and collaborative – all of which charted the lowest percentage of 6.7 percent.

Table 3

Comparison Between Findings on Video Game Potential in Articles Selected

No.	Potential of video game	Percentage(%)
1	Motivation	40
2	Pedagogy and Enjoyment	6.7
3	Social network interaction	13.3
4	Student experience	13.3
5	Effectiveness of online video game	6.7
6	Instructional tool for positive support	6.7
7	Potential of computer simulation in T&L	6.7
8	Interactive and collaborative	6.7

7.   Implications and Recommendations

Hence,there were 15 articles out of 33 articles selected in this study. While 9 articles were obtained using key words video game and language learning. Meta analysis study is appropriate for evaluating the strengths and weaknesses for every article studies. This meta analysis represents a collection of all articles related to the topic and can be categorized as thematic whether according to method, title, sample and study findings in an effective way. Hal ini demikian, perbandingan dapat dilakukan dan kesimpulan bagi setiap kajian turut dilaksanakan dengan sistematik. Although meta analysis is only descriptive in nature without using field studies and real data, its effectiveness lies in evaluating and providing beneficial critique and encouraging other researchers to adopt an action plan to fill existing gaps in the literature with continuous research.

8.   Conclusion

According to Shih, Feng dan Tsai (2008), a meta analysis not only helps the researcher identify the title of the study, methods and latest trends but also to know the influence and factors in the matters being investigated. The

findings were collected in thematic form and were then summarizedto see the overall direct effect of the article studied. Apart from qualitative analysis, this study also uses descriptive atatistics to analyze data. Based on the findings, of eight selected journals, the journal*Procedia Social and Behavioral Sciences* (PSBS) recorded the highest percentage of 26.7 from the aspect of research paper analysis. From the viewpoint of method most preferred, 5 out of 15 articlesused the method of literature reviewwhich recorded the highest percentage (33.3 percent).Comparative analysis showed that articles on motivation recorded the highest percentage or 40 percent. The overall finding from the articles was thatvideo games have potential as effective teaching aids capable of enhancing student motivation in language learning.

Hence, this studyJusteru, kajian helps researchers in identifying the limitations and gaps between previous research and the researcher's study. The researcher agrees with Yildiz and Pelin (2009) who stated that video game shows the effectiveness in language instruction based on the environment of online video game technology especially in learning language in vocabulary skills).The researchers also agree with the statement of Brett and Jon (2011) suggested that design of educational video games is able to enhance motivation in students especially in Grade 9 studenmts of English subject. Similarly Ricardo Rosas et al.(2003) staterd that the design of video game has a positive effect on student motivation through the use of video game as an experimental tool for the experimental group in in mathematics subject, reading, understanding and spelling (English).Hence, this meta analysis encourages researchers to study what previous researchers have not studies before and help the researchers to obtain further information and subsequently carry out research on the potential of video games in learning Bahasa Melayu vocabulary among international students.

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Pre - Implementation Study of Blended Learning in an Engineering Undergraduate Programme: Taylor's University Lakeside Campus

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Abstract

This paper provides a framework on the implementation of blended learning (BL) for engineering undergraduate programmes. A survey comprising questionnaires, interviews and practical observations were administered targeting members of the faculty from three various engineering disciplines within the School of Engineering (SoE). Raw data was generated to establish the status quo of BL tools that are most preferred among faculty members using radar charts. A framework using the Plan, Do, Check and Action (PDCA) cycle used to monitor the progress of BL in engineering undergraduate programmes is developed.

Keywords: Blended Learning; Radar Chart; PDCA; Undergraduate Programme.

Introduction

The rules are changing drastically and there is an increased pressure on institutions of higher learning to evolve, adapt or desist (Swail, 2002). In 2003, the American Society for Training and Development identified Blended Learning (BL) as one of the top trends to emerge in the knowledge delivery industry (Rooney, 2003). Transformation of learning environments in higher education settings for an increasingly electronic world is critical (Williams, 2002). In agreement with Hicks, Reid and George (2001), there are demands for Universities to provide for a larger and more diverse cross section of the population, to cater for emerging patterns on educational involvement which facilitate lifelong learning and to include technology-based practices in the curriculum. The above literature all seem to focus on a need for a transformation in the learning environment. Before dwelling further into the measures needed for transformation, learning as a whole should first be understood. Learning may be defined as the acquisition of new mental schemata, knowledge, abilities, skills, etc, which can be used to solve problems potentially more successfully, furthering decision making on the basis of experience which elevates "doing" as a basis for achieving an effective understanding of knowledge (Pazos, Azpiazu, Silva & Rodriguez-Paton, 2002). The definition of BL on the other hand still remains a point of ambiguity. The main differences between BL and other terms such as distributed learning, e-learning, open and flexible learning and hybrid courses still remains unresolved. Some definitions of BL are so broad that it would be difficult to find any learning system that was not "blended" (Massie, Ross & Gage, 2004). While there exists a wide variety of definitions available for BL, if examined closely, these definitions are just variations of a few common themes. The three most common found definitions as described by Graham, Allen and Ure (2003) are:

- BL = Combining instructional modalities / delivery media (Bersin *et al.*, 2003; Orey, 2002a, 2002b; Singh & Reed, 2001; Thomson, 2002).
- BL = Combining instructional methods (Driscoll, 2002; House, 2002; Rossett, 2002)
- BL= Combining online and face to face (F2F) instruction (Reay, 2001; Rooney, 2003; Sands, 2002; Ward & LaBranche, 2003; Young, 2002).

The first two definitions suffer from the problem that BL is so broadly defined that it may be seen as encompassing almost all learning systems. The third definition however, is a more accurate reflection of the author's

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view on BL and shall be regarded as the foundation of this paper. The third definition reflects upon the combination of two separate models *i.e* F2F traditional learning systems and distributed learning systems with an emphasis on the central role of computer based technologies. Six reasons have been identified by Osguthorpe and Graham (2003) as to why an academic institution of higher learning should chose to design and eventually adopt a BL system, which are as follows: (1) Pedagogical Richness, (2) Access to Knowledge, (3) Social Interactions, (4) Personal Agency, (5) Cost Effectiveness and (6) Ease of Revision. However a more recent study by Graham, Allen and Ure (2003) showed that from the six reasons stated previously, academic institutions of higher learning that operate in a more laissez-faire environment tend to overwhelmingly chose BL systems mainly for three reasons which are (1) Improved Pedagogy, (2) Increased Access or Flexibility and (3) Increased Cost Effectiveness.

2. Rationale

Improved pedagogy with regards to an increase in the level of active learning strategies, peer to peer learning strategies and learner centered strategies have been cited by Hartman, Dziuban and Moskal (1999), Morgan (2002), and Smelser (2002). These authors have also provided an insight into how computer-mediated environments improve the level of authenticity when compared to the traditional classroom experience. For example, Collis (2003) shared a model for how BL can be used to integrate formal classroom learning with the much more anticipated informal workplace learning. Morgan (2002) and Smelser (2002) also suggested how by mixing live F2F elements with virtual reality, a more comprehensive collaborative learning and problem solving environment may be obtained.

Increased Access / Flexibility seem to be an important factor in many programs where learning experience is gained at a distance from instructors and / or students (Reynolds & Greiner, 2002). This according to the authors was due to the fact that many learners want the convenience offered by a distributed learning environment. Dziuban (1999) stated that almost 80% of Universities in the U.S.A. have seen an expansion of reduced seat time courses allowing for increased flexibility while retaining small amounts of traditional F2F contact. This proves to show that increased learning flexibility within a more distributed learning environment, a key feature of BL systems seem to be gaining popularity among a more computer mediated environment dependent students.

Cost Effectiveness which is an important consideration for the more laissez-faire Universities is also realized within a properly crafted BL system. This is because BL systems are capable of providing a large opportunity for reaching a large, globally dispersed audience in a short period of time with consistent, semi-personal content delivery as suggested by Kozma (1991). Dziuban (1999) also cited that some Universities have predicted cost savings due to cost reduction in physical infrastructure and improved scheduling efficiencies.

3. Methodology

3.1 Learning Content Management System (LCMS)

Taking into consideration the financial limits, as well as legislative rules imposed by other governing bodies of accreditation such as Engineering Accreditation Council (EAC) and Malaysian Qualification Agency (MQA) a baseline target was set as a tool to introduce and subsequently increase the awareness on the need for change, in order to adopt a BL system throughout the University. The target set was that 30% of the 50% of all modules for an engineering undergraduate programme conducted by the school should incorporate a BL approach. This means that a minimum total of 30% of the student's learning time should be spent in a BL environment in at least 50% of the total modules offered by SoE.

In SoE of Taylor's University Lakeside Campus (TULS), BL was embraced with a pragmatic approach. Taylors Integrated Moodle e-Learning System (TIMES) which is the LCMS system used in TULS is a Moodle based platform. It is a dedicated computer system used to organize and manage e-learning. This system offers a wide variety of tools that support and facilitate the publication of the service content, either in a text or graphic form or as ready-made documents or usable applications. TIMES also make it possible to manage groups of users as well as resources that were created for them. One of the most distinct features of TIMES is that the system offers tools which enable monitoring of the learning process. It is also worth noting that one of the world's largest and oldest online Universities, Open University in Great Britain, has also chosen Moodle as its LCMS platform. Research by Dobrzanski, Honysz and Brytan, (2006) and Dobrzanski & Broz, (2008a; 2008b), shows that a Moodle based platform is also preferred in Poland.

3.2 Integrated Teaching and Life-Long Learning Center (InTelleCT)

BL design within TULS is seen as a problem solving exercise from the perspective of the learning experience rather than the perspective of the tools. Shuell (1986) observed that the teacher's fundamental task is to get students to engage in learning activities that are likely to result in them achieving certain learning outcomes. Thus, to fully realize the potential of BL, the adoption of BL is motivated by a recognized need for more effective learning experiences that will lead to achievement of desirable learning outcomes. In order to facilitate the adaptation process among staff of the University, InTelleCT was developed with the aim of ensuring the provision of relevant, innovative and excellent teaching and learning experiences within the University. InTelleCT fuses the three-fold functions of three departments dedicated to cultivating a total learning experience through excellent teaching, academic student support and an innovative and technology-driven learning environment. Within InTelleCT, three divisions were established which are Teaching and Educational Development (TED), Learning and Academic Skills (LASC) and e-Learning Academy (eLA). Among the three divisions established, the eLA division was formed with the specific mandate to drive and support the implementation of BL at TULS.

The Associate Dean of Learning and Quality (ADLQ) is appointed within SoE to coordinate BL activities between eLA and SoE as shown in Fig. 1. ADLQ also ensures that a smooth transaction of learning environment from the traditional F2F learning environment to a BL environment is achieved. A screen shot of the survey conducted to gage the BL hours incorporated in each module within SoE is as shown in Fig. 2.
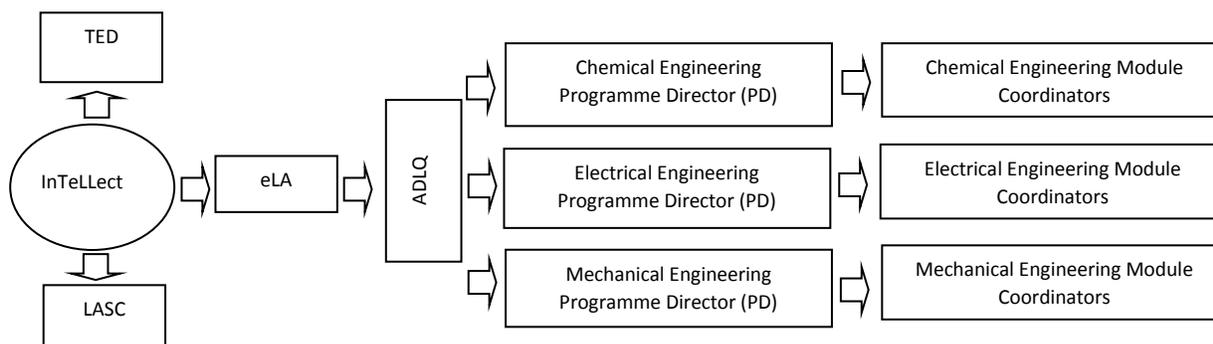
Fig. 1. The Role of the Associate Dean of Learning and Quality (ADLQ)
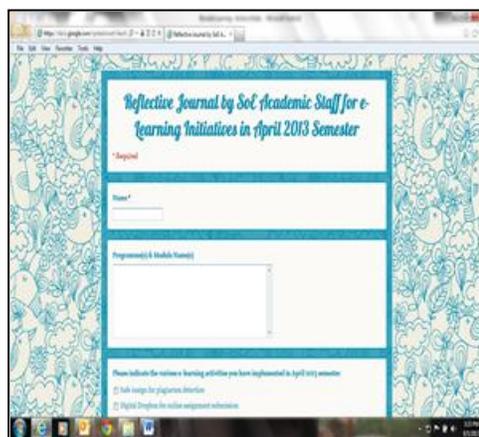
Fig 2. Screen shot of Survey to Gage BL hours in each module for staff in SoE.

4. Results and Discussion

4.1 Radar Chart for BL Tools and Hours.

As most if not all tutors had no experience in teaching within a BL framework, discussion sessions between the ADLQ and practitioners of e-learning and specialists in e-methodology, together with staff from eLA were held. This coupled with practical observations, student feedback and also valuable inputs from experienced staff members led to the creation of five BL tools that may be used as a preliminary tool in advocating BL environments in classrooms. Similar investigations conducted in University of Pretoria, University of Technology, Sydney and University of West Florida employed the use of a radar chart for results illustration (Sharafuddin & Allani, 2010). In addition, The American Society of Quality states that "Radar charts, which are extensively used in the field of institutional development, are commonly used to measure quality." Therefore, it is the belief of the author that the innovative use of a radar chart for educational assessment fits the purpose as well. The results are explained in Fig. 3, which is useful in interpreting the most favourable tool among staff of SoE.

Small magnitudes, (1) represent tools which are less favourable while large magnitudes, (5) represent more favourable tools. This chart suggests an image of a tiny island within an ocean, which amplifies the cautious steps that need to be taken by the ADLQ and eLA staff in educating the academicians within SoE on the usages of the various tools in order to achieve a BL environment that is a hybrid between F2F and online learning so instruction occurs both in the classroom and the online component becomes a natural extension of traditional classroom learning.

The findings from the above chart can be explained as follows:
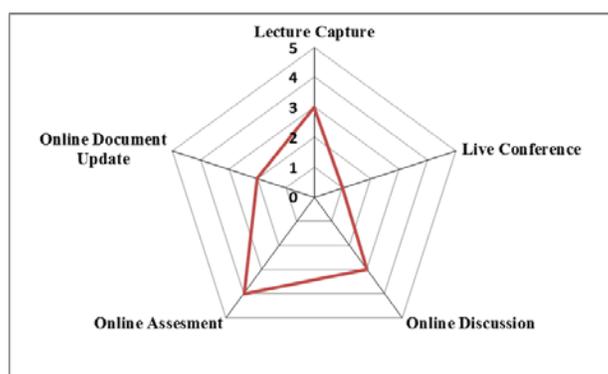
Fig. 3. Radar Chart for BL Tools in SoE

Lecture capture system is seen by most staff as a tool for improvement. Such a system will also enable the enhancement in the learning quality of the students since students may review the captured lecture anytime, anywhere thus moving away from the traditional mortar-brick system opening the doors to a more flexible learning environment. However some staff believes that the lecture capture system has their disadvantage which is disclarity among students since their doubts cannot be addressed spontaneously. Others expressed concern due to the uncomfortable feeling that is felt being brought about by the thought that the lecture is monitored throughout the session and freedom to deliver in one's own pace is compromised. However it should be noted here that in the studies reviewed by Heterick and Twigg (2003), the authors suggested that in large student number classes, recorded (captured) lectures is a useful tool to replace the traditional one or two lectures each week allowing the module coordinators with more time to give to individual students and to enhance the quality of the course through sustained development and innovation as well as teaching development. Mixed responses on the effectiveness of this BL tool created an average of 3 out of 5 within SoE. Due to this, it was concluded that 1 lecture hour which is captured shall be equal to 20 minutes of BL time.

Live Conference tool involves the presentation of a video or any other audio formatted lecture through the use of Internet. The staffs have identified this tool as one which is capable of promoting higher levels of interaction in a teacher-student environment. However students stressed that due to the band width limitations, the video or audio quality may be compromised or even totally disrupted thus disabling the students to participate in a high level interaction environment that was perceived. This is the rationale behind the average score of 1 that was assigned to this tool. The total time contributed by activities using this tool was computed on a 1 to 1 ratio, which implies that the total activity time equals to the BL time.

Online Discussion consists of the use of Facebook, MSN Messenger, Blackberry Messenger, Whats App, Moodle forums and others alike. Such a method has gained support from the staff and students as it has been recognized to be highly interactive, yielding an average score of 3. It also encourages participation from all students and at times student with a rather quiet nature may also be motivated to write. However more than often, due to the highly interactive environment that most of the time is minimally guided by the module coordinators, students tend to repeat the same point by "liking" comments thus not having to go through a deep thinking process since the answers are already visible through the forum. With regards to the number of hours contributed to BL, if postings are to be within the lecture period then the activity would be accounted for on a 1 to 1 ratio. However, if delayed postings are allowed, the module coordinator needs to estimate the duration of the activity and assign that duration on a 1 to 1 ratio with regards to the contribution towards BL hours.

Online Assessments emerge as the top most favourable tool with an average score of 4. The online assessments include quizzes, structured questions and essay based questions. This tool based on empirical observations from staff and students promotes instant feedback to the students so that immediate remedial action can be accounted for. Assessments can also be conducted on a more frequent manner through the use of Multiple Choice Questions (MCQ) thus allowing students to obtain more feedback with regards to their understanding about the subject matter. For activities using this tool, the time taken to complete the assignment would then be regarded as BL hours.

Online Document Update also promotes an interactive environment, however the major difference here is that group participation and the ability of the module coordinator to gain a better insight on the individual contribution to the total group work is made possible. However academic dishonesty which occurs when a different student writes on behalf of his group member cannot be detected thus bringing the score assigned to this tool to 1. The contribution towards BL hours for this activity is 50% of the total activity time.

4.2 Implementation Framework

While preparing and realizing the project, great attention was paid to ensure high quality of teaching and learning is sustained within the classroom. Following the concepts underlying Total Quality Management (TQM), a Plan-DO-Check-Action cycle was developed to continuously monitor the progress of the implementation of BL environments within the classroom. PDCA cycles were developed by W.E. Deming in Bell Laboratories, U.S.A in the 1930's. The main concept behind the PDCA cycle is to divide the project into four steps. In TULC, each module was to be blended based on the number of credits that is offered by the module. For an example a module with 3 credit hours would require 120 notional hours, thus a total of 30% of these hours should be spent in a BL environment. Below, as seen in Fig. 4, a framework governing the initial implementation of BL within TULC is provided based on a PDCA cycle.

In the PLANNING section, the syllabus is written by the module coordinator and its compliance to the programme's requirements are discussed among the module coordinator, programme director and senior staff of SoE to ensure its alignment with the proposed learning outcomes, assessment methods and other legislative requirements. Once the syllabus is finalized, the syllabus content is now divided into smaller sub topics that would address each learning outcome directly. Sub topics are then further segmented into teaching hours. Each teaching session is for a period of two hours. Within this two hours segmented portions of the sub topic is addressed. For each segment a certain percentage of BL is introduced based on the depth and the learning outcomes. The tool that is to be used to cater for this BL activity is to be decided by the module coordinator after discussing with the ADLQ and other senior members of SoE within the same discipline.

The DO section involves the preparation of electronic material that would seem most useful in enhancing the student's learning experience as well as the teacher's teaching experience. Module coordinators would then conduct the session which would be observed by senior staff of SoE which is assigned by the ADLQ. Upon completing the session students are assessed on the understanding of the subject matter. This assessment is best done through a discussion forum which is created in TIMES. However module coordinators are not requested to adhere to the use of TIMES as a sole platform to obtain this feedback.

In the CHECK section, the module coordinator now obtains the student feedback together with the class observer feedback. An action plan is discussed with the ADLQ to address the gaps that were discovered. Based on the gap analysis corrective actions catering for improvement are planned. This action will then result in a more enhanced delivery method.

In the ACTION section, scope of activities involves the execution of the enhanced delivery method that was formulated earlier. Student feedback is obtained once again and thus the quality improvement cycle forms a closed

loop where the principles of continual quality improvement can now be employed in the pursuit for an excellent BL environment.
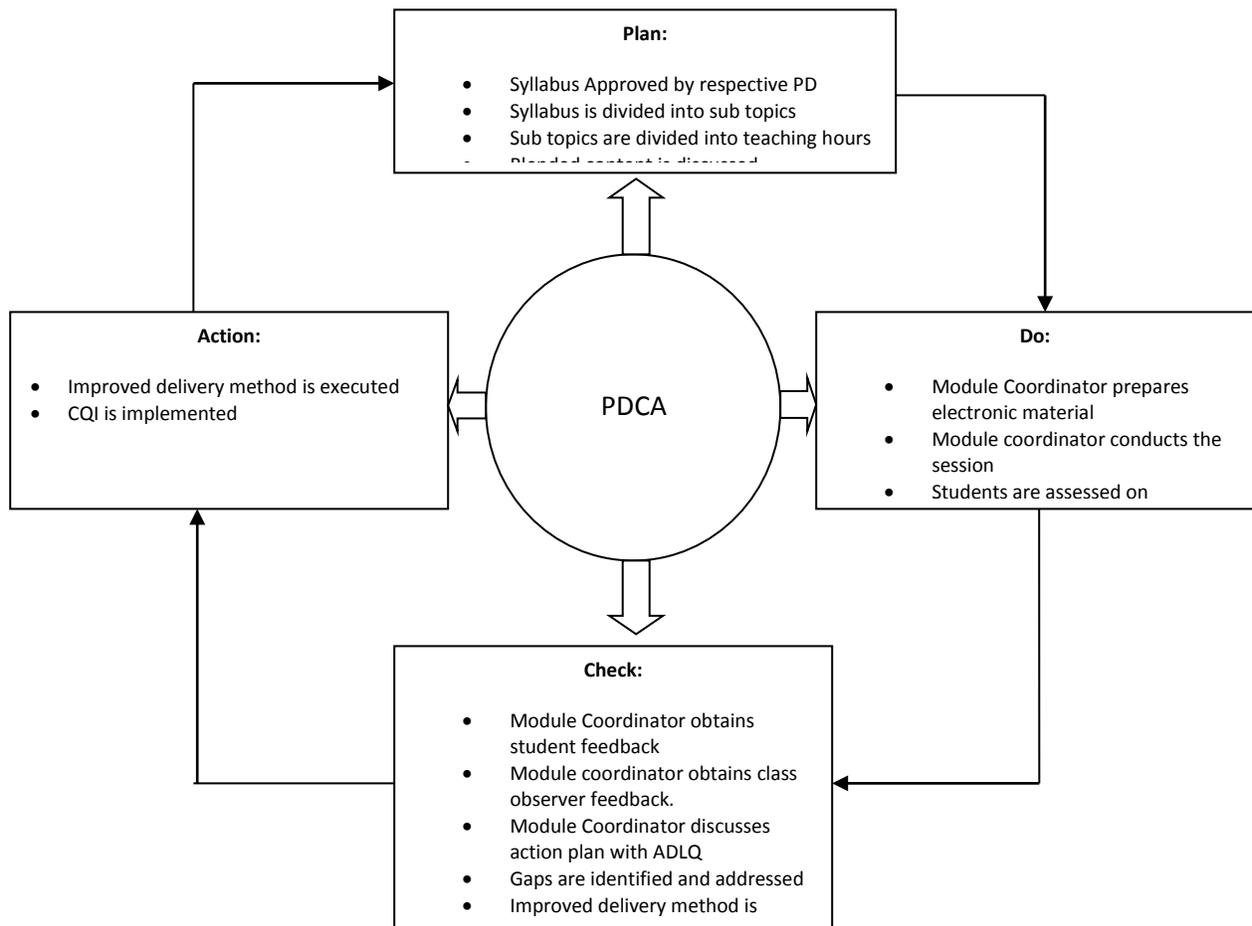
Fig. 4 PDCA Cycle for the implementation of BL within a Module.

5. Conclusion

A framework based on a survey consisting of questionnaires has been administered in SoE. The results seem to show that the staffs of SoE are keen on adopting a BL environment into their classrooms. However the relatively small island depicted by the radar chart in Fig. 2 proves to show that not all staff seems to be well informed with the use of these tools to enhance the BL environment in the classroom. It is hoped that once an initial pilot run is administered in SoE, the feedback from the staff would enable higher levels of collaborative BL design between the eLA team and the T&L coordinators which would then churn out brand new ideas on the improvisation of BL within the classrooms of SoE. The guidance provided on the quantification of BL hours based on the BL activity which is still in the conceptual stage needs to be experimented first by module coordinators. The feedback obtained from these tests would craft a better quantification system thus forming a closed loop for continual improvement in quality.

Acknowledgements

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QUALITY EDUCATION FOR ALL: Case Study FISIP Unpad And SKKU Korea

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Abstract

E-learning is the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Unpad is one of the largest universities in Indonesia with the number of students reached almost 40 thousand's. It is a potential and challenges for the implementation of an ideal education (effective and efficient) to produce graduates with the desired competencies. Ongoing education should not always use conventional way, even technology support must always updated.

The expectations from e-learning are Lecturers and students can communicate without restriction, Unpad have already prepared for e-learning. No less just 200 courses are online, this process needs a structured and integrated plan which is supported by policy leaders. The fact, the online learning desire was born of personal volition but it was not enough. Such things happen with the class video conferencing between FISIP Unpad and SKKU Korea. Technically the learning process went very well, but in fact very weak support in anyways even the quality of the results of students who participate in the program became doubtful.

The paper contribution is to evaluate the distance learning programs especially in Unpad, where the idea is learn from the various research and compare with the existing condition. Hoping there is a synergy knowledge and idea regarding the implementation of distance learning in order to approach the ideal conditions expected in many aspects.

Keywords: e-learning, Fisip Unpad, SKKU Korea.

INTRODUCTION

Development in science and technology is a sure thing keep going. It is sometimes linear, but often pervasive and difficult to control. As well as in education area, should be able to use technology in teaching and learning, considering education is the core to create a quality human.
Unpad in this case the Faculty of Social and Political Sciences (FISIP-Unpad) in collaboration with Sungkyunkwan University (SKKU-Korea) has been almost a year carry out cooperation in the field of distance learning (electronic learning). Both of teachers from Korea - Unpad turns the process of teaching to student learning through electronic media as well as video conferencing.

Whether realize or not, there are many types of electronic learning materials have been defined which is used in the learning process. The following types of learning materials are :

- Technical parts
- Learning units/ Material contents
- Learning entities

Where Technical parts Consist of:

1. Text
2. Picture
3. Animation
4. Video-clip

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5. Sound
6. Etc…

The three learning material is an absolute prerequisite for the success of a learning process, where it should be supported by technical knowledge related to the teaching (next 6 point above). Without it we can be sure the learning process less than the maximum. The process of teaching and learning is expected to adopt the concept of student-centered model (see table 1 below). Where interactive occur on both sides between students and teachers. This concept is theoretically appealing, but the challenge is whether the implementation of the teaching (as a pioneer) is able to bring students in the interactive process? Or even passive.

40. Table 1. Teacher-Centered Versus Student-Centered Models (Sergio Bermejo, 2005)

Teacher-Centered Model		Student-Centered Model	
Teachers	Students	Teachers	Students
Are the performers	Are the spectators	Are the trainers	Are the active players
Transfer knowledge	Repeat this knowledge in exams	Both from a society for discovering and creating knowledge	
Are active	Are passive	Both are active	
Are focused on grading		Are focused on understanding	
Learning environment		Learning environment	
Individual and competitive		Cooperative or collaborative	

Terms of student-centered learning, one of which is the use of the mobile device for interacting. It is confirmed by the study on sales for smartphones rise significantly (see figure 1).
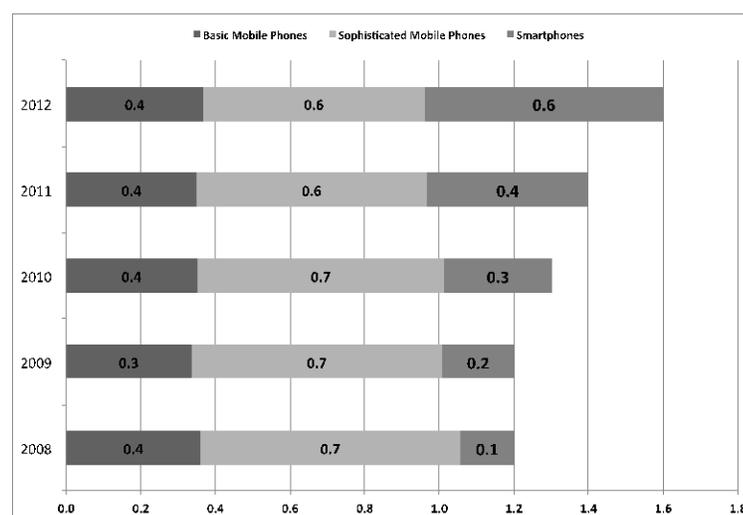
Fig. 1. Number of mobile phones sold (in thousands of millions) per-year worldwide (P. M. Santos, 2009)

Along with the interest for smartphone as well as the support of the ease of access to information, this is an opportunity for the success of electronic learning program where the content can be easily embedded in a digital server to be accessed by students in support of the learning process, so that the process is much more effective.
It is increasingly recognized by the vendor or applications provider and information services to immerse learning content for easy access to learning anytime anywhere with various kinds of content and packaged in such a way to attract interest of students to learn. The electronic content is currently developed with various templates (P. M. Santos, 2009). If we can utilize all the content is in the process of teaching and learning activities it will be very helpful.
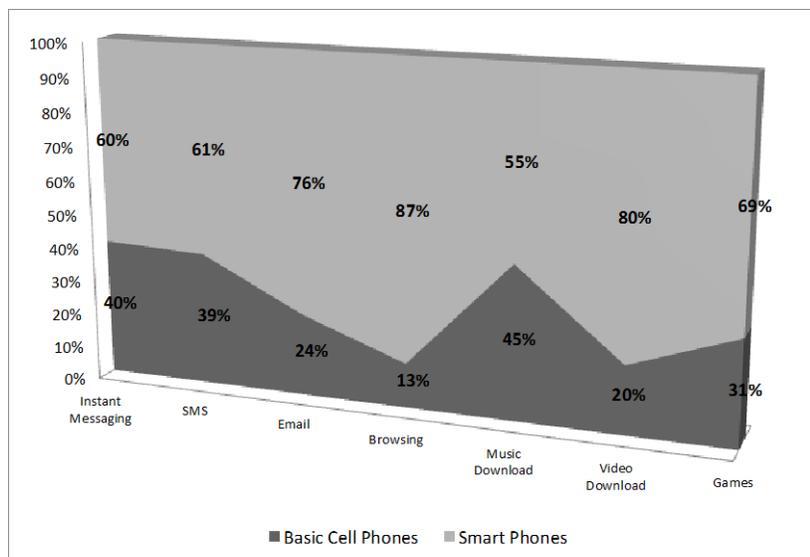
Fig. 2. Advanced functionalities used in basic phones and smart phones 2009 (P. M. Santos, 2009)

The content of the most widely circulated is the presentation type. Just a few presenters tend to create an interactive presentation such as games, video and other digital content. Though it is quite effective in improving the effectiveness and efficiency of the electronic learning process.
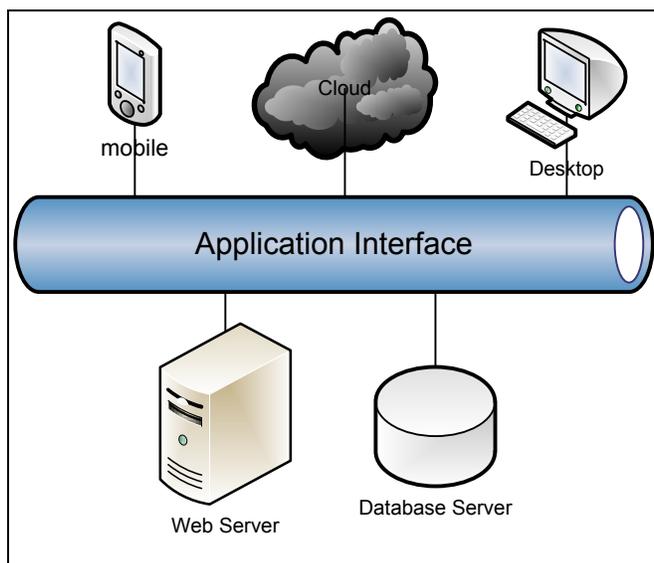
Fig. 3. Client-server architecture of the framework

For example, the implementation of a wide range of connected devices integrated in a single server (see figure 3). This shall be done if we are to seriously applying the model of e-learning quality. Framework in figure 3 ensures easy access and content management of electronic materials and their relation to a wide range of devices including smartphones.

ANALYSIS FINDING

There is a tool for evaluating the effectiveness of e-learning programs in small and medium sized enterprises (SMEs). The model and tool for the evaluation of the effectiveness of e-Learning programs in SMEs has been designed to provide an easy-to-use instrument to carry out a retrospective evaluation of an e-learning program. This retrospective analysis should enable enterprises to detect weaknesses and strengths of their learning program with regard to its organizational, pedagogic and technological implications (Graham Attwell (ed.), 2006). Fisip not implemented a good system in preparing the electronic learning process, the happened next is the organization still highly dependent on the incidental and several individuals involved.
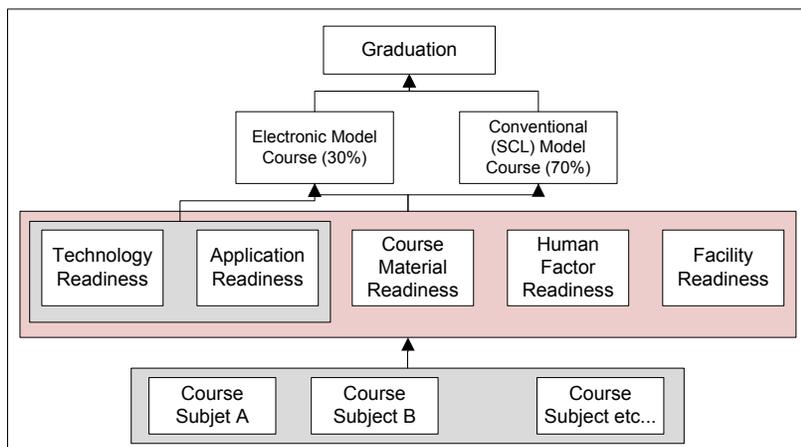
Fig. 4. The professional Course System Structure

Figure 4 shows the application of electronic learning system seriously. This is very necessary based on explanation above that the teachers must also adopt information technology knowledge in the teaching-learning process. For the present framework we used, it tends to use no appropriate framework. The framework is not designed carefully to the needs of electronic learning seriously.
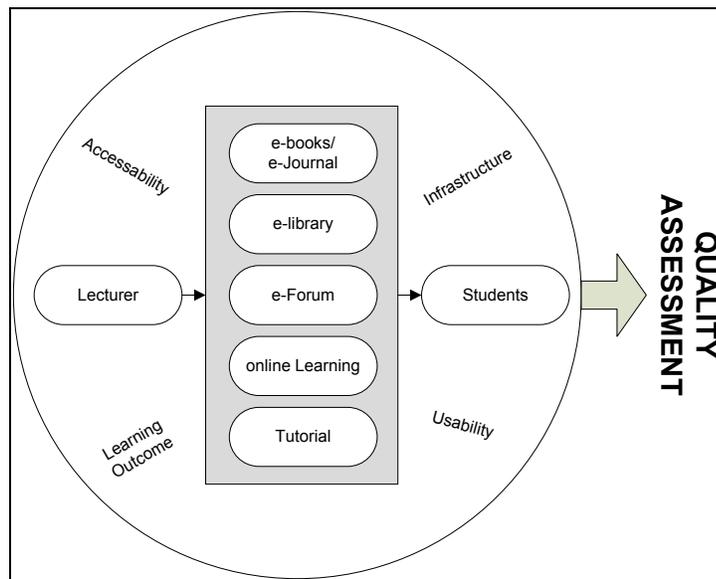
Figure 5. The Framework of e-Learning

Figure 5 shows how to get serious to implement this framework in e-learning activities. We then tried to do a survey of the 10 participants of e-learning class on master degree program who regularly attend with FISIP Unpad and SKKU Korea. We try to analyze the important things that should come during the implementation of the learning process.
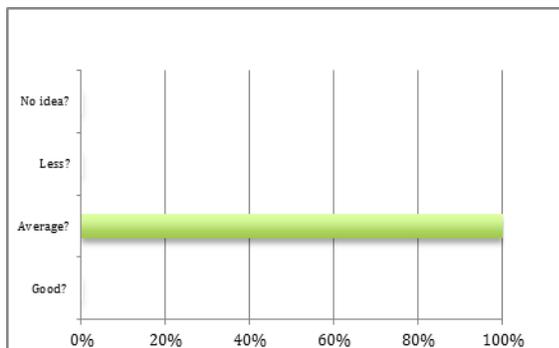
Figure 1. Computer skills of the students

First, we tried to ask about the capabilities of computers who follow the teaching and learning activities. Results demonstrate their ability level is on average which means basic computer skills and office application skills are likely under their control.
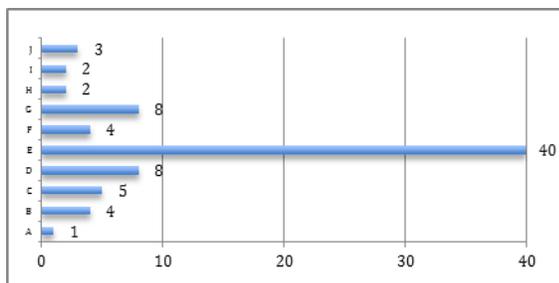
Figure 2. Hours a week the students to access the internet facility on campus.

Next we will look how many hours a week do students access the Internet in the campus area? Apparently the average student access the internet 7-8 hours a week. Only one student is very high internet access on campus with the numbers 40 hours a week.
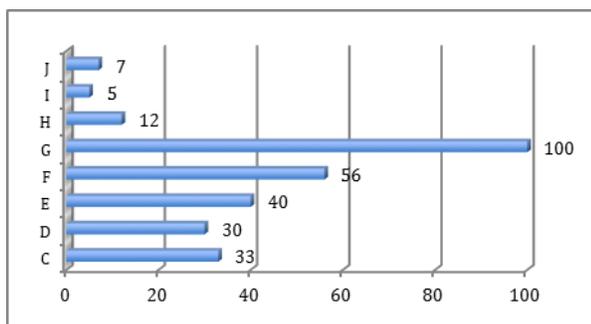
Figure 3. Hours a week (frequency) of accessing the internet at home

Next question, how often the students accessing the internet at home. An average of 35-36 hours a week answering internet access at home.
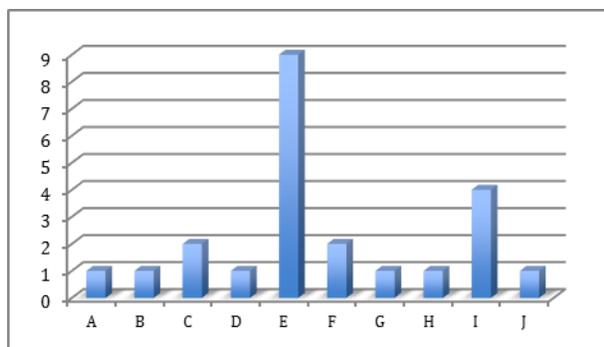
Figure 4. How often (times a week) the students access the e-books/ e-journal?

But it is must to be concern that the hours they access the internet at home or on campus, the number of accessing e-books / e-journal per-student 2-3 times a week. Based on interviews we obtained information that they are only occasional access to e-books / e-journal only where they have an assignments. It seems that access electronic journal / e-books have not become a habit for students.

This become homework where the students should begin actively looking for an updated literature. This can be obtained through scientific publications published by many researchers in the scientific journals on the internet. Although the figure is less high-access journals, but students experienced the benefits of electronic learning process and they still want the electronic learning process continued eventhough several challenges must still be resolved. But nevertheless, there is no doubt that e-learning technology has a positive impact also has a negative impact.
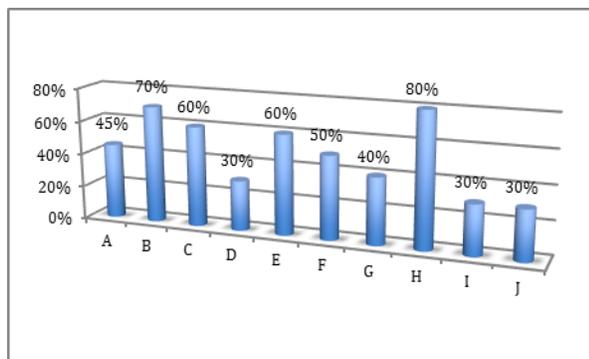
Figure 5. How effective the online learning for students (in percentage)

The positive impact are :

- Easy updating and management of teaching materials until the distribution process
- More flexible in terms of discussion, interactive until the time management, grade, etc.
- Easier to control because the function is two-way and transparent
- To Push all parties to use Internet technology for academic purposes

The lack of e-Learning are :

- Lack of emotional contact between teachers and students.
- The relatively expensive infrastructure investments
- e-Learning need more effort in preparing learning materials.
- Not all subjects can be represented by this process, such as mathematics, physics, chemistry require further guidance

- There is no formal legal regulations related to support this process and sometimes, we cannot avoid the both impact.

Recommendation of The Study

It is quite difficult to implementing the ideal e-learning concept. Based on the existing conditions, we try to recommend a few things that feel important in improving the teaching and learning process. Here are the steps proposed:

- Defining the course material
- To evaluate the course material
- An evaluation of students, faculty, the teams involved and the infrastructure

The course material, it should be discussed with both parties in this case are a team of Fisip Unpad and SKKU Korea. Such as determines the course for the lectures, the point 1 tend to be easy to do. Its a little tricky is point 2, where the evaluation of the material must be executed before and after the lecturing process. This is required to ensure that the material presented is a suitable and students-even can easily understand and digest the material. Even more complicated is actually the third point, which cross-check using the tools of analysis required here, since there must be a statistical measurement of the relationship between the value of on-line courses with the teaching-learning process in which the entire process involves all components. This is necessary because the process running is quite effective and efficient or otherwise.
In the process of teaching and learning also consider two basic objectives:

- Students of different disciplines, so the material is able to be understood. It can not be avoided given the master program consists of various disciplines so that the proper selection of materials is required.
- Motivating teachers to produce high-quality materials through the selection and evaluation of instructional materials.

It is proposed that the e-materials are evaluated according to the following elements:

Technical Evaluation of implementation and compatibility

A variety of equipment and materials involved in the process of e-learning ranging from human resource tools and specifically identify the lecturing trip, so it will feel effective and efficient. It involves upgrading and installation issues hardware / software, bandwidth sufficiency, type / presentation materials and interopability.

Evaluation of Quality Production

Related to the evaluation of quality of production, not only about the technical superiority of equipment and materials, but also covers the quality of the text, graphics, grammar, speech, presentation style, layout, and so on. This should be considered carefully given the success not only related to the production of technical equipment and materials used alone, but there must be an innovation in the implementation.

Interface Device Evaluation

Planning user interface is an urgent task for the achievement of the quality and success of electronic content. The interface-specific e-learning must ensure that learners and educators get the same quality of the interface and understood by both parties. Therefore, the following factors should not missed to be evaluated. For example ease of display, the menu is basic, tracking facilities, navigation, ease of organization of material, service, support must be ensured to run smoothly.

Content and Instructor Evaluation

The quality of the trainer is the most important point in the process of e-learning. We realize that this is part of the most comprehensive and quality should be improved. Following evaluation focuses on learning content, ie, the relationship between learning objectives, content, methods, and participants. For example, description of the intended use of the learning materials, the definition of learning goals, learning objectives and the suitability of the content of the presentation, and so on is the most important thing to get an increase.

Conclusion

The quality of electronic learning material is become the importance thing, since the production of e-material is significantly increase. It is also true that the World Wide Web offers a huge mass of e-material in different ways, using different technologies and didactical approaches. Because of all the aforementioned, it is necessary to determine and implement criteria for the quality assessment of e-material, as well as to establish an appropriate system for transparent evaluation. The last and the most important thing is leadership support and commitment from various parties is one factor that can not be overlooked in the success of this activity.

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Quantitative Measurement of Students PO Attainments for Taylor's University Engineering Programmes

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Abstract

As engineering education shifts its focus from the traditional content and time-based method into the student-centred and outcome-based method, more detailed and rigorous assessments of student's learning outcomes are required. In outcome-based education (OBE), the focus is on what students are expected to know and be able to do by the time of graduation. Aside from many tasks including preparing teaching materials, examination papers, laboratory sheets, markings papers, doing research, and some administrative support tasks, lecturers are now required to do intensive OBE assessments and Continual Quality Improvement (CQI) planning and implementation for every module they handle.

This paper presents the details of a quantitative measurement of the learning outcomes (LO) and programme outcomes (PO) in the module level and up to the programme level to assess the student's PO attainments upon graduation. An End-of-Semester Assessment Tool (ESAT) was developed to assist the lecturers in this OBE assessments and CQI process. ESAT is a macro-enabled software package that automatically calculates the students' individual LO and PO attainments based on their respective module's assessments mark. A LO or a PO is said to be achieved if the student's total assessment mark is greater than or equal to a defined key performance indicator (KPI) related to that LO or PO. ESAT results from all modules are then stored in the students LO and PO database system to generate the cohort's, and the individual student's PO attainments. ESAT results in the programme level offers varied results that describes the student' overall PO performance. Periodic results can be generated for all students that can be used for student's CQI action.

Keywords: quantitative measurement; LO attainments; PO attainments; key performance indicator; outcome based education

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1. Introduction

All universities in Malaysia offering engineering degree programmes are now mandated by the Engineering Accreditation Council (EAC) to implement OBE as a requirement for accreditation. Taylor's University in particular fully supports and implements OBE in its engineering programmes. Guided by EAC Manual (2012) and Taylor's University graduate capabilities (TGC), the School of Engineering crafted its own PEOs and POs to do OBE assessments and CQI implementation in its engineering programmes according to the OBE model shown in Figure 1 (Namsivayam, et.al., 2012).
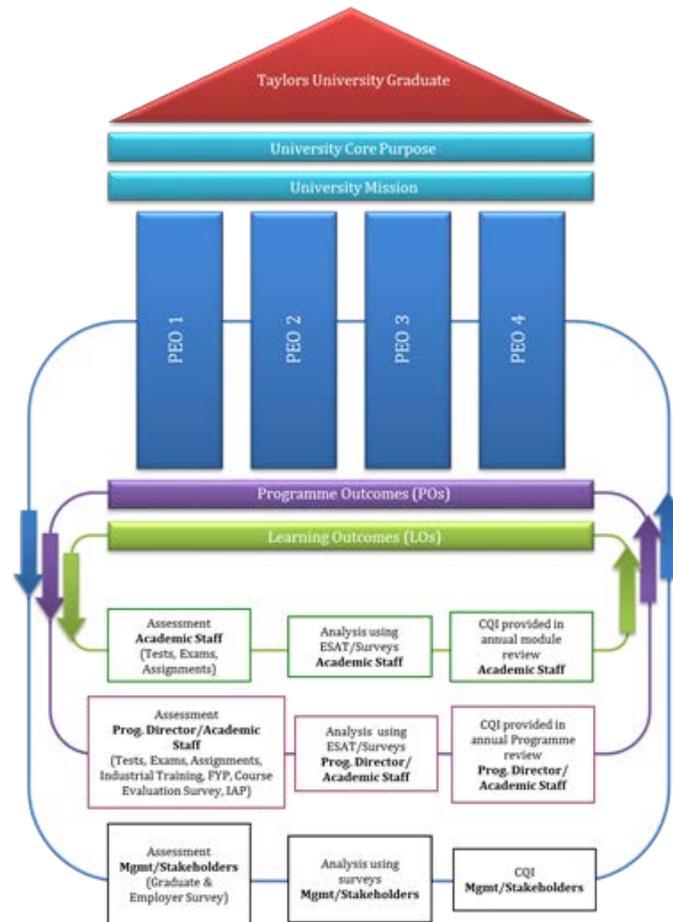
Fig. 1 Taylor's University OBE Model

With reference to LO loop in Fig. 1, at the start of semester, the students are provided with an approved scheme of work (SOW) that guides them on how the module will be delivered throughout the semester. The SOW contains the weighted assessment components, LO-PO mapping, and assessments-LO mapping among others. Students marks collected from the assessments are then used to measure the students learning outcomes quantitatively through a macro-enabled End-of-Semester Assessment Tool (ESAT). ESAT generates the module LO and PO attainments based on the individual student's LO and PO attainments marks. These results will be used by lecturers to prepare the module review which evaluates the impact of CQI implementation from previous semester to the current semester and henceforth develop a CQI plan for implementation the next semester cycle. This complete CQI process in the module level is depicted in Fig. 2.
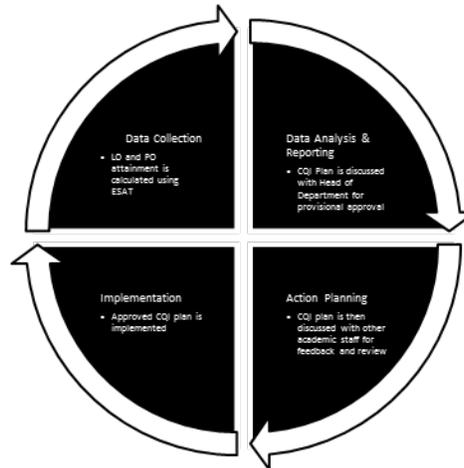
Fig. 2. Taylor's University CQI Process Flow

In the PO loop, all modules ESAT results will be collected and stored in the LO-PO database system that will be used to generate the individual students as well as the cohort's PO attainments upon leaving the programme. ESAT provides end of semester results summary to monitor learning outcomes and do a CQI action plan and its implementation. In the PEO loop, qualitative assessments are used to evaluate the graduates PEO attainments 3 to 5 years after graduation.

Authorities in OBE have not specifically defined OBE assessment standard which leads to various methods and techniques being used by many universities. In Malaysia particularly, Ismail, Zaharim, Abdullah, Nopiah, and Isa (2007) reported that in Universiti Kebangsaan Malaysia (UKM), an used grade point average (GPA) at the end of semester OBE assessments, while Sani, Noor, Senawi, Sulaiman & Rejab (2008) stated that Universiti Malaysia (UM) Pahang used an exit survey from final year students to assess the PO attainments of its mechanical engineering programme for CQI planning and implementation while the Mechanical Engineering program of University of Maryland-Baltimore Country uses both quantitative and qualitative method of assessing PO attainments (Spencer & Zhu, 2007). Although EAC manual (2012) suggests that PO mapping be given weighted emphasis, some universities used equal emphasis on PO mapping like the Faculty of Engineering and Built Environment of the National University of Malaya (UKM) and the Faculty of Electrical and Electronic Engineering of Universiti Tun Hussein Onn Malaysia (UTHM) among others (Sharir, et al. 2008, Shamsul et al., 2012).

As OBE is a continuous, and a tedious process, lecturers are faced by added burden of preparing documents to evaluate the students LO and PO attainments for each module. This is on top of a module analysis and CQI plan to be prepared and presented based on LO and PO results. Since lecturers are already tied-up with a lot of paper documentation for each module required by the accrediting agency, there is an urgent need to provide a OBE assessment tool to do quantitative measurements of LO and PO attainments. This paper will now present the details of LO and PO attainments from the module level up to the programme level using ESAT.

2. End-of-Semester Assessment Tool (ESAT)

The ESAT developed by the author consists of macro-enabled worksheets that automatically calculate the module's LO and PO attainments at the end of semester. This improved model was implemented at the School of Engineering in all of its programmes. The implementation of ESAT is shown in Figure 3.
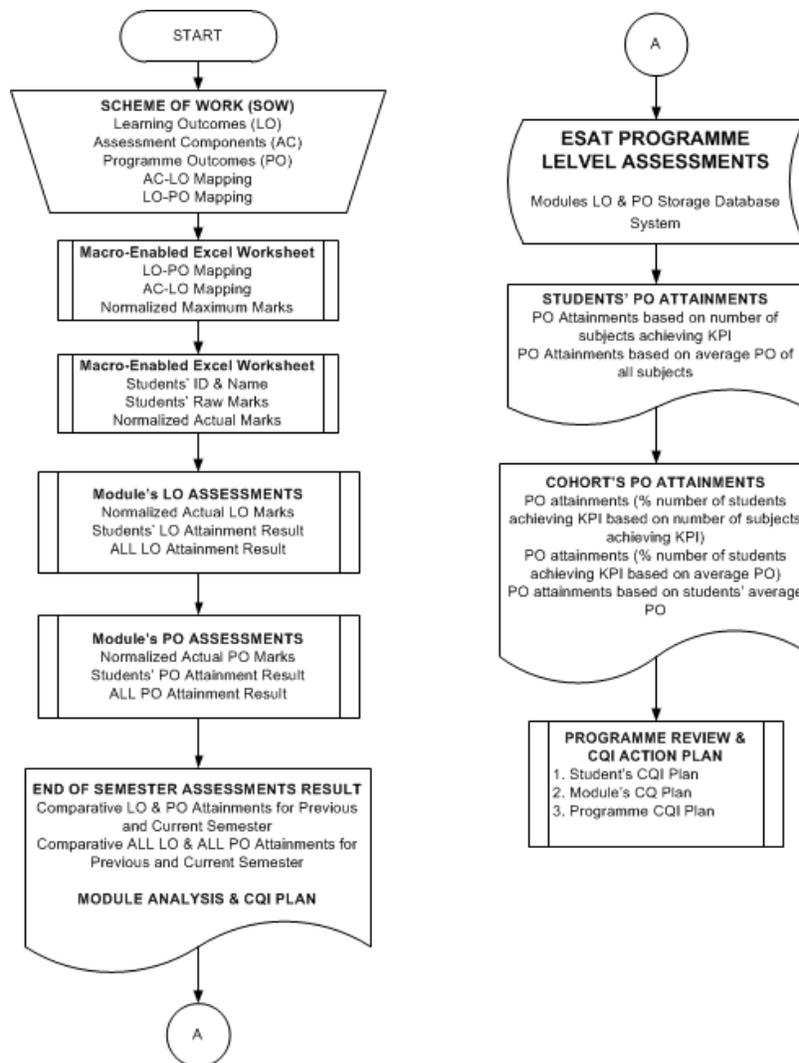
Fig. 3. ESAT Process Flow Chart

As indicated in Fig. 3, the Scheme of Work (SOW) was used in the LO and PO assessments. The SOW contains the details of assessment components (AC) and their respective mapping to each LO, and the LO-PO mapping among others. The information was used to generate the LO-PO mapping and the associated normalized LO and PO marks. The students' raw marks were used as input, which automatically generates the respective LO and PO assessment marks. ESAT outputs the comparative LO and PO attainments for the previous and current semester that serves as basis for CQI plan. ESAT results from all modules were then stored in the LO-PO database system to generate the student's PO attainments upon graduation. Details of the ESAT process flow are presented through screenshots shown in Fig. 4 to Fig. 10 using an ESAT file of Analogue Electronics that the author handled in the September 2012 semester.

Fig. 4. LO-PO Mapping

Fig. 5. Assessment Components (AC)-LO Mapping

Fig. 4 shows the LO-PO mapping from SOW where POs are mapped to one or more LOs and given equal emphasis while Fig. 5 shows the assessment components mapped to LOs. Lecturers are given flexibility to layout the mapping based on their preference where each assessment component can be mapped to one or more LOs and need not be based on 100 marks. These assessment marks are automatically normalized to 100 to generate the normalized LO and PO marks. A screenshot of normalized LO mark is shown in Fig. 6.

Fig. 6. Normalized LO Marks

After generating the normalize LO and PO marks, the lecturer is now ready to key-in the students' individual assessments mark based on Fig. 5 AC-LO mapping. A screenshot is shown in Fig. 7.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
			Test 1-Q1	Test 1-Q2	Test 1-Q3	Test 1-Q4	Test 2-Q1	Test 2-Q2	Test 2-Q3	Test 2-Q4	Lab 1	Lab 2	Finals-Q1	Finals-Q2	Finals-Q3	Finals-Q4	Finals-Q5	Finals-Q6
61	INSTRUCTION:	CLICK ME→ HEADING LAYOUT																
62		UPDATE LO/PO																
63																		
64	EDIT THE GREEN-COLORED CELLS ONLY.																	
65	LO and PO ATTAINMENT RESULTS WILL BE																	
66	GENERATED AUTOMATICALLY.																	
67	PLEASE KEY-IN THE STUDENT'S RAW MARKS																	
68	IN EACH ASSESSMENT COMPONENTS.																	
69		MAXIMUM NORMALIZED MARKS:	2.5	2.5	2.5	2.5	3.1	1.9	2.5	2.5	5.0	5.0	10.5	10.5	10.5	10.5	14.0	14.0
70	STUDENT	MAXIMUM RAW MARKS:	20.0	20.0	20.0	20.0	25.0	15.0	20.0	20.0	100.0	100.0	15.0	15.0	15.0	15.0	20.0	20.0
71	NUMBER	COVERED LO's	LO1	LO1	LO2	LO2	LO3	LO3	LO4	LO4	LO1	LO2	LO1	LO2	LO3	LO5	LO4	LO6
72	0305308	AHMAD FAKHRI BIN ABDUL KHALID	20.0	12.0	20.0	15.0	25.0	12.0	5.0	10.0	78.0	88.0	15.0	10.0	6.0	11.0	10.0	14.0
73	0309744	CHENG KEAN KEONG	20.0	11.0	20.0	20.0	25.0	15.0	20.0	20.0	89.0	89.0	15.0	15.0	14.0	12.0	14.0	20.0
74	0303261	CHONG WEI HSIUNG	20.0	5.0	20.0	15.0	3.0	4.0	5.0	7.0	82.0	90.0	8.0	14.0	9.0	15.0	18.0	13.0
75	0304374	GEOFFREY TAN WERN-JYAN	12.0	1.0	3.0	1.0	13.0	2.0	0.0	0.0	88.0	90.0	1.0	4.0	5.0	0.0	11.0	19.0
76	1006Q79843	HUANG POH HUAI	16.0	12.0	20.0	16.0	19.0	15.0	20.0	20.0	77.0	82.0	10.0	15.0	9.0	10.0	15.0	16.0
77	1001A77041	JONAS CHAN LEONG SEAN	19.0	8.5	20.0	15.0	25.0	15.0	20.0	20.0	95.0	91.0	6.0	13.0	8.0	11.0	17.0	20.0
78	1006Q79762	JOSHUA CHIENG LIE YANG	15.0	4.0	20.0	20.0	21.0	10.0	7.0	20.0	95.0	86.0	15.0	14.0	12.0	11.0	7.0	16.0
79	1001A77420	KAVIN KALAI SELVAN	18.0	8.0	15.0	20.0	25.0	5.0	20.0	11.0	83.0	91.0	10.0	15.0	11.0	12.0	15.0	20.0

Fig. 7. Students' Raw Assessment Marks vs LO Normalized Marks

Fig. 7 shows the individual student's raw marks distributed to respective LOs with corresponding normalized LO marks. At this point, as marks are keyed in, the student LO and PO assessments marks are generated automatically using equations (1) to (4).

$$LO \text{ Assessment Mark} = \sum \frac{\text{Raw Mark}}{\text{Maximum Raw mark}} \, x \text{ Normalized LO Mark} \tag{1}$$

$$LO \text{ Attainment Mark} = \frac{\text{LO Assessment Mark}}{\text{Maximum LO Mark}} \, x \, 100\% \tag{2}$$

$$PO \text{ Assessment Mark} = \sum LO \text{ Shared Assessment Marks} \tag{3}$$

$$PO \text{ Attainment Mark} = \frac{\text{PO Assessment Mark}}{\text{Maximum PO Mark}} \, x \, 100\% \tag{4}$$

For example, for the student with ID of 0305308 in Fig. 7, LO1 and PO1 attainments are calculated as

$$LO1 \text{ Mark} = \frac{20}{20} x 2.5 + \frac{12}{20} x 2.5 + \frac{78}{100} x 5.0 + \frac{15}{15} x 10.5 = 18.4$$

$$LO1 \text{ Attainment Mark} = \frac{18.4}{20.50} x 100\% = 89.76\%$$

$$PO1 \text{ Assessment Mark} = \frac{18.4}{3} + \frac{15.8}{3} + \frac{8.8}{2} + \frac{8.9}{3} + \frac{7.7}{3} + \frac{9.8}{2} = 26.2$$

$$PO1 \text{ Attainment Mark} = \frac{26.2}{38.25} x 100\% = 68.5\%$$

At 60% KPI set for the programme, a LO or a PO is said to be attained if at least 60% of the students obtain 60% of their assessment mark related to that LO or PO. Hence, in this example, the calculated LO1 and PO1 are considered attained by the student. A screenshot summary of the module LO and PO assessments marks is shown in Fig. 8.

Fig. 8. Students' LO Assessment Marks

After generating these LO and PO attainments, a bar chat comparing the previous and present semester LO and PO attainments are generated for the module. Screenshots are presented in Fig. 9 and Fig. 10, respectively.
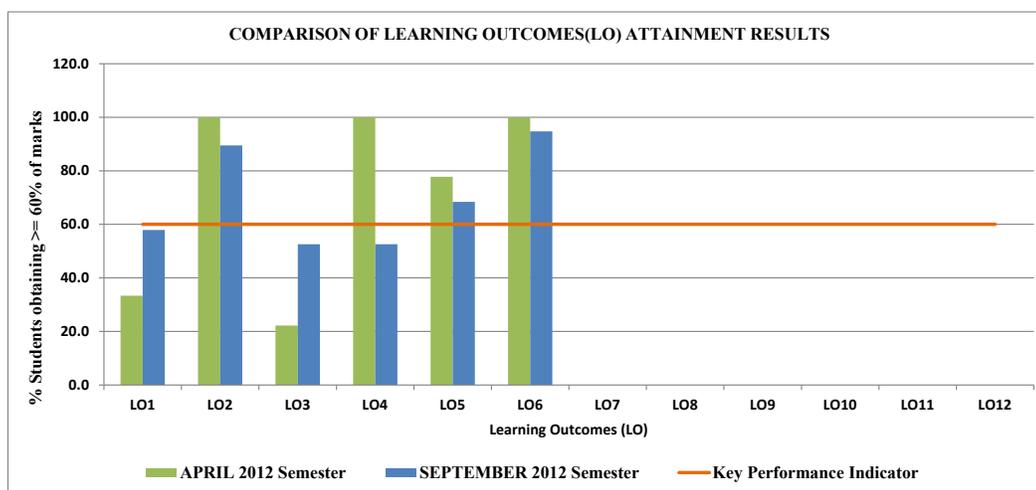
Fig. 9. End of Semester LO Attainment Results

It can be observed in Fig. 9 that there are LOs that improved and there are those that decreased considerably. Also, some LOs although improved did not reached the KPI. Analysis of these results will lead to CQI action plan that can be implemented in the next semester cycle.

Similarly, Fig. 10 shows the comparative PO attainment results for the previous and the current semester. It can be observed that there are POs that improved and there are those that decreased from the previous semester to the current semester.
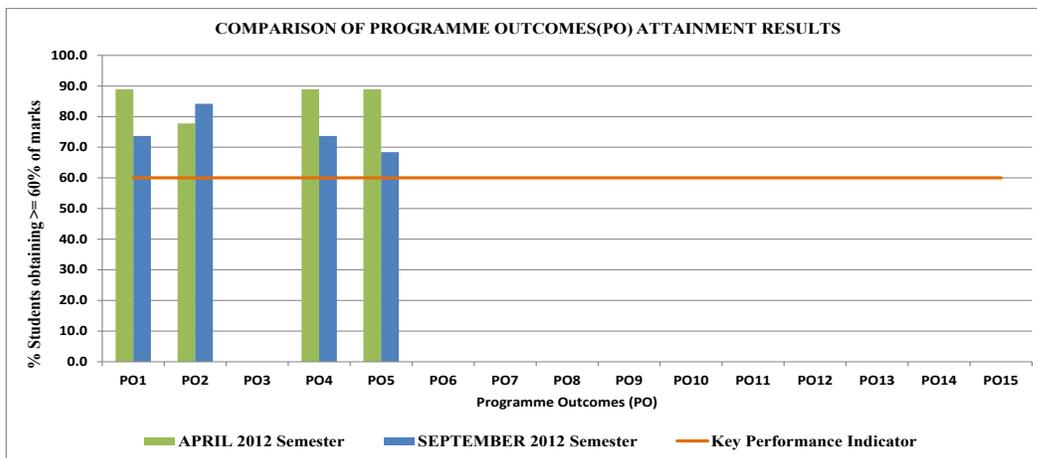
Fig. 10. End of Semester PO Attainment Results

In the programme level, all ESAT files from semester 1 to semester 7 were collected and stored in the LO-PO database system. ESAT can generate the individual student as well as the cohort's PO attainments at any desired assessment period in just one click of a button. The screenshots for the student's PO attainments are presented in Fig. 11 and Fig. 12.
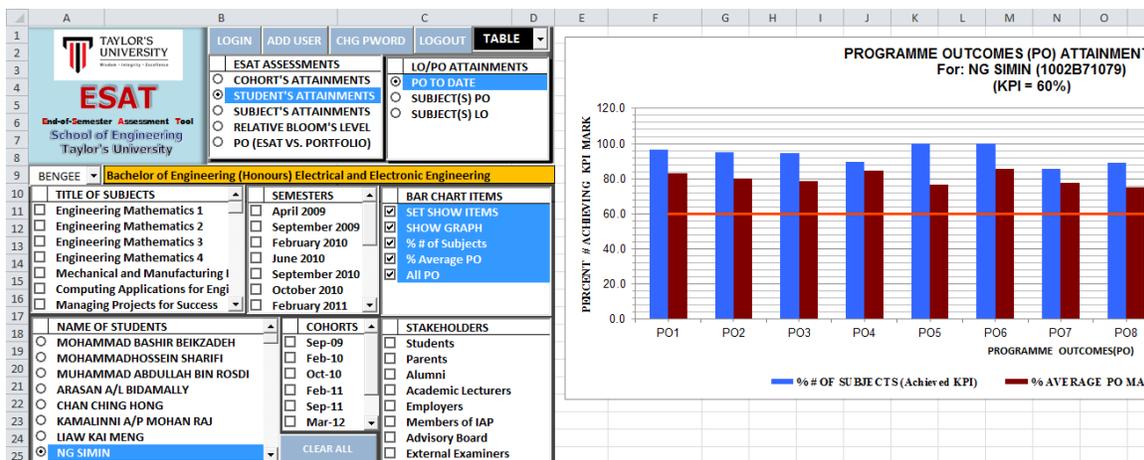
Fig. 11. ESAT's Programme Level PO Attainments Window

In Fig. 11, by just clicking the name of a student, a bar chart consisting of two types of student's PO attainment results can be generated. The first bar (in blue color) in Fig. 12 represents the PO attainments based on the number of subjects achieving KPI while the second bar (in red color) represents the PO attainments based on the average POs of all modules. Management can decide which output best describes the student's PO attainments.
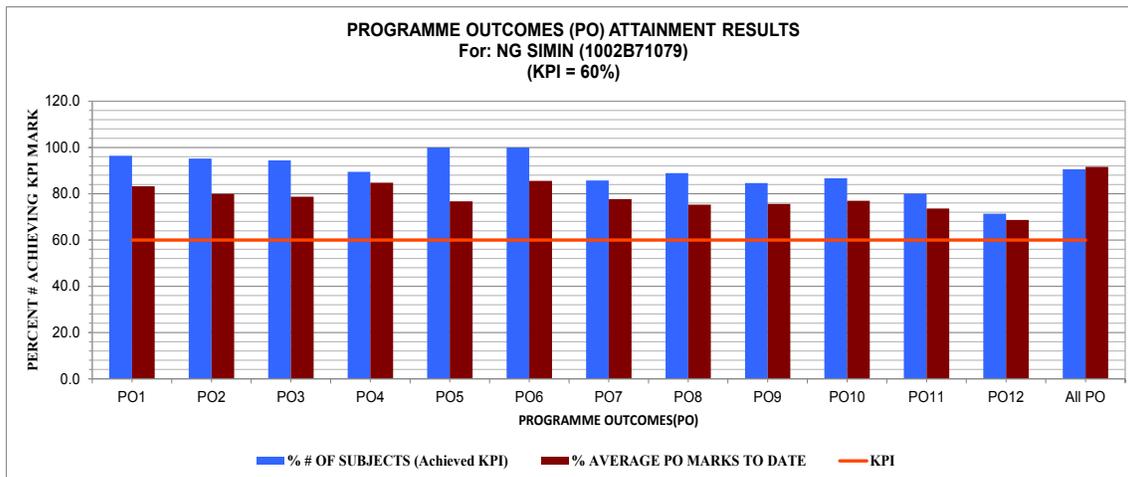
Fig. 12. Student's PO Attainments To Date

Similarly, the cohort's PO attainments can also be generated through the main window. Fig. 13 and Fig. 14 shows the screenshots for 2009 cohort's PO attainments result. Fig. 15 shows three types of PO attainments that can describe the cohort's performance. The first bar (in blue color) represents the percent number of students achieving KPI based on the number of subjects achieving KPI while the second bar (in red color) represents the number of students achieving KPI based on the individual average PO, and the third bar (in green color) represents the simple average of the students PO attainments.
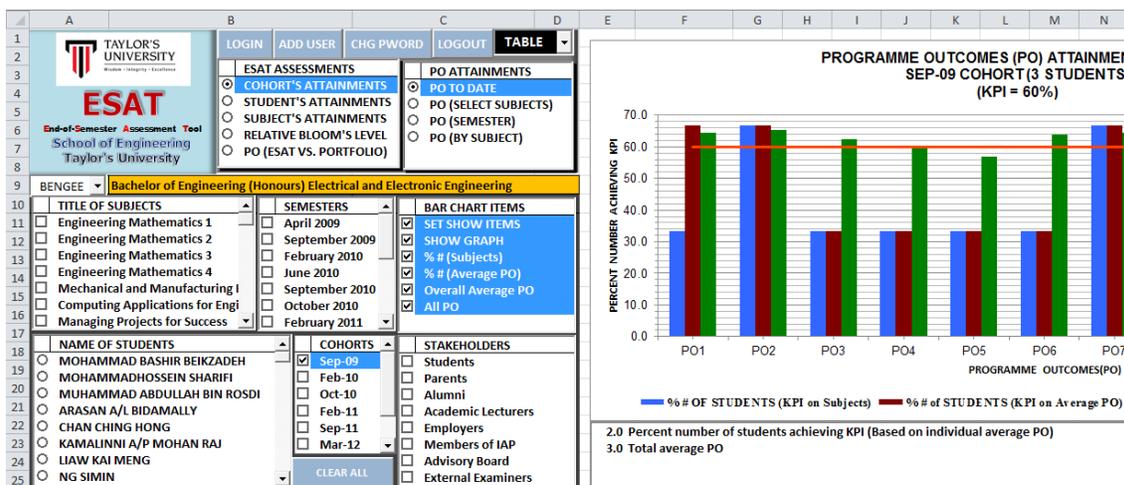
Fig. 13. Student's PO Attainments To Date

ESAT can also generate the LO and PO attainments of any module or group of modules offered in a semester for any student or cohort that could be used for analysis, monitoring and CQI action planning.
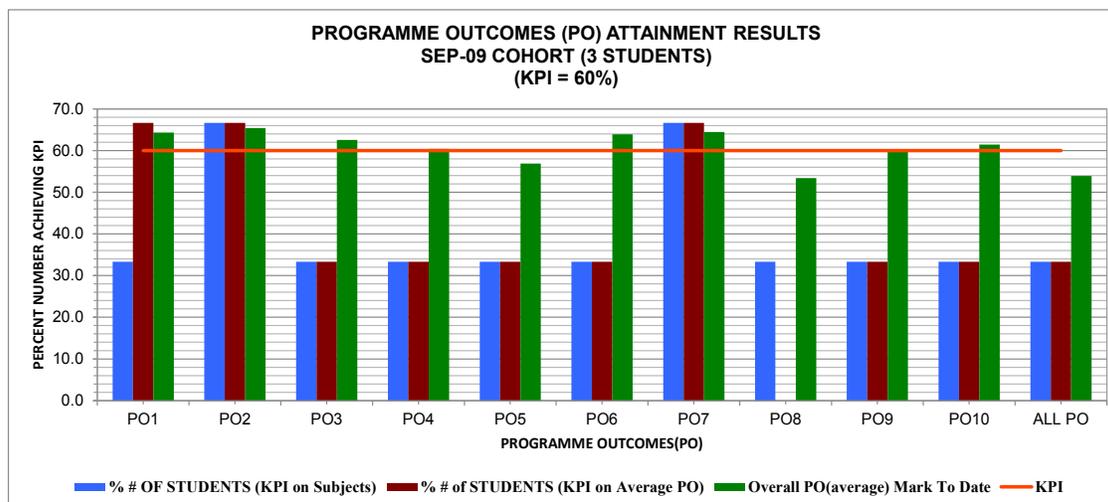
Fig. 14. 2009 Cohort's PO Attainments To Date

Conclusion

A comprehensive presentation of a quantitative measurement of PO attainments had been presented. The authors believe that with this blueprint in place, lecturers can perform module-level LO and PO assessments with ease, reliability, and efficiency. ESAT results can be an effective tool in improving the module delivery through regular assessments, monitoring, CQI action planning, and implementation thus ensuring better quality graduates equipped with desired capabilities ready face the complex challenges of their respective field of profession. ESAT PO attainments in the programme level can also be used to evaluate the lacks and insufficiencies in curriculum, facilities, and other programme policies towards enhancing the students learning experience.

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Research and trends in the studies of WebQuest from 2005 to 2012: A content analysis of publications in selected journals

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Abstract

This paper provides trends analysis and content analysis of studies in the field of WebQuest that were published in seven major journals: TOJET, Educational Technology & Society, Educational Technology Research & Development, Computers & Education, Learning and Instruction, Australasian Journal of Educational Technology and British Journal of Educational Technology. These articles were cross analyzed by published years. Content analysis was implemented for further analysis based on their research topics, issues category, research settings and samplings, research designs, research method and data analysis. It was found that WebQuest benefited students academically. The results of the analysis also provides insights for educators and researchers into research trends and patterns of WebQuest.

Keywords: WebQuest; Research Trend; Content Analysis

1. Introduction

The process of learning and improving students performance by using appropriate technological processes and resources have been the order of the day. In this regard, WebQuest application is a new phenomenon that motivates students in their learning processes (Dodge, 1995). It has been used by students as a web-based tool for collecting and evaluating information to increase their learning performance. According to Dudeney (2003), its application that requires student to perform certain tasks, analyse, evaluate and solve problems motivates students than outdated course books and other such teaching materials. WebQuest is a web-based activity which requires the students to be active learners and allows them to enhance their higher order thinking skills such as finding topic-related web sites, examining and selecting well-prepared and reliable Web sites (Halat, 2008). Regarding finding relevant resources, they must evaluate the sites so that all the unnecessary information will be eliminated and this will help them to develop their critical-thinking skills. WebQuest is a valuable tool for providing students with many interaction opportunities in realistic settings thus making for a more meaningful, experiental and very motivating learning experience. If the WebQuest is associated with students' professional needs, their implementation can be very successful and it helps to enhance students' skills both in academic and cooperative work (Laborda, 2009). As research documented that WebQuests is more effective in promoting student engagement, motivation, connecting to authentic contexts, critical thinking, creativity, literacy skills, improving problem solving skills, social interaction, scaffolding learning and collaborative learning (Abu-Elwan, 2007; Allan & Street, 2007; Abbitt & Ophus, 2008; Ikpeze & Boyd, 2007; Kanuka, Rourke & Laflamme, 2007; Lara & Reparaz, 2005; Lim & Hernandez, 2007; Segers & Verhoeven, 2009; Yasemin, Madran & Kalelioglu, 2010). That is why a majority of the teachers used WebQuest as a tool for teaching and learning; to achieve the learning outcomes (Yasemin, Madran,& Kalelioglu, 2010; Segers & Verhoeven, 2009; Cheng, Tzung, & Wei, 2011; Pear & Crone-Todd, 2001) and assisted in bridging the gap between theory and practice (Lim & Hernandez, 2007).

A WebQuest is one example of how teachers can integrate technology into classrooms, which is a growing area of interest as information technology creates new learning opportunities and becomes more accessible across the world (Krismiyati Latuperissa, 2012; Garry, 2001; Lin & Hsieh, 2001). Research has shown that integrating technology especially using internet in teaching and learning can have positive influences on students' motivation, inquiry-based learning, attitudes, achievement and peer interactions in the classrooms (Abu Bakar Nordin &

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Norlidah Alias, 2013; Chandra & Lloyd, 2008; Dorothy Dewitt, Saedah Siraj & Norlidah Alias, 2013; Lim & Tay, 2003; Norlidah Alias & Saedah Siraj, 2012; Wang, Kinzie, Mcguire, & Pan, 2010).

In Malaysia the research done on WebQuest is still lagging far behind compared to other countries in the world. Research done in 2009 by Norazah Mohd Nordin & Ngau Chai Hong on the development and evaluation of WebQuest for Information and Communication Technology subject found that WebQuest could attract students to search more information using the web by using the link attached. It also serves as an easy way for e-learning.

So far, there have been numerous publications about WebQuests in the last few years; the majority have either fallen within the categories of conceptual, descriptive, design or other technical aspect of it (Sox & Rubinstein-Avila, 2006). Since then, there has been increasing research on WebQuest application on a wide range of topics. However, none has focused on content analysis of publications on WebQuests.

2. Research Objective

This review intends to concentrate on and learn about the research trends related to WebQuest covering the years 2005 to 2012. The articles were obtained from seven professional journals and abstract databases and published in the *Social Sciences Citation Index* (SSCI); which has comprehensive coverage of the world's most important and influential journals and research results.This paper only covers 7 journals that have been selected from ISI, namely the Educational Technology Research and Development (ETRD), Turkish Online Journal of Education and Technology (TOJET), The Educational Technology And Society Journal (ETS), The Learning and Instruction Journal (L&I), Australasian Journal of Educational Technology (AET), British Journal of Educational Technology (BET), as well as Computer & Education (C&E).

The present study looks into all the articles published in the *Education Technology Research & Development* (ETRD) comprising 233 articles, *Turkish Online Journal of Educational Technology* (TOJET) contained 398 articles, *Educational Technology and Society*(ETS) consisting of 493 articles, *Learning & Instruction* (L&I) contained 294 articles, *Australian Journal of Educational Technology* (AET) containing 51 articles, *British Journal of Educational Technology*(BET) containing 906 articles and *Computer & Education* (C&E) comprising 1240 articles. From the total of 3707 articles, only 10 articles were successfully extracted and identified to cover related WebQuest researchers. It showed up in the publication of journals namely, *Education Technology Research & Development* (ETRD)(2011) 59, *Australian Journal of Educational Technology* (AET)(2012),vol.28(2), *British Journal of Educational Technology*(BET)(2007) Vol.38(6) and (2011)Vol.42(5), *Learning & Instructional* (L&I)(2009)Vol.19, *Turkish Online Journal Educational Technology*(TOJET)(2011),vol.10(2),(2012) Vol.11(4), *Educational Technology and Society*(ETS)(2009)vol. 12(1) and (2010) vol. 13(3)and *Computer & Education* (CNE)(2011) vol.57

Accordingly, this review will provide content analysis of such journal articles by categorizing them based on the research topic, methodologies, design and WebQuest trends. Our analysis, therefore addresses the following research questions:
1. What are the research topics about WebQuest during the study period from these selected journals?
2. What are the research methodologies that have been used?
3. What are the research designs that have been applied?
4. What are the WebQuest trends in the selected journals?

The study undertaken is to extract the similarities and differences from the above classification including the findings found in those selected journal articles. It may shed some light on future research that will be conducted and provide guidance for researchers and a basis for discourse for policy makers.

3.Method

Content analysis is a research technique and tool for social science and media researchers. As a scientific method for an objective, systematic, and quantitative description of the manifest content of communication (Berelson, 1952). Furthermore it can be extended to describe the characteristics of content of a document, making an observation and provides an analysis. Krippendorff (1980) defined content analysis as a research technique for making replicable and valid inferences from data to their context. One of the most frequent uses of the content analysis is to study the changing trends in the theoretical content and methodological approaches by content analyzing the journal articles of the discipline (Loy, 1979).

Firstly, a content analysis of journal articles was conducted by formulating the research question and the objectives of the study. Secondly, 7 journals were selected which were published in the Social Science Citation Index (SSCI) pertaining toWebQuest research. Thirdly, a set of criteria were set for the analysis and development of

the content categories. Fourthly, data preparation for the necessary analysis was completed before final analysis and drafting of the report.

In order to examine the research trends in WebQuest research, the study make classification of research topic of each published article. Descriptions of those categories consist of (i) Research Trends (ii) Research topics (iii) Research Design and methodology; and (v) Data analysis and findings.

Webquest Research Trend

The utilization of information technology such as internet, digital program and gadget has increased in education. Recently the use of internet learning tools such as WebQuest, Facebook, Wiki, YouTube and Web-Based have been integrated into instructional learning in the classroom. Focusing on the topic of WebQuest in all the 7 selected journals and results of trend analysis from 2005-2012 shows that out of 3614 articles published, only 13 articles were related to WebQuest. This is only about 0.35% from the total number of journals analyzed as shown in Table 1.

Table 1: Number of research articles in WebQuest published in 7 selected Online journals.

Year	No of Journal with WebQuest articles	Percentage (%)
2005-2006	0	0%
2007-2008	1	14.3%
2009-2010	3	42.9%
2011-2012	5	71.4%
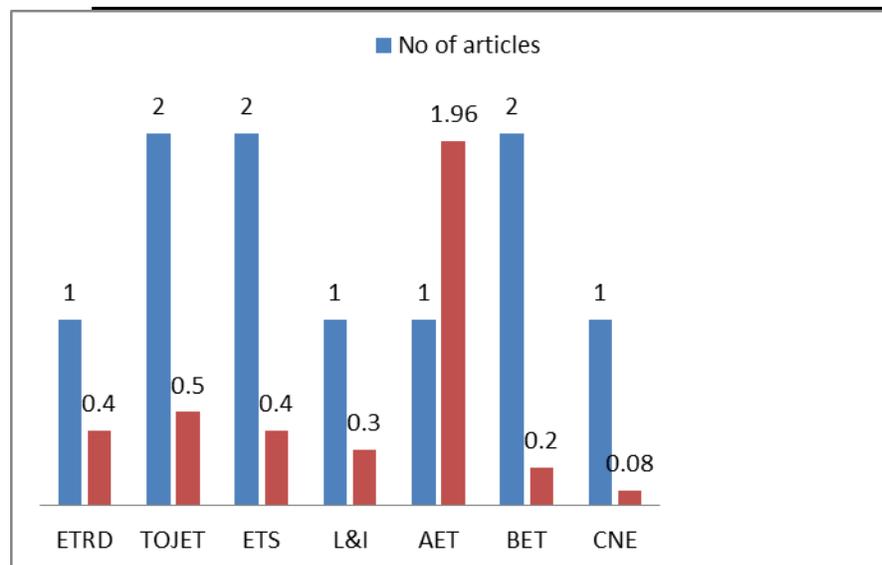
Figure 1: Percentage and number of articles in selected journals

The study found that from the year 2005 until 2012; only 1 or 2 articles which were related to WebQuest were published in the seven selected journals. For example, in AET there is a research on self regulated WebQuest learning system for Chinese elementary schools. While in TOJET there were two articles that studied WebQuest was found in 2010 & 2012. ETS also had the same pattern which WebQuest related research articles found in 2009 and followed in 2010. The issues that were highlighted since 2009-2012 was reading comprehension performance

(2012), motivation of the preservice elementary school teachers (2011), oral communication in English (2009) and WebQuest- Web Macaresi for teaching and learning (2010).

Two articles from TOJET 2011 and 2012 clearly discussed advantages of using WebQuest. The post-test administered in those research found that WebQuest helps in improving students' reading comprehension performance and it shows that WebQuest use has the potential in promoting competency in reading comprehension. For this reason, teachers and students need to be trained in order to use WebQuest more effectively (2012). The pre service elementary school teachers who used designed WebQuest–based applications in teaching and learning mathematics shows that it had a great effects on their motivation (2011). Results of these studies imply that developing WebQuest-based activities in a college level methodology courses may have more positive effect on the attitudes of the pre-service elementary school teachers towards teaching and learning mathematics, rather than doing spreadsheet activities. If they try to design WebQuest activities as a group or individual project in their methodology courses, they might have the opportunity to practice their pedagogical and content knowledge in a different environment, which will give more benefit in developing their competency. Multimethodology in teaching and learning processes also promises a good sign to practice not only for teachers, but also the students. The distribution of WebQuest articles in selected journals is shown in Table 2.

Table 2: Distribution of WebQuest articles in selected journals

Journal	No of articles	WebQuest	Total of articles	Percentage %
ETRD	1		233	0.4%
TOJET	2		398	0.5%
ETS	2		493	0.4%
L&I	1		294	0.3%
AET	1		51	1.96%
BET	2		906	0.2%
CNE	1		1240	0.08%
	10		3614	100

One of the main purposes of this study was to categorize research topics in WebQuest and to help indentify research trends from 2005-2012 in the 7 selected journals. The selected articles which were reviewed were classified into three categories such as WebQuest as learning enviroment, WebQuest as a learning tool and WebQuest for self development. Our study found that 40 % of the articles focused on the learning enviroment. For example, research done by Allan and Street (2007) on the impact of a knowledge by pooling WebQuest in primary initial teacher training shows that WebQuest has the potential to promote high order learning within different disciplines in higher education. It also creates a new enviroment in learning. As a result, the study of the 10 articles on WebQuest research found that: (1) when WebQuest was used in real situations, students could acquire more knowledge and experiences, and (2) in the learning activity of the experiment, the students accomplished different learning tasks and expressed their own opinions and perspectives, which could foster their critical thinking skills. On the other hand, the students in outdoor situation could be positive to participate in learning activity. Based on these outcomes, WebQuest has the potential to develop as a pedagogical model for teaching and learning. In Table 3, the study summarizes the content analysis from the selected journals.

Table 3: Content analysis of WebQuest articles in selected journals.

Research Topic	Topic Category	Source : (author, year, journal, page no.)	Sample and research location	Research Design	Instrumentation
Learning in a sheltered Internet enviroment: The use of WebQuests	Enviromental Education	Segers & Verhoeven *Learning and Instruction* Vol 19 (2009) : 423-432	229 Grade Sixth (116 boys & 113 girls) , Elementary School in Netherlands	Quasi-Experimental Design and Statistical analyses to measure the effects of WebQuests.	CITO Test, Digit Span Test, Questionnaire (21 Items), Knowledge Test, Scoring Form,
WebQuests in special primary education: Learning in a web-based environment1099 801..	Differences in learning gain when performing a WebQuest with a well-defined versus an ill-defined assignment	Tijs Kleemans, Eliane Segers, Mienke Droop and Hanneke Wentink *British Journal of Educational Technology* Vol 42 No 5 2011 801–810	Twenty boys and twenty girls (mean age 11; 10), attending a special primary education school, performed two WebQuests.	Knowledge acquisitionwas assessed by means of a concept map (ie, associative knowledge) and a knowledge test, based on facts concerning the subject (ie, factual knowledge).	Concept map (associative knowledge) and a knowledge test,

The quest for deeper learning: an investigation into the impact of a knowledge-poolingWebQuest in primary initial teacher training	Explores the impact on learning in higher education of the integration of a knowledge-pooling stage into a WebQuest.	Jo Allan and Mark Street *British Journal of Educational Technology* Vol 38 No 6 2007 1102–1112	Questionnaires were completed anonymously by 87 of the 95 students participating in the sessions; 37 of these respondents were on the BEd course and 50 were on the PGCE. Two focus groups were formed: one consisting of eight BEd final-year students, and one consisting of six PGCE students. Twelve questions were used to guide the focus group sessions.	i. Explain the concept of WebQuests, consider recent literature regarding the effects and difficulties of this approach to learning. ii. Examine students' perceptions of the impact of this tool on high-order learning.	i. Level of learning achieved by respondents is analyzed using Biggs' Structure of the Observed Learning Outcomes (SOLO) taxonomy. ii. Three sets of data were collected for this study: (1) from a student questionnaire focusing on students' perceptions of the impact of the WebQuest session; (2) from focus groups; and (3) an analysis of 48 feedback sheets for PGCE assignments. The questionnaire was used in order to gain as broad a picture as possible of student perceptions of learning via WebQuest.
Implementing a self-regulated WebQuestlearning system for Chinese elementary schools	The rapid growth of Internet has resulted in the rise of WebQuest learning recently. Teachers encourage students to participate in the searching for knowledge on different topics. When using WebQuest, students' self-regulation is often the key to successful learning.	Hsien-Sheng Hsiao, Chung-Chieh Tsai, Chien-Yu Lin and Chih-Cheng Lin *Australasian Journal of Educational Technology* 2012, 28(2), 315-340	Participants in the study including 193 students in six classes, with average 12 years of an elementary school in Taipei County,Taiwan. The experimental group and the control group are composed of three classes respectively.	The current study investigates the correlation between students' selfregulated behavior and their achievement when using WebQuest learning through the self-regulated learning assisted functions and traditional WebQuest learning.	Used quasi-experiment to study the effect in WebQuest learning, and sequential analysis to calculate students' particular interaction patterns. Study was a five-week experiment, in which the independent variables were the WebQuest learning with as well as the WebQuest learning without self-regulated learning assisted functions, and self-regulated levels of the students, while the dependent variables were their learning effect.

The effect of two different cooperative approaches on students' learning and practices within the context of a WebQuest science investigation	Science Education	Zacharias C. Zacharia • Nikoletta A. Xenofontos • Constantinos C. Manoli *Education Tech Research Dev* (2011) 59:399–424	The participants were 38 seventh-graders (14 year-olds) from two classes (Nclass1 = 18 and Nclass2 = 20) of a public school (Gymnasium) in Nicosia, Cyprus	Qualitative	WebQuest Conceptual test Screen and video captured data Interviews
The study on integrating WebQuest with mobile learning for environmental education	Enviromental Education	Cheng-Sian Chang, Tzung-Shi Chen, Wei-Hsiang Hsu *Computers & Education 57* (2011) 1228–1239	One hundred and three sixth-grade students in a public school in Tainan, Taiwan, participated in this study, and their ages ranged from 11 to 12	Experimental design	Pre test Post test
The effect of using WebQuests on reading comprehension performance of Saudi EFL Students	Reading comprehension performance	Yousif A. Alshumaimeri & Meshail M. Almasri. Curriculum & Instructional department. College Of Education.King Saud University, Riyadh. *TOJET:* Oct 2012-Vol 11, Issue 4. pp. 259-306	1st year preparatory program with 83 level 3 male students in the science and engineering track in the preparatory Year (PY) in King Saud University. Saudi male EFL students	Quasi-experiment. pre-test and post-test quasi-experiment non equivalent control group research design. Experimental group-received the traditional teaching &WEBQUEST as supplementary activities and the control group received traditional teaching only. Performance in the post-test was compared for both groups in order to determine whether there were significant differences between the groups in relation to the treatment. They were enrolled in the intensive English program with 20 weekly contact hours for two semesters and summer.	Data collected were analyzed using SPSS and t-**test** was computed to investigate the differences between the pre-test and post-test. An analysis of covariance (ANCOVA) was conducted, partialling out the pre-test scores, in order to investigate the differences between the experiment and control group in the post-test.
The impacts of mathematical representation developed through WEBQUEST and spreadsheet	motivation of pre-service elementary school teachers	Halat E (Halat,Erdogan); Peker M (Peker, Murat). *TOJET:* April 2011- Vol 10, Issue 2, pp. 259 -	30 studens in experimental group and 40 students in control group. The study conducted in the spring semester	Quasi experiment. Questionnaires, Course interest survey (CIS) as pre and post test in the study.	Test scoring guide in the analysis of the CIS. The response scale range from 1-5. *t*-test statistical procedure with $\alpha = .05$ in the pre-test scores to

		267	2008 and it took place for 7 weeks. Each group had 4 hours of instruction in a week.	To investigate how students are motivated, or expected to be, by the particular setting.	determine any differences in terms of motivational level between exp. and control groups.
activities on the motivation of pre-service elementary school teachers.			70 pre-service elementary school teachers as a convenience sampling that enrolled in mathematics teaching course at a university located in central Turkey.	Included 34 statements that categorized into 4 part: i. attention ii.relevance iii. confidence iv. satisfaction	This t-test procedure showed means scores differences in term of level and motivational between the two groups favouring the control group. Then scores from the CIS were compared using one-way analysis of covariance (ANCOVA) with $\alpha = .05$, which is a variation of ANCOVA, to adjust for pretest differences that existed between control and exp groups
Using WebQuest for oral communication in English as a foreign language for Tourism Studies	Present a practical back ground for using WebQuest, mainly orally. Effect of WebQuest in the classroom communication in English	Laborda JG 2009. *Educational Technology & Society,* 12(1),258-270.		The framework presented 3 main aspects: i. as a contructivism learning approach ii. as a professional developement activity iii. as an oral development task.-	Provide a real example to facilitate the understanding of the theoretical concepts.
Development and Evaluation of an Interactive WebQuest Enviroment: " Web Macerasi"	Developmental design: i.analysis and design ii. developement iii. implementation iv. evaluation	Yasemin Gullbahar, R. Orcun Madran and Filiz Kalelioglu. *Educational Technology & Society*, 2010 13(3), 139 -150.	convenience sampling. 3 courses from 2 departments in the educational faculty of a private university. 92 pre-service teachers (59 women & 33 men). The second phase of the study was conducted in a sophomore course called Teaching Principle and Methods	Qualitative & quantative method were used for this research. Collecting data relating to WebQuest used. WebQuest application Questionnaire was used. 1st part- 9 item for demographic data. 2nd part= 22 items for general design of WebQuest 3RD part- 19 items steps of the WebQuest project. All the items in this questionnaire used a five-point Likert-type scale where 5 = strongly agree, 1 = strongly disagree	Quantitative part: **Q**uestionnaire (descriptive analysis method) 1- demographic data 2. general design of QW site. 3. Steps of the WebQuest project 4.workng as individually or group on WebQuest project. Qualitative part: (content analysis) interview

This paper analyzed the publication by the methodology involved in WebQuest research. The results shows that 60% of the articles used quasi-experiment as the research design. The research objectives were more to see the positive aspects of using WebQuest. The other methods used were Developmental Research and as a concept paper. For example in TOJET (April 2011- Vol 10, Issue 2), a study on the impacts of mathematical representation developed through WebQuest and spreadsheet activities on the motivation of pre-service elementary school teachers used quasi experiment which involved 30 students in the experimental group and 40 students in the control group. While, the study done by Zacharias, Nikoletta, and Constantinos (2011) used a qualitative approach to study the effect of two different cooperative learning approaches, namely, the Jigsaw Cooperative Approach (JCA) and the Traditional Cooperative Approach (TCA), on students' learning and practices/actions within the context of a WebQuest science investigation. Various aspect of the learning processes including performance, comprehension, understanding, creativity and motivation were highlighted. The study described the implementation of a WebQuest in science in which 38 seventh-graders were involved as participants to study about the ecology, architecture, energy and insulation of CO_2-friendly houses. The result revealed that by applying the Wilcoxon test procedure, the JCA and TCA conditions improved the students' understanding of concepts related to the ecology, architecture, energy and insulation of CO_2-friendly houses. However, there were no differences between the two approaches, in terms of enhancing students' understanding of concepts related to CO_2-friendly houses using the Mann-Whitney procedure. The study described 6 categories of working mode that the students followed within the context of a WebQuest science investigation. The study also identified 4 categories of problems the students face within the context of a WebQuest science investigation (i.e., the problem with regard to the actions/practices (working mode) to follow, the WebQuest material, the web-based platform tools and student interaction within a group).

In comparison, the articles in C&E which studied WebQuest used an experimental design as the approach. An experimental group comprising 103 sixth-grade students participating in the study were broken down into three groups namely: traditional instruction, traditional instruction with WebQuest and WebQuest instruction with outdoors. Their assignment was to learn more about resource recycling and classification with the objectives being to know about the use of natural resources which not only improves the quality of life but also destroys the natural landscape and brings about environmental pollution at the same time; to learn the concept of resource recovery so that they can form habits of resource recovery and classification; and to understand that the earth's resources are limited. The results of the study showed that using WebQuest in outdoor instruction influences students' learning performance positively.

As a result of this study, the research methodologies had been used in all the articles appeared in the seven selected journals were descriptive research studies conducted involving WebQuest. The focus was on informational research with regard to the concept or the use of WebQuest in education.

Conclusion

The present study examines the WebQuest research trends between 2005-2012 from seven selected journals. In this decade, the WebQuest research trend has involved the quasi experimental study on how WebQuest can be used as a tool in teaching and learning, enhancing student potential and creating a positive learning enviroment. The analysis shows that all research had relied on a descriptive methods and critical analysis. It puts less concern on the importance of interpretative methodology that can be applied. Both types of research could emphasize and attempt to understand such phenomenon (WebQuest application) in order to deal with the issues of ability, reliability and effectiveness of such technology in terms of creating a better student and teacher as well. From the research also, it shows that we do not have any evidence that the studies were able to deal with those issues. Finally, this study suggests that research in the future should expand the data sources for more deliberate analysis. Future research is also encouraged to conduct similar studies; but with more current information and research data from various sources.

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Research Trends and Issues in the Studies of Twitter: A Content Analysis of Publications in Selected Journals (2007 – 2012)

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Abstract

This paper provides research trends and content analysis of studies in the field of Twitter that were published in seven major journals: **The Turkish Online Journal of Educational Technology (TOJET), Educational Technology & Society (ET&S), Educational Technology Research & Development (ETR&D), Computers & Education (C&E), Learning and Instruction (L&I), Australasian Journal of Educational Technology (AJET) and British Journal of Educational Technology (BJET).** These articles were cross analyzed by published years. Content analysis was implemented for further analysis based on their research topics, issues category, research settings and samplings, research designs, research method and data analysis. The results of the analysis also provide insights for educators and researchers into research trends and issues of Twitter.

41. *Keywords:* Twitter; Trends; Content Analysis

1. Introduction

Twitter was founded in 2006 by Jack Dorsey (@Jack), Evan Williams (@Ev) and Biz Stone (@Biz), programmers at the San Francisco podcasting company Odeo Inc. (Picard, 2011). The increasing number of educators, who use Twitter as part of their teaching and learning process, does create a niche area for researchers to study its use in education. In parallel to this increasing interest of the use of Twitter in education is the increasing number of studies conducted and published regarding Twitter use in education that have covered a wide range of topics; such as language learning, students' engagement and grades, students' collaboration and success, students' perception toward teachers or instructors and also higher education scholars' participation on Twitter (Johnson, 2011; Junco, Elavsky & Heiberger, 2013; Junco, Heiberger & Loken, 2011; Lomicka & Lord, 2012; Veletsianos, 2012). With the overwhelming numbers of published articles about Twitter usage in education, there is indeed a need to review the research trends and issues about the topic in order to help future researchers in related fields to design and framed their research interest.

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Although previous studies have shown that there were always enthusiasm for new technology, over time this perception may change as the 'novelty wears off' (Lomicka & Lord, 2012). With more than 175 million tweets per day (Infographics Labs, 2012) from 200 million active users (Bennet, 1993) six years after its introduction, the future of Twitter seems promising yet nothing can be said for sure. Moreover, by analyzing the current trends and issues in the studies of Twitter, this study will help generalizing the findings from the related researches and enable educators to decide whether Twitter usage will benefit them or otherwise. It is crucial, therefore to examine research trends and issues concerning Twitter in education based on the published articles related to the topic at this point.

As such, this paper intends to provide insights into the research trends and issues in the studies of Twitter through content analysis of selected journals from 2007 to 2012, covering seven major journals: TOJET, ET&S, ETR&D, C&E, L&I, AJET and BJET**.** The research questions that need to be answered by this paper are:

1. What are the research topics and research setting and sampling related to Twitter that were published in these selected journals from 2007 – 2012?
2. What are the main issues category and source of article related to Twitter that were published in these selected journals from 2007 – 2012?
3. What types of research design, research method and data analysis have been applied in article research of Twitter that were published in these selected journals from 2007 – 2012?

2.   Review on Studies of Twitter

The prevalent use of Twitter has increased in education; thus learning is no longer restricted to the four walls of classroom. By trying to move away from the traditional pen and paper classroom, Twitter as a new form of communication – a Web 2.0 micro blogging tool, appears to be blending harmoniously well with modern thinking and current educational practice as it ensures that learners will have more opportunities to be independent in their study and research (Crook, 2008).

Although it is always considered the world's second most popular social media platform after Facebook, Bruns (2012) listed a few characteristics of Twitter that makes it no less appealing than Facebook, such as (1) 140-characters updates that are designed for brief messaging, (2) flat and simple network structures, (3) public and visible to all messages from users or private and visible only to approved 'followers' and few other mechanisms such as #hashtag and @replies.

The benefit of Twitter in education does not only apply to students but to educators as well. The earlier studies that were published when Twitter started being used in the classroom mainly focusing on students' online practices (Ito, Baumer, Bittanti, boyd, Cody, Herr-Stephenson, Horse, Lange, Mahendran, Martinez, Pascoe, Perkel, Robinson, Sims & Lisa, 2009). It was then followed by few studies that attempt to examine the relationship of social networks and students' achievement and outcomes (Kirschner &Karpinski, 2010; Junco et al., 2011). Hew (2011) in his studies also tried to find students' attitudes towards online social networks.

After the first wave of studies about Twitter in education in general; which is mainly to see the relationship about Twitter and students, researchers then started focusing on Twitter usage and benefit in specific subject. The top of the list is the language learning. Borau, Ullrich, Feng and Shen (2009) in their research were focusing on using Twitter to train communicative and cultural competence. Lomicka and Lord (2012) proved that Twitter usage among language learner can be used to develop sense of community and social presence. The importance of Twitter to enhance social presence was again studied by Dunlap and Lowenthal (2009). There are also researchers who used Twitter in their studies to be compared with Facebook (Junco, 2012; Ranieri, Manca, & Fini, 2012).

It has been six years since Twitter being established on July 2006. With 500 million registered users and 340 million tweets daily and being nicknamed as "SMS of the internet", there is still a big room for future researchers to study the effect, benefit, advantage, usage or looking into the current trend and predict the future of Twitter in every aspects of life. This phenomena called for a need to conduct a generalization for previous studies as the basis for future studies related to Twitter.

3.   Methodology

This studies use methodology content analisis to analyse trend and issue about twitter. Why content analysis? Stemler (2001) confirmed that content analysis indeed is a powerful method to examining trends and patterns in documents. It is also a useful technique to discover and describe the focus of individual, group, institutional or social attention (Weber, 1990). By conducting a content analysis from the seven selected journals in the timeframe of 2007 to 2012, this study will look out for issues and trend that underlies the studies of Twitter currently.

Besides that, this study cross-examines papers related to Twitter; published in seven selected journals from 2007 to 2012. The selected journals were **TOJET, ET&S, ETR&D, C&E, L&I, AJET** and **BJET**. These journals were chosen based on its impact factor as released by Thomson Scientific 2011 Journal Citation Reports and Institute of Scientific Information (ISI) Journal Citation Reports. There was 4319 document items have been published by these journals from 2007-2012. However, only papers that were identified as 'article' were chosen and analysed.

Six databases were chosen for the cross-examine purpose. The different databases were chosen due to the availability of certain journals and accessibility of the abstract and full text for the selected articles. The databases were; **EBSCOhost, ProQuest Education Journals, Science Direct, Springer Link, Web of Science** and **Wiley Online Library**. One search engine was also used for the purpose above. The search engine used was Google Scholar.

First procedure in conducting this research is setting three items to search for the related articles in all databases above. They are; (1) Selected Journal Name for Journal Name, Publication Title or Journal/Book Title column, (2) Twitter for Topic or Title column and (3) 2007-2012 for Time span, Year or Coverage column. This step is important to ensure standardization in order to search the related articles in spite of the different interface between all databases.

There were 110 articles have been identified from the first procedure. Next procedure consists of further comprehensive review which needs the researchers to examine 110 articles carefully to determine the articles which is related to Twitter. Finally, a total of five articles were selected for the analysis.

Trend Analysis

Trend analysis of an article can show the periodic discussion taking place in a knowledge discipline (Erford, Miller, Duncan, & Erford, 2010). In the analysis of trend and frequency, justification for selection of articles is found in the TOJET, ETS, C&E, ETR&D, AJET and BJET only.

Content Analysis

Based on content analysis or the process of summarizing and reporting of written data (Cohen et al., in Cowan, 2011), the research topics in the articles selected for analysis were categorized according to key words in the given abstracts, issues discussed as well as research scope. Throughout the data analysis carried out, each category identified was further clarified using thematic analysis. At the end of the analysis, the categories and sub-categories of the articles are as follows:

1. Research topics

2. Issues category

3. Research settings and samplings

4. Research designs

5. Research Method

6. Data Analysis

4. **Findings**

Frequency and trend analysis

Based on frequency analysis, there were four articles listed in the shortlist related to the topic of Twitter. Three of these were found in BJET, ETS and C&E for the period 2007 until 2012. Following frequency analysis, there were two shortlisted articles related to Twitter in the BJET, one article ach in Journal of ETR&D and C&E for the period 2007 until 2012. Analysis of number of articles is given in Table 1.

Table 1
*Number of Articles Related to Twitter According **Yearly Phases***

No	Journal	Frequency	References
1	**BJET**	2	Shesen Guo, Ganzhou Zhang, & Run Zhai, 2011; Fei Gao, TianLuo, Ke Zhang, 2012.
2	**C&E**	1	Martin Ebner, Conrad Lienhardt, Matthias Rohs, & Iris Meyer, 2010
3	**ET&S**	1	Rita Kop, 2012

Content Analysis of Current Articles on Studies Related to Twitter

For the latest trend related to twitter, this chapter also considers issues in the published articles in the BJET, ET&S and C&E for the years from 2007 until 2012 only. Given the limitation of the date of publication four articles related to twitter were found. The selected articles were type of research based articles.

Research based articles are content analyzed based on several constructs such as title, research topic, issues category, research setting and sampling, research design, research method and data analysis. Table 2 show the results of content analysis of four selected articles related to Twitter categorized according to two categories namely research based articles and non research based articles.

Table 2. Content analysis and current focus on studies of Twitter.

Article Title	Source	Research Topic	Issues Category	Research Sample and Setting	Research Design	Research Method	Data Analysis
Use of Twitter for formative evaluation: Reflections on trainer and trainees' experience.	Liwen Chen; Tung-Liang Chen. **BJET**. March 2012, Vol. 43, Issue 2, E49-E52	Twitter benefit, barriers and method.	Perceptions of trainer and trainees on using the Web 2.0 application.	39 colleges, university and a private university student in Taipei.	Case study	Interview, observation, participation	Thematic analysis
Integrating readability index into Twitter search engine.	Sheshen Guo, Ganzhou Zhang & Run Zhai. **BJET** September 2011, Vol. 42, Issue 5, E103-E105	Application Program	Challenges to enhance capability by using Twitter	Twitter search engine	Descriptive research	Exploratory project	Thematic analysis
Micro blogs in higher education: A chance to facilitate informal and process-oriented learning?	Martin Ebner, Conrad Lienhardt, Matthias Rohs & Iris Meyer. **C&E** August 2010, Vol. 55, Issue 1, 92-100	Twitter for process-oriented learning, higher education	Chances to facilitate informal and process-oriented learning	Students of University of Applied Science of Upper Austria	Case Study	Observation	Thematic analysis
The unexpected connection: Serendipity in human mediation in networked learning	Rita Kop. **ET&S**. April 2012. Vol. 15, Issue 2, 2-11	Recommender, RSS, Twitter, Serendipity, Networked learning	Challenges and opportunities for learning towards Twitter.	recommenders, RSS and micro-bloggers	Qualitative research	Literature Review	Content analysis

5. Discussion and Findings

In this section, the authors summarized and discussed the major findings as follows:

Only four articles were found to focus on researches pertaining to Twitter. A published article focused on the benefits, barriers and methods in Twitter. Another article studied the application program. The third article looked at the use of Twitter for process-oriented learning and higher education. The final article studied recommender, RSS, Twitter, Serendipity and networked learning.

The main issues category that were discussed in these selected journal was user's perceptions on using of Twitter. Second and fourth article are concern on the issues of challenges which is to enhance capability by using Twitter and opportunities for learning towards Twitter. Third articles discuss about chances to facilitate informal and process-oriented learning. The source of article related to Twitter were Liwen Chen and Tung-Liang Chen, (2011), in BJET, 43(5), E49-E52; Shesen Guo, Ganzhou Zhang and Run Zhai, (2011), in BJET, 42(5), E103-E105; Martin Ebner, Conrad Lienhardt, Matthias Rohs & Iris Meyer 2010, in **C&E** Vol. 55, Issue 1, 92-100; Rita Kop (2012) (Special Issue Articles) ET&C, 15 (2), 2–11.

From these four articles, 39 students from institutions of higher learning in Taipei became samples. Research sample for the second article was the Twitter search engine. Students of University Of Applied Science Of Upper Austria became research samples for the third article while research samples for the fourth article were recommender, RSS and micro blogging.

Altogether, there were eight research methods used in the articles on Twitter, among them interview, observation, participation, exploratory project, and literature review. In design analysis, two articles featured different designs, namely descriptive research and qualitative research. Meanwhile, the other two articles featured case study design.

In data analysis, it can be concluded that three articles involved thematic analysis. Only one was in the content analysis category.

6.   Conclusion and Implications

In general, the results from the analysis done on articles pertaining to Twitter published by BJET, C&E and ET&C revealed that the use of Twitter is still new in the arena of teaching and learning as it was first introduced in 2006. However, it was proven through the articles that Twitter can be the trending networking medium and learning method. These articles based on research should be highlighted and displayed in various locations to support and expand this alternative educational tool as an innovation in the world of education.

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Review of Digital School Construction and Development in China

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Abstract

The National Long-term Education Reform and Development Plan (2010-2020) has pointed out that national education modernization and informatization has entered a new period of increasing development and improving educational quality. During this period, a different task and special requirements about education informatization has emerged, which has signaled the promotion of digital schools' construction and acceleration of the process of education informatization. By analyzing current characteristics and existing problems of China's digital schools' construction, this study offers suggestions that must be given more attention in future construction.

Keywords: Education informatization; digital school; elementary education; regional informatization

1.Instruction

The concept "digital school" was first coined by Professor Kenneth Green of American Claremont College, who sponsored and hosted a large-scale scientific research project, the Campus Computing project. However, concepts such as "digital city", "digital school" and so on had not been accepted internationally until the influence of former U.S. vice-president AL GORE's lecture "The Digital Earth: Understanding our planet in the 21st Century", which was given at the California Science Center on January 31, 1998.

Throughout the progress of elementary education informationization in the U.S., England, Australia and New Zealand, a common feature of global elementary education informatization construction has been to make schools become the main body and to promote further development of education informatization (Huang Ronghuai 2009). It can be concluded from these strategic reports of national educational development and from official investigations and studies that digital school construction in middle and primary schools focus primarily on the following aspects: informatization leadership, application of advanced technology, application of online evaluation, promotion of digital learning and teaching, support of effective teaching and learning, participation of community and family, learning outside school and the problem of campus safety (Wang Yunwu 2010). These experiences have provided China with abundant enlightenment. That is, while constructing our digital schools, we need not only pay attention to those vital aspects but also practically develop and creatively act according to our national condition and the actual situation and features of each school.

In China, the earliest appearance of academic journals devoted to digital schools dates back to the working report "Constructing High Engineering Education Model with the Harmonious Development of Knowledge, Ability and Quality, Trying Hard to Improve the Educational Quality and Managerial Level", published by Hu Guogen, president of Guizhou Industrial University in June 1999. This report mentioned "strengthening the constructing force of the digital school, establishing modernized teaching methods system and teaching management system". In April 2002, Huang Xuanzhe, the leader of the Information Centre of Shanghai Fuxin Senior Middle School, embarked on a systematic discussion of the digital school. Huang suggested that building digital schools is a current question and would provide teachers and students an entirely different digital working, studying and living environment. He also stressed that primary and middle schools must significantly differ from universities in the construction and functional design of digital schools (2002).

With increasing discussion of digital schools, many primary and middle schools have begun construction. For example, in Jiangsu, Zhejiang, Guangdong, Shanghai, and Beijing, some schools and areas with superior consciousness began building digital schools. After a long period of exploration and continuous improvement,

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thoughts about construction are becoming clearer. Each school has gradually developed its own features, unique building ideologies, programs and promotional strategies. Based on analysis and conclusions about the characteristics, problems, and future development tendencies of our country's primary and middle schools, this study aims to supply an overview and revelations on the national digital schools of primary and middle schools for researchers and practitioners who are interested in this area.

2. Features of the current construction of digital schools

Prof. Huang Ronghuai, who leads the construction of digital schools in the Beijing region of China, has analyzed how the ideal digital school should effectively support teaching and learning, a rich school culture, truly broaden temporal and spatial latitudes, be based on service-oriented consciousness, rely on advanced communication network technology, and build a teaching and learning educational environment with easy business, shared resources and flexible artificial intelligence.

Based on this ideal, we can draw a new educational system structure model under the support of the digital school as indicated in follow figure, which differs from the old system.
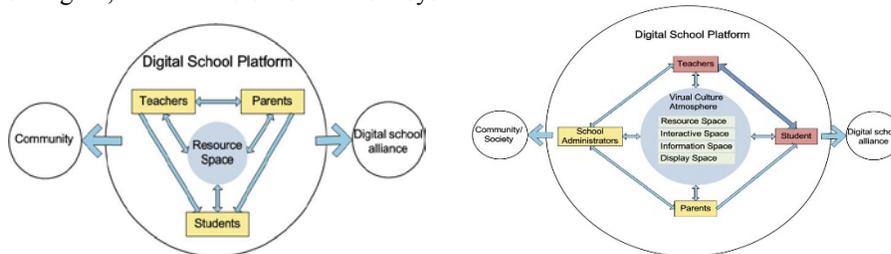
42. Fig. 1. (a)The old educational system structure model; (b)The new.

The new education system possesses the following characteristics. I. Openness. An important function of the digital school is realizing information transmission and communication across the boundaries of campus and technology by means of new and varied technology. This type of exchange involves the sharing and interchanging of information and resources not only in schools but also among schools and between schools and society. Each school attempts to fuzzify the individual boundary and create open and shared digital space in the large educational area. II. Interactivity. Cooperation is a core aspect of contemporary educational management of the school, as is multi-level interaction among teachers, students who promote their mutual cooperation, and, consequently, activated educational development. III. Development. The school respects the individual needs of the development of teachers, students and parents, and the digital school has provided relevant services for all levels of personnel that will satisfy each other's demands and realize the wisdom shared by mutual interaction and cooperation.

Currently, China's primary and middle schools have initiated digital school construction, and we will extract features of this construction from various practical construction cases.

2.1 Paying more attention to the practical requirements, improving function design, and incorporating campus culture and developing features

Many have stressed the practical demands coming from all levels of schools during digital school construction, and this foundation function design must be improved.

Chen Shengri, the headmaster of the information center at Qibao Middle School in Shanghai, compared different departments' requirements to tree branches. He considers that if the education environment likes vast soil, education informationization could be treated as one of the tens of millions of species of plants that scatter in the soil like stars or spread like forests, and as they grow, their roots make the soil more solid; at the same time, their growth cannot do without the soil. The branches and leaves of the plants, which represent the multifold demands, must also live in the soil (the present situation of the development of education and schools), but the soil wants to know their varied needs (Chen Shengri 2010). In this respect, different schools have not only commonalities with digital school construction but also have functional requirements for its own development. Therefore, how to analyze all levels of their own needs and the process generated by the possible interaction among all levels is of great importance.

Beijing Chaoyang Experimental Primary School (for their entire design scheme) investigated the actual demands of all types of users before construction, finding as many questions in real utilization as possible. Based on former jobs, designers should increase, decrease or integrate some functional modules when it comes to digital school planning, which has proven extremely effective in the latter usage stage (Chen Lihua and Li ying 2010). Another successful case is Nanshan Experimental School in Shenzhen, Guangdong province, whose digital school construction was based on the demands of five roles, including the school itself, parents, students, teachers and curriculum. This school produced the guiding ideology that digital culture leads the development of the connotation of the school and conducts construction on four aspects, including digital resources, digital platforms, technology applications and mobile learning exploration.

While improving functional design, campus culture and developing features become increasingly prominent. With this guiding ideology, digital school construction in Beijing area has made significant achievements, building a group of experimental digital schools with their own characteristics. For example, Beijing No. 94 Middle School has developed human software similar to a genuine errors-recorded notebook and ecological school-based curriculum; Fuxue-Hutong Primary School filled its digital school with Fu-Xue special culture (Ma Dingyi, Hu Songlin and Ma Yong 2011); Qiyi Primary School stressed effective evaluation in digital school construction; and Fengshi's attached primary school built a "digital class."

2.2 Consistent with the people-oriented principle and service-oriented construction ideology and focusing on users' feedback and experience

The ultimate purpose of digital school construction is to serve all kinds of users throughout the school, but those users are sometimes very critical, stating many work needs and not personal but mutual needs. Consequently, we must observe the people-oriented principle, that is, that the application of technology should return to the nature of education and humans, and must think about how to increase the effect and decrease the burden from the perspective of physical and psychological development, allowing the user to be completely free in the technical experience rather than act passively.

In the traditional technical environment, for example, each function system, which may be developed in different periods, has been put into use once achieved. Consequently, many systems are independent from others. Therefore, when teachers try to log into different function modules, they must go through identity verification many times, a repeated operation that is inconvenient and may waste time so is not necessary. To prevent such unpleasant things from happening, some schools have adopted a software technology called a wisdom application developed by K12 Inc. in Beijing, which constructs a set of communication mechanisms that complies with international standards by applying middleware technology, with enterprise instant communication software as the carrier. This mechanism may realize unified identity authentication, single-point login, application gateways and personalized information-pushing communication mechanism, connecting isolated information islands among the software, and man-machine information gaps; thus, users can smoothly deal with all types of application system processing. This technology has, indeed, produced sound effects.

The people-oriented principle is also able to focus on all levels of users' experience and feedback when they surf in digital schools. Users can learn that technology has brought some satisfaction to work and self-development. Accordingly, the leading organization of Beijing digital schools added the "user-happiness" index to the latest proposed digital school construction evaluation specification. The headmaster of Nanshan Experimental School in Shenzhen put forward this idea of benevolent education (Li Xianqi 2011), which guides digital school construction, attaching importance to the development of all children's behavior through information technology. It realizes personalized, student-oriented education and does not result in teachers having extra schoolwork burdens but rather improves their professional happiness.

The basic ideology of digital school construction is service-oriented and stresses that construction should provide service to the overall development of schools, not only in constructing, operating and maintaining the digital school itself but also in promoting the idea to serve teachers and students in daily teaching applications and professional development. In addition, it improves the practicability of digital schools through home-campus interactive network construction and development.

2.3 Using various methods and actively promoting the application of digital schools

With the development of China's education informatization construction, campus networks have gradually turned to the application of information technology in practical education from information infrastructure construction. Correspondingly, the problem people care about is no longer what equipment should be installed but instead what resources must be purchased, how can resources be managed uniformly, how can the system platform support teaching and learning, and how can we improve school informatization leadership and teachers' and students' information literacy. To promote the application of digital schools, each school has taken different approaches, such as strengthening teachers' ICT applications by providing training, improving teaching efficiency using scientific studies, and so on.

Guangzhou Dongfeng Road Primary School in Guangdong province set a goal of integrating new technology into daily teaching and learning activities and making technology application universal to realize universal usage and normal technology application, with the percentage of the curriculum, roles and processes covered totaling 100%. In addition, they invited education technology experts and scholars to guide the staff training, to help promote effective technology applications and to aid teachers and students in controlling technology easily, flexibly and creatively. These trainings and applications change the usual condition of just one or two typical application stages; for example, only in the public class would the integration of information technology with curriculum be put into practice. The digital school of Shanghai Qibao Middle School contains much practical application software development, such as achievement analysis software, elective course management software, teaching and scientific research achievement management software, art evaluation management software and a questionnaire survey subsystem (Chen Shengri 2011). All software actively works with the teachers' teaching and management, and teachers consider that the informatization works easily.

Zibo Beimengli Primary School in Shandong province concluded from an exploration experience of digital school construction that "subject is the first step". It applied for many national research projects during the "eleventh five-year plan" period, including "study on online teaching design and model in primary schools", "research on blended learning based on interactive white blackboard" and "research on primary school students reading and writing in advance under the information technology environment". Teachers and students actively participate in national primary and middle school information technology innovation and practice, with scientific research leading teaching research. This strategy not only promotes the application and development of digital schools but also has gained

many achievements. Teachers and students say that participation in scientific research has improved their information literacy. The application of information technology in education is from spontaneous to conscious, and from step-process toward standardization. After taking these subjects, teachers have learned a significant amount from many experts and have learned more in terms of educational theory.

3. Three factors that restrict digital school construction

Although China's digital school construction has moved to a certain stage, several factors continue to influence its process and are the imperative problems faced by primary and middle schools.

3.1 Personnel factors

Without informationization leadership or teachers and students with good information literacy, we cannot construct digital schools, let alone develop them. Informationization leadership plays a key role in digital school construction. Leaders must take charge in the overall planning of digital school construction, and it would be impossible for those who are lacking knowledge of informationization and current educational theories to work out an appropriate e-campus plan. The information literacy of teachers and students is also a critical reason to promote digital school construction, which largely determines the extent of the real practical applications of digital schools. Without qualified information literacy, no one knows when and how to use digital schools, which are actually "castles in the air".

One personnel factor is the technical team of primary and middle schools, which is different from universities with many technical experts, a professional staff and sufficient support when building digital schools. Advanced information technology (e.g., cloud services, mobile computing, the internet of thing technology, electronic schoolbag) has appeared. Although there is no strict request to use this technology in digital schools, it is a trend for future education. People have designed a blueprint for the prospective education informationization, which has not yet been built, so we hope technical and theoretical assistance will accelerate digital school construction. Some experienced areas can learn from one other by holding academic conferences, discussions and site visits. Experienced areas must help those who are lacking to break through temporal and spatial limits by sharing digital resources and creating an educational situation in digital schools.

As for primary and middle schools, there are so few people who are skilled in the latest computer technologies that if some schools desire a powerful professional team to achieve construction, they must always turn to technical individuals who are not part of their own staff. At present, most primary and middle schools take such strategies as "schools cooperating to develop with companies", "buying some resources, and then cooperating with or assigning to the companies", and some schools even "assign the task to capable companies". On the contrary, the phenomenon of schools independently developing rarely occurs in primary and middle schools. Hence, primary and middle schools must try their best to do enough research and improve functional design. Only if those former tasks were better accomplished would the latter work progress more smoothly. Consequently, while working together with other companies, the alternation of practical needs would have no influence on developing speed. Assuredly, in practice, changes in schools will also cause actual demands to change to some degree immediately.

3.2 Technical factors

Because of the long-term nature of digital school construction and the participation of different technologies, we must use all types of technical programs while dealing with data among various platforms, owing to their integrating standards that are different from one other. Recently, the data-planning problem has become a common issue raised by certain provinces and cities. Our local digital school construction holds the mutual goal to make true sharing of decent educational resources and managing of resources intensively and uniformly. Nevertheless, because different areas and schools cooperate with different companies and different companies follow different data standards, different data standards make different information systems unable to read or write each other's data and share resources, which ultimately gives rise to isolated information islands. Each school does things in its own way, resulting in repeated resources. This situation is critical.

Thus, we require a unified data standard as soon as possible to let each school have a criterion to comply with in digital school construction. Beijing city has been the leading example. First, it created the data interoperability specification. Second, it sent it to all experimental schools, and every school then self-defined and modified

according to this data standard. Under this uniform background, all schools may actually undertake personalized construction without restriction.

3.3 Evaluation factors

Evaluation plays an important role in digital school construction. Through evaluation of each school, we may know of the defects of construction and deficiencies of applications and then make corresponding improvements.

Yet, it is not easy to evaluate digital school construction for several reasons. First, each region has its own characteristics, so evaluation must be regionally distinctive. Particularly in different areas of China, there exist wide gaps in economic development. Therefore, each region differentiates from others in both investment and ideologies. Second, digital school construction has classified stages so the evaluation must be categorized. Third, practical evaluation must be mutative, as the actual process of constructions shifts. Fourth, schools in the same area have their own software and hardware features respectively, and similarly, evaluation should be performed at different levels. Fifth, significant attention must be paid to the characteristics and creation of digital school construction; therefore, evaluation must have some extended differentiation. Sixth, evaluation plays a guiding and leading role in digital school construction and, thus, should be particularly forward-looking.

Some areas have already formulated their own assessment solutions in terms of regional construction. Taking the example of Yangzhou city in Jiangsu province, its regional digital school evaluation rules contain four primary indexes: informational infrastructure level, teaching application level, management application level and guarantee measure level. In addition, Changing district of Shanghai has proposed an evaluation standard for application of digital schools, including six primary indexes: organization and management, network and facilities, teaching and resources, teaching staff and training, social service and communication and school-based features. Another example is Yinzhou district in Ninbo city of Zhejiang province. This region has set the standards for evaluating typical digital schools through six primary indexes: organization and leadership, hardware and equipment, educational resources, school managements, effect of usage and additional score.

Evaluation of digital school construction is constantly changing; consequently, it is necessary to take charge of evaluation and to constantly observe, think, explore and improve focal points in current construction. Only in this way may people promote "construction" with "evaluation" and lead "construction" with "evaluation" and ensure that digital school construction can be successfully completed.

4. Future development of digital school construction

Digital school construction aims towards, with school as the principal part, the constant promotion of building and developing the informationization of elementary education, connections between inside and outside the campus, interworkings among schools, and integration of technology and education. To promote full development, digital school builders can also locate some critical breakthroughs in the conclusion below.

4.1 Mining key technology for the "hotspots" in digital school construction

In the digital school environment, we can call those spaces that are often visited by teachers and students "campus hotspots" (e.g., intelligent classrooms, virtual communities, online libraries and virtual laboratories). Prof. Zhang Jiping summed up the features of the future ideal intelligence classroom, which is a prospecting blueprint of a prospective classroom, as "everywhere network, seamless access, flexible tables and chairs combined, changeable form, multi-channel display, convenient cooperative learning, classroom record, easy self-study, integration of virtual reality , resource expansion, intelligent controlling, people-based". The Intelligence Classroom is such an intelligence-enhanced classroom, which is characteristic of natural human-computer interaction, that it could freely control and operate all sorts of visual, acoustic and electrical equipment, teachers and students could be seamlessly engaged in teaching and learning activities and accustomed to many types of learning methods (e.g., distance education). In this classroom, learners study in a comfortable physical and psychological environment, multiform class activities are available, acquisition of high-quality multimedia educational material becomes more rapid, interpersonal interaction becomes stronger, class management is unified, teaching becomes artful and flexible, and learning is individual with interactive cooperation. Anyone can, without limit, transcend temporal and spatial blockages, arriving anywhere, talking to anyone, finding any learning resource and interacting with anyone in anyway. In a word, the application of information technology in the classroom satisfies all kinds of people's

educational demands, and the intelligence classroom brews an ideal and personalized educational form that can best match the individual's wishes.

It is beneficial to the construction of "hotspots" to know how to apply advanced technology, such as the ubiquitous internet of things technology, cloud computing technology and so on. The wireless terminals of internet of things technology not only allow for personnel positioning but also allow for parameter positioning for all sorts of "things", providing technical help for educational management, security management, health monitoring and class teaching. Take wireless interactive terminal technology, for example; it can make up the class interaction system with which teachers can real-time know the learning condition of and feedback from all students and then adjust the teaching progress. Regarding extracurricular teaching, internet of things technology supports independent inquiry learning, sets a certain teaching situation and performs mobile learning, and all of these benefits help cultivate the bold science-exploring spirits of students. Even though internet of things technology remains to be explored, scholars believe that it will realize the "wisdom campus (the intelligence campus based on the advance technology)" in the near future.

4.2 Regionally establishing digital school construction evaluation standards based on different regions

Standards are the foundation of campus innovation, and campus innovation allows for the development of standards. Yet, there is not only one unified standard or one complete standard system that includes implementation rules and management rules. It is critical to establish a platform that would allow teachers and students to apply and sufficiently develop with a multi-level and multidimensional usage based on the standard.

China has vast areas but a serious unequal distribution of economic development, and as a result, nearly all regions differ from one other in digital school construction. To promote the development of digital school construction, it is indispensable to develop evaluation strategies. However, it is not feasible to establish an absolutely unified evaluation standard. Therefore, some scholars have suggested establishing regional digital school evaluation standards, which not only promote digital school construction but also accelerate the interaction of various digital schools in a region. At present, regions such as Jiangsu, Zhejiang and Beijing that began digital school construction early have already formulated digital school standards. They are of some referenced worth but must be further refined.

Associate Prof. Li Yishun, who conducted a comprehensive analysis of the key points and evaluation work of developed countries' digital school construction, such as the U.S., England, Australia and New Zealand, refers to the 2010 American educational technology planning (named "Transforming American Education Learning powered by Technology") and education informationization evaluation and advanced a three-layer digital school evaluation theory. First is the construction level, which involves mastering the overall condition of the digital school construction of every school, evaluating the results of digital school construction with great investments and, if the intended targets are achieved, checking implementation. Second is the application level and involves judging if the construction of all kinds of software and hardware facilities have been put into practice to evaluate the reasonable degree of the former design and planning, the promotion of the core business, highlighting school-based features and innovation. Third is the benefit level and involves assessing the result of digital school construction and application and researching users' satisfaction to evaluate if the applied technology is available and if digital school construction would raise the comprehensive strength of the school and promote sustainable development in the future.

The establishment of evaluation standards is simple for areas or schools to evaluate the condition of their digital school construction while also supplying standards and advice about the schools that are constructing and designing digital schools.

4.3 To continue promoting the teaching application of digital schools and, at the same time, to drive comprehensive application

The ultimate goal of digital school construction is teaching application. Therefore, schools must try their best to make the digital school play a vital role in this aspect. They must also discover deficiencies in applications and solve these problems. In the 21st century, it is essential to cultivate students' four capacities: creativity and innovation spirit, critical thinking, problem-solving ability and communicating and cooperating ability (Joathan Anderson 2010). Fortunately, the digital school can provide the most convenient conditions for these similar objectives. Digital schools have gained some positive results in supporting the application of subject teaching, and each school must take other means to drive additional application.

Facing the current problems, Prof. Huang Ronghuai has established five "winning" rules of digital school construction that are inspiring our schools to promote the comprehensive application of digital schools. (1) Take advantage of situation. For example, simplify the complicated procedures for freshmen and let students feel more comfortable than previously through informationization. The application of an "all-in-one-card " system brings about the integration and management of sharing data. (2) Use a horizontal marketing strategy. The department of business takes charge, optimizes the work of the school office and educational administration, raises the service level, and wins "trust". (3) Look into conflicts and master the condition of demands. Take the special events of the school development, grasp the particular opportunities, arouse leaders' attention and "stimulate" coordination among departments. (4) Create time and space. Strive for time, solve significant problems and avoid the "short board" effect in digital school development. (5) Innovate constantly. Technology, business and service all require innovation, and win the value recognition of teachers and students through service (Huang Ronghuai 2011).

In spite of the active utilization of all sorts of platforms with various functions provided by digital schools, schools must also integrate other technology and equipment with applications. Currently, the alternation of resources and terminals is more influential in the educational aspect. Among them, Adobe, Inc. is one of the most outstanding examples. This company rapidly assists teachers in creating teaching resources by use of their e-learning suit (including Acrobat, Photoshop and Flash), and these teaching resources bring about a strong interactive learning environment with a multimedia experience, thereby giving the students multiple experiences, including visual, acoustic and sensual. Multiform teaching resources can also be combined as just one "resource pack", and this form allows students to watch and operate without any restriction over platforms, make independent study convenient, and help teachers modify on their own more easily to satisfy personalized practical needs. These rich-media technologies must be assuredly potential in the education application, as it can create a sort of rich-media teaching experience, full of self-modification, individualized custom-made rules and ample interaction and a teaching context like real life, which backs the transfer of knowledge and enhances problem-solving abilities. This fertile visual and acoustic experience not only contributes to stimulating learning interests but also helps teachers teach more effectively.

Lastly, teachers and students are increasingly attracted to tablet computer technology, which stresses the users' experience. This technology supports mobile learning as well. With the assistance of such mobile, light and portable computers, it is possible for informal and individualized learning to occur and also for teachers to build a mobile-learning environment for students in the real-life context. Mobile learning is highly suitable for independent study outside class. Once opening the computer, learners can begin to study at any time and in any place. Take teachers from Xishan branch campus of the high school affiliated with Renmin University of China, for instance; after experience with this equipment, they began attempting to explore real-life mobile learning based on tablet computer technology. They say that while students are discussing in class or doing independent inquiry learning, teachers can approach students and answer questions more closely. For example, in a mathematics class, teachers can also demonstrate the entire process of graphic alternation with the computer to help students better understand certain geometric principles. When this demonstration is over, the process of graphic alternation can be saved and promptly sent to the student. This behavior perfectly describes how teachers apply technology to support actual teaching and treat it differently with different students.

4.4 Building a community of digital school development and deeply promoting further communication and technical sharing

In the next ten years, the digital school construction, especially that of primary and middle schools, is an inevitable trend in the development of education informationization, an effective scientific method that helps to facilitate the integration of education and technology.

The first digital school communication conference was held in April 2011 in Beijing. This conference indicated that national digital school construction is currently underway, and many areas and schools are seriously promoting this work. However, we also have found that development is quite uneven, based on participants' opinions. For example, Shenzhen, Shanghai and Beijing have accumulated significant experience, while Shandong and northwest areas still have many problems.

Hence, we consider it necessary to establish some communities as early as possible and then regularly organize conferences on digital school construction and conduct multilayered discussions. We believe these efforts will promote digital school construction. Also, experts in this field will gather all over the country, discussing and exchanging mutual viewpoints on national educational informationization, such as the relationship of technology and

education, advanced direction of the development of national elementary educational informationization, construction and development of digital schools and so on.

5.Summary

Digital school construction aims to support learning and innovative teaching, resulting in improvement of resource integration and service, which enhances the efficiency of the educational innovation of the entire school. Yet, people have been conscious that this work cannot be achieved overnight but must be performed systematically. Whether you can seize and make good use of the opportunity to construct digital schools depends on the work of changing teachers' and students' informationization knowledge, improving opportunity awareness, strengthening reformation and taking reforms as breakthroughs. Trying our best to effectively promote digital school construction and firmly enhance our schools' strength, our dream of development of elementary educational informationization may come true!

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School Improvement Efforts and Challenges: A Case Study of A Principal Utilizing Information Communication Technology

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Abstract

There is a shift in school improvement paradigm over the years due to the advancement of technology. School improvement efforts are more focused on capacity building, improved teaching and learning processes, high level student learning outcomes, and creating a community of learning amidst a digitized learning environment. This has transformed the roles and responsibilities of principals to make ICT as an enabler for effective teaching and learning. In this context, this case study is attempted to explore the best practices employed by a principal in an urban secondary in Kuala Lumpur. The findings indicated the importance of principal's leadership qualities, attributes and his belief in the use of information communications technology to guide ICT utilization in school.

Keywords: School improvement; Technology Leadership; Transformational Leadership; Instructional Leadership

Introduction

Current school improvement efforts are influenced by technology advancement. Information and communication technology (ICT) has compelled teachers to use innovative pedagogies to improve learning. Aligning to changing pedagogies and learning with ICT, reforms in curriculum, assessment, governance and financing (Levin, 1998 in Hopkins, 2001) were evident in education systems in countries like Australia (Schiller, 2003), Hong Kong (Yuen, Law & Wong, 2003), Britain, Canada, Ireland, Japan, New Zealand, Singapore (Ministry of Education, 2003) and Malaysia (Ministry of Education Malaysia, 1996).

For school improvement, principals are expected to improve student achievement (Hopkins, 2001; Leithwood, Day, Sammons, Hopkins & Harris, 2006; Crum & Sherman, 2008). However, due to centralized policies (Hopkins, 2001), efforts to enhance teacher's capabilities may be hindered. Meanwhile, concrete links between school leadership and school improvement ICT could yet be established in educational and leadership studies in Canada, United States of America, United Kingdom, and Australia (Barth, 1990; Gray, Hopkins, Reynolds, Wilcox, Farrel & Jesson, 1999; Harris, Day, Hopkins, Hargreaves, Hadfield & Chapman, 2003; Leithwood, Day, Sammons, Hopkins & Harris, 2006; Ross & Gray, 2006; Crum & Sherman, 2008).

The Ministry of Education, Malaysia upholds ICT as an enabler to propel education to greater heights (Ministry of Education, Malaysia, 2006). However, the challenge lies in the principal's autonomy to implement change due to the hierarchical organisational structures and centralised school management. Moreover, research on ICT utilization and leadership in the local context is scarce. Most studies on school leadership focus on effective schools and developmental models (Rahimah Ahmad, Zulkifli Abdul Manaf & Shahril Marzuki, 1999; Shahril Marzuki & Mohd Faisal A. Ghani, 2007). A recent study on factors affecting leadership and ICT utilization in Malaysia indicated there is no significant relationship between ICT competence and transformational leadership in implementing ICT (Mojgan Afshari, Kamariah Abu Bakar, Wong & Saedah Siraj, 2012). Hence, case study to explore the best practices employed by principal to guide ICT utilization in school is required.

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School Improvement, Leadership and ICT Implementation

Technology has transformed how pupils learn, how teachers teach and influences how school principals envision opportunities for ICT utilization for teaching and learning (Ministry of Education Malaysia, 2010). To facilitate effective ICT adoption, school processes need to be redesigned (Law, Wong and Yuen, 2003). Learning is curriculum-driven and technology supports learning (Ministry of Education Malaysia, 1997). Hence, teachers should innovate their teaching practices and adopt constructivist and learner centred approaches to make learning fun and engaging (DeWitt, 2010).

ICT in education programmes were more focused when it was established that ICT enhances the quality of education (Tong & Trinidad, 2005 in Mojgan Afshari, Kamariah Abu Bakar, Wong & Saedah Siraj, 2012). ICT-competent principals were found to be more successful in implementing ICT programs (Hughes & Zachariah in Ho, 2006). To facilitate creation of digital citizens, school administrators are needed to be visionary leaders, competent instructional designers and excellent professional practitioners, as highlighted in the National Education Technology Standards (International Society for Technology in Education ISTE, 2009). Therefore, it is essential for school principals to be knowledgable and to develop relationships to sustain the culture of ICT utilization (Fullan, 2001; Mojgan Afshari, Kamariah Abu Bakar, Wong & Saedah Siraj, 2012).

Leadership is a social process involving complex relationship-webs with multiple and evolving influences, with the intent to influence followers to move in a desired direction (Ho, 2006). School principals were recommended to regenerate school systems by resetting directions, redeveloping its people, redesigning their organizations, and managing their instructional programmes for organizational transformation (Leithwood, Day, Sammons, Hopkins & Harris, 2006). Building teachers' capacity, encouraging innovative pedagogies and creating communities of learning are focus areas to consider (Barth, 1990; Gray, Hopkins, Reynolds, Wilcox, Farrel & Jesson, 1999; Hopkins, 2001). The transformational entities should include facilitating instruction, developing personnel, facilitating leadership, delegating and empowering teams, recognizing the ultimate accountability, establishing communication and rapport, and managing change (Crum & Sherman, 2008), as well as developing staff competencies and providing accessibility to the teaching and learning content (Glickman, Gordon & Ross-Gordon, 2010). Teachers, senior management, governors and parents contributing as the 'community of learners' is of importance because these groups energize their learning as well as of others. In advocating the importance of school capacity in school transformation, a new dimension of technical resources refers to the quality of the curriculum, instructional material, assessment instruments, effective use of technology for the work place was identified (Newman, King & Young, 2000).

School principals are instructional leaders in leading curricular instruction in school (Leithwood, Louis & Anderson, 2004). However, school principals as change facilitators were found to be successful in initiating and implementing school change with ICT (Schiller, 2003). A recent research has indicated transformational leadership as the significant leadership type to influence and promote ICT utilization in schools (Yee, 2000 in Mojgan Afshari, Kamariah Abu Bakar, Wong & Saedah Siraj, 2012). Transformational leadership explained as idealized influence, inspirational motivation, intellectual stimulation and individualized consideration occurs when one or more persons engage with others in manners that leaders and followers raise one another to higher levels of motivation and morality (Geijsel, et al. 2003). Creating collegial norms is the principle behind this principal-teacher collaboration (Davies, 2005; West-Burnham in Bush, 2005). The key to building these interpersonal relationships depends on how effective school principals encourage and empower teachers to share the role of 'change agentry' in the change process (Senge, 2005). These initiatives could result in raised confidence levels and renewed expectations among the education community. However, successes of such initiatives are highly dependent on the school culture and the quality of interpersonal relationships (Barth, 1990).

Meanwhile, a research in 800 schools in USA indicated that technology leadership is necessary for effective ICT utilization in schools (Anderson & Dexter, 2005). In technology leadership, pupil engagement in authentic learning experiences, supported by the use of appropriate technology; sharing a vision of defined technology's place in education; effective professional development; equity of access by providing ICT access to pupils regardless of the skill or interest of their teacher; and ubiquitous network where digital technologies are available whenever and wherever needed were areas which need to be addressed (Flanagen &Jacobsen, 2003). Similar entities of vision,

access and support were reflected in Riedl's technology leadership model (Ho, 2006). Ultimately, school principals takes on different leadership roles to ensure ICT is utilized for teaching and learning. They are the instructional leaders, transformational leaders and technology leaders.

The Study

In this exploratory case study, an inductive approach is used to investigate leadership practices and ICT utilization by a school principal of an urban secondary in Kuala Lumpur. The best practices employed for school improvement amidst a budding and developing digital school environment in Malaysia was observed. This study attempts to explain the connection between ICT utilization from the following perspective.

a. What is the belief of the school principal regarding ICT in education?

b. What are the leadership practices adopted by the school principal?

c. What are the attributes shown by the school principal?

Methodology

Research Design

This case study explores the emergent leadership themes in relation to ICT utilization. Relationships between people, and findings based on views and actual accounts of how the school principal influences the use of ICT by stakeholders especially teachers, student, parents and the community are determined by the grounded theory approach. This systematic analytical procedure was selected because it could explain phenomenon and context which are not clearly evident where multiple sources of evidences are used (Yin, 1994) besides facilitating meaningful analysis of data by linking particular facts and areas without biasness (Lincoln & Guba, 1995).

Sampling

A school was selected based on its impressive track record on successful ICT utilization and its establishment as the centre of academic excellence. The school principal was awarded the ICT Excellent Leadership Award in 2008 due to his accomplishments in leading ICT for teaching and learning. The school found to excel in co-curricular activities, English language and ICT niche areas was also conferred the cluster school of excellence in 2008 by the Ministry of Education, Malaysia.

Data Collection

Open-ended interviews were conducted to determine leadership practices and ICT utilization in the school. Probing questions were used to explore emerging themes in depth by permitting free and unlimited responses (Lincoln & Guba, 1985). Consent for participation and the use of research data was obtained prior to research. The interview was audio-recorded and transcribed. Subsequent interviews were conducted until sufficient data was found for corroboration. Information was also collated from reviews of the school mission and vision statements, the school's charter, event logs, the school annual magazines et cetera and school's websites.

Data Analysis

In analysis, the transcript was categorized according to leadership themes and mapped to establish emerging links between school leadership practices and ICT utilization. In data presentation and analysis, these findings were supported with literature and quotes from the sample.

Findings & Discussion

The emerging themes in relation to transformational leadership, instructional leadership and technology leadership were found to contribute to successful ICT utilization in school. Four improvement initiatives linking leadership practices and ICT utilization identified were realigning school practices, building teacher capacity, building community support, and building a culture of technology utilization.

Findings are explained in two segments: (1) the school principal's beliefs in ICT utilization and (2) how the school principal's leadership practices and leadership attributes influences the initiatives attempted for ICT utilization in school. The leadership attributes are used to explain the leadership practices

School Principal's Belief and ICT Utilization

Successful school improvement initiatives are highly dependent on the beliefs of the school principals due to factors of passion, ownership, skills and knowledge (Fullan, 2000). In context of this case study, the school principal's firm beliefs on the importance of ICT for school transformation were indicated below.

"..As I have pointed out earlier, the school has long since established in academic excellence but to maintain and further improve teachers and students in this aspect, I choose to use ICT to areas of learning, teaching and administration…."

"IT is not for show. No doubt people will be impressed with the technology infrastructure but that's not how it is supposed to be. Technology is to be translated into efficiency and productivity… it is about teachers being able to access resources for teaching and learning and others for administrative purposes…"

The following teachers' responses were elicited to support the school principal's belief in ICT.

"…the principal is IT-savvy and he sees opportunities in using IT in school… He practices IT and as you can see we have a technology rich environment…That's why the school is moving towards IT…"
…He is different… still insist on teaching a few IT classes which is very rare these days…"

Leadership Practices, Leadership Attributes and ICT Utilization

The school principal demonstrated the transformational, instructional and technology leadership attributes as well as a strategic leader in resetting priorities, organizational goals and planning for developing school capacity.

Realigning School Practice

The respondent was found to be an interventionist, a strategist (Hopkins, 2001) and change facilitator (Barth, 1990; Caldwell in Bush, 2005; Yukl, 2002). The purposeful school leader in the sample who viewed changes with urgency and energy expedited the change (Harris, 2000**).** His initiatives included resetting goals, environmental scanning, needs analysis, priority setting, planning, budgeting and motivating stakeholders.

"…I set targets and make sure the vision of the school to achieve world class education by 2010 is achieved…..I have to scrutinise the school vision and mission and to redefine what is world class education in a very tangible way before setting certain targets for the school…I did an environmental scan to look into gaps and areas for improvement…I get the teachers to do a SWOT analysis of strengths, weaknesses, opportunities and threats other than my own personal scanning... is about turning weaknesses into strengths…"

The school principal empowered teachers to direct management and exercise control over curricular related tasks. The importance of teamwork and ownership, an attribute of transformational leadership (Leithwood, Jantzi & Steinbach, 1999; Bush, 2005) were noted.

"...Teachers are appointed to different committees and they came up with strategic plans, lesson plans and teaching and learning resources... This strategic plan is a point of reference when we finally get down to getting things done...This plan is dynamic and expandable from time to time as we encounter different situations... "...I have compiled the school strategic plans and uploaded to the school website the school's Drupple, a Content Management System (CMS) application which I have set up last year so my teachers can access all sorts of materials and resources for instance the strategic plan online via intranet to see what other teachers are doing

"...Ownership among teachers is very important, so what best to do is get them involved in planning and setting targets. I make sure my teachers have ownership of their plans and I practices both top-down and down-up managing... in achieving targets..."

Building Teacher Capacity

Building teacher capacity by developing competencies and establishing professional learning communities (Newman *et. al.,* 2000; Harris, 2000) was identified. Engaging teachers in continuous professional development is very important as it allows teachers to self-sustain and to experiment and construct new knowledge. As an instructional leader, the school leader provided opportunities for teachers to enhance their teaching and learning skills, resulting in more learning possibilities to support student's learning (Mortimore, 1998; Fullan, 2000).

"... I piloted an internationally acclaimed ICT Certification for my teachers... they went for the ICT courses and were certified... teachers gain knowledge and hands-on skills in using applications... and this is a way to encourage teachers to continuously learn...My teachers are all ICT literate... they have to proof that they are using higher level applications like Flash and Professional Adobe Illustrator to develop teaching and learning resources and lesson plans..."

"...we are going to set up an LCD projector at main school office to salute long serving and excellent teachers. It is a way for the school to recognise and give appreciation for their hard work...this is the least the school can do to show that we care and appreciate their services and to celebrate their achievements...it is to be unveiled as a surprise for the teachers and a gift during the upcoming Teacher Day in May..."

Building Community Support

Creating and facilitating networks that leverage on good practices were found to enhance relationships between the school and the community (Day, 2005). The school principal has succeeded in negotiating and forming networks and strategic alliances with the community for instance with the State Education Department, the school alumni, parents, agencies and private sectors to support the ICT initiatives. Contribution of expertise for professional development, monetary resources, school infrastructure and ICT equipment were recorded.

"...I usually have coffee ...with the old boys to get them to "buy in" to new ideas...don't have much problem garnering support in fact I have more demand to supply. They are very supportive in developing the school... the new building adjoining the old wing is fully sponsored by the Old Boys Alumni...The computers in the two (2) computer laboratories are funded by the alumni..."

"...company X tested and piloted an internationally acclaimed ICT Certification...after the one year tenure Company X awarded the school with the set of online software and since then teachers have continuously learn ..."

Building A Culture of Technology Utilization

The continuous efforts to build a culture of technology utilization is influenced by the school principal's beliefs on ICT as an effective tool and how it can be used to further enhance learning and teaching. In this aspect, the school principal portrayed the attributes of a technology leader who constantly builds student's and teacher's

capacity in using ICT, and the leader of resource management by providing equal access to ICT (Flanagan & Jacobsen, 2003) and leading technical resources (Newman *et. al,* 2000; Fullan, 2000).

"...One of the standards of cluster school is single schooling session...this year we implemented the one schooling session...With this new time, we can slot IT classes into the actual schooling timetable which is once a week for all classes...

"... we are provided with projectors and screens to facilitate teaching in the classroom... we also set up a central repository centre where all courseware are loaded up on to the CMS server where students use the content online for self-pace, self-directed and self-access learning.."

The school principal's efforts to provide equal access to equipment and resources were reflected below.

"...Content Management System (CMS) application which I have set up last year...so my teachers can access all sorts of materials and resources for instance the strategic plan online via intranet..."

"...computer club generates about RM80,000.00 per year...funds are used to pay for utilities and facilitate other IT based activities in school...two (2) IT coordinators come in twice a week to assist in managing ICT... their salary is paid by using the computer club funds..."

"...We were funded RM500,000.00 by the government ...By using this fund, we bought PCs and laptops. At this moment, the teacher computer ratio is 1:1, either PCs or laptops...for existing ICT infrastructure, what I did was to upgrade their equipment with more random accessed memory (RAM)... All classrooms are equipped with mounted Liquid Crystal Display (LCD) Projectors and screens...I'm looking into setting a panel whereby teachers can easily link up their equipment to the projectors ...The whole school is wired and linked up with the Schoolnet, we used the streamyx line where we pay the service providers by using funds from the Computer Club..."

A summary of the improvement initiatives, leadership styles and attributes in ICT utilization in school is tabulated in Table 1.

Table 1: Summary of Leadership Styles and Attributes in ICT Utilization in School

	ICT Utilization in School: Leadership Styles and Attributes				
	Initiatives	**Leadership Types**	**Leadership Attributes**	**Concepts**	**Descriptors**
1.	Realigning School Practices	Transformational leadership Instructional leadership	Strategist Change Facilitator Interventionist Motivator	Shared Vision Goal Setting Teamwork Interpersonal Relationship Collegiality	Setting achievable targets Aligning teachers to school vision and mission Accessing and scanning the environment for opportunities Selective in defining areas for improvement Creating strategic and tactical plans for ICT utilization Involving teachers as managers and leaders in different committee
2.	Building teacher capacity	Instructional leadership Transformational leadership	Skilled Directors in Curriculum Skilled Human Resource Directors Master in Building Managers Negotiators	Innovative Pedagogies Sustained and retained expertise	Developing and enhancing teacher knowledge, skills and expertise Appreciation and recognition Rewards and promotion
3.	Building community support	Transformational leadership	Skilled Curriculum Facilitators Negotiator	Networking Sustainability Community of Practice	Continuos parental support Active alumni involvement in funding, providing expertise, school equipment and infrastructure Consolidated community support for

ICT Utilization in School: Leadership Styles and Attributes				
Initiatives	**Leadership Types**	**Leadership Attributes**	**Concepts**	**Descriptors**
				the State Education Department, government agencies, and private companies
4. Building a culture of technology utilization	Technology leadership	ICT change agents ICT leaders ICT champions	Innovative ICT Teaching and Learning Pedagogies, Tools and Resources Students' Engagement Maintenance Support	Efficient and productive teaching and learning process Technology Equipment – PC, LCD, Laptops Content Management System Whole school is wired and linked to the world wide web: streamyx and SchoolNet Employing IT Coordinators for maintaining equipment

Recommendations & Conclusions

In relation to leadership literature and research, this case study has consolidated the importance of the school leader, his leadership styles, attributes and beliefs as the key for successful ICT utilization in school. However, a clear distinction of a single leadership practice is not evident as the school principal was continuously adapting to instructional, transformational and technology leadership at different instances.

The school principal's beliefs were also found to influence school initiatives. In implementation, the school principal has had a worldview of how ICT provide teachers opportunities for innovating pedagogies and developing new learning experiences. Secondly, the school leader strongly believed that ICT was the solution for improving students' learning. Building strong community support is another salient point for success, and being effective negotiators with effective communication skills to bring ideas across is an advantage.

Therefore, the following recommendations are suggested for leadership practices and ICT utilization schools.

- Initiatives are school-based and teacher initiated

- Communicate goals and change efforts to the entire school community.

- Committed to teacher development and professional growth by providing professional learning opportunities

- Develop leadership and temporary systems where groups of teachers act as catalysts for change within the school

- Promote collaborative problem-solving and open communication

- Incorporate a collaborative and participative approach within the school

- Focuses on professional interchange, collaboration and networking where professional communities are established through their work in schools – establishing communities of learning

- Develop improvement and monitoring strategies

However, this case study is specific to one school only, and further research is required to determine if these principles could apply to other cases.

In conclusion, effective school improvement initiatives involve the whole school working in collaboration to motivate and inspire the community in lieu of changes in practices and belief systems. School principals are considered as change agents, ICT leaders and ICT champions to encourage and acculturate ICT utilization in school.

Faced with this challenge, it is recommended that school principals explore the possibilities of being transformational leaders, as well as instructional and technology leaders.

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School management by values according to teachers' opinions

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Abstract

Today,management by values has increased in value instead of management by regulations and norms.Internalized values of administrators and teachers at schools influence the improvement of organizational behaviours effectively.This research aims to determine the perceptions of teachers at primary schools about 'management by values' and if there is differentiation in successs according this perception or not.In research, survey methods are used.Research's sample is formed by 261 teachers working at schools in Elazığ. Schools' successes were determined according to results in SBS.In result,participants adapt management by values in high levels.

Key words: Primary schools,Values, Management by values,Teachers'opinions.

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Introduction

According to pozitivist paradigma in management science in past, thougths of organizations and management as a cosmic and reality, it was supposed that various patterns developed in this field can be applied to all organizations. But,at the end of the last quarter of 20. century, observed in other fields ,in organization and management theories a paradigma transformation became a current issue and serious criticisms started about programmes aiming the training of education administrators. (Mulkeen, Cambron, McCabe, Anderson, 1994; Şişman ve Turan, 2002).

At the beginning of mid 1970s,a trust worthy transformation in organization and management science started. In all fields, multiplying theroists started a struggle against the pozitivist paradigma.Post-Pozitivizm and Post-Rationalism claim that reality, knowledge and truths are social speculations. So we reach different results in topics appearing as indisputable. Because each of us fing different meanings of the same things according to subjective perception. Therefore, the same thing can be interpreted differently. (Tierney ve Rhoads,1993,322; Şimşek, 1994). Existing education management and leadership theories ignore the importance of values and culture at scholl. But, culture gives the meaning of life. Culture is an intellectual skeleton combining belief, values and actions. Last studies emphasize that the importance of values in school administrators' effectiveness (Bates, 2001a) and make a point of values in education organizations.(Strike, 1993). School administrators' values are the sources of intends. In many studies, despite the emphasis on instrumental actions and technic contentment, it appeared that values intending administrators and their culturel sources are valued.(Bates, 2001a, Yılmaz, 2006).

According to Greenfield(1994) ,the field of educational management, since it entered the dominance of pozitivist paradigma, human values, emotions and subjectivity have be ignored intentionally or not. Greenfield (1994) brings out that researches in educational management fields need to head topics forming human behaviours such as language, culture and social contect to understand the social realities.(Cited by Turan, 1998;Turan ve Şişman, 2000; Şişman ve Turan, 2004b;Yılmaz,2006).

Values of people influence behaviours in all stages intentionally or not. Social structures effected by human behaviours also can be effected by values. Human behaviours concern not only himself but also the society. It is important that education system which aims to shape human behaviors should be programmed as value-centered.

 The basic assumption of management by values is the point of view seeing human as a presence behaving according to values rather than reasonal. Management by values is an approach integrating the employees around the values and providing value-focused behaviours. According to this approach the most important factor of collective spirit is the shared values. In the organizations of values management there is an emotional relationship between employees and the organization. If the degree of internalization is strong, the emotional relationship becomes stronger. The strength of emotional relationship increase the ethnic responsibility of employees. (Çelik,2002:84). At the same time ,the researches in physchology and education fields show that people generally reflect the values they find important to their work environment (İmamoğlu/Aygün,1999; Baloğlu ve Balgalmış, 2005).

Purpose of Research

The aim of research is to determine the opinions of primary school teachers about school management topic and testing if there is a differentiation or not in the opinions of teachers' according to success.

2. Method of Research

The research is in survey pattern and it is carried out as a descriptive study. The study universe of research is formed by the schools in the center of Elazığ in 2008-2009 school year. Sample is formed by 261 teachers in 18 primary schools chosen randomly.

Data Collection and Data Analyze

As data collection instrument 'Management measure according to values' was used, developed by Yılmaz.(2006). To determine the measure's validity and reliability opinions of two academicians took into

consideration, so content and expression aspects were arrenged. To determine the validity and reliability a survey conducted 80 chosen teachers in city center of Elazığ raof datas to factor analyze (KMO) ve Cronbach Alpha co-efficient was calculated. KMO= .93, Barlett's Test= 2844,6 as a result of this test, the datas were suitable to factor analyze. In factor analyze it was understood that sections gathered in mono section and mono factor explains %47 of loads of sections. For example, in the result of reliability analyze Cronbach Alpha co-efficient was found as= .97.This result shows that the measure is reliable. There are 25 sections in measure. Schools' successes were evaluated according to SBS. While interpreting the aritmetic avarage in Likert survey, the results were 1.00-1.80 totally disagree, 1.81-2.60 disagree, 2.61-3.40 uncertain, 3.41-4.20 agree and 4.21-5.00 totally agree accepted.

3. Findings and Comments

Participants gave opinions about school management as 'Agree' or 'Totally agree' (X= 3.83- 4.42). So it was concluded that teachers accepted high level value management. This situation is suitable for cuntries such as Turkey devoted to values.

In 2007-2008 school year sample schools' successes in OKS 100/3= 33 according to equal co efficient; it was determined as 0-33= 3, 34-66= 2, 67-100=1. Related information is shown in Table 1.

Table 1. 2007-2008 school year , sample schools' OKS success.

	School Name	Participant Students	Successfull Students	Success Rates %	Success Sequence
1	Özel Mustafa Sabuncu Primary School	53	51	96	1
2	Özel Harput Primary School	34	29	85	1
3	Özel Bilgem Primary School	18	15	83	1
4	Kıbrıs Şehitlerı Primary School	28	21	75	1
5	Mezre Primary School	247	140	57	2
6	50.Yıl Primary School	14	8	57	2
7	Hilalkent Primary School	41	23	56	2
8	Koç Primary School	79	40	51	2
9	Fevzi Çakmak Primary School	13	6	46	2
10	Mehmet Ve İfakat Gülaçtı Primary School	7	3	43	2
11	İstiklal Primary School	39	15	38	2
12	İbn-İ Sina Primary School	18	6	33	3
13	Yavuz Sultan Selim Primary School	3	1	33	3
14	Ziya Gökalp Primary School	25	8	32	3
15	ŞHT.Öğretmen Rüstem Şen Primary School	11	3	27	3
16	Vali Tevfik Gür Primary School	42	10	24	3
17	Kuyulu Primary School	8	1	13	3
18	Şht.Öğretmen Nadir Ozan Primary School	22	1	5	3

Taking into consideration of school success,teachers'opinions about the management by values are shown in the table.

Table 3. The means of the participants according to their school's success

Groups	Mean	Frekans	Standart Deviation
Group1	4,11	86	0,61
Group2	4,00	100	0,79
Group3	3,78	75	0,75
Total	3,97	261	0,73

According to success situations of participant schools,the answers to measure sections are varient as (X= 3,971; SS=0,73) and this comes the levels 'agreee and totally agreee' .Highest participation about the management by values belongs to high-level successfull school teachers. 1st Group= (X= 4.11; SS=0,61).

A single-option variance was done to see probable difference in the opinions of participants according to school success. In result of analyze,despite no difference in 16. Section,there was a difference in 9. Section.

Table 4. A single-option variance determining the difference between school success and participants' opinions.

No	Items	X	F	p	Difference
5	All sorts of studies are cared to be copmleted successfully.	4,08	10,38	.00	1 ve 2- 3
6	Scientific principles are seen as a guide.	3,83	6,46	,00	1 ve 2- 3
7	Hard workers are appreciated in community.	3,66	3,51	,03	1 ve 2- 3
10	Private time should be sacrificed for school in necessary situations.	4,00	17,56	,00	1. Grup ile 2 ve 3 arasında
12	Cooperation among colleagues should be cared.	3,96	3,47	,03	1 ve 2- 3
19	Taking responsibility in friends and work groups shouldn't be ignored.	4,06	4,06	5,38	,005
21	Sources are tried to be used effectively and productively.	3,97	4,06	,41	1 ile 2 ve 3. grup
22	The necessity of harmony among colleagues are thought.	4,22	3,00	,42	1 ve 3
25	Works are done in pleasure.	4,03	4,32	,14	1 ve 2- 3

The different sections among employees are the sections about responsibility,coordination and cooperation related to study methods.The highest participant in management by values measure was in favor of first group and there were different opinions with other groups.

4. Conclusion and Discussion

Management by values perception, appropriate to human nature, has increased in value recently.In this research,done to determine the opinions of teachers about tht management by values,teachers adapted the education by values in high levels.At the same time we reached other researches done to similar results.(Yılmaz, 2006; Blanchard&O'Connor, 1998; (Powellandothers, 1984).Management by values is so significant about the acceptance of organizational purposes and affordance of organizational effectiveness. (Wiener, 1988).

In the research we concluded that the teachers of successfull schools' accepted the management by values more.That is to say,the management of successfull schools depends on values.The schools having strong organizational culture and values are more successfull and motivation of teachers are higher(Cheng, 1993; Stolp, 2002).So it shouldn't be forgotten that motivation, the base of organizational success is affected by beliefs and values.

Suggestions

- Management by values appliances in education organizations should be widespread.

- Trainings for teachers,students and tutors about the management by values topic should be arranged.

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    e a subheading within the Appendix if you wish.

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Self-Directed Learning in asynchronous courses: Strategies for Effective Design and Development

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Abstract

Designing asynchronous online courses should be done through the application of scientific strategies using different models of instruction to ensure the success and achievement of the educational goals. This paper will discuss the process of designing a computer based instruction for the Ministry of Education in Oman to teach the main strategies to design asynchronous online courses. The paper will explain the process used to design this project using the "Dick and Carey System Approach Model" and the Merrills' First Principles of Instruction to design the content of the Computer Based Instruction.

Key words: Front- end Analysis; Needs Analysis; CBI.

Introduction

   As we are living in the 21st century, technology is playing a vital role in speeding the education movement around the globe. The Ministry of Education in Oman (MOE) has a team called: "The E-content and E-Learning Team" which is responsible for designing and developing instructions for learning use besides providing the necessary training courses to enhance the use of technology in each region. Recently, this team began to offer online courses through the Educational Portal in the MOE. A front-end analysis process was conducted to ensure the need for an instruction; the analysis consisted of analysing the MOE online courses and questioning both the course designers and learners on the effectiveness of the MOE courses; the results revealed the course designers lack the knowledge of designing online courses and learners are still not satisfied after all. The front-end analysis ensured that there was a need to design an instruction to teach the strategies of designing online courses. The purpose of this project is to design and develop a computer based learning instruction for MOE team members on the strategies of designing effective self-directed online courses. The paper will describe the design, development, and evaluation stages of this computer based instruction and then present the results. This paper will discuss the project case study and define the Instructional Design Approach which will be applied in the design and development of the Computer Based Instruction (CBI). The learners of this CBI are specifically members of the e-content and e-learning teams of the Ministry of Education in Oman (MOE), and generally any educators who design self-directed online courses whether in K-12 schools or any other educational academics can get benefit from this CBI.

Project Case Study

   The Ministry of Education Oman (MOE), Sultanate of Oman, has established the educational portal to create a communication platform between all personnel working in the Ministry; teachers, students, parents, faculties, etc. Within the different directorates of the Ministry of Education in the different regions; e-learning and e-content teams have been formed. In the last two years, those teams had started to teach asynchronous online courses through the Educational Portal Forums. Those online courses are open to anybody in the Ministry, teachers and faculty, to sign up and then complete them in their convenient time. The courses are completely online and learners have to achieve

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them without the instructor. Those courses have been mentored by the General Directorate of Information Technology in the Ministry of Education Oman.

Front-End Analysis:

Environmental Analysis

The MOE has visions and missions in online education and there is a potential support to provide variety of online courses to e-learning and e-content members. The MOE has provided the team members with the needed technology to accomplish its vision. As a result, each member has the needed software and hardware and also the capabilities to use them. The MOE provides positive social support to learn all what is needed to design online courses. More results on the environmental analysis are included in Appendix D.1.

Learner Analysis

Each e-content and e-learning team in each region consists of members who used to be teachers, of different subjects, but skilful in integrating technology into teaching. They have been selected according to their skills in computer and their ability to be innovative to teach using technology. When those teams have been first established in every region, members have been trained and exposed to variety of workshops to prepare them for the new job. Thus, all team members are aware of the future goals and the responsibility of the e-learning and e-content teams. Many of the team members have taken online courses before but none of them have taken courses on the strategies of designing online courses. At this point, the teams of the different regions have posted a variety of asynchronous courses within the last two years. Besides, the teams are continuing to create courses as there is still a need for those courses to spread the importance of integrating technology into teaching. More results on the learner analysis are included in Appendix D.2.

Needs Analysis

Performance Problem

From my navigations within the asynchronous courses which mainly have been created by members in e-content and e-learning teams, they lack the principles of the self-directed online courses; such as not supported with clear syllabus neither clear directions on how to accomplish each task. Online surveys were submitted to almost 200 members of the e-learning and e-content members (See appendices A, B, C). The results of a scale question (1-5 scale) on any previous training/workshop experience on learning how to design online courses is as following: 80% have previous training experience on designing online courses, 10% have no previous experience on designing online courses, and 10% have limited experience based on readings. Moreover, the survey included a question to ensure whether the learners were able to access formal training resources to learn how to design online courses, the results are: only 10% have attended workshops but 10% have used Google only as a main source. Besides, 10% have more than one resource to learn the strategies to design online courses. Also, 50% of members pointed out that they are in need for a CBI to teach them the strategies of designing online courses, however; only 10% did not need to learn the strategies on designing online courses. On a different online survey which was given to teachers who have taken the MOE online courses, the results clarified that the MOE online courses need some modification in delivering the content. In a scale question about the satisfaction of those learners: 10% were satisfied with the MOE online courses, 10% were unsatisfied, and 75% were fairly satisfied with the MOE online courses. Also, 70% of learners were not able to complete the MOE asynchronous courses without the instructor, 20% not sure, and 10% who did explain the difficulty to complete those courses without an instructor. Based on the previous question of the survey, 50% of learners agreed that the MOE online courses did not include any guidance on how to complete the course. Moreover, 100% of learners agreed that the MOE online courses should be improved regarding the content and guidance provided to complete each course. In additional comments provided by the learners: they think that the MOE online courses should be clearer and should provide details on how to accomplish the course objectives.

Proposed Solution

   Given the problems listed above and the need for those asynchronous courses, providing an instruction on the strategies of designing online courses will increase the teams' abilities to design effective asynchronous courses. The instruction will teach learners the strategies and principles of designing online courses especially the self-directed online courses. This instruction will be designed and developed as a self-instruction which will teach learners how to design their own self-directed online courses. The Instructional System design that will be used to develop this project is: "Dick and Carey System Approach Model." Using this model, this project will go through the following steps: Analysis, Design, Development, Implementation, and Evaluation. This instruction will be developed in the form of a Computer Based Instruction (CBI) using "Adobe Captivate" and will include a pre-test and post-test besides the developed content. The content of this project will be taught using An Instructional Design Approach, First Principles of Instruction Approach, to ensure mastering the learning objectives.

The Delivery System using the Computer Based Instruction (CBI)
   The Computer Based Instruction (CBI) will be the delivery system for the designed instruction. The CBI is a term used to indicate that the designed material is software and able to be used in any computer whether the CBI is stored in CD/DVDs, in a personal website, or any other server. The CBI of this project will be designed using Adobe Captivate and it will be a self-directed instruction; the instructor is not involved in the learning process. Within this CBI; the learning materials will be provided to learners besides the pre-test, post-test, and short exercises.

Instructional Design Model (Dick and Carey Model)

Design

   - The optimal goal of the CBI is: to apply the best strategies when designing an asynchronous course. The CBI also includes other six sub-goals:
     - Identify synchronous from asynchronous courses
     - List the main strategies of designing an asynchronous course
     - Demonstrate designing a course syllabus
     - Demonstrate designing a course guidance
     - Demonstrate designing a course schedule
     - Demonstrate designing a course content

   The design stage consists of two stages: designing a task analysis (See Appendix D.3) and performance objectives and assessment (See Appendix D.4).

Instructional Design Approach

To teach the content of the CBI, an Instructional Design Approach will be applied: "First Principles of Instruction Approach" which is one of the instructional design approaches to design and develop instructions (Merrill, M. D. 2009. First Principles of Instruction, 2009, p.42). The criteria for selecting this approach when developing the CBI are: the context, the learners, and the environment. The goal of this approach is to enhance the skills of understanding the content. This approach could be applied to teach adults and provides motivational techniques for learning the content. Besides, this approach could be applied in a variety of environments and the CBI is one of them. Since this CBI is a self-directed instruction in which learners are not receiving any guidance from the instructor, this approach provides techniques to ensure the effectiveness and efficiency of mastering the learning objectives such as the application phase. Appeal is also another priority for learning the content of this CBI in which this approach supports appeal more than effectiveness and efficiency. This approach consists of four phase cycles (Figure 1): activation, demonstration, application, and integration. The principle of each phase includes (Merrill, M. D. (2009). First Principles of Instruction, 2009, p.42):

Figure 1: The Four-Phase Cycle of Instruction

Development

Storyboard

The storyboard of the CBI includes a detailed description of each slide in the CBI; what will be the content of each slide, the narration/ audio of each slide, media used and any additional notes. Based on the content of the storyboard, the designer will develop the CBI. Appendix D.5 includes the Storyboard of this CBI.

Designing and Conducting Formative Evaluation

As part of the Dick and Carey Model; a formative evaluation was conducted after the first draft of the developed CBI. The purpose of this evaluation was to improve the module after it has been developed and to get feedback on the currency and accuracy of the content. The formative evaluation consisted of two parts; the one on one evaluation and the small group evaluation. The learners were able to access the CBI through the following URL: www.thurayaalghafri.com/Moodle

The CBI is uploaded within the course: CBI MOE

The following are sample screen shots from the developed CBI:

Figure.2: Screen shot samples from the CBI

The introductory slide   **Pre-test Slide**
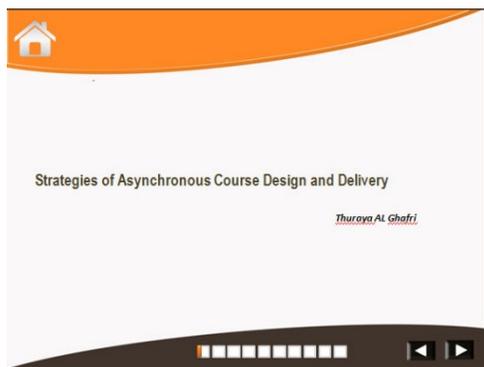
Navigation Screen
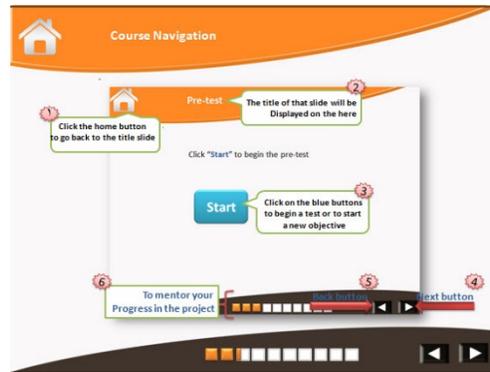
The One on One Evaluation

The purpose of the One on One Evaluation is to identify and remove the most obvious errors, to obtain initial performance indications, and to get reactions on the content by learners. There are three main criteria that this evaluation will be gathering from learners:
1- Clarity: of the content, objectives and the learning materials presented in the module.
2- Impact: the learners impact on the module, their attitudes, and their achievements of the learning objectives.
3- Feasibility: of the time and resources provided in the module.

Participants

The participants of this evaluation consisted of four learners from different knowledge background; one is IT teacher and three English language teachers. They are all females and members of the e-learning and e-content teams in the MOE. The four of them have work experience in the Ministry of education between 4 to 8 years. The learners did the evaluation one at a time. Learners received the CBI URL, www.thurayaalghafri.com/Moodle, which includes both surveys and the developed CBI.

The Small Group Evaluation

The second evaluation stage was the small group evaluation. In this evaluation, a group of users tested the CBI without any guidance from the designer. The purpose of this evaluation was to: determine the effectiveness of the changes made after the one on one evaluation, and to identify any remaining learning problems. The criteria that this evaluation did focus on are: the learners' performance scores on the pre-test and post-test, their attitude about the instruction, and the feasibility of the instruction.

Participants

The participants of this evaluation consisted of three female learners from different knowledge background; two English teachers and one used to be a math teacher but have good skills in technology. Two of them have 5 years of work experience and the third one has 8 years of work experience. Each learner did the evaluation separately and in a different location from other learners because each one lives in a different region and it was difficult to have all of them do the evaluation at the same time and place. The internet was the only source to access the developed CBI. The designer shared a drop box with learners besides uploading the CBI in a private server. The designer was able to talk to one of the learners to discuss the CBI in general and get an impression about the CBI besides the written surveys.

Results

One on one evaluation

The attitude questionnaire, appendix D.8, consists of three parts: the scale part and the comments and others. In the scale part of the questionnaire, the survey samples rated their motivation to use the instruction in a scale of 5 in the CBI objectives in the following areas: attention, relevancy, confident, and satisfaction. The reason for evaluating the CBI based on these areas is that they can measure the effectiveness of the CBI from different sides; the design, the content, the presentation of the content, etc. Based on analysing the first part of this questionnaire, see Appendix D.9, the results were as following; the lowest average was 1.8 on these parts of the project: sample video of a course guidance, and the exercise on a course syllabus. On the other hand, the highest average was on the objective: "demonstrate designing course guidance" as the average was 3.7 and 3.5 on these goals: "what are the main parts of course guidance 3.7", and "course guidance objective 3.5.

The results on the "comments" part which asked learners to add the strengths and weaknesses on parts of the project. The most important comments on the strengths of this CBI were: the CBI was inspiring and easy to use, as well as it has nice screen interface design. On the contrary, the main weaknesses of the CBI were as following: it has lots of texts, it was long, it was little bit boring, and also there should be more diversity of slides. Moreover, the results of the second survey, See Appendix D.7, were average between good to very good, and a few times it was "excellent". There was one questionnaire which added a comment "needs more clarification in the clarity of the content.

To add more, both tests were included in the CBI in the form of an online URL, using Google Docs applications. This is because most of the questions in both tests are subjective and difficult to score the students' results whether correct or wrong. From analysing answers of both tests, all students answered the multiple choice questions correct. However, in the other questions the students' answers in the post test were better than the pre-test. In the pre-test the students did not have an idea of what is a syllabus or what is the course guidance. In the post test, the students' answers were more accurate and based on the CBI content.

One on One evaluation, Changes:

After conducting the one on one evaluation, the designer made several changes and additions to the CBI such as: including more videos, images to increase the learners' motivation and adding the introductory video which demonstrates the main objectives within the CBI. Besides, the designer added a summary video which summarizes the main content of the CBI.
Also, the designer changed the post-test and the pre-test and included them within the CBI instead of including them in Google Docs.
Continue designing the rest of the objectives; "Identify synchronous from asynchronous courses", "List the main strategies of designing an asynchronous course" and "Demonstrate designing course content".

Small group evaluation

The attitude questionnaire, appendix D.8, consists of three parts: the scale part, the comments, and others. In the scale part of the questionnaire, the survey samples rated their motivation to use the instruction in a scale of 5 in the CBI objectives in the following areas: attention, relevancy, confidence, and satisfaction. Based on analysing the first part of this questionnaire, see appendix D.10, the results were as following; the lowest average was 1 in the objective "Demonstrate designing course guidance" and specifically in the exercise part. To add more, the following objectives also scored low average of 1.2: learners' satisfaction on the new skills, clarity of the CBI vocabulary, learners' confidence to demonstrate designing a course schedule, and the exercise part in the objective "demonstrate designing course guidance". On the other hand, the highest average was 2.2 on the following parts of the CBI: "face to face vs. online", "sample of a course syllabus", and on the relevancy of demonstrating designing a course schedule and course syllabus.

The results of the other survey, appendix D, were as following: most answers vary between good and very good while there were blanks in some questions of the survey. The most interesting answer was that the CBI "sentence structure" was complex. Also, the length of the CBI was another interesting result; two of the learners find the CBI

is long and it took them almost an hour to complete it. Moreover, the main weakness in the instruction is that it needs more audio to guide learners within the CBI. Besides, in the exercises and also in both tests, filling the gap questions was very challenging and difficult.

The score results of both the pre-test and post-test is explained in Appendix D.11. In general the post test scores are higher than the pre-test scores for each learner.

Small group evaluation, Changes:

- After the small group evaluation, the designer is planning to make the following changes to the CBI:

- Add more explanations on some of the objectives as some learners indicated that the "sentence structure" is complex.
- Add audio into some of the slides such as: before the pre-test and post-test slides to explain the tests and provide information on the question type.
- Change the font size and color in some of the slides to make the visual media more interesting and appealing.
- Modify the typo mistakes in some of the slides.

Evaluation Results:

Based on the one on one evaluation results, there are some required changes in the CBI. The first one is to re-edit the sample video of course guidance as well as the exercise of a course syllabus. Moreover, based on the attitude questionnaire results, the required changes are mainly in the diversity of slides and also to reduce the text in some of the slides to make the CBI more interesting. According to the tests results, the multiple choice questions might be too easy and they could be modified especially in the post-test. After all, most changes are technical changes and related to the course design and few of the changes are on the clarity of the content or the tests.

According to the small group evaluation results, the CBI still needs modifications in the buttons, audio, and images. Also, more audio guidance on how to proceed or where to click should be added in some of the CBI objectives. There are other modifications should include the language complexity such as adding glossary for difficult vocabulary. To add more, the results of tests clarify that there is a progress in the students' learning, however; the learners' comments shows that they faced difficulty in filling the gap questions. Thus, "fill in the gaps" questions could be converted to a multiple choice question.

Conclusion

In conclusion, this paper discussed the stages that a developed CBI went through: a front-end analysis stage, and then the design, development and evaluation stage of the computer based instruction to teach the strategies of designing self-directed online courses for the e-content and e-learning team members in the MOE. The paper reviewed the front-end analysis process to ensure the need for the computer based instruction. The front-end analysis included surveying both the learners and designers of the current MOE online courses. The results of the need analysis proved that the designers lack the knowledge of designing online courses. Moreover, the paper included the environmental analysis, the learner analysis, and the reasons for developing the instruction as a computer based. The Dick and Carey Instructional System Model was used to conduct this paper. Merrill's First Principles of Instruction Approach used to design and develop the CBI. This paper included all details of each step used to design and develop the designed instruction. Both the "one on one evaluation" and the "small group evaluation" were used to assess the effectiveness of the CBI. At the end the paper was concluded by discussing the evaluation results and explaining the limitations of this paper. This paper will play a great influence on the e-content and e-learning teams' performance in Oman to help them design asynchronous online courses for the Ministry of Education. All the data gathered and analysed based on the environment and learners in Oman. Thus, based on the current language and knowledge skills the content of this CBI was developed. Despite the difficulties to achieve this project, language, distance and time difference between Oman and the US, the evaluation results guided the designer on the strengths and weaknesses of the CBI. Upon the formative evaluation results, there will be more modifications to this CBI till it

becomes ready for final implementation. When the final version of the CBI is ready, it will be used by the Ministry of Education in Oman. This CBI will be a great asset and an additional source for the e-content and e-learning teams in the MOE to help improve the teams' productivity of designing asynchronous online courses.

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Appendices

Appendix A

This survey was created via Google Docs and sent to participants through emails. The survey is part of the first stage of the project, the front-end analysis, to ensure the need to design a CBI to teach the strategies of designing online courses.

Title: Online Survey for E-Learning and E-content members.

Link to the online survey:

https://docs.google.com/spreadsheet/viewform?formkey=dEwwNUo2MXU5SUg4LWo5THdfM1FEQXc6MQ

QR code of the appendix:

Appendix B

This is the interview questions which were created in Google Docs and sent to participants through emails. The interview is part of the first stage of the project, the front-end analysis, to ensure the need to design a CBI to teach the strategies of designing online courses.

Title: Interview questions
Link to the online interview:
https://docs.google.com/spreadsheet/viewform?formkey=dElqWmtKR0hjV1FNRDdFQWtCWjhUbGc6MQ
QR code of the appendix:

Appendix C

This survey was created via Google Docs and sent to participants through emails. The survey is part of the first stage of the project, the front-end analysis, to ensure the need to design a CBI to teach the strategies of designing online courses.

Title: survey for teachers who attended the MOE online Courses
Link to the online survey:
https://docs.google.com/spreadsheet/viewform?formkey=dEo0UEFpc2tsWXFrUWl3ZTZrajg3bHc6MQ
QR code of the appendix:

Appendix D

This online Appendix includes the following: environmental analysis, learner analysis, task analysis, performance objectives, story board, the evaluation form used to score the learners' pre-test and post-test results, the questionnaire used during the one on one and the small group evaluations, and the attitudinal questionnaire that was used during the one on one and the small group evaluation stages. Besides, it includes the results of the attitude questionnaire that was given to participants during the small group evaluation stage and the one on one evaluation stage, and it includes the scores of the pre-test and post-test of the small group evaluation stage.
Link to the analysis in Google Docs:
https://docs.google.com/document/d/1PKXD8Q8bFGYRZCZ4edsisartvEy0PfDFWYqqT9f3gwc/edit
QR code of the appendix:

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Shared Mental Model Among Graphic Designers, Multimedia Designers and Subject Matter Experts in Designing Multimedia-based Instructional Media

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Abstract

The research identified and explored the shared mental model among the instructional multimedia design and development experts comprising of subject matter expert, graphic designer and multimedia designer. The knowledge shared by the team was categorized into three groups of multimedia design principles encompasses of basic principles, authoring principles and design principles. The research focused on soliciting knowledge of agreement on the principles.   Outcome of the research is essential in providing description of the cognitive skills needed to perform tasks in multimedia design and development proficiently.

Keywords: shared mental model, subject matter expert, graphic designer and multimedia designer

INTRODUCTION

To share can mean to have or use the same entity such as share the beliefs, but it can also mean to distribute. In the context of team cognition and shared mental models, sharing can imply either knowledge similarity or common knowledge that is held among team members for example, everyone knows the same thing or knowledge distribution in which knowledge is shared by apportioning it to team members according to expertise or role (Cooke et. al; 2001, Salas et. al; 1995). In this sense knowledge is complementary, not common with respect to the team. It has been suggested that realistically, team knowledge is not likely completely common or distributed, but rather overlapping with portions that are distributed or common (Cooke et al, 2000; Klimoski & Mohammed, 1994). Thus, this advocates the research which focuses on the shared knowledge among experts in multimedia design as the overlapping knowledge.

In order to explore the shared mental model, Cognitive Task Analysis (CTA) is applied throughout the research. Cognitive Task Analysis (CTA) is defined as the exploration of mental processes, a method to analyze and represent the knowledge and cognitive activities workers utilize to perform complex tasks in the work domain. It focuses primarily on how workers function in cognitively-demanding domains. It is most useful in developing training programs, developing means to assess performance, and developing criteria to select people for certain jobs. It also provides insights into creating effective decision support systems and other software systems (Clark et al, 2007).

A team Cognitive Task Analysis is a description of the cognitive skills needed to perform a task proficiently. It is helpful as it can describe the way the team is thinking as opposed to the steps it is following. Cognitive processes for teams consist of control of attention, shared situation awareness, shared mental models, application of strategies and heuristics to make decisions, solve problems and plan and metacognition (Cook et al, 2001).

2. REVIEW OF RELATED LITERATURE

Shared mental models imply that team members have the same understanding for the dynamics of key processes. These processes can include the roles and functions of each team members in accomplishing the task, the nature of the task, the use of equipment and so forth. In most settings a critical factor is the degree to which the team members have a shared mental model of their own roles and functions (Schraagen, Chipman & Shalin, 2000). The research focused on soliciting knowledge of agreement on strategies. The process requires asking each team member to

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analyze the situation and justify strategies taken. Besides that, the purpose is also to analyze team agreement (Schraagen, Chipman & Shalin, 2000). This is further discussed in the methodology section on the application of Delphi technique to analyze team agreement.

One common source of difficulty for teams is when the members are confused about who is supposed to do what. Confusion about roles and functions leads to wasted effort or a failure to carry out essential subtasks. Effective teams understand the functions, including the common routines. Hence shared mental models refer to the configuration of the team and the way it is supposed to perform routines (Hoffman & Militello, 2008).

Another issue that must be addressed is how the elicited information is represented. As is the case with CTA data at the individual level, there are several representational formats that might be useful as a means to describe knowledge elicited from a team CTA. For example, task action hierarchies, concept-maps, semantic nets, concept graphs, task network models or simple lists or Tables could be useful to employ communication or link analysis to describe the flow of information among team members, models of shared knowledge or analyses of knowledge overlap among team members. These latter techniques have not received much attention in the literature, but are crucial if a true picture of team-level knowledge stemming from a team CTA are to be useful. This includes an understanding of what each team members needs to know to function effectively, as well as an understanding of what information must be dynamically shared among members (Schraagen, Chipman & Shalin, 2000)

Research aimed at addressing this issue is clearly needed. Despite the gaps in research, a number of knowledge elicitation methods are available from research since such data are required so that team selection, training, task design and management systems can be optimized. This research highlights the flow of information among team members, models of shared knowledge or analyses of knowledge overlap among the design and development of multimedia courseware team subject matter expert, graphic designer and multimedia designer. Issues in the design and development of courseware are often neglected. These include understanding of what each team member needs to know to function effectively, as well as an understanding of what information must be dynamically shared among members.

3. RESEARCH DESIGN

A cognitive task analysis was conducted using twelve national multimedia design and development experts to construct the list of principles in designing multimedia-based instructional media. For the purpose of establishing content validity of the multimedia design principles, the number of experts is more than 10 due to its consistency with Dalkey's finding (as cited in Martino, 1972). The sample involved experts from various fields who are experienced and qualified in multimedia design process. A modified Delphi technique was used to facilitate experts' opinion to reach consensus on the principles in designing and developing multimedia-based instructional media. At the second phase, interview was done twice for each expert. The first interview was done simultaneously with gaining experts' consensus during the second round of the modified Delphi technique. The second interview was carried out after analyzing the final consensus among the experts, so that questions asked during the interview are based on the final consensus. Three experts representing each specialization was selected for the interview.

4. RESEARCH FINDINGS

4.1 Modified Delphi

Table 1 showed that all the three groups of experts obtained similar result with no consensus for all the principles under design phase. They obtained median score between 4 to 5 and interquartile range between 2.00 to 3.25. Moreover, all the three groups of experts shared the same view that they gained no consensus with regard to the application of the principles under validate phase. They obtained median score between 4 to 5 and interquartile range between 2.25 to 3.50. Apart from that, all them also obtained high consensus with high median score between 4 to 5 and low interquartile range between 0.00 to 0.75 for enhance and maintain phases.

Graphic designers and multimedia designers shared the same view with regard to authoring phase. Similarly they obtained high consensus for production phase of instructional design process with median score between 4 to 5 and interquartile range between 0.00 to 0.75. This indicated that both groups of experts involve in the production phase of instructional design process.

. The result shows that only subject matter experts considers the application of principles under analysis phase. The median score is between 4 to 5 and interquartile range is between 0.00 to 1.00. Graphic designers on the other hand, are the only group who involved in development phase. They obtained high consensus for all the principles in development phase of instructional design process with median score 4 and interquartile range 0.75.

Table 1 : Consensus among subject matter expert, graphic designer and multimedia designer in instructional design process

PRINCIPLES	GD		MD		SME	
	Med	IQR	Med	IQR	Med	IQR
Analysis						
define problem	4	3.00	4	3.00	4	0.75
describe facilities & schedule	5	3.25	5	3.00	5	0.75
audience detail description	5	3.00	5	3.50	5	0.75
needs analysis	5	3.00	5	2.25	5	0.75
ability to cover	4	2.75	4	2.00	4	2.00
general objectives	5	2.25	5	2.25	5	0.00
Design						
evaluate team capability	4	3.50	4.5	2.75	5	2.00
review objectives	5	3.00	4.5	3.00	5	2.00
plan high level design process	4	3.25	4.5	2.75	5	2.00
prepare design strategies	5	3.00	4.5	3.00	5	2.00
Develop						
develop storyboard	4	0.75	5	3.00	4	3.00
develop scripts	4	0.75	5	3.00	4	3.00
write for narrators	4	0.75	5	3.00	4	2.25
computer screens and video	4	0.75	5	3.00	4	3.00
graphics plan budget	4	0.75	5	3.00	4	3.00
Produce						
organize materials	5	0.00	4	0.75	5	3.00
check content accuracy	5	0.75	4	0.00	4.5	3.25
edit and evaluate media components	5	0.75	4	0.75	5	3.50
Author						
integrate media elements	4	2.00	5	0.00	5	3.00
end users' perspectives	5	2.00	5	0.00	4.5	3.25
refine the presentations	5	2.00	5	0.00	5	3.50
Validate						
measurement instrument	5	3.00	4	2.25	4	2.25
interview audience and record	4.5	3.25	5	3.25	5	3.25
analyze validation findings	5	3.50	5	3.00	5	3.00
Enhance & Maintain						
Beautify	4	0.00	4	0.75	5	0.75
Modify	4	0.00	4.5	0.75	5	0.75

Based on the description in Table 2 graphic designers and multimedia designers obtained high consensus for software support tools with median score 5 and interquartile range between 0.00 to 0.75. This indicates that the principles are applied among graphic designers and multimedia designers.

Table 2: Consensus of subject matter expert, graphic designer and multimedia designer in software support tools

PRINCIPLES	GD		MD		SME	
	Med	IQR	Med	IQR	Med	IQR
graphic tools	5	0.00	5	0.00	4	3.00
planning and organization content-	5	0.75	5	0.75	4	3.25
area tools	5	0.00	5	0.00	4	3.25

The description in Table 3 shows that all the three groups of experts obtain consensus for the principles such as self-critique principles, conceptual principles, marketability principles, consistency principles, site map

principle, navigation principle, interactivity principle and signaling principle. They obtained consensus with high median score between 4 to 5 and interquartile range between 0.00 to 1.00. All the three groups of experts agree that the application of the principles is important in designing multimedia.

Table 3: Consensus among subject matter expert, graphic designer and multimedia designer for principles under content design

PRINCIPLES	GD		MD		SME	
	Med	IQR	Med	IQR	Med	IQR
Self-critique principles	5	0.75	5	0.00	5	0.00
Conceptual principles	5	0.75	5	0.00	4	0.00
Marketability principles	5	0.75	5	0.00	4	0.00
Consistency principles	5	0.75	5	0.00	5	0.00

4.2 Interview

Expert 01 explained that graphic designers design illustrations which is then passed to multimedia designers who will add movements and animations on the graphics. Multimedia designers and graphic designers work well together and this is advocated in analysis of findings from Delphi technique round 2. Graphic designers and multimedia designers shared the same view with regard to production phase of instructional design process. Both groups of experts involve in the production phase of instructional design process. Expert 01 further supported that:

multimedia designers and graphic designers can work together ..usually these two groups of experts easily understand each other..

Their specialization in developing content requires them to apply principles under cognitivism, behaviorism, constructivism, andragogy, instructional design theory and interactivity in designing multimedia. This is elaborated by expert 01 that:

subject matter expert developing content..instructional designer focusing on design aspect.

Thus, multimedia designers involve in the application of majority of the principles under authoring tools. Expert 01 elaborates that multimedia designers apply programming software in most of their tasks.

okay first, graphic designer will design illustration then his work will go to multimedia designers who will move and animate the graphics..use programming..usually these two task easily understand each other

However, subject matter experts do not involve in the application of the principles under software support tools. Graphic designers differ from multimedia designers and subject matter experts as they apply majority of the principles under audio visual. This is due to the principles are closely related to graphic and design specialization.

Expert 01 elaborates that graphic designers perform task based on their observation of characters, images and events around them. Their work is mostly based on experience rather than reading materials. Expert 01 explains:

the role of graphic designers is not just reading..he obtain information by digesting his surrounding .....meaning he needs to observe characters, images..reading or reference as such are not applicable and very limited for graphic designers ..

5. RESEARCH IMPLICATION

The shared knowledge among subject matter experts, graphic designers and multimedia designers is as explained in the shared mental model illustrated in figure 1 (Cooke et. al; 2001, Salas et. al; 1995). The research further categorized the multimedia designing task into two types of tasks: shared task and expertise-based task.
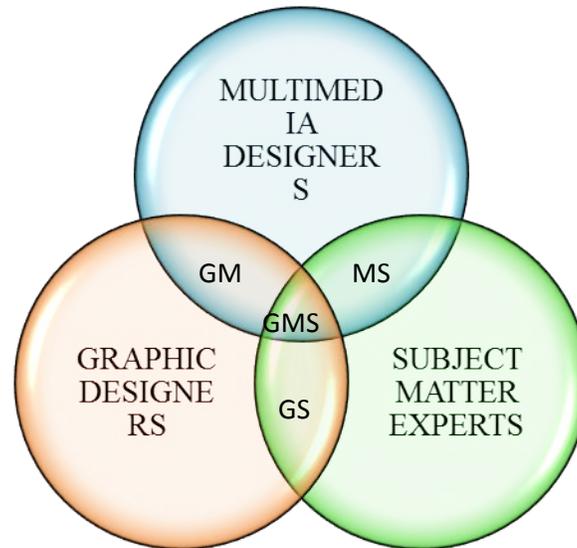
Figure 1: Shared Mental Model of subject matter experts, graphic designers and multimedia designers

5.1 Expertise-based Task

Jamaluddin et al. (2003) and Norazlin et al. (2007) agree that each team members in designing and developing multimedia-based instructional media work according to their area of expertise. This is further emphasized in the instructional design process which segregates the experts according to their expertise. The subject matter experts concentrate on the design phase where designing instruction is their expertise. Graphic designers are involved at the develop phase. Multimedia designers perform tasks in the author phase. Multimedia designers obtained high consensus for principles under authoring tools. Job specification of multimedia designers requires application of principles under authoring tools. Jamaludin et al. (2003) further support that the design group includes subject matter expert, instructional designer and script writer.

5.2 Shared Task

Graphic and multimedia designers (GM) are categorized under the same technical team (Jamalludin et al. ,2003; Alessi and Trollip, 2001).   Graphic Designer and multimedia designer similarly perceive all the principles under learning theory are not applicable to their specialization. Furthermore, they also agree that all the principles under instructional design theory as not important to be considered under their job specification. The Modified Delphi analysis shows that multimedia designers and graphic designers work together and share knowledge under the produce phase. Graphic designers and multimedia designers share the same view with regard to the production phase of the instructional design process. Both groups of experts involve in the production phase of the instructional design process. Furthermore, the principles under screen design essentially involved multimedia designers and graphic designers when designing multimedia.

The shared mental model involves all the three groups of experts. Specifically, they share similar view with regard to principles such as self-critique principles, conceptual principles, marketability principles, and consistency principles under content design principles. Design principles under instructional design process also involve all the three groups of experts. Thus, the shared knowledge provides understanding of what information must be dynamically shared among members which further solicited knowledge of agreement on principles of multimedia design and development for instructional purposes (Schraagen, Chipman & Shalin., 2000).

6. CONCLUSION

The research focused on the shared mental model among the experts in multimedia design and development such as subject matter experts, graphic designers and multimedia designers. A critical need exists for a solid understanding of the factors that influence team decision making and performance in order to identify interventions that can affect the decision making process and improve performance (Hall & Regian, 1996; Klinger et

al., 1993; Salas et al., 1995). Previous research (Keppell, 2000) addresses the gap in the field of instructional design and outlines a number of key principles to consider in interacting with subject matter experts. Hence, this research provides a platform for further investigation on expertise study for other area of expertise.

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Smart principals and smart schools

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Abstract

Contemporary researches on the impact of globalization and the development of Information, Communication and Technology (ICT) towards the roles of principal had shown that school principals are experiencing dramatic changes in their work. The Malaysian Ministry of Education is planning to transform all schools into smart schools. Principals simply cannot avoid this. They have to be sophisticated users of management information system. They have to become proficient users of a variety of software, hardware, both Intra and Inter Networks, integrating technology into teaching and learning processes, attending professional development programs for enhancing their level of competencies in handling ICT equipment, and experiencing the impact of ICT on their work. Specifically, this paper will focus on the roles of principals in transforming their respective schools into smart schools.

Keywords: Smart Schools, integrating technology, professional development, teaching and learning

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INTRODUCTION

The information age poses a whole new set of challenges and questions to Malaysian schools. The quality of our nation's political, social and economic future will depend on the ability of our young generation to become functioning members of society who can understand how to access information (and determine its significance), handle data, draw independent rational conclusions and communicate findings. Students today need a higher level of academic, technical, communication and information-processing skills in order to function effectively in a society. The contemporary workplace requires that employees be adaptable team players with strong problem-solving and decision-making skills. Schools will have to accommodate a variety of learning styles, interests and life experiences if they are to educate today's students. Leading experts have suggested that an organization's ability to learn, and to keep improving the way it learns, may be the ultimate competitive advantage.

With our interest in the goals for students in Vision 2020, we are beginning to look at what it takes to educate our children for the world of the future and what skills that will need to acquire to become productive citizens. It is interesting to explore the wide range of skills in communication, critical thinking, and even problem solving that the world of work would ask educators to consider when planning curriculum, as well as the advanced technical skills associated with the information society we are going to become.

The mission basically is to develop a world class quality educational system which will realize the full potential of the individual and fulfil the aspiration of the Malaysian nation. This will only happen if education departs from the disinterested rote learning mode, and explores how information technology can be used to encourage active, creative, and independent learning. Malaysia needs to make the critical transition from an industrialised economy to being a leader in the Information Age. In order to make this vision a reality, Malaysians need to make a fundamental shifts towards a more technologically literate and thinking workforce, able to perform in a global work environment and use the tools and technology available in the Information Age. To make this shift, the education system under the guidance of the National Philosophy of Education, must undergo a radical transformation. The schooling culture must be transformed from one that is memory-based to one that is informed, thinking, creative and caring. One way to make this happen is through the use of leading-edge technology.

NEW PARADIGM IN INFORMATION TECHNOLOGY ENVIRONMENT

The challenges of the new millennium such as the rapid globalization, the tremendous impacts of information technology, the international transformation towards knowledge-driven economy, the strong demands for societal developments, and the international and regional competitions have driven numerous educational changes in the different parts of the world. The paradigm shift in learning inevitably requires corresponding paradigm shift in teaching and teachers' role. Teaching is considered a process to initiate, facilitate, and sustain students' self-learning, self-exploration and self-actualization; therefore, teachers should play a role as a facilitator or mentor who supports students' learning.

Teachers can maximise the opportunities to enhance effectiveness of their teaching from local and global networking and exposure through Internet, web-based teaching, video-conferencing, cross-cultural sharing, and different types of interactive and multi-media materials (Holmes, 1999; Ryan, Scott, Freeman, & Patel, 2000). With their help, students can learn from the world class materials, experts, peers, and teachers in different parts of the world such that teaching can become world-class teaching. Through participation in local and international development and research programs, teachers can achieve global and regional outlook and experiences beyond institutions. In other words, all schools should be transformed into smart schools.

ICT AS A TOOL AND AN ENABLER IN EDUCATION

According to 2013, Ministry of Education's websites, Malaysia has 7,745 primary schools and 2,340 secondary schools. Infrastructure development for schools includes the installation of ICT facilities to all schools in Malaysia. Planning for the 10,085 schools is carried out in phases as follows:

2001	2,400 schools
2002	2,000 schools
2003 onwards	the rest of the schools: 10,085 schools

It is against this background that Smart Schools have been made one of the flagship applications in the Multimedia Super Corridor (M.S.C.). The concept of Smart Schools is no longer a fashionable luxury but the only way forward. In 1999, there were about 635 schools undergoing the Computers-in-Education programme and 87 schools under the Smart Schools programme. Whereas the comprehensive computerisation programme is mainly aimed at bridging the digital divide, the smaller Computers-in-Education programme is dual-pronged, i.e. aiming at both ICT literacy and use of ICT as an enabler in teaching-learning. The smart schools programme is a total

solution targeted at improving not only teaching-learning but also school management and external relations and involves an even smaller number of schools (Rohani Abdul Hamid, 2002). Smart Schools are equipped with computers and appropriate software that offer tremendous scope and potential for self-paced and interactive learning. The Smart School will not be elitist in nature, but will be innovative, creative and stimulating, coupled with extensive usage of computers along the areas covered by the multimedia super corridor. Smart Schools are not only intended to produce knowledge workers who possess the requisite technological skills but also aim to inculcate critical thinking skills through intelligent learning consistent with the tenets of the National Education Philosophy. A Smart School is an educational establishment that adopts instructional processes and educational management practices that foster systemic changes that are intended to enable learners to surmount the challenges posed by the information technology era. The Smart Schools Pilot Project was implemented in 87 schools nation-wide. Beginning in 1998, the Teacher Education Division of the Ministry of Education, Malaysia was charged with the task of training teachers for the Smart Schools Programme. The effective training of teachers for these Smart Schools is a key factor impacting on the success of the Programme.

How successful is the Smart Schools Programme? During the 2010/2011 academic year, we had conducted a series of studies that investigated the effectiveness of training programmes intended to train Smart School teachers and evaluated their impact on student learning. The data for this study was collected through a questionnaire that was administered to 882 Smart School teachers. The questionnaire was also administered to 2689 students in 70 Smart Schools throughout Malaysia. The findings of the study show that Smart School teachers acquired a diverse range of knowledge and skills related to smart instruction. These teachers reported that they had succeeded in mastering various aspects of the concept of smart instruction, planning smart teaching, managing smart instruction and managing the smart classroom. Smart School learners had a positive view of, and were receptive to Smart School instruction. On the whole, smart school instruction has had a moderate to high impact on smart school learners. But, in implementing smart instruction in schools, only **23.9%** received the necessary support from their respective principals (Mohammed Sani Ibrahim, 2010).

Consistent finding was obtained from another study conducted earlier by Baharom Mohamad (2002) who had explored teachers' perception of instructional leaderships given by their respective Headteachers/Principals in computer literacy in their schools. A survey was conducted by using questionnaires administered among 380 randomly selected teachers in the State of Johor, Malaysia who had involved in the Computers-in-Education and Smart School Programmes. The major findings from this study indicated that only **24.0%** of the primary school teachers and **29.4%** of the secondary school teachers were satisfied with the support obtained from their school heads.

These two research projects had proved that Malaysian school principals were not able to integrate technology in the teaching and learning processes in their respective schools. If we don't improve this, then the Ministry of Education, Malaysia would definitely unable to transform all schools into Smart Schools by the year 2020. Appropriate steps should be taken immediately to overcome this situation by infusing technological culture among school principals first before trying to convert all schools to become Smart Schools.

MALAYSIA EDUCATION DEVELOPMENT BLUEPRINT 2013-2025

The Prime Minister of Malaysia had recently launched the Malaysia Education Blueprint 2013-2025. There are eleven shifts that had been suggested in order to achieve the national vision. Shift Number 7 is to leverage ICT to scale up quality learning across Malaysia. Why such shift is important? : The Ministry has spent more than RM6 billion on Information and Communication Technology(ICT) over the past decade in education initiatives such as Smart Schools—one of the most capital-intensive investments the system has undertaken. However, ICT usage in schools continues to lag expectations—both in terms of quantity and quality. For example, a 2010 Ministry study found that approximately 80% of teachers spend less than one hour a week using ICT, and only a third of students perceive their teachers to be using ICT regularly. Critically, the 2012 UNESCO review found that ICT usage has not gone much further than the use of word-processing applications as an instructional tool. ICT has tremendous potential to accelerate the learning of a wide range of knowledge and thinking skills. However, this potential has not yet been achieved. What success will look like: Across all 10,000 schools in Malaysia, ICT will enhance how teaching and learning happens. Students will be able to access a wider range of content that is more engaging and interactive. They will be able to learn some lessons at their own pace, and will have fewer limitations in what they choose to study through distance-learning programmes. Teachers and principals will have access to both national and international learning resources and communities to help them improve their practice. ICT will be a ubiquitous part of schooling life, with no urban-rural divide, and with all teachers and students equipped with the skills necessary to use this technology meaningfully.

THE ROLE OF PRINCIPALS IN DEVELOPING SMART SCHOOLS

What makes an administrator ready for the digital age? What kinds of leadership skills are necessary for both in-service and pre-service administrators to lead in today's ever-changing field of technology? In order to lead and collaborate affectively with other educators and policy-makers in the digital age, educational administrators need to take advantage of the wireless revolution and its impact upon the infrastructure of school districts. School leaders must recognize and use the "power of technology" to improve student productivity, while making "more efficient use of time, money, and staff (O'Neil and Perez, 2002; Schrum and Levin, 2009). Many studies have demonstrated that computers are still found in computer labs, with limited access for integrated instructional uses, and students use technology far more outside of school than within the school environment, where it is often still seen as an "addition" rather than a part of the curriculum" (Schrum and Levin, 2009, pp. 65-66). Educational administrators should inspire and lead development and implementation of shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization, engage in an on-going process to develop, implement, and communicate technology-infused strategic plans aligned with a shared vision and advocate on local, state and national levels for policies, programs, and funding to support implementation of a technology-infused vision and strategic plan. The principal, technology coordinator, and superintendent are urged to collaborate with key stakeholders, such as teachers, students, program and curriculum directors, parents. Community members and governmental officials should be involved in strategic planning initiatives that enhance the most effective technology use in education.

Below are some ways that school principals can adopt in order to transform their schools to become smart schools:

Develop an ICT Culture

The principals and the senior management play important roles in building a professional culture of teaching which is responsive to changes (Hargreaves and Dawe, 1990). ICT is becoming an important facet of school culture. If a school is to move forward with its usage of ICT, such a subculture must be embedded in the structure of the school. The principal's role is vital in developing an ICT culture in school and he should ensure that financial support is available to maintain and update the equipment on a rolling programme.

Leadership

Even the most inspiring ICT co-ordinator is going to make little impact on a school without the support of the principal. Principals continue to be the powerful definers of the culture, ethos and organisation of their schools, and it through working with individuals, within the school system that they are able to build the momentum and involve others in the process of change. While there are different viewpoints on educational leadership, most schools have adopted an approach that involves some type of collaborative management. In this way, schools are able to maximise the skills, commitment and energy of their staff to create a `potent and catalytic mix for successful change and development'. It is important to have deadlines and clear targets, as well as the support required to achieve

them (Fullan, 1992). Principals wishing to embed a positive ICT culture in the school must make their intentions clear to all through the processes that take place on a daily basis

Principal as an administrator, one should ask:
- Does the principal give attention to the ICT usage in subject areas on a daily basis?
- What are the available financial resources for ICT and to what extent does the principal involved in seeking additional funding for this purpose?
- Does the principal serve as a role model in the usage of ICT?
- How does the principal support staff development in ICT?
- What are the principal's immediate needs in developing a partnership?
- What kinds of professional development can he provide for his staff?
- What are the legal, social, and ethical issues that he must be concerned with?
- Does the principal take into account a person's ICT capability when selecting and promoting staff?
- What kind of technology plan can he implement?

As a teacher, one can ask these similar, but more learner-centered, questions:
- How can I partner with others to help my students?
- What support can I have with using new technologies?
- How can I use technology to enhance my instructional strategies in class?
- What could I do to impede or improve the progress of my students' learning?
- What are the legal, social, and ethical issues that I must be concerned with?

Generating and Maintaining an ICT Policy

As ICT is something that every teacher will use, it is important to have a policy to hold together the ways in which ICT is involves in lessons throughout the school. It is vital that all teachers share the values envisaged within it and that they understand its implications. It follows that every teacher should have some involvement in the production and upkeep of the policy.

Here are some suggestions for designing an acceptable use of policy in your school:
- Keep it simple, one page if possible.
- Use student-friendly language, but be very clear about the policies.
- Provide reasons for having the Acceptable Use Policy (AUP).
- Install penalties for misuse.
- Have a place for all stakeholders to sign an agreement with the AUP requirements.

Compliance training conducted yearly for all staff members could minimize any possible negative impact upon the way in which the acceptable use policy is carried out in the school. Technology changes constantly on a yearly basis. It makes sense, therefore, to institute a training program that is updated frequently.

TARGET SETTING

Target setting is a key activity for improving schools and it involves school community. Target setting provides a focus from planning changes and for monitoring progress towards personal or institutional goals. Targets should fulfil five characteristics summarised by the SMART acronym: Specific, Measurable, Achievable, Realistic and Time-related. Everyone can participate in the formulation of targets as well as sharing the responsibility for carrying them out.

The School Development Plan

The development plan represents specific activities which school intends to carry out in order to implement its policy and achieve its targets. ICT will undoubtedly form a part of each school's development plan and will probably continue to do so as the technology improves and our knowledge of pupils' learning with computers grow. The purpose of the plan is to help school to improve its use of ICT through reflection on existing practice and the development of new ideas. Schools need to undergo the process of finding out *where they are now* and identifying *where they wish to be* after a set time interval.

ACHIEVING AND SUSTAINING ICT CAPABILITY

A policy with respect to ICT and the inclusion of ICT in the school development plan alone will not result in the desired change in teachers' perspective. Teachers' thinking is now challenged. A key element in successfully achieving and maintaining an ICT culture is the establishment of development cycle where policy and whole-school

planning are put into practice through integrated schemes of work. Here teachers recognise the importance of undergoing certain types of training, depending on their needs, and understand the importance of reflecting on the effectiveness of their ICT usage in lessons. The challenge for managers is to create conditions which will help individuals and teams to achieve their goals and the overall goals of the school.

The ICT co-ordinator plays a significant part in ensuring that the development process is maintained. Policies and schemes of work of every school should be reviewed annually and developed in response to new technologies, educational initiatives, inspection findings and internal evaluation. It was recognised that not only could policy changes lead to improvements in practice, but that often policy needed to be developed to reflect and disseminate successful practice that had been implemented and evaluated informally.

MONITORING PROGRESS

For any change programme, monitoring and evaluation are the most important elements. Improving both quantity and quality is a daunting task and needs to be thought of in terms of both short- and long-term goals.   For schools embarking on a review of their policy, the normal starting-point is the auditing of current teaching and learning activities involving ICT. It is important to identify a baseline for development through an audit process for ICT and to monitor progress towards the goals or targets set.

SMART SCHOOLS: AN ESSENTIAL VISION FOR THE FUTURE

In this section, we draw together the strands presented in the previous sub-topics and set out a vision of what it means for a school to be successful in developing ICT capability.

Developing ICT-capable pupils

We have to develop pupils to become ICT-capable pupils. There is a role for ICT-based homework in bridging school and home culture; pupils who do not have adequate resources at home should be given opportunities to use school resources outside normal school hours.

Developing ICT-capable teachers

If schools are to improve the development of pupils' ICT capability, it is through the work of teachers and other staff that support learning that it will be achieved. Teachers should be given the opportunities to attend in-service training for ICT. They should get support from experienced colleagues and a sustained programme of curriculum-based training and development is vital. The level of ICT capability of the individual teacher is important, and is likely to influence classroom usage. Technology cannot survive in schools without full integration in professional practice by all educators, and that must both include and be led by educational administrators (Garland, 2010). School principals, in particular, need to understand and facilitate collaborative models of professional development. The delivery of in-service programs for teachers should be interactive and on-going. The content should address the 21st-century educational mandates for competency-based instruction and connected learning (Garland, 2008). Administrators and teachers alike need to engage in career-long learning networks. Empowering teachers to make changes in their instructional practices is a powerful means to help them meet their students' needs. The results of a study by Bogler (2005) showed that teachers who perceived that they could make positive changes in their instructional methods were most likely to also improve their commitment to professional development. Continuous in-service training, possible only with the proper allocation of time and resources, is an important element in integrating technology at any school site. Many educators can also benefit from a networked learning community that links other professionals regionally and globally to the education platform.

Developing ICT-capable classrooms

The ICT-capable classroom is a combination of

- *Teachers* who are prepared to use technology as a model for pupils.
- *Pupils* who are disposed to use ICT and can judge when it is likely to be helpful in their work, rather than just using ICT for the sake of it;
- *Resources* which are easily available – either in the classroom or in a nearby resource area.

Teachers need to link the learning located in the computer room with the activities in the subject classroom. The availability of an internet link has the potential to transform the culture of most classrooms. It makes a massive range and capacity of information and activities available, facilitates direct communication with people and organisations that were previously remote and perhaps uninteresting, and allows pupils to have new audiences for their work (Pachler & Williams, 1999). In the ICT-capable classroom, pupils will learn by watching, discussing and evaluating ICT use by others, as well as by taking their opportunity for *hands-on experience.*

In particular, principals and technology coordinators must support classroom assistance and professional development for teachers in implementing new technology resources for the targeted learning needs of all students. Special needs students are not always well served by the technology available in most schools because most

software programs and Internet search sites are only in English and learning disabled students are also found to be academically excluded from information communication (McKenzie, 2007). In addition to these socio-economic, language, and special needs issues in the digital divide are factors of race and gender. Social issues in technology use by students and educators involve not only safety and privacy but also ethical and communication practices.

Developing ICT-capable subjects

The role of subject leader is vital in developing a team of teachers who use ICT in the classroom. Subject leaders should keep up-to-date with ideas about links between ICT concepts and subject concepts, and should incorporate ICT into staff development activities in their subjects. It is vital for subject leaders to work with ICT co-ordinators.

Developing capable ICT co-ordinators

The co-ordinator in an ICT-capable school will have a high level of understanding of the basic ICT concepts and good higher order skills. They must be able to work with colleagues who may have very different teaching styles. The co-ordinator may well be the ICT resource manager as well, but even if not he or she will help plan the development of a school intranet system which can support teaching, learning and curriculum management, and act as a gateway to the internet.

Developing ICT-capable management

As mentioned earlier, the role of senior management team is crucial. The school's vision and drive should be focused on teaching and learning, not merely the acquisition of more resources. The ICT-capable school will have systems in place, accepted and adopted by all staff, to ensure that the process of development is continuous. The ICT-capable principal should also support the development of teaching and learning by effective use of management information systems to inform curriculum planning, staff development and appraisal, and pupil support.

External support and services

The ICT-capable school will make use of a range of external services – commercial, academic and governmental. The personnel in District Education Department are seen as a valuable filter for general findings on good practice. Schools' inspections are a powerful force in stimulating change. The most successful schools should response positively to any weaknesses in ICT teaching identified by inspection reports.

Staff development programmes for ICT capability

Staff development must also be based on teaching and learning needs, In-service training programmes are needed to ensure that staff have the requisite skills to make personal use of ICT equipment and that they understand how it can be used to help pupils to learn. The programme must also match the ICT policy and be in line with the school development plan. After attending INSET programmes, new techniques must be adopted to implement the changes in teaching processes required to take advantage of ICT.

PRINCIPALS AND ICT

Currently, there is no research on the aspects of how school principals in Malaysia acquire the necessary knowledge and skills in handling ICT software and hardware. But in Australia, Gurr (2000) had conducted a study based upon interviews in 1999 with 21 Victorian government school principals concerning the impact of ICT on their work. In the interview, principals were asked to describe the impact that information communication technology had on their work as principals. The interview was unstructured with principals free to explore the areas that they felt most relevant. The responses to these questions were thematically analysed. The themes that arose were as follows:

(a) Use of technology: Software

Principals used a variety of software and related administrative packages provided by the Department of Education (DOE).

(b) Use of technology: Hardware

The most significant hardware mentioned was the use of DOE supplied laptops. All principals had a desktop or laptop computer at work and many had their own desktop computer at home. For some, having their own work place computer has been a dramatic change.

(c) Use of technology: Networks

Many principals mentioned how their schools were developing networks or responding to government initiatives in this area and how these were impacting on the teaching and learning processes.

(d) Teaching and Learning

Most principals seemed to be energised by the possibilities of IT to change teaching and learning. Principals believed that they had an important role in this process of change.

(e)   Working with Staff

Principals relied on staff to assist with technology. This may have meant working with a dedicated IT person or with teaching staff with particular expertise. Principals sometimes had to support IT staff to make sure that the technology was being used efficiently, or simply to encourage the work of the support staff.

(f)   Administration

Technology is changing the way school administration operates. The management information systems constructed by the Department of Education allow schools to collect, store and manipulate most of the data related to the running of a school. Principals described how these systems gave them ready access to critical information. To access this quickly and to manipulate the information, principals needed to be competent users of technology.

(g)   Department of Education: Help and Hindrance

The use of technology by the Department of Education was cited as both helping and hindering the work of principals.

(h)   Principal Professional Development in Technology

Principals acknowledged the need for professional development. Some principals mentioned that whilst they had a need for professional development, they found it difficult to find the time. A lot of development in skills appears to occur on-the-job simply through the use of technology. One of the principals had a parent who was providing weekly training sessions for the principal. Principals also rely on staff expertise to help them learn new software or to solve technical problems.

(i)   Personal Qualities

There appeared to be two broad categories of principals: Those who were confident in their technology skills and those who were insecure about using technology.

In their own professional development efforts, administrators themselves must learn the technology that best applies to the profession. In order to ensure effective practices in the infusion of technology across the disciplines, professional development opportunities do not have to occur within the boundaries of a particular school or district. There are numerous conferences, both online and on-gound, that provide training for administrators and teachers in emerging technologies. Principals, program coordinators, and technology coordinators can stay connected by participating in annual conventions and conferences in which digital age collaborations are celebrated. The educational leaders are thus urged to attend an online or local technology conference in order to better stimulate innovation at the school level.

CONCLUSION

This paper had explained why it is important for principals to acquire the knowledge and skills which will enable them to transform their schools into smart schools. Based on the findings of many researches in Malaysia, it was obvious that most principals are not prepared to do this. This paper had discussed the `how' and the `what' aspects in integrating technology in the teaching and learning processes as well as in the administration of the schools. All principals must transform the schools into smart schools by the year 2020. Principals now have to be sophisticated users of management information systems. They also must become proficient users of a variety of software including word processing, spread sheets, databases and email. They don't have to be network experts, but they have had to ensure that their school is developing appropriate networks. The nature of work in both teaching and learning and administration has changed, and whilst old practices can be done more efficiently, the technologies have allowed new practices to develop.

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Social Media as a Non-formal Learning Platform

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Introduction

The world is seeing a paradigm shift in the way it considers education; where 50 years ago a university degree would be the ticket to a plethora of job opportunities, the corporate world has since moved from focusing on academic qualification and work experience in seeking out potential hires to actively seeking job candidates possessing specific character traits, emotional intelligence and social aptitude, or "soft skills" that are evaluated in equal if not higher importance to academic achievement. The view is further endorsed by global organisations such as the Organisation for Economic Co-operation and Development ("OECD") and the United Nations Educational, Scientific and Cultural Organisation ("UNESCO"), both of whom have extensively defined and endorsed lifelong learning – an overarching philosophy defined by the OECD as consisting of formal, non-formal and informal learning – as a key proponent for economic development (Tuijman, 1996) as well as social wellness (Delors, et al., 1996).

Traditional education systems already have formal learning down to a near-rigid science; in Singapore, which is ranked 11th of 48 as at 11 May 2012 in the Universitas 21 benchmark for higher education (Williams, de Rassenfosse, Jensen, & Marginson, 2012), at least 14 years of an average person's life will be spent in pursuit of a very well-structured formal education, beginning in kindergarten at four years of age to earning a diploma or a degree at a tertiary institution when the individual has entered his or her early 20s. Yet, soft skills development is hardly dependent on formal learning – such assets are attained through hands-on experience, relationship-building, and maturing of thought processes *out* of academia more so than in it. As noted by Fuller, et al. (2003, p 7), "… people learn in many different settings and that only some of this learning is classroom-based and/or accredited through qualifications, and that it can occur over the life course."

The point of graduation from formal education into working life is where informal and non-formal learning will take precedence in a person's further skills development. Drawing from a CapitalWorks employee survey (Cross, 2003), informal learning forms 87% of total contribution to job proficiency as weighed against formal learning methods such as job training and classes.

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Tough (2002) also highlighted this by suggesting there is a "20/80 split" in learning, with approximately 20% of concerted learning endeavours being formal or non-formal and 80% being informal.

The authors found that digital technologies: [Play] a beneficial role in overcoming some of the barriers which may prevent adults from engaging in learning beyond formal settings. Not only can technologies such as the internet provide the information people need to inform them what opportunities are available, they can also offer learning opportunities which are more flexible, more convenient, and, for some learners, more engaging than other options available to them (Hague & Logan, 2009, p. 17)

Given the pervasiveness of the available technology and the tools that are commonly accessible, this proposal investigates how adult learners make use of digital media tools as a platform for non-formal learning. Digital media tools consist of tools as smart phone applications, social media such as blogs, Facebook and twitter and any other Web 2.0 based internet applications.

According to the glossy of terms in the European Centre for the Development of Vocational Training (Cedefop, 2001) formal, non-formal and informal learning are defined as:

- *Formal learning* consists of learning that occurs within an organised and structured context (formal education, in-company training), and that is designed as learning. It may lead to a formal recognition (diploma, certificate). Formal learning is intentional from the learner's perspective.

- *Non-formal learning* consists of learning embedded in planned activities that are not explicitly designated as learning, but which contain an important learning element. Non-formal learning is intentional from the learner's point of view.

Research Methods
The main study group was facilitated by a group of lecturers who set the ground rules and were in constant touch with the respondents for the main study. To gain a better understanding of the informal learning tools used in the study and to give the Delphi study findings some context, an in-depth interview was conducted.

Four facilitators of the six-week COM355e Multimedia Public Affairs Reporting at SIM University, which was conducted in January 2010, 2011, and 2012 were invited to participate in an in-depth interview in the form of an email questionnaire. These participants were so chosen because of their use of social media as learning tools during the course of the module, which augmented the central Blackboard Discussion Board.

The facilitators will be referred to as respondents, and the use of social media and other technologies as teaching tools will be referred to as non-formal learning tools in this report.

Key Findings

The respondents found that the Blackboard Discussion Board, stipulated by the university as part of the course and in consultation with UniSIM's educational technologists offered a convenient one-stop shop for students as the ability to constantly push relevant and current content in real-time. As one participant mentioned:

"Blog(ging) in teaching multimedia journalism provides a holistic platform for students to experience the range of media elements introduced in the course (video, photos, graphics, animations, audio, music, text) actively and intuitively. Video has great visualizing power to start discussions and engage students in learning about multimedia."

These non-formal teaching tools not only facilitated peer-interaction and peer-critique, but also functioned as a platform for submitting assignments, clarifying course assignments requirements, concepts, terms, etc and informal raising of any concerns related to courses.

The preparations needed to introduce these tools into the curriculum and to students were surmised in two steps: content curation, and student instruction. Before the course started, triggers for discussion were carefully selected, expectations articulated, and relevant materials curated. When the course commenced, students had to be provided with instructions which included setting up of their blog, housekeeping and administrative procedures, and the Discussion Board populated with engaging threads to stimulate student participation.

The level of engagement that was required by the students in using the tools drew varied responses which from the need to log in at least once daily, to logging in once every 2 – 3 days being deemed sufficient. Though the frequency of the logins needed varied, it was of unanimous consent that effort was needed by both tutors (to provide information to prompt activity) and students alike to overcome the challenge of self-directed learning – to acquire the mindset to explore and embrace new dimensions of learning that is on demand, informal and social.

The Facilitators

The respondents agreed amongst many points that facilitators had to make their presence felt by contributing regularly to the discussion boards not only to show that the boards are being 'monitored', but also to motivate students. It was however, wise to regulate the frequency and volume of online activities such as exercises, extra readings and notes as these could bog down the learning process instead cause disinterest amongst students. It was also suggested that facilitators should have a consistent manner of organising information on any non-formal learning tool so that students may not miss out pertinent information. A respondent surmised their key takeaway as the following:

"I need to re-imagine my role as a journalism and media educator. I need to innovate teaching approaches and adopt new platforms – to move from gatekeeping and transmitting of information to one of aggregating and curating content, challenging and verifying assumptions, and providing platforms for students to connect and collaborate as peer learners."

While students were interested in non-formal learning methods and appreciated the additional information and discussion points beyond the graded requirements that the tutors provided, some students displayed motivation to interact and engage with their peers only in view of being awarded mark – the platforms were viewed as simply as a tool for submitting their works.

In a post-course evaluation done by the students, 7 out of 10 students had agreed or strongly agreed that the non-learning platforms employed in the module had reinforced their understanding of the course materials, provided insights into their strengths and weaknesses, and sustained their learning interest through the multimedia tools used.

An interesting thought arose from this discussion in which an a respondent expressed that coupling the non-formal learning platform with a social component such as blogs and discussion forums could debunk the transmission myth that many students still have by forcing them to play an active role in exchanging and co-creating information.

Motivation, Opportunity, and Ability as Factors of Effectiveness in Learning

Whilst utilising non-formal learning tools was reported to have a positive impact in the motivation and learning amongst students, possible regressive effects of information overload (too much learning tips, links, and notes being posted on Blackboard), and inculcation of an inhibitive consciousness amongst students which may develop in fear of being criticised by their peers in an open environment were highlighted.

Self-motivation was reported as the basic factor needed for individual students to get on to the platform to be able to participate and learn when asked how motivation, opportunities, and abilities factored into effectiveness to learn from the non-formal learning platforms. Though motivation had to be coaxed by incentivising participation, opportunities and ability amongst the students were abundant, as many of them were digital natives or avid users of communication technologies who embraced non-formal learning platforms effectively. In fact, many students accessed materials online and participated in the activities during office hours, and demonstrated their abilities in ECA multimedia projects that served as a showcase of their ability to integrate ideas, practices and theory. A respondent opined that students were motivated to:

" think differently as a result of being able to exploit a new communicative environment where 'learning is more than being taught.' Because knowledge is distributed among many stakeholders and 'the answer' does not exist or is not known, students learn proactively and take responsibility for their learning. "

Students welcomed the break from textbooks and prescriptive learning to the flexibility that non-formal teaching tools offered - offering 'anytime, anywhere' access to knowledge that formal teaching platforms lack. Such an environment where knowledge is externalised (online, transcontinental, virtual) and shared, and where its production is a collaborative effort was reported to develop more engaged students.

The break away from formal learning shifted the emphasis to skills, where students are enabled to move away from memorising facts and rules to applying knowledge to complex real-world situations and see the relevance of the course beyond the curriculum and textbook.

Implications

Building an additional e-platform, e.g. a dedicated Facebook page for students' participation require much upfront effort from tutors and may not justify its need just for a short 6-week course, and may even dilute the effects and outcomes gained from the existing platforms. It was suggested that just one main complementary platform, e.g. Facebook, be selected to complement the Blackboard Discussion Board be incorporated as part of the upfront formal course development and structure, so that the implementation can be easily rolled out to all the tutors teaching the same course.

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13ᵗʰInternational Educational Technology Conference

Student Centered Learning in Statistics: Analysis of Systematic Review

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Abstract

This paper reports the initial results of research relatedto student-centered learning in statistics education. Student-centered learning (SCL) suggests students to engage actively as doers in education setting who are empowered to decide on what, when, where, and how to learn. Although SCL in statistics instruction research has rapidly increased, there is little study to evaluate and synthesize the results of relevant research in this area, specifically within the context of computer support education. The objective of this paper is to identify the direction of recent research in SCL usage in statistics teaching and learning. Four research questions were raised in this study: What are the important issues in student centered concept in statistics teaching and learning? What are the SCL methods in statistics course? Which methods are used in statistics education research? What type of computer supported material sources involved? This paper applies systematic review to summarize the research by performing synthesis on research resources. Results of the review were presented and discussed in the paper.

*Keywords:*Student-centered learning; Statistics; systematic review

Introduction

Traditionally, teaching and learning processes are conducted actively by instructors or teachers. This approach is now replaced by student-centered learning (SCL). SCL provides an environment where students play more active role in obtaining knowledge by accessing key materials and resources in the learning process. SCL suggests major changes in the central issue of teaching and learning.Lu et al. (2007) summarize the main transformation in education key factors quoted by Oblinger& Maruyama (1996) in terms of the role of instructor and student, and the notions of place and time. SCL suggest the instructor to play a role as a learning facilitator instead of a learning organizer. Meanwhile, students engage actively as doers in education setting who are empowered to decide on what, when, where, and how to learn.

Implementation of SCL in statistics education as in the case of other subjects require preparation include education program, course content, learning outcome and general experience with the subject. The general assumption of statistics education at university level typically highlight the difficulty of the course content, relevancy to future job specification and the attitude of nothing could change the initial perception of the course (Gonzalez et al, 2010).

Although SCL in statistics instruction research has rapidly increased, there is little study to evaluate and synthesize the results of relevant research in this area, specifically within the context of computer support education. The objective of this paper is to identify the direction of recent research in SCL usage in statisticsteaching and learning. Four research questions were raised in this study: What are the important issues in student centered concept in statistics teaching and learning? What are the methods used in SCL for statistics course? Which methods are used in statistics education research? What type of computer supported material sources involved?

2. Student-centered learning

SCL model suggests that students are flexible and empowered individual to access important sources of knowledge (Lu et al, 2007). These resources may include course instructor, course material, library and internet that provides most of the

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materials, other students as peer in the learning process. With the availability of ICT, students have more flexible access to multiple resources including the library, the Internet, instructors, other students, lecture, and other school. Figure 1 presents this relationship.
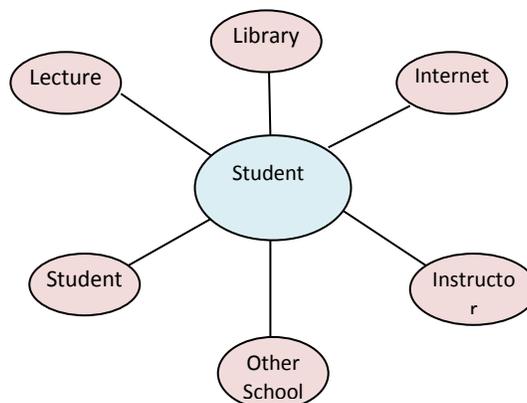
43. Fig. 1. Student-centered learning (Oblinger and Maruyama, 1996)

SCL environment consists of a number of methods. Among the important methods are computer supported collaborative learning, collaborative learning, problem-based learning, active learning and cooperative learning. In computer supported collaborative learning (CSCL) environments, students collaborate together to solve a problem with the help of computer technology. CSCL trains students with important procedure by sharing their thoughts, exploring computer tool to construct solution and using skills in a knowledge building to solve the given problems (De Corte, Verschaffel, &Eynde, 2000).

Collaborative learningitself is a method that enables students to work together through the process of collaboration and brainstorming to retrieve vast amount of informationefficiently, in a meaningful way to create new ideas or to accomplish learning tasks (Lipponen, 2002). Problem-based learning (PBL) method suggests that students to be guided to work in small groups where they identify what they do and do not know, and what information they need to solve the problem at hand (Baturay and Bay, 2010). Therefore, students in PBL method take responsibility for and get involved in their learning, whereas instructors are responsible for organizing suitable content that represent real problem to be solved and to facilitate group processes and learning. In this method, students are required to apply and develop critical thinking and working in team.

Cooperative learning (CL) involves small groups for example two students who work together to maximize their own and each other's learning(Johnson & Johnson, 1998).Four types of team work are introduced in CL i.e. formal, informal, cooperative base groups, and academic controversy that provide one another with efficient and effective help and assistance. CL emphasizesgroup members to exchange information or materials, discuss the concepts and strategies being learned, decide how to solve problems, and provide for the necessary support and encouragement (Johnson & Johnson, 1996).In active learning environment, students were trained to think critically and reflectively helped them become self-directed learners(Justice et al., 2007). As a consequent, they were able to weigh evidence from a variety of sources, synthesize information, and communicate their ideas.

3. Method

The method for this study applies systematic review. Kitchenham and Charters (2007) define systematic review is a process for identifying, evaluating and interpreting research materials to answer a number of research questions. The purpose of systematic review is to summarize the research by performing synthesis on research resources. The review process is conducted in systematic procedure. It provides means or ways to conduct a literature reviewusing extensive and comprehensive strategies based on severaldefined stages (Norsarimah, 2008). The method could be categorized intothree major phases. In design phase, the major activities involve identification of the need of the

review, development ofthe review protocol and formulation of the research questions. The second phase deals with searching related research. The main activities in the second phase include identification of relevant literature by conducting acomprehensive and exhaustive search and selection of primary studies based oninclusive/exclusive criteria. In the final phasei.e. analysis and interpretation, these procedure are performed: data extraction together with the quality assessment, synthesis of evidence, and interpretation of results and report writing.

The design phase require the researchers to conduct in depth literature review to justify the need of the review. The rational is reported in introduction section. The formulation of research questions produces four useful guidelines to be used in the review:What are the important issues in student centered concept in statistics teaching and learning?What are the methods used in SCL for statistics course?What kind of test was used to evaluate SCL implementation in statistics course?What type of computer supported material sources involved?

The second phase deals with searching related research. The main activities in the second phase include identification of relevant literature by conducting acomprehensive and exhaustive search and selection of primary studies based oninclusive/exclusive criteria.

To examine relevant research in the second phase, the researchersidentify relevant literature. The researchers conduct database search on SCL in statistics instruction using prominent sources: Elsevier, Sage, ERIC and IEEE. These data bases were identified as a source of information domain because top ranking journals in education are widely covered and published, including the publication of conferences e.g. International Conference on Multimedia Computing and Systems (ICMCS), International Conference on Education Technology and Computer (ICETC), and International Conference on Information and Multimedia Technology (ICIMT). The review protocol applies two keywords i.e. "Student-Centered Learning" and "Statistics".

Theinclusive criteria are as listed: Research papers published between the years 2005 - 2011;Research paper that discusses the topic of SCL in statistics education. Meanwhile, the rejection of a research papers are those that meet this criteria: Research papers published other than English;Research papers outside the domain of SCL in statistics education. The analysis and interpretation is discussedin the next section.

Results and Discussions

The search protocol produces 67 research papers.Using the exclusive criteria, 20 papers were rejected leaving only 47 papers to be accepted for analysis. The percentage for valid paper is 70% from the initial 67 retrieved research papers.Table 1 summarizes the result. The entire result would be presented according to the intended research questions.

4. Table 1. Paper reviewed

Paper	Number
Total fulfill inclusive criteria	67
Total fulfill exclusive criteria	20
Total valid	47

Research question 1: Issues ofSCL in statisticseducation

A number of issues were identified from the research paper. Table 2 presents the distribution of issues. Each paper brings at least one issue:main issue and additional issue, if available. The important issues are techniques of teaching and learning, assessment of technique, computer supported learning: design and development, interaction, motivation and attitude, ability and aptitude.

Regarding techniques of teaching and learning in statistic SCL, many aspects were discussed. Sung and Hwang (2013) emphasise the need for proper teaching and learning design to ensure intended result could be achieved. Without proper designsuitable learning support, negative impacts of employing computer game in statistics instruction could occur.Tsai (2010) andSendag and Odabasi (2009) discuss the suitable environment for efficient teaching and learning to take place such as help by instructor are needed to seek information and solve problems in spoon feed environment. Ke (2013) and Schoor and Bannert (2011) were interested in the interaction in learning activities and motivation on knowledge acquisition during SCL session.

The second issue,assessment of techniqueemerge due to the need to conduct empirical study that support the usefulness of teaching and learning method, specifically within the context of teaching statistics This may include learning tool such as video podcasts (Kay and Kletskin, 2012; Lloyd and Robertson, 2012), computer system (González et al, 2010),integrated computer technology (Lowerison et al 2006) or teaching method (Harpe et al, 2012).

The design and development of computer support were considered important issue because the use of computer technology may motivate students in the learning experience of statistics (Lopez-Morteo and Lopez, 2007). Computer learning tool was designed to suit the selected learning method such as PBL scenario for Statistic course (Nurnadiah et al, 2009), or to be able to generate different statistical exercises and to provide immediate feedback to students' answers(González et al, 2010).Issues on interaction, motivation and attitude, and ability and aptitude were also receivedattention from researchers. For example, Lin (2010) evaluates the interaction among students in the collaborative problem posing and solving learning system and understands their intention to use.Lloyd and Robertson 2012 assess the effect of screencast tutorials on learning outcomes, including statistical knowledge, application, and interpretation.

5. Table 2. Identified issues

Issue	Main issue	Second issue
Techniques of teaching and learning	29	0
Assessment of technique	14	9
Computer supported learning, design n development	2	7
Interaction, motivation and attitude	2	6
Ability and aptitude	0	4
No issue	0	21
Total	47	47

Research question 2: SCL Method used in statistics education

There are ten identified methods used in the research paper, as in Table 3. Computer supported collaborative learning,collaborative learning and problem-based learning appear to be the most widely used SCL method. According to Lazakidou and Retalis (2010) computer supported collaborative learning (CSCL) allows students to jointly work out a solution to a problem, engage themselves to the knowledge building process using computer technology. Combinationof SCL methods werealso used in statistics teaching and learning (Cavanagh, 2011). This result implies that statistics instructors are required to be more flexible, to use combination of traditional teaching approach with other techniques in lecture and tutorial to make the session more interesting.

Table 3. SCL method

Item	Number
Computer supported collaborative learning	10
Collaborative learning	9
Problem-based learning	10
Active learning	6
Cooperative learning	4
Inquiry-based learning	2
Service learning	1
Schema-based learning	1
Computer support	3
General SCL	1
Total	47

Research question 3: Method used in statistics education research

Table 4 presents the method of statistics education research. Experiment appears to be the most widely used approach in this topic (Sung and Hwang, 2013;Lazakidou and Retalis, 2013; Chiu and Hsiao, 2010; Tsai, 2010; Chang et al., 2012; Schoor and Bannert, 2011, Mercier and Frederikson, 2007; Jitendra et al., 2011; Harpe et al, 2012).Among the reason to use this method is due to statistical controlled design in the study to examine the impact of teaching style on learning (Giles et al, 2006).

The use of survey was also relevant, especially to assess students' attitude towards statistics (Hall and Buzwell, 2013) and to measure students' perception on the extent to which the lecture activities helped them to learn and understand the course content (Cavanagh, 2011). Case study was used to expand the methodology involved in the lesson study process as well as some practical ideas for its implementation (Davis and Blanchard, 2004; Roback et al, 2006).

Table 4. Research method

Item	Number
Experiment	26
Survey	9
Case study	8
Secondary data	2
Interview	2
Total	47

Research question 4: Types of computer used in statistics education

Half of the papers were using computer technology in statistics instruction (refer Table 5). The computer technology used was categorized either as statistics learning tool/ multimedia, web-media system, e-workbook or game. These computer technology was used in statistics courses to improve the statistical abilities of students by continuously engaging these students to certain activities that could develop their understanding in long run without much intervention and supervision by instructor, who would be far from the student's sight (Jover et al, 2010).

Among the proposed statistics learning tools involve linear and non-linear multimedia courseware (Nurnadiah, 2009), Interactive Instructors of Recreational Mathematics (Lopez-Morteo and Lopez, 2007), and a randomized statistical exercises tool (González et al, 2010). Web-based system or tools such as problem-based video podcasts were used to teach the subject (Kay and Kletskin, 2012).Web-based classroom technology including podcasting, vodcasting, and screencasting, is on the rise in higher education (Lloyd and Robertson, 2012).

Table 5. Computer technology

Item	Number
Statistics learning tool/ multimedia	7
Web-media system e.g. Wikipedia	7
E-Workbook	7
Game	3
Not using	23
Total	47

Conclusion

The initial results of research related to student-centered learning in statistics education. Systematic review was used to summarize SCL related research in statistics by performing synthesis on research resources. The results suggest a few emerging issues in SCL, identify the SCL methods in teaching statistics, discover research methods used by researcher in this domain and determine computer technology used in statistics SCL classroom. The finding from this paper may givessome direction of recent research in SCL usage in statistics teaching and learning.

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Students' attitudes towards computer-assisted language learning

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Abstract

Faculty of languages and linguistics at university of Malaya in Malaysia has invested substantially to introduce students to computer-based language learning materials and to integrate technology into existing curriculum. The purpose of this study was to examine the attitudes of students towards use of computer-assisted language learning (CALL). Data was collected from 100 students using a survey questionnaire. Findings of this study indicated that students had moderate attitudes towards CALL. Moreover, study results indicated that perceived usefulness, perceived ease of use, and subjective norms were significant predictors of computer attitudes. Implications for student training and suggestion for further research were provided.

Keywords: Computer assisted language learning, computer attitude, perceived usefulness, perceived ease of use

1. Introduction

Many researchers believe that integrating information and communication technology in education supports pupils in their own constructive thinking and engages them in cognitive operations (Teo, 2006). Pemberton, Borrego and Cohen (2006) conducted a study on using interactive computer technology to enhance learning and found that the use of ICT creates a powerful learning environment and intrinsically motivate students to learn and participate in classroom activities. In line with this idea, Wright (2008) stated that academic learning accompanied by computer technology offers students much more confidence and interest in the process of exploring and learning knowledge. It would seem that computer technology is an important tool to support new ways of teaching and learning. It can be used to develop students' skills for cooperation, communication, problem solving and lifelong learning (Voogt, 2008).

Nowadays, computers have been recognized as a valuable instrument in teaching modern foreign languages in universities. Lee (2000) stated that using computer in second language instruction can improve practices for students through experiential learning, motivate students to learn more, enhance student achievement, increase authentic materials for study, encourage greater interaction between teachers and students and students and peers, emphasize individual needs, escape from a single source of information and, enlarge global understanding. It is clear that the field of English as a Second Language can be enhanced through the use of computer technology.

Teo (2006) found that students' attitudes towards computer have an influential role on their acceptance to use the computer as a learning tool and their future behaviours towards the computer such as using it for further study and vocational purposes. Similarly, Zhang (2011) stated that students' attitudes towards the computer-assisted language learning (CALL) can be considered as a key predictor in terms of successful application of computer to language learning. Moreover, Ajzen and Fishbein (1977) stated that ''attitudes toward targets will predict multiple-act criteria, provided that the attitudinal and behavioural entities involve the same target elements'' (p. 981). It would seem that awareness of students' attitudes toward computers can be ''a critical criterion in the evaluation of computer courses and in the development of computer-based curricula'' (Woodrow, 1991, p. 165). Therefore, computer attitudes should be considered as key constructs in predicting technology acceptance for future use.

Several models were developed to help in predicting technology acceptance. Among these models, the Technology Acceptance Model (TAM) is the most popular (McCoy, Galletta, & King, 2007). It is testable and has received substantial empirical support for being robust and parsimonious in predicting technology acceptance and adoption in various contexts and using a variety of technologies (Teo, 2009) (Fig.1). This study used this model to understand students' attitudes and the factors that influence these attitudes. The successful integration of computers in education is largely affected by students' attitudes and their willingness to embrace the technology (Pektas &

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Erkip, 2006). Studying students' attitudes can help us to answer some questions relating to acceptance and usage of technology in teaching and learning.

2. Literature review

Many researchers believed that computer technology is the ideal tool to enhance students' learning in English. Beatty (2003) defined computer-assisted language learning (CALL) as "any process in which a learner uses a computer and, as a result, improves his or her language" (p.7). Warschauer (1996) stated that computers help students to learn English in three ways: computer as tutor (offers tutoring to students), computer as stimulus (improves synthetic and analytic thinking of students), and computer as tool (e.g. grammar checking, word processing, collaborative writing, and Internet). It is clear that the computer should be integrated into teaching and learning process. Computer technologies can enhance interpersonal and communication skills and can provide opportunities for cooperative learning. Hence, using computers not only increase instructional effectiveness and efficiency, but also promote positive social interactions and enhance students' motivation for learning (Afshari et al., 2007).

According to Teo (2006), attitudes toward technology play a crucial role in the adoption of instructional technology and students' learning in the classroom. Attitude is also considered as one of the affective variables in the success of implementing technology in the second or foreign language learning process. In line with this idea, Ayres (2002) conducted a study on students' attitudes toward CALL and reported that 80% of the students believed that CALL is relevant to their needs, 77% of the students agreed that CALL gives useful information, and 66% of the students thought that more CALL should be used in their learning. Moreover, he added that attitude is one of important factors which promote or inhibit the successful implementation of any initiative. Hence, it is important to examine students' attitudes toward computer at different stages of development.

In addition, several attitude theories and models have confirmed the relationship between attitude and behaviour. In 1980, Ajzen and Fishbein introduced The Theory of Reasoned Action (TRA) and stated that behavioural intent of a person determine his performance of a particular behaviour and this behavioural intent is identified by two things, attitude and the subjective norms within which a person operates, i.e. the cultural norms of the organization. Marcinkiewicz and Regstad (1996) conducted a study on the influence of subjective norm on computer use and found that subjective norm is most predictive of computer use, alongside self-competence, perceived relevance and innovativeness. Moreover, Pan, Sivo and Brophy (2003) and Teo and his colleagues (2008) reported that there is a positive relationship between subjective norm and attitudes.
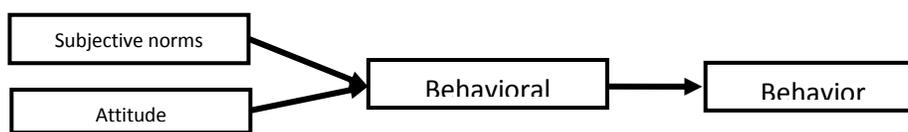
Figure1: Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980).

Davis et al. (1989) developed the Technology Acceptance Model (TAM), based on the Theory of Reasoned Action. TRA is general whereas TAM relates to technology; TAM takes this model and derives from it two variables which determine attitude (Gilbert & Kelly, 2005). These variables are perceived usefulness, and perceived ease of use. Perceived usefulness refer to the extent to which people believe a technology will help them to do a better job, and perceived ease of use shows the ease or lack of effort to actually use it (Davis, 1989). When people believe that computer is easy to use, nearly free of mental effort, and helpful to learning; then they may have a favorable attitude toward using computer to learn English. It can be predicted that such people may use computer technologies frequently and intensely. Moreover, Moon and Kim (2001) hypothesized that perceived ease of use related to perceived usefulness.
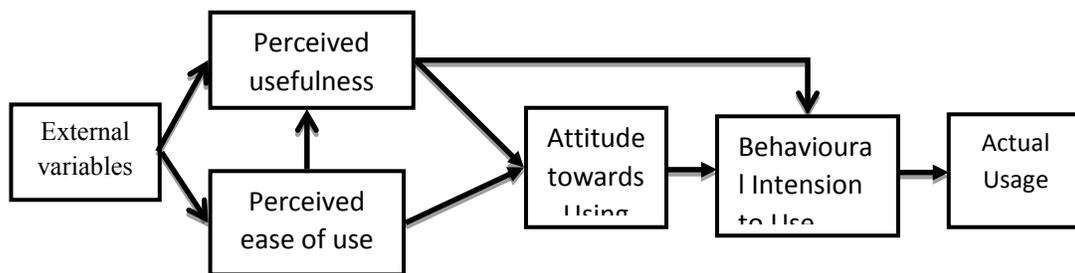
Figure2: Technology acceptance model (Davis 1989)

Although the TAM has been validated and has been examined its importance on the adoption of innovation since 1989, studies on its application in education is limited. Venkatesh (2000) suggested that "Future research should examine mandatory usage contexts to test the boundary conditions of the technology acceptance model" (p. 358). The purpose of this study is to use TAM model to examine students' attitudes towards computers. This study extends the TAM by including an additional user-related variable (subjective norm). The objective of this study was achieved by answering the following hypotheses:

Hypothesis 1: There is a positive relationship between perceived ease of use of computers and students' attitudes toward CALL;
Hypothesis 2: There is a positive relationship between perceived usefulness of computers and students' attitudes toward CALL;
Hypothesis 3: There is a positive relationship between subjective norm and students' attitudes toward CALL;
Hypothesis 4: There is a positive relationship between Subjective Norm and perceived usefulness of computers;
Hypothesis 5: There is a positive relationship between a student's perceived ease of use of computers and her/ his perceived usefulness of computers.
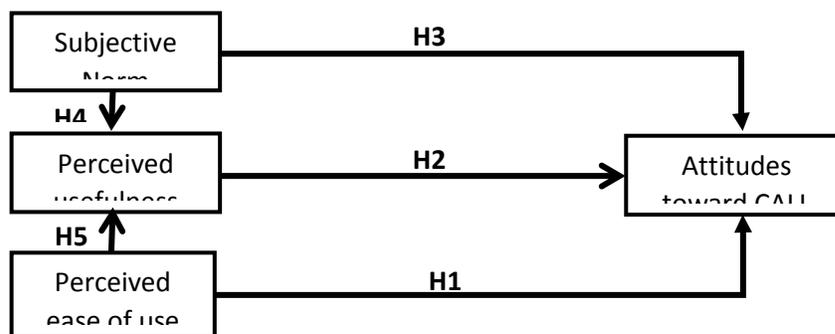
Figure 3: proposed research model

3. Methodology

A structural equation modeling (SEM) approach was used in this study to develop a model that shows the relationships among four variables: subjective norm, perceived usefulness, perceived ease of use, and attitudes toward CALL. Also, a quantitative method was utilized to collect data from students at the Faculty of Languages and Linguistics in University of Malaya.

Participants were 100 students at the Faculty of Languages and Linguistics in University of Malaya. They were selected from undergraduate (42%) and postgraduate students (58%). Among the participants, 21% were male while 79% were female. In terms of age, 43% of respondents were within the 23-25 age range, 31% were within the 18-22 age range, 22% were within the 26-30 age range, and 4% were more than 30. Almost every student had access to a computer at home (99.9%) and majority of them (67%) had much competence in using computer. Approximately 80 % of the respondents used computers daily and 86% of students reported that they did not use computer-assisted language learning lab in faculty.

A survey questionnaire was administered to the participants who volunteered for this study. The instrument was composed of 22 statements on attitude, 7 statements on PU, 3 statements on PE, 2 statements on SN. Participants gave their opinions to each statement on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Participants from various field of study completed the survey questionnaire provided by the researchers. The purpose of the study and its potential usefulness explained clearly for participants. Those who wished to participate were assured about confidentiality of their responses. Further, the enumerators provided those participants with briefing on how to fill the questionnaire. The enumerators checked the questionnaire for completeness immediately upon return. On average, each participant took not more than 20 min to complete the questionnaire.

4. Data analysis

Test of the measurement model

To review the reliability and validity of the measures, a confirmatory factor analysis was carried out. The results of the measurement model have been shown in Table 1. All factor loadings are above 0.85 and range from 0.85 to 0.99. Together, the principal component analysis showed that these three factors in the proposed model explained 87% of the total variance. All standardised regression weights are above 0.85. The multiple square correlations (R^2) of all items ranged from 0.73 to 0.99, indicating that these items were explained by their predictors at a range from 73% to 99%. Also, Convergent validity of these instruments was calculated.

Convergent validity refers to a set of variables that presume to measure a construct (Kline, 2005). It can be tested using: average variance extracted (AVE) and factor loading. According to Hair et al. (2006), AVE and factor loading on a factor more than or equal 0.5 indicate a high convergent validity. The average variance extracted (AVE) ranged from 0.78 to 0.99 which were above the minimum level of 0.5 (Fornell & Larcker, 1981). Moreover, construct reliability was measured. As shown in Table 1, the construct reliabilities ranged from 0.77 to 0.99 which exceeded the minimum level of 0.7 (Chin, 1998). It would seem that the measures have adequate reliability and convergent validity.

Table 1. Results for the measurement model

Latent Variable	Manifest Variable	Factor Loading (>0.50)*	CR (t-Value)	SRW	R^2	AVE (≥0.5)	Construct Reliability (CR)
Subjective Norm	SN1	0.99	50.976 ***	0.99	0.98	0.99	0.99
	SN2	0.99		0.99	0.98		
Perceived usefulness	PU1	0.85	13.452 ***	0.85	0.73	0.78	0.97
	PU2	0.89	14.890 ***	0.88	0.78		
	PU3	0.87	14.40 ***	0.87	0.76		
	PU4	0.90	15.668 ***	0.89	0.80		
	PU5	0.91	16.111 ***	0.90	0.82		
	PU6	0.89	15.328 ***	0.89	0.79		
	PU7	0.89	15.302 ***	0.89	0.79		
	PU8	0.93		0.93	0.86		
Perceived ease of use	PEU1	0.91	14.980 ***	0.91	0.83	0.81	0.96
	PEU2	0.89	13.839 ***	0.88	0.78		
	PEU3	0.91	14.793 ***	0.90	0.82		
	PEU4	0.90		0.89	0.81		
Attitudes towards CALL	Affective	0.99		0.99	0.99	0.97	0.77
	Cognitive	0.98	48.994 ***	0.98	0.96		
	Behavioral	0.99	53.297 ***	0.98	0.97		

SRW: Standardized Regression Weight.

Average variance extracted= AVE= $(\Sigma\lambda 2)/n$
Construct reliability = CR= $(\Sigma\lambda) 2 / (\Sigma\lambda) 2 + (\Sigma\delta)$

Furthermore, this study assessed the discriminant validity. Discriminant validity is considered adequate when the variance shared between a construct and any other construct in the model is less than the variance that construct shares with its measures (Fornell et al. 1982). The variance shared by any two constructs is obtained by squaring the correlation between the two constructs. The variance shared between a construct and its measures corresponds to average variance extracted. Discriminant validity was assessed by comparing the average variance extracted for a given construct with the square of correlation between that construct and all other constructs. According to Table 2 in all cases, the AVE was greater than the square of correlation between the two factors which indicate that all variables meet the requirements of discriminant validity.

	Computer Attitude	Subjective Norm	Perceived Usefulness	Perceived Ease of Use
Computer Attitude	1	0.77	0.97	0.98
Subjective Norm	0.77	1	0.73	0.74
Perceived Usefulness	0.97	0.73	1	0.96
Perceived Ease of Use	0.98	0.74	0.96	1

Table 2: Square of correlation between constructs

A variety of indices such as the $\chi 2$ statistics, comparative fit index (CFI), Tucker-Lewis index (TLI), Goodness-of-Fit index (GFI), and root mean square error of approximation (RMSEA) can be used to obtain a comprehensive model fit (Hair et al., 2006). The level of acceptable fit and the fit indices for the proposed research model has been indicated in Table 3. Based on these criteria, we can conclude that the measurement has a good fit.

Table3: Fit indices for the measurement model

Model fit indices	Values	Recommended guidelines	References
$\chi 2$	449.57	Non-significant	Klem (2000), Kline (2005), McDonald and Ho (2002)
CFI	0.92	≥ 0.9	Klem (2000), McDonald and Ho (2002)
TLI	0.91	≥ 0.9	Klem (2000), McDonald and Ho (2002)
GFI	0.94	≥ 0.9	Klem (2000), McDonald and Ho (2002)
NFI	0.92	≥ 0.9	Klem (2000), McDonald and Ho (2002)
RMSEA	0.072	<0.08	McDonald and Ho (2002)

4.2 Test of the structural model

Several indices were examined to test the structural model. Findings indicated a good model fit ($\chi 2$= 425.23, P< 0.001, GFI=0.92, AGFI=0.94, CFI=0.91, NFI=0.916, TLI=0.925, and RMSEA=0.071). The results of the hypothesis test and path coefficients of the proposed research model have been shown in Figure 4. Findings indicated that all hypotheses were supported by the data. All the hypotheses were significant indicating PU significantly influenced students' attitudes toward CALL (b = 0.52, P < 0.05), supporting hypothesis H2. SN was found to be significant in influencing PU (b = 0.24, P< 0.05) and attitudes toward CALL (b = 0.18, P < 0.05), thus supporting hypotheses H4 and H3. PEU was significant in influencing PU (b = 0.34, P< 0.05) and CA (b=0.28, P < 0.05), thus supporting hypotheses H5 and H1.

Two endogenous variables were tested in the research model. Students' attitudes toward CALL were predicted by SU, PU, and PEU, resulting in an R2 of 0.67. This means that 67% of variance in the students' attitudes towards CALL was explained by SU, PU, and PEU. PU was significantly determined by SN and PEU. About 29% of variance in PU was explained by SN and PEU.

5. Discussion and conclusion

The purpose of this study was to identify students' attitudes towards CALL. The study found that students had moderate attitudes toward CALL (M=2.45). Moreover, this study identified the key determinants of attitudes towards CALL. Study results indicated that students' PU and PEU were key factors of their attitudes towards CALL.

Both variables (PU and PEU) had a direct and significant effect on students' attitudes towards CALL. Moreover, PU and PEU had a very strong correlation with attitudes towards CALL, indicating that as students' perceptions of computer attributes (PU and PEU) improve, their attitudes will be enhanced as well. The result of this section is consistent with prior theoretical arguments made by Davis (1989) and previous studies in which TAM examined (Teo et al., 2007; Masrom, 2007). Furthermore, findings of this study indicated that SN can be a determinant of students' attitudes towards CALL. SN had a direct and indirect effect on students' attitudes towards CALL.

According to Chang et al. (2012), training should be provided for learners to learn not only computer skills, but also a positive attitude. Training can encourage students to use computers with CALL applications as much as possible in their learning. Computer lab and language lab should be opened to students as many hours as possible. Furthermore, the university should encourage lecturers to integrate more computer technology into their teaching and curriculum design. Lecturers should believe that CALL–based ESL course can be more effective than traditional one. They should be familiar with CALL applications and software in order to give technical support to the students and provide the best way to integrate CALL into their ESL course design.
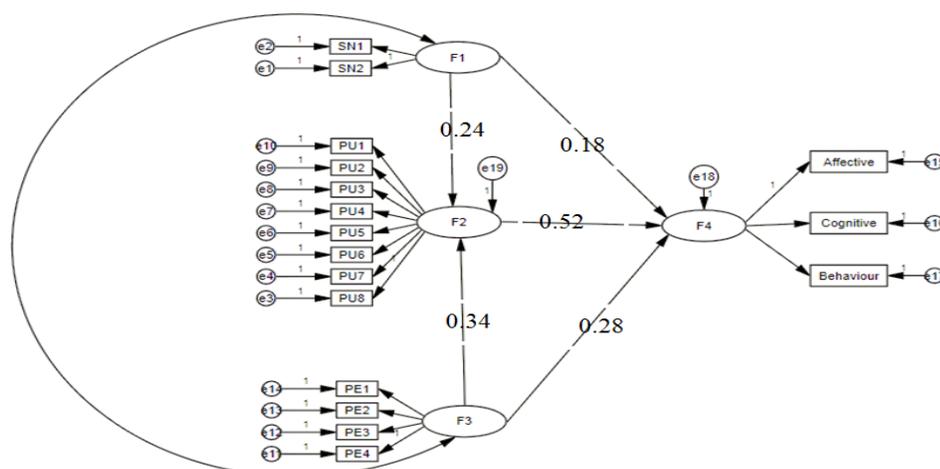
Figure 4: Structural model

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Students' Feedback of e-AV Biology Website and the Learning Impact towards Biology

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Abstract

This paper presents students' feedback on the design and development of a Website for Biology, namely e-AV Biology for senior high schools in Indonesia. The teaching media was developed with the main feature of video lessons and other features supporting the learning of Biology such as the Interactive Quiz and Discussion to support students' learning in Biology. Some video lessons described Renewable Energy on the field of Biotechnology Industrial, which is one of the topics that commonly difficult to visualize and explain. There is a need of aiding the explanation of Biodiesel sources, Biodiesel production process and Biodiesel usages by using audio visual. This study examined the design (Features and Interactivity, Video Content) and the Learning Impact of e-AV Biology Website. A total of 256 high school students participated in a larger study of a quasi-experiment in year 2011 with the intervention of two different ways of teaching, one with fully media instruction using e-AV Biology teaching method and another one the traditional manner of teaching. However, for the purpose of this paper, only the perception of the students participated in experiment group (n= 121, with 75 females, 46 males) were used, analyzed and reported. The last section of the paper presents the findings which indicated that majority students have positive response to overall feedback towards e-AV Biology teaching method, particularly the Features and Interactivity that provided in e-AV Biology Website.

Keywords: Feedback, e-AV Biology Website, Renewable Energy, Biodiesel, Learning Impact

Introduction

The teaching and learning Biology in Indonesia was done traditionally in the form of teacher-centred learning (Durbin, 2001). Teachers explain the subject according to the textbook, and then they write it on the whiteboard. After lecturing, teachers give some assignments to students. Meanwhile, students' activities in classroom are mostly the following: listen to teachers' explanation, take note, memorize the subject and also do assignments (Durbin, 2001). These are the scenario of Biology classes in Indonesia (Setiawan, 2008) resulted students who are generally passive and lack interest in Biology. This can be shown in the low enrolment of Biology major classes in upper levels (Puspita et al., 2008) as they do not find Biology an interesting subject (Setiawan, 2008).

The teaching aids such as audio visual materials or multimedia have been considered as an urgent necessity for the teacher to explain Biology subject in a more appealing way. A picture is worth a thousand words; multimedia appears to be more visual appealing supported by audio that explains the abstract concepts in a planned sequence based on instructional design principles. Teachers must have the ability to make the learning atmosphere more interesting while using the teaching aids for their classes. In this study, the teaching media platform, namely e-AV Biology Website, was developed with the main feature of video lessons in supporting the students' learning in Biology. e-AV Biology Website is one of the alternative aids to explain Biology in a visual appealing way supported by interactive features such as quizzes, and the control panel for the videos.

Objectives

The purpose of this paper is to report a part of the larger study. Focus of this paper is to gather feedback of e-AV Biology learning materials. There are two objectives here: 1) To examine the Design (Features and Interactivity, Video Contents) of e-AV Biology Website; 2) To examine the Learning Impact of e-AV Biology Website.
These objectives are in line with the research questions which in context of e-AV Biology: 1) What is the Improvement of the Design of e-AV Biology suggested by students? 2) What is the Learning Impact of e-AV Biology Website as perceived by students?

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Difficulties in Studying Biology

Students' difficulties in learning Biology concepts have been investigated by many researchers. The survey outcomes from a study conducted by Lu, Cowie, and Jones (2008) indicated that 66% of the student respondents expressed that their Biology classes were taught monotonously. Just over half of the respondents (53%) wishes their teachers would include more interaction and active involvement in the lessons.

Moreover, the Biology teaching and learning process was often faced with abstract concepts and it was out of the students' daily experiences, particularly the process the production of Biofuel (Renewable Energy). Shelmet, Shields, and Huggins (2008) stated that many science classes have been conducted in 50-minutes content-driven lectures in traditionally classroom. Memorization of facts and algorithmic problem solving are often stressed, rather than conceptual understanding. Therefore, Biology needs to be taught dynamically, not as a static subject in textbooks (Tekkaya, Ozkan, and Sungur, 2001).

Finley, Yarroch, and Stewart (1982) reported that cellular respiration, photosynthesis, protein synthesis, mitosis and meiosis, were difficult and important topics for students to learn. Other topics which students find difficult to learn were respiration and photosynthesis (Anderson, Sheldon & Dubay, 1990), and concept of energy (Jennison & Reiss, 1991), all of these concepts were also supported by Tekkaya et al. (2001, p.145). Most of the participants of in the study conducted by Tekkaya et al. (2001, p.148) reported that "Biology is a course that presents overwhelm contents, most of which depend on memorization. Textbooks are boring and include excessive details; textbooks contain too much new and unnecessary information".

The study of Baggott and Wright (1996) on the use of interactive video in teaching cell division, among first-year undergraduate Biology education students, indicated that they find it more advantageous and more motivating in grasping the relevant phenomenon. Moreover, Prinou et al. (2003) stated that most of students reported that the moving image clarified or enhanced their understanding. It seems that through video, they understood that mitosis is a continuous rather than step-by-step process.

Renewable Energy

Due to global trend of the reduction of fuel resources, the human efforts are collectively looking into a renew source of energy, especially biofuel. Indonesian is rich of biofuel resources such as Jatropha oil, Coconut oil, Cassava and Crude Palm Oil. Biotechnology Industrial, especially Renewable Energy as a part of Biology is learned in the tenth grade of Senior High Schools, it is determined by the fifth Competency Standard of Indonesian Biology curriculum, which states that:

"The Students are able to explain about Biotechnology - the principles, roles and its implications for sciences, environment, technology and society". Energy resources and renewable energy is an important issue to be introduced to students; many side topics related energy such as energy consumption and preservation, generation of energy with consideration of environment protection are all related to this topic.

Multimedia Website for Learning

The educational content that build based on multimedia can be delivered through internet, so the teaching and learning process can be done via internet. According to Thierry and Deborah (2000, p.225), "The Internet is the major technological advancement reshaping not only our society but also that of universities worldwide. In the light of this, universities have to capitalize on the Internet for teaching, and one progressive development of this is the use of online delivery methods".

According to McAuliffe (2001), the online teaching and learning process could produce more relevant and consistent interaction than what is produced in the traditional undergraduate classrooms. A large traditional classroom does create communication barriers that make it more difficult for all students to participate in class discussions. The Internet is providing a practical way to remove learning barriers and encourage greater access to intellectual resources. The Internet has proved to be a powerful educational tool for Biology, because not only can it offer a large number of alternative images of the same phenomenon, but it can also provide a numerous of suggestions for the synthesis of relevant educational material (Prinou et al., 2003).

The Audio Visual is one of the popular multimedia components in education. Didactical video or Audio Visual is able to give a multisensory aspect to the learning experience to students than textual information. On the other hand, paper based pedagogical materials, such as books or articles, could allow students to think and analyses the content provided. Multimedia materials in this study presented in a Website can bring the two kinds of material together. Firstly, it allows the inclusion of Audio-Visual content into the array of educational materials. Secondly, it also allows the inclusion of textual information (Amatller & Simo, 2007). Multimedia material has another distinctive characteristic: it allows interaction. Students can interact with the information in different mode. The access to information could be done in multiple ways, different items could be connected according to students' interest and the practice and simulation of complex processes such as the processes of production biofuel is made possible. All the characteristics are not only the result of technological possibilities; they are also opportunities for constructivism based pedagogic materials (Amatller and Simo, 2007). Nowadays, Audio Visual Media is easily produced and published on the web and CD (Romero et al., 2008).

Methods of the Study

The teaching and learning process of Biology in Senior High Schools of Indonesia was tested using the e-AV Biology instructional design framework. Two Senior High Schools with 4 classes of students use e-AV Biology for their individual learning on Biology topics. They used it for 4 weeks, with first week as introduction to the website, 2nd week for Renewable Energy of Biodiesel Sources, 3rd week for Renewable Energy of Biodiesel Production and 4th week for Renewable Energy of Biodiesel Usages. In total 256 students completed their lessons and a post survey was conducted to seek feedback from them regarding audio visual learning on Biology. However, for the purpose of this paper, only the perception of the students participated in experiment group (n= 121, with 75 females, 46 males) were used, analyzed and reported. The instrument (post

survey) contains various dimensions of learning measures and also students' feedback on e-AV Biology. Those dimensions are: Video Contents, Features and Interactivity, and Learning Impact of e-AV Biology.

Description of e-AV Biology Website

A Website was used as the Multimedia technology. The website includes the interactive video about Biotechnology Industrial as a part of Biology subject. e-AV Biology had been developed with integrated and comprehensive video lessons, and other features supporting the student learning process. The use of animations, motion images, and videos was intended to render a scientific phenomenon and process to be easily comprehended by students.

There are some features to aid teaching and learning, available in e-AV Biology Website:

Home Page of e-AV Biology

This part aims to introduce students to the e-AV Biology Website. It starts with a description of how-to-use and register to become users of the e-AV Biology, followed by a short description of e-AV Biology menu and other e-AV Biology features.

Video Lessons

This part contains various videos concerning biofuel sources, biofuel production and biofuel usages (in Indonesian and English). Students were provided with contents in the form of audios, videos and animation that enables them to explore e-AV Biology Website on their own pace/individually. The integration of various media elements such as diagrams, audio, video and animation in this part adds more value to the website. Figure 1. shows e-AV Biology Videos, while Figure 2 shows sample of e-AV Biology Lesson for Indonesian students.
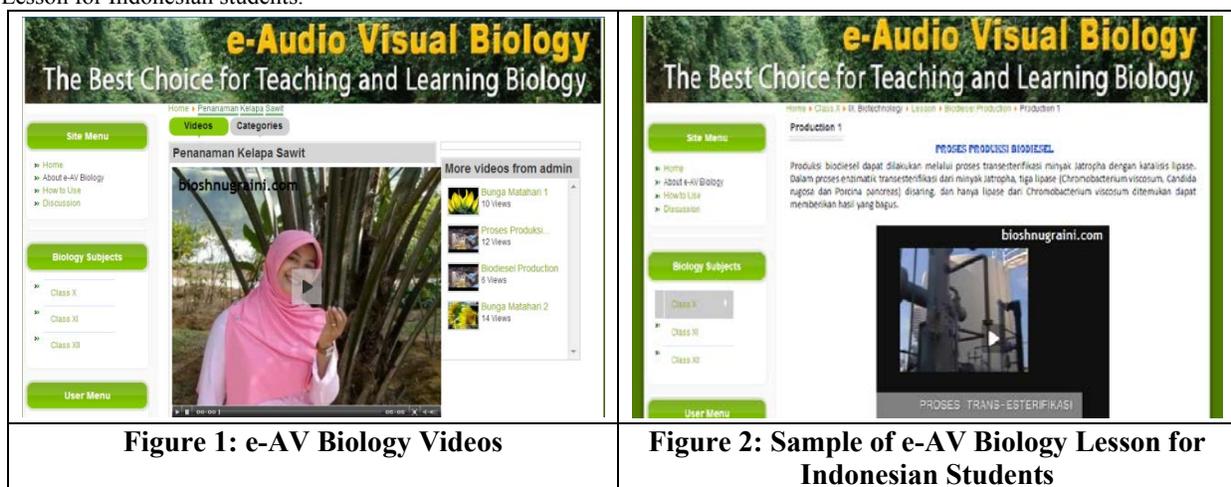
Figure 1: e-AV Biology Videos	Figure 2: Sample of e-AV Biology Lesson for Indonesian Students
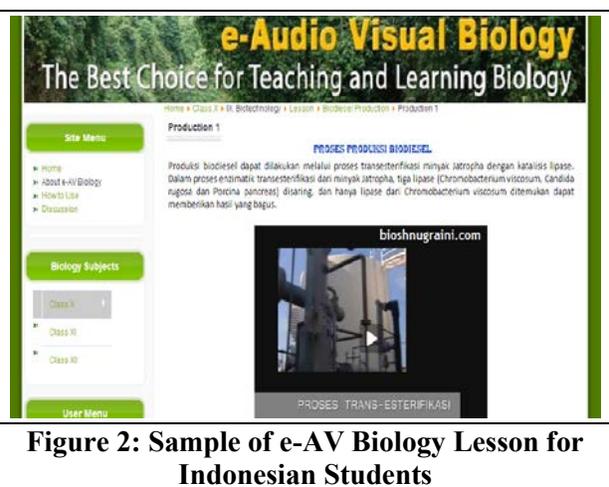
The video lessons also supported by articles and textual information related to Biology for the benefit of students to read about Renewable Energy such as Biodiesel Sources, Biodiesel Production and Biodiesel Usages. It provides materials for students in a more convenient way of access through text based information.

Findings and Discussions

This section present the survey results on e-AV Biology Website gathered the students' participants of experiment group, after they were using e-AV Biology Website for their learning individually.

Mostly descriptive findings are presented to highlight popular items and also to notice which items are less agreed or more agreed by students. A mean score of 4.5 with low standard deviation value indicates that the items are agreed and strongly agreed by students, and also many of them sharing the similar feedback on the scale of 5 or 4 (agreement). These items will be mentioned and discussed in the following sections. Likewise, for items with mean scores near to 3 indicated that the items are neither agreed nor disagreed by students (only one item in Table 3), it indicates indecisive opinion by students for those items or other words a mixture of opinion of agree and disagree by the group of students collectively. Majority of the items draw favorable agreement by most of the students, with mean scores value ranging from 3.22 to 4.78 and the standard deviations around 0.42.

a. Feedback of Video Contents in e-AV Biology Website

Table 1 shows the Students' Feedback of Video Contents in e-AV Biology Website. The table shows that majority the students have a positive response to Video Contents in e-AV Biology Website, with aggregate mean value = 4.35, and standard deviations around 0.53. The percentage of students' agreement and disagreement were represented by '%', while 'number of students' was represented by 'n'. 'Positive Respone/Agreement' indicated the students' *agree* and *strongly agree* with the statements, while 'Negative Response/Disagreement' indicated the students' *disagree* and *strongly disagree*.

Table 1: Video Contents Feedback

Items	Statements	Agreement (%) (n)	Undecided (%) (n)	Disagreement (%) (n)	Mean	Agregate Mean
q8	Video contents of **e-AV Biology** are useful to learn Biology	98% (119)	2% (2)	0% (0)	4.554	
q9	I am interested in using the video contents of Biology	77% (93)	20% (24)	3% (4)	4.207	
q10	Video contents of **e-AV Biology** are suitable for Biology courses	97% (117)	3% (4)	0% (0)	4.562	
q11	I am satisfied with the video contents for learning Biology	82% (99)	12% (15)	6% (7)	4.314	
q12	The Video contents are attractive	89% (107)	9% (11)	2% (3)	4.421	
q13	The Video contents can increase my ability to learn Biology	92% (112)	6% (7)	2% (2)	4.471	
q14	The Video contents can motivate me to learn Biology more	82% (100)	17% (20)	1% (1)	4.430	
q15	The sequence of video contents are easy to follow	87% (105)	11% (13)	2% (3)	4.595	4.35
q16	The Video contents allow me to clarify my misconception in Biology	77% (94)	21% (25)	2% (2)	4.331	
q17	The background music is attractive, the background music is appropriately used.	54% (65)	38% (46)	8% (10)	3.868	
q18	The background music is distracting	17% (20)	18% (22)	65% (79)	3.893	
q19	Video content can explain abstract concepts clearly	86% (104)	13% (16)	1% (1)	4.562	

Note : n = 121

Likert Scale 1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree

Agreement = *agree* and *strongly agree;* Disagreement = *disagree* and *strongly disagree*

Students' feedback on Video Contents of e-AV Biology indicated that item q8, q10, q15, and q19 shows higher mean scores (mean ≥ 4.0) with low standard deviation scores (SD ≤ 0.8), which mean that the items have low variability of the feedback from students. Many of them agreed and strongly agreed that Video Contents of e-AV Biology were useful to learn Biology, it was suitable for Biology, the sequence of Video Contents were easy to follow, and Video Contents can explain abstract concepts clearly.

b. Feedback towards Features and Interactivity of e-AV Biology Website

Table 2 shows that majority the students have a positive response to the Features and Interactivity of e-AV Biology Website, with aggregate mean value = 4.55, and the standard deviations around 0.66.

Table 2: Features and Interactivity

Items	Statements	Agreement (%) (n)	Undecided (%) (n)	Disagree-ment (%) (n)	Mean	Agre-gate Mean
q20	There are many visual examples in **e-AV Biology** Website	90% (109)	8% (10)	2% (2)	4.603	4.55
q21	Feature of Interactivity helps me learn better	89% (108)	10% (12)	1% (1)	4.570	
q22	The features of audio and visual are helpful as I can easily get the visualisation and explanation of the studying material	93% (113)	5% (6)	2% (2)	4.554	
q23	**e-AV Biology** is helpful in my learning because it has interactivity feature where I can pause and play on my own paced	87% (106)	11% (13)	2% (2)	4.537	
q24	I can repeat **e-AV Biology** Videos as much as I want	84% (102)	10% (12)	6% (7)	4.397	
q25	**e-AV Biology** makes me easy to study and make discussion based on the assignment, hence, enrich my learning	89% (108)	10% (12)	1% (1)	4.653	

Note : n = 121

Likert Scale 1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree

Agreement = *agree* and *strongly agree;* Disagreement = *disagree* and *strongly disagree*

Students' feedback on Features and Interactivity of e-AV Biology indicated that item q20, q21, q22, q23, and q25 shows higher mean scores (mean $\geq$ 4.0) with low standard deviation scores (SD $\leq$ 0.8), which mean that the items have low variability of the feedback from students. Many of them agreed and strongly agreed that e-AV Biology has many visual examples, Features and Interactivity in e-AV Biology help students learn better, they can easily get the visualization and explanation of the studying material, e-AV Biology was helpful in students' learning because it has interactivity feature, where students can pause and play on their own paced, and it make them easy to study and make discussion based on the assignment, hence, enrich their learning.

c. Feedback of the Learning Impact of e-AV Biology Website

Table 3. shows that majority of the students have a positive response to the Learning Impact of e-AV Biology Website, with aggregate mean value = 4.27, and the standard deviations around 0.42.

Students' feedback on the Learning Impact of e-AV Biology indicated that item q26, q28, q36, and q39 shows higher mean scores (mean $\geq$ 4.0) with low standard deviation scores (SD $\leq$ 0.8), which mean that the items have low variability of the feedback from students.

Many of them agreed and strongly agreed that they were motivated to learn Biology using e-AV Biology because the contents were able to attract students' attention. e-AV Biology has positive impact on students' learning of Biology. Students did not feel bored studying Biology with e-AV Biology. e-AV Biology has shortened students' learning time on a particular topic of Biology, and students' knowledge was improved by e-AV Biology.

Table 3: The Learning Impact

Items	Statements	Agreement (%) (n)	Undecided (%) (n)	Disagreement (%) (n)	Mean	Agre-gate Mean
q26	I am motivated to learn Biology using **e-AV Biology** because the contents are able to attract my attention	87% (105)	12% (15)	1% (1)	4.578	
q27	My motivation will be decrease after using **e-AV Biology** for several time	20% (24)	15% (18)	65%(79)	3.876	
q28	**e-AV Biology** has positive impact on my learning of Biology	98% (119)	2% (2)	0% (0)	4.777	
q29	I have interest to use **e-AV Biology** during the learning of Biology	84% (102)	14% (17)	2% (2)	4.488	
q30	**e-AV Biology** is efficient than the conventional teaching of Biology	73% (88)	26% (32)	1% (1)	4.223	

q31	Learning through **e-AV Biology** is effective than the conventional learning of Biology.	73% (88)	25% (31)	2% (2)	4.273	
q32	I wish **e-AV Biology** could be used in the teaching of Biology	86% (104)	9% (11)	5% (6)	4.446	
q33	I can learn Biology with **e-AV Biology** alone	69% (84)	25% (30)	6% (7)	4.231	
q34	I do not feel bored studying Biology with **e-AV Biology**	70% (85)	15% (18)	15% (18)	4.149	
q35	Biology textbook make me feel bored	48% (58)	24% (29)	28% (34)	3.223	
q36	**e-AV Biology** has shortened my learning time on a particular topic of Biology courses.	84% (102)	16% (19)	0% (0)	4.512	
q37	My interest towards Biology was increased by **e-AV Biology.**	75% (91)	23% (28)	2% (2)	4.380	
q38	**e-AV Biology** was effective in helping me learn the material.	92% (111)	8% (10)	0% (0)	4.008	
q39	My knowledge was improved by **e-AV Biology**.	90% (109)	10% (12)	0% (0)	4.653	

Note : n = 121

Likert Scale 1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree

Agreement = *agree* and *strongly agree;* Disagreement = *disagree* and *strongly disagree*

Overall Feedback

Students had reported about Feedback of Video Contents in e-AV Biology Website, Feedback of Features and Interactivity and Feedback of The Learning Impact of e-AV Biology Website. The survey results indicated that majority the students have positive response (agree and strongly agree) for overall feedback of e-AV Biology Website. The data had been collected from results of the questionnaires as presented in Table 1 to Table 3.

The findings of students' feedback towards e-AV Biology Website for learning Biology can be summarized as shown in Figure 3. The graph indicated that majority of students have positive responses towards e-AV Biology Website, particularly in the Features and Interactivity that provided in e-AV Biology Website with mean value = 4.55
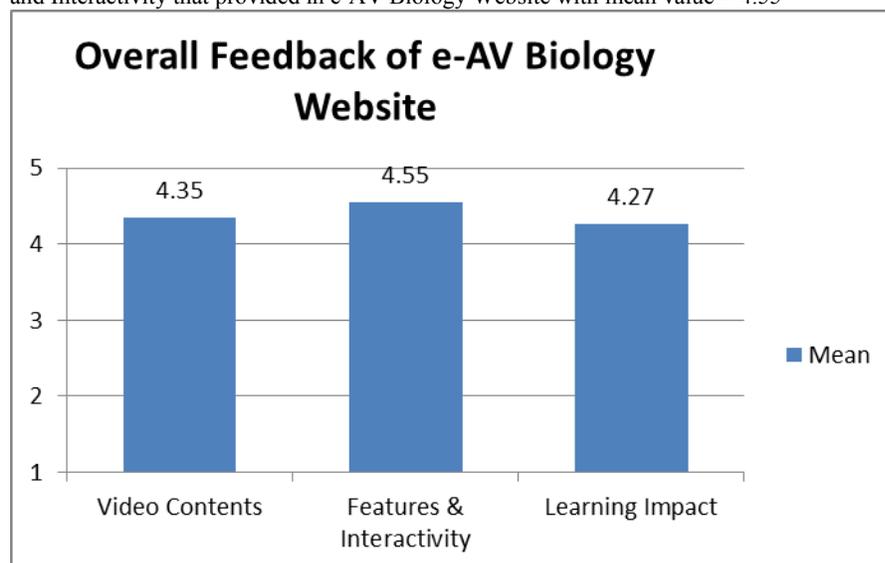
Figure 3: Students' Feedback towards e-AV Biology Website

Conclusion

The study on Students' Feedback of Audio Visual teaching media through e-AV Biology was conducted due to the increasing challenge of teaching an abstract subject, and the importance of the topic of Biotechnology Industrial or Renewable Energy (Biodiesel Sources, Biodiesel Production and Biodiesel Usages). Audio and Visual media was incorporated as the key component in e-Learning website, based on Integrated Framework of e-AV Biology which have been designed and developed. Findings

indicated that majority the students have a positive response to the Video Contents in e-AV Biology, the Features and Interactivity, and also the Learning Impact of e-AV Biology Website for students' Biology learning.

Students' feedback on Video Contents of e-AV Biology indicated that many of students agreed and strongly agreed that Video Contents of e-AV Biology were useful to learn Biology, it was suitable for Biology, the sequence of Video Contents were easy to follow, and it was able to generate similar perception of students about abstract concepts.

Students' feedback on Features and Interactivity of e-AV Biology indicated that many of students agreed and strongly agreed that e-AV Biology has many visual examples, Features and Interactivity in e-AV Biology help students learn better, they can easily get the visualization and explanation of the studying material, e-AV Biology was helpful in students' learning because it has interactivity feature where students can pause and play on their own paced, and it make them easy to study and make discussion based on the assignment, hence, enrich their learning.

Students' feedback on the Learning Impact of e-AV Biology indicated that many of students agreed and strongly agreed that students were motivated to learn Biology using e-AV Biology because the contents were able to attract students' attention. e-AV Biology has positive impact on students' learning of Biology. Students did not feel bored studying Biology with e-AV Biology. e-AV Biology has shortened students' learning time on a particular topic of Biology, and students' knowledge was improved by e-AV Biology.

Limitations and Future Research

The limitation of this study is mainly due to: (1) a short time frame of conducting the study and the impact on knowledge gain has not shown much significance. (2) The research is only conducted in one of the major cities in Indonesia, (3) the research sample is limited to International Schools by the Indonesian Government.

The contribution of the study is to propose the e-Learning Website design and development for Indonesia Senior High Schools to address the problem faced in Biology education. e-AV Biology website will be further developed to include more videos related to different topics of Biology since generally students are able to accept it and perceived it as useful to improve their interest and attitude toward Biology.

Acknowledgement

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Success of Marketing Information System Model for SMEs of Punjab: Validation of Survey Based Results and Case Study Analysis

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Abstract

The study uses a survey analysis for 140 SMEs of manufacturing sector of Punjab in India to understand the level of MkIS by firms. Punjab has been ranked as one of the growing states of India. The study uses step-wise regression technique to find the important predictors of the MkIS model. The results depict that co-efficient of determination is 0.508 and adjusted co-efficient of determination is 0.490, these predictors explain 49% of the variation and Durbin-Watson index is 2.102, which is acceptable for the model. The main objective of the study is to validate the success of MkIS model for SMEs through a case study done for six firms of which 2 firms produce cutting tools from district Patiala, 2 firms producing sports goods from district Jalandhar and 2 firms producing bicycle components from district Ludhiana respectively.

Keywords: Marketing Information System (MkIS); SMEs, Punjab manufacturing; Important Predictors of MkIS.

1. Introduction

Marketing Information System (MkIS) is a set of procedures and methods designed to generate, analyze, disseminate, and store anticipated marketing decision information on a regular, continuous basis. An information system can be used operationally, managerially, and strategically for several aspects of marketing. MkIS also provides methods for interpreting the information it provides. With a proper MkIS in place, the complete organization can be tracked which can be used to analyse independent processes. This helps in establishing a broader perspective which helps to know which steps can be taken to facilitate improvement. MkIS is critical for planning. No organization can do planning without information. For planning, the first thing which is needed is the organizations capabilities, then the business environment and finally competitor analysis. In a proper MkIS, all these are present by default and are continuously updated. Thus MkIS is very important for planning and analysis. MkIS are mostly applied by large and dominant firms, but it is right time now for SMEs to focus on the MkIS and initiate steps to enhance information technology culture in SMEs of Punjab manufacturing. The present study has been taken against the above backdrop for MkIS of manufacturing SMEs of Punjab in India.

On the basis of literature the following five predictors have been identified as independent variables. These are:

1.1 Design characteristics of MkIS:
As per (Piercy and Evans, 1983), (Little, 1979) and (Milis, 2008) design characteristics deals with information. Design characteristics cover the following:
   a. Broad scope information. (DC1)
   b. Timely information. (DC2)
   c. Accurate information. (DC3)
   d. Current information. (DC4)
   e. Aggregated information. (DC5)

1.2 Capabilities of MkIS:
According to (Knuckles, 1987) and (Fleisher *et al.,* 2008), the broad capabilities of MkIS range from providing data to decision support system for sophisticated analysis of data. These capabilities are highlighted as:
   a. It simply provides data on which decisions are made. (CA1)

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b. It has the capability to undertake simple analysis of the data and from this provides information on which decisions are made. (CA2)

c. It provides sophisticated analysis of data, and therefore provides invaluable decision support information. (CA3)

d. It provides sophisticated analysis of data and has the ability to make recommendations, if so required, as an aid to decision making. (CA4)

1.3 Primary characteristics of MkIS:

According to (Bhagwat and Sharma, 2007) Primary characteristics of MkIS are considered as a major tool to help companies provide a competitive edge in the era of globalization. As per (Murray *et al.,* 2004) primary characteristic covers the basic tools for MkIS and highlighted as :

a. Windows 98 & Windows XP as Operating system. (PC1)

b. E-Mails & Search Engines as Internet (PC2)

c. Word, Excel & PowerPoint as Applications. (PC3)

d. Timely information of marketing needs. (PC4)

e. Stores marketing information. (PC5)

f. Processed information maintained in the data-base. (PC6)

1.4 Hindrance factors of MkIS:

For success of MkIS it is essential to identify the factors that can deter its progress. It is essential to deal with them properly, so that they cannot act as impediment. As per (Sisodia, 1992) tackling hindrance factors of MkIS is in fact very important. Infact, system implementation success factors is not just use of Technology. According to Thatcher and (Thatcher and Oliver, 2001) problems are the result of the interaction between characteristics of the people being asked to adopt the system and characteristics of the system itself. The hindrance factors covered are:

a. Not as an information processing system. (HF1)

b. Can solve all management problems. (HF2)

c. Lack of training. (HF3)

d. Adequate attention not given. (HF4)

e. Impersonal system. (HF5)

f. Does not give perfect information. (HF6)

g. Under estimating. (HF7)

1.5 MkIS sophistication:

As per (Van Nievelt, 1984) and (Martin, 2004) sophistication covers the marketing needs for meeting customer requirements and also for formulating of the strategic plan for effective marketing decision. The MkIS sophistication covered in the study are:

a. Strategic perspective.(SO1)

b. Meeting customer needs. (SO2)

c. Threat. (SO3)

d. Strategic planning. (SO4)

e. IT budget. (SO5)

f. Marketing decision. (SO6)

2. Research Methodology

The present study has been based on a survey analysis conducted in the state of Punjab, one of the growing states of Indian economy. Data has been collected through a self-structured questionnaire from 140 manufacturing industries which include 124 small and 16 medium enterprises respectively of Punjab from the following districts: Patiala for cutting tools (30 units), Jalandhar for sports goods (50 units) and Ludhiana for bicycle components (60 units). Reason for selecting these districts is due to the 82 per cent exports of total exports from these districts of Punjab and they have prominent range of product. Cutting tools from Patiala, sports goods from Jalandhar and bicycle components from Ludhiana compromises nearly 15 per cent of total exports from Punjab and provides 75 percent of the country's requirement.

The survey was tested for reliability and overall reliability score (Cronbach Alpha) of the questionnaire has been 0.902. Face and content validity have been done. The questionnaire had been validated by the peers and has a validation score 3.75 on a scale of five. Some questions were reframed. Table 1, describes the details of the reliability statistics. The data so gathered analysed using SPSS ver.19. The questionnaire has five sections viz. i) Primary characteristics (usage of computers), ii) Design characteristics/ Capabilities/ Marketing mix/ Sophistication

of MkIS, iii) Success factors of MkIS, iv) Hindrance factors of MkIS and v) Organizational performance. The reliability score of all the four sections ranged between 0.710 and 0. 829.

Table 1	Reliability Statistics		
Items		No of Items	Cronbach Alpha
Primary Characteristics(Usage of Computers)		11	.829
Design Characteristics/ Capabilities/Marketing Mix/ Sophistication of MkIS		19	.792
Success Factors of MkIS		07	.710
Hindrance Factors of MkIS		07	.807
Organizations Performance		06	.729
Overall		50	.902

2.1 Objectives of the study:
- To identify the predictors for the development of MkIS model for the selected manufacturing SMEs of Punjab.
- To develop a model for the MkIS in the selected SMEs of Punjab.
- To validate the survey based results and case study analysis.

2.2 Hypothesis related with the study are:
H1: Design Characteristics of MkIS are positively associated with success factors of MkIS Model.
H2: Capabilities of MkIS are positively associated with success factors of MkIS Model.
H3: Primary Characteristics of MkIS are positively associated with success factors of MkIS Model.
H4: Hindrance Factors of MkIS are negatively associated with success of MkIS Model.
H5: MkIS Sophistication is positively associated with success factors of MkIS Model.

3. Data analysis and Discussion
3.1 Survey based results:
Data has been collected through a self-structured questionnaire from 140 manufacturing industries of Punjab.
3.1.1 Design characteristics of MkIS:

Table 2		Design Characteristics of MkIS				
Nature of Firm		DC1	DC2	DC3	DC4	DC5
Cutting Tools	Mean	3.20	3.33	3.53	3.10	3.30
	N	30	30	30	30	30
	SD	1.27	0.99	1.13	1.06	0.98
Sports Goods	Mean	3.14	3.32	3.30	3.10	2.98
	N	50	50	50	50	50
	SD	1.24	1.26	1.05	1.35	1.31
Bicycle Components	Mean	3.05	3.38	3.40	3.43	3.26
	N	60	60	60	60	60
	SD	1.01	1.20	0.94	.88	1.07
Total	Mean	3.11	3.35	3.39	3.24	3.17
	N	140	140	140	140	140
	SD	1.15	1.18	1.02	1.11	1.15

As per Table 2, From sector- wise analysis it is evident that all three sectors, i.e., cutting tools, sports goods and bicycle components have given high priority to Accurate information and Timely information.

3.1.2 Capabilities of MkIS:

Table 3		Capabilities of MkIS			
Nature of Firm		CA1	CA2	CA3	CA4
Cutting Tools	Mean	3.43	3.36	3.86	3.56
	N	30	30	30	30
	SD	1.07	1.09	77	0.81
Sports Goods	Mean	3.30	3.30	3.54	3.76
	N	50	50	50	50
	SD	1.18	1.18	0.93	1.02
Bicycle Components	Mean	3.21	3.58	3.50	3.80
	N	60	60	60	60
	SD	1.00	0.99	0.89	0.91
Total	Mean	3.29	3.43	3.59	3.73
	N	140	140	140	140
	SD	1.08	1.08	0.88	0.93

As per Table 3, overall results indicate that in all three sectors, i.e., cutting tools, sports goods and bicycle components respectively have given highest rating to sophisticated analysis of data, which has an ability to make recommendations as an aid to decision making followed by that it provides invaluable decision support information.

3.1.3 Primary characteristics of MkIS:

Table 4   **Primary Characteristics of MkIS**

Nature of Firm		PC1		PC2		PC3		PC4	PC5	PC6
Cutting Tools	Mean	3.43	3.10	3.83	2.83	3.43	3.30	2.80	3.23	3.26	3.26
	N	30	30	30	30	30	30	30	30	30	30
	SD	0.67	0.92	0.74	0.83	1.04	0.65	0.80	1.27	0.98	0.82
Sports Goods	Mean	3.52	2.66	3.46	2.54	3.14	2.82	2.56	3.00	3.02	3.36
	N	50	50	50	50	50	50	50	50	50	50
	SD	0.64	0.71	0.61	0.61	0.60	0.74	0.61	1.42	1.40	0.92
Bicycle Components	Mean	3.56	2.75	3.48	2.40	3.23	2.88	2.41	3.05	3.20	3.51
	N	60	60	60	60	60	60	60	60	60	60
	SD	0.56	0.75	0.62	0.64	0.53	0.64	0.67	1.39	1.02	0.81
Total	Mean	3.52	2.79	3.55	2.54	3.24	2.95	2.55	3.07	3.15	3.41
	N	140	140	140	140	140	140	140	140	140	140
	SD	0.61	0.79	0.66	0.69	0.69	0.70	0.69	1.37	1.16	0.85

As per Table 4, Email as an Internet has highest usage in all the three sectors, i.e., cutting tools, sports goods and bicycle components. Also processed information (e.g., sales forecasts, market share, distribution trend, etc.) maintained in the database has a good preference amongst the three sectors.

3.1.4 Hindrance factors of MkIS:

Table 5   **Hindrance Factors of MkIS**

Nature of Firm		HF1	HF2	HF3	HF4	HF5	HF6	HF7
Cutting Tools	Mean	3.16	3.53	2.56	1.93	2.83	2.83	2.83
	N	30	30	30	30	30	30	30
	SD	1.17	0.81	0.85	0.69	1.05	0.83	0.98
Sports Goods	Mean	3.28	3.42	3.10	2.08	3.34	3.18	3.06
	N	50	50	50	50	50	50	50
	SD	1.14	0.97	1.21	1.06	0.96	1.18	1.09
Bicycle Components	Mean	3.56	3.45	2.78	2.53	3.01	2.60	2.58
	N	60	60	60	60	60	60	60
	SD	0.94	0.94	1.30	1.22	0.96	0.90	0.96
Total	Mean	3.37	3.45	2.85	2.24	3.09	2.85	2.80
	N	140	140	140	140	140	140	140
	SD	1.07	0.92	1.19	1.09	0.99	1.02	1.03

As per Table 5, all the obstacles are having a little higher mean score and hence deserve attention but in terms of individual factor the highest belief in all the three sectors, i.e., cutting tools, sports goods and bicycle components is that the computerized MkIS can solve all the management problems of planning and control of the business followed by that it is not as an information processing system.

3.1.5 MkIS Sophistication:

Table 6   **MkIS Sophistication**

Nature of Firm		SO1	SO2	SO3	SO4	SO5	SO6
Cutting Tools	Mean	3.30	3.70	3.03	3.30	2.93	3.26
	N	30	30	30	30	30	30
	SD	0.91	0.74	0.99	0.87	1.04	0.94
Sports Goods	Mean	2.86	3.60	3.44	3.26	3.18	3.06
	N	50	50	50	50	50	50
	SD	1.16	0.83	1.09	1.10	1.24	1.09
Bicycle Components	Mean	2.96	3.51	3.53	3.18	3.21	3.10
	N	60	60	60	60	60	60
	SD	0.97	0.89	1.04	0.85	1.02	1.03
Total	Mean	3.00	3.58	3.39	3.23	3.14	3.12
	N	140	140	140	140	140	140
	SD	1.03	0.83	1.06	0.94	1.10	1.03

As per Table 6, all the factors in all the three sectors, i.e., cutting tools, sports goods and bicycle components are having a little higher mean but the meeting customer needs has the highest priority followed by threat to new entrants.

3.2 MkIS (Marketing Information System) Model:

Table 7   **Marketing Information System Model**

Predictors	B	Std Error	Beta	T	P
(Constant)	1.624	0.398		4.077	.001***
Des Characteristics	0.148	0.054	0.219	2.708	.008**
Capabilities	0.128	0.053	0.189	2.427	.017**
Primary Characteristics	0.223	0.073	0.196	3.036	.003**
Hindrance Factors	-0.176	0.06	-0.214	-2.956	.004**
Sophistications	0.171	0.083	0.168	2.063	.041*

*** $p<.001$; ** $p<.01$; and * $p < .05$

As per Table 7,

The results of regression highlight that the value of B for Design Characteristics of MkIS is positive and is 0.148, thus the hypothesis H_1: *Design Characteristics of MkIS are positively associated with success factors of MkIS Model* has been accepted.

Regarding Capabilities of MkIS the value of B is 0.128, and it is positively related with Success Factors of MkIS. Thus the hypothesis H_2: *Capabilities of MkIS are positively associated with success factors of MkIS Model* has also been accepted.

Regarding Primary Characteristics of MkIS the value is 0 .223, it is positively associated with success factors of MkIS. *Hence,* the hypothesis H_3: *Primary Characteristics of MkIS are positively associated with success factors of MkIS Model* has been accepted.

Regarding Hindrance factors as expected the value is negative and is -0.176, thus the hypothesis H_4: *Hindrance Factors of MkIS are negatively associated with success factors of MkIS Model* has also been accepted.

In case of MkIS Sophistication the value of B is positive and is 0.171, thus the hypothesis H_5: *MkIS Sophistication are positively associated with success factors of MkIS Model* has been accepted.

Table 8   **MkIS (Marketing Information System) Regression Model**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
						Change Statistics				
1	.575a	0.33	0.32	0.25	0.33	68.33	1	138	-	
2	.641b	0.41	0.40	0.23	0.07	18.43	1	137	0.000	
3	.676c	0.45	0.44	0.23	0.04	11.47	1	136	0.001	2.102
4	.702d	0.49	0.47	0.22	0.03	9.68	1	135	0.002	
5	.713e	0.50	0.49	0.22	0.01	4.25	1	134	0.041	

*** $p<.001$; ** $p<.01$; and * $p < .05$

Design Characteristics[a] , Capabilities[b] , Primary Characteristics[c] , Hindrance Factors[d], Sophistications[e]

The regression model results are highlighted through Table 8. The value of co-relation is .713, co-efficient of determination is 0 .508 and adjusted co-efficient of determination is 0.490, these variables explain 49% of the variation and Durbin-Watson index is 2.102, which is acceptable for the model. The ANOVA results are also significant, which depict the overall significance of the model. Moreover the results of step wise regression depict that value of R^2 has improved from 0.331 to 0.508 with the introduction of all variables. That means the model can include all these factors as the predicting power has improved from 32.6 to 49 percent. Thus the results verify that success factors of MkIS are positively associated with Design Characteristics, Capabilities, Primary Characteristics and Sophistication. Regarding predicting power Primary Characteristics and Sophistication have higher value of 'B' and are relatively more important than other predictors.

3.3 Case-study validation of results:
Case study validation has been done for six firms of which 2 firms producing cutting tools from district Patiala, 2 firms producing sports goods from district Jalandhar and 2 firms producing bicycle components from district Ludhiana respectively.

3.3.1 MkIS Design characteristics – Study of 6 Manufacturing firms:

Table 9   **MkIS Design Characteristics – Study of 6 Manufacturing Firms**

Design Characteristics	F1	F2	F3	F4	F5	F6	Total of 6 Firms	Average of 6 Firms	Rank
DC1	5	5	3	2	2	4	21	3.5	3
DC2	4	4	3	5	3	5	24	4	1

DC3	5	4	4	3	3	4	23	3.83	2
DC4	5	3	3	4	4	2	21	3.5	3
DC5	4	3	4	1	5	3	20	3.33	4

As per the Table 9, importance accorded by the firms to different initiatives in context to MkIS Design characteristics with the highest priority is Timely information and followed by Accurate information in all the three sectors, i.e., cutting tools, sports goods and bicycle components respectively.

3.3.2 Capabilities of MkIS – Study of 6 Manufacturing firms:

Table 10   Capabilities of MkIS – Study of 6 Manufacturing Firms

Capabilities of MkIS	F1	F2	F3	F4	F5	F6	Total of 6 Firms	Average of 6 Firms	Rank
CA1	4	4	3	5	2	4	22	3.66	3
CA2	4	3	4	1	3	5	20	3.33	4
CA3	5	5	4	3	4	4	25	4.16	1
CA4	4	4	5	4	3	4	24	4	2

As per the Table 10, importance accorded by the firms to different initiatives in context to Capabilities of MkIS with the highest priority is that it provides sophisticated analysis of data, and therefore provides invaluable decision support information and followed by that it has the ability to make recommendations, if so required, as an aid to decision making in all the three sectors, i.e., cutting tools, sports goods and bicycle components respectively.

3.3.3 Primary characteristics of MkIS – Study of 6 Manufacturing firms:

Table 11   Primary Characteristics of MkIS – Study of 6 Manufacturing Firms

Primary Characteristics	F1	F2	F3	F4	F5	F6	Total of 6 Firms	Average of 6 Firms	Rank
PC1	2	3	3	4	4	4	20	3.33	3
	2	2	2	2	3	3	14	2.33	6
PC2	4	4	4	3	4	3	22	3.66	1
	4	4	3	4	2	2	19	3.16	4
PC3	4	4	3	4	2	2	19	3.16	4
	4	3	2	3	3	3	18	3	5
	4	3	3	3	4	2	19	3.16	4
PC4	4	4	2	4	4	2	20	3.33	3
PC5	2	3	4	5	1	4	19	3.16	4
PC6	4	4	4	3	3	3	21	3.5	2

As per the Table 11, importance accorded by the firms to different initiatives in context to Primary characteristics of MkIS with the highest priority is that of Emails of internet and followed by processed information which is maintained in the database in all the three sectors, i.e., cutting tools, sports goods and bicycle components respectively.

3.3.4 Hindrance factors of MkIS – Study of 6 Manufacturing firms:

Table 12   Hindrance Factors of MkIS – Study of 6 Manufacturing Firms

Hindrance Factors of MkIS	F1	F2	F3	F4	F5	F6	Total of 6 Firms	Average of 6 Firms	Rank
HF1	3	2	3	3	3	5	19	3.16	2
HF2	4	3	3	5	4	5	24	4	1
HF3	1	2	2	2	5	2	14	2.33	5
HF4	2	3	2	1	5	2	15	2.5	4
HF5	2	3	3	4	3	3	18	3	3
HF6	2	4	2	3	2	2	15	2.5	4
HF7	1	2	2	4	3	2	14	2.33	5

As per the Table 12, importance accorded by the firms to different initiatives in context to Hindrance factors of MkIS with the highest priority is that the computerized MkIS can solve all the management problems of planning and control of the business in the business systems respectively and followed by that MkIS is not as an information processing system in all the three sectors, i.e., cutting tools, sports goods and bicycle components respectively.

3.3.5 MkIS Sophistication – Study of 6 Manufacturing firms:

Table 13	MkIS Sophistication – Study of 6 Manufacturing Firms								
MkIS Sophistication	F1	F2	F3	F4	F5	F6	Total of 6 Firms	Average of 6 Firms	Rank
SO1	4	3	3	5	3	3	21	3.5	3
SO2	3	4	4	3	4	4	22	3.66	2
SO3	3	3	3	4	5	5	23	3.83	1
SO4	3	4	4	2	4	3	20	3.33	4
SO5	2	2	3	3	2	3	15	2.5	6
SO6	4	3	4	4	1	3	19	3.16	5

As per the Table 13, importance accorded by the companies to different initiatives in context to Factors Underlying MkIS Sophistication, with the highest priority is threat to new entrants and followed by meeting customer needs in all the three sectors, i.e., cutting tools, sports goods and bicycle components respectively.

3.4 Synthesis of Survey Based Results and Case Study Analysis:

This section deals with synthesis of the survey based results of 140 SMEs and case study analysis. The top two factors of each predictor are selected on the basis of the analysis of the priorities accorded by the manufacturing SMEs in all the three sectors, i.e., cutting tools, sports goods and bicycle components.

3.4.1 Synthesis for MkIS Design characteristics:

It is analysed that Accurate information and Timely information are the top priorities.

3.4.2 Synthesis for Capabilities of MkIS:

It is analysed that high priority to sophisticated analysis of data has an ability to make recommendations as an aid to decision making and also it provides invaluable decision support information are the top priorities.

3.4.3 Synthesis for Primary characteristics of MkIS:

It is analysed that Emails of Internet along with processed information (e.g., sales forecasts, market share, distribution trend, etc.) which is maintained in the database are the top priorities.

3.4.4 Synthesis for Hindrance factors of MkIS:

It is analysed wherein the belief is that the computerized MkIS can solve all the management problems of planning and control of the business followed by that MkIS is conceived as a data processing and not as an information processing system in the database are the top tpriorities.

3.4.5 Synthesis for MkIS Sophistication:

It is analysed that meeting customer needs and threat to new entrants are the top priorities.

4. Conclusion

As per the Fig. 1, top two factors of each independent variables of MkIS in three categories viz. cutting tools, sports goods and bicycle components have been taken with the validation of the survey based results of 140 SMEs and case study respectively for highlighting the overall scenario of Success of MkIS Model.

Many organizations use MkIS successfully, others do not. Though the hardware and the software is the latest and has appropriate technology, its use is more for the collection and storage of data and its elementary processing. There are some factors which make the MkIS a success and some others, which make it a failure. The results of the present study highlight that MkIS and developments in SMEs of Punjab are still at initial stage. It can be concluded that the consequent opening up of many SMEs, the enterprises have a variety of challenges in front. MkIS has made the SMEs sector today to rise up to the occasion by devising and formulating a number of marketing strategies. Efforts have to be made by this sector if it wants to survive in the present day world of competition. Further, though activities like management training programs, computerization, maintain of database, improvement in functional evidence etc. are being provided by SMEs, it is suggested that SMEs sector should also take a fresh look at these aspects and introduce necessary changes in them. It is recommended that SMEs, which are carrying out MkIS must make efforts to introduce new concepts in their systems.
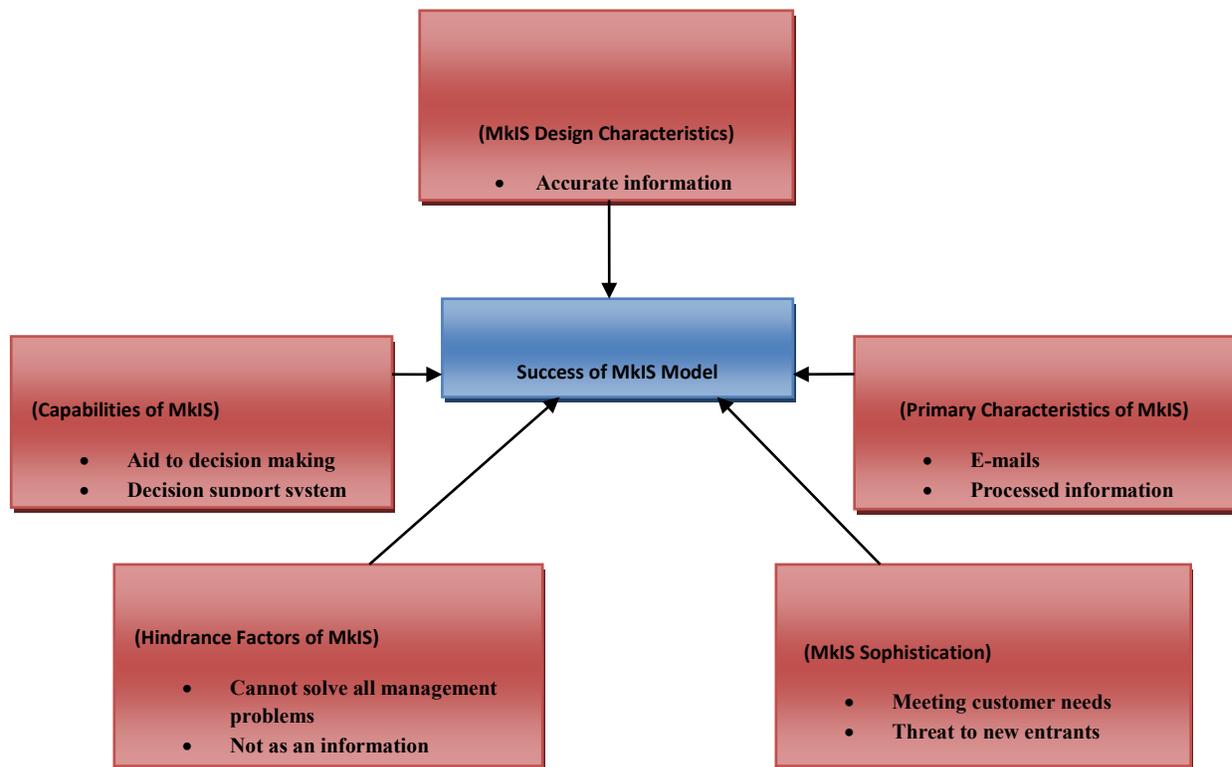
Fig. 1. Success of MkIS Model with top two factors of each independent variable of MkIS in the three categories viz. cutting tools, sports goods and bicycle components.

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Teacher Opinions About Computer Usage and Education in Preschool Education

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Abstract

Computers which are the most significant tools of information age, have increasingly been used in each stage of education system. During the childhood period being one of the most important stages for human development, computer usage has become common especially in the institutions of pre-school education. The aim of this study was to determine the opinions of pre-school teachers about computer usage in education. The research was planned in accordance with the relational screening model. Within this research, the questionnaire form was applied to 215 pre-school education teachers. Towards the results of the study, suggestions have been made for pre-school education teachers.

Key words: Pre-school Education, Computer Education, Computer Teaching in Pre-school Education

1. Introduction

Education has been going on with its innovations over the centuries. In this renewal process, big developments have been experienced in the educational technology, especially the computer-aided education programs have played crucial roles in enriching and increasing productivity. Educational systems tend to develop themselves continuously and give ever-increasing importance to the usage of technology in education towards technological advances.

The most important reason of the technological progress in education may be relation between current educational problems and potential of new technology for solving these problems (Alkan, 2005).

In information age everybody agrees that the computer technologies need to be learned. Today the usage of computer technologies have been taught even in preschool education (Gündüz and Odabaşı, 2004).

It is appropriate to start computer-aided education in the period of preschool education for the reason that interest and curiosity as the factors facilitating learning are intensive (Kacar and Doğan, 2007). Guiding to the children, in accordance with their levels, computers which make them active participants, will help instructors to transfer their roles to private instructions. Instructors must understand that computers are beneficial for children to solve problems and be in cooperation with them (Arı and Bayhan, 2003). It is necessary that children both show skills of technology usage at a high level and use these technologies in the teaching-learning process at an optimum level of productivity (Gündüz and Odabaşı, 2004).

2. Methodology

This study which was done for describing preschool teachers opinions about computer usage and education, was planned as a relational screening model among the screening models.

2.1. Scope and Sample

The scope of the study consists of formal, independent nursery schools, nursery classes and private nursery schools as well as their teachers. The sample group includes total 215 preschool teachers working at nursery schools and nursery classes in different 46 cities of Turkey. Demographical information concerning teachers involved has

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been shown in tables from Table 1 to Table 5. Based on the demographical characteristics such as *gender, school type, availability of computer schools where teachers work, teachers' computer education and city where teachers work,* the distribution results of the questionnaire for the participants have been shown below, respectively.

Table 1. Gender of Participant Teachers

Gender	f	%
Female	193	89.77
Male	22	10.23
Total	215	100

When examining Table 1, it has been seen that total 215 persons responding to the questionnaire consist of 89.77% female and 10.23% male participants.

Table 2. Types of Schools Where Participant Teachers Work

School Type	f	%
Formal Nursery Schools	118	54.88
Independent Nursery Schools	90	41.86
Private Nursery Schools	7	3.26
Total	215	100

At Table 2. it has been observed that total 215 persons participating in the questionnaire also consist of 54.88% of them working at formal nursery schools, 41.86% of them working at independent nursery schools and 3.26% of them working at private nursery schools.

Table 3. Availability of Computers at Schools Where Participant Teachers Work

Availability of Computers at School	f	%
Available	168	78.14
Non-Available	47	21.86
Total	215	100

According to Table 3; it has been also seen that there are computers at schools where 78.14% of them worked while there were not any computers at schools where 21.86% of them worked among total 215 persons participating in the questionnaire.

Table 4. Computer Education of Participant Teachers

Computer Education of Teachers	f	%
Available	44	20.47
Non-Available	171	79.53
Total	215	100

Looking at Table 4, among total 215 instructors involved in the questionnaire, 20.47% of them have computer education and 79.53% of them do not have any computer education.

Table 5. Cities Where Participant Teachers Work

Work City	f	%	Work City	f	%

Adana	1	0.47	İzmir	1	0.47
Afyonkarahisar	4	1.86	Kahramanmaraş	2	0.93
Ağrı	1	0.47	Karaman	1	0.47
Aksaray	1	0.47	Kayseri	1	0.47
Ankara	3	1.40	Kırıkkale	1	0.47
Antalya	1	0.47	Kocaeli	1	0.47
Aydın	2	0.93	Konya	135	62.79
Balıkesir	2	0.93	Kütahya	1	0.47
Bartın	1	0.47	Malatya	2	0.93
Batman	1	0.47	Manisa	2	0.93
Bursa	2	0.93	Mersin	4	1.86
Çanakkale	4	1.86	Niğde	1	0.47
Denizli	1	0.47	Osmaniye	1	0.47
Diyarbakır	1	0.47	Rize	1	0.47
Edirne	1	0.47	Samsun	1	0.47
Elazığ	2	0.93	Sinop	1	0.47
Erzurum	2	0.93	Sivas	1	0.47
Gaziantep	1	0.47	Urfa	4	1.86
Gümüşhane	1	0.47	Şırnak	1	0.47
Hakkari	1	0.47	Trabzon	2	0.93
Hatay	1	0.47	Van	4	1.86
Isparta	1	0.47	Yozgat	1	0.47
İstanbul	9	4.19	Zonguldak	2	0.93
Total	215				

When examining Table 5, maximum participation in the questionnaire come from the Konya city as 62.79% (135 persons). Respectively, the cities of İstanbul (4.19%), Afyonkarahisar-Çanakkale-Mersin-Şanlıurfa-Van (1.86%) follow this one.

2.2. Data Collection Tool

The questionnaire form which was designed for evaluating "instructor thoughts about computer teaching in preschool education", applied to the teachers involved in the research sample. As a result of the factor analysis, it was found that the questionnaire form used in this research consisted of two dimensions. The questionnaire form involved total 11 items, including 7 items as Positive Factors in Computer Usage and Education for the first dimension of the form and 4 items as Negative Factors in Computer Usage and Education for the second dimension of the form. The factor analysis was done for detecting at how many different dimensions the questions of the questionnaire form regarding instructor thoughts about computer teaching were perceived by the participant instructors. In order to test the appropriateness of data set for the factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were performed. As a result of analyses, it was determined that the data set was appropriate for the factor analysis since the KMO value was over 0.799 and 0.50, and the sphericity possibility of Bartlett's test was at 0.05. Necessary information concerning the reliability of the questionnaire form has been presented at Table 6, Table 7 and Table 8.

Table 6: Results of Factor Analysis Regarding Measurement of Computer Usage and Education In Preschool Education

Factor	Item	Factor Loads		Cronbach Alpha
		1	2	

Positive Factors in Computer Education	It significantly increases the quality of education.	0.813	
	It increases productiveness during activities.	0.766	
	It is important like educational books.	0.707	
	It makes activities more enjoyable.	0.683	%79.5
	It saves time in educational activities.	0.608	
	It can be used in every types of activities.	0.538	
	It makes measurement and evaluation more reliable.	0.515	
Negative Factors	The computer is as complex as everybody cannot use it, which makes its usage difficult in education.	0.730	
	It causes setbacks in education due to the technical problems.	0.695	%55.4
	Usage time for computers should not be over 15 min.	0.580	
	It reduces a teacher's communication with children.	0.481	

Eigenvalue	3.855	1.279
Explained Variance (%)	30.532	16.140
Total Variance (%)	46.673	

Notes: (i) Analysis of Principal Components with Varimax Rotation
ii) KMO = 0.799, Barlett Test= 618.131; p<.001

By using the method of principal components and the Varimax rotation, the responses regarding computer usage/teaching measurement were analyzed. In a consequence of the factor analysis, it was found that the measurement of computer usage/teaching involving 11 questions was dealt in 2 sub-dimensions by the participant instructors. The totally explained variance was found to be 46.673%. The factors were named as positive factors in computer usage and teaching (7 items) and negative factors in computer usage and teaching (4 items), respectively. The contributions of these factors to explain opinions about computer usage and teaching in preschool education were found to be 30.532% and 16.140%, respectively.

In estimation of the internal consistency of the factors, the Cronbach Alpha coefficient values were used. This coefficient was an adaptive value based on the correlation between the questions. The Cronbach Alpha value shows the reliability levels of the questions in total. On the dimensions for the measurement of computer usage and teaching in preschool education, the Cronbach Alpha values were found to be 79.5% and 55.4%, respectively.

Table 7. Positive Factors in Computer Usage and Education

Positive Factors	X	S
It significantly increases the quality of education.	4.33	0.69
It increases productiveness during activities.	4.24	0.77
It is important like educational books.	4.15	0.90
It makes activities more enjoyable.	4.13	0.77
It saves time in educational activities.	4.07	0.76
It can be used in every types of activities.	3.71	0.89
It makes measurement and evaluation more reliable.	3.53	1.05

Notes: (i) n= 215, (ii)Scale 1=Strongly Disagree and 5= Strongly Agree . (iii) According to the Friedman Two Way Anova test, $\chi2= 188.201$; p<0.001, the results statistically significant.

When examining at Table 7, it has been observed that they mostly give importance to the expression "It significantly increases the quality of education" among the expressions regarding the dimension of positive factors in computer usage/teaching for the instructors participating in the research. Also, the table includes the arrangement of all expressions in accordance with the significance level.

Table 8. Negative Factors in Computer Usage and Education

Negative Factors	X	S
Usage time for computers should not be over 15 min.	3.73	0.98
It causes setbacks in education due to technical problems.	3.03	1.07
The computer is as complex as everybody cannot use it, which makes its usage difficult in education.	2.96	1.23
It reduces a teacher's communication with children.	2.87	1.07
Notes: (i) n= 215, (ii) Scale 1= Strongly Disagree and 5= Strongly Agree anlamındadır. (iii) According to the Friedman Two Way Anova test, χ2= 93.852p<0.001 the results statistically significant.		

When examining Table 8, it has been also observed that they mostly consider the expression "The time for computer usage should not be over 15 min." among the expressions regarding the dimension of negative factors in computer usage/teaching for the instructors participating in the research. Also, the table includes the arrangement of all expressions in accordance with the significance level.

2.3. Data Collection and Analysis

The data were collected by face to face communication and online communication. The statistical analysis of data was done using the SPSS 16.0 package program chosen for data analysis in social sciences. The Mann-Whitney U test and the Kruskal Wallis One Way Variance Analysis were used to analyze whether teacher opinions related with computer teaching differ in gender, school type, availability of computer at school and computer education.

3. Findings

Among the variables of the questionnaire form within this section of the research, the H_0 and H_1 hypotheses were tested with regard to *the availability of computer at school and the teachers' computer education*.

3.1. Computer Usage and Education in Preschool Education With Regard to Availability of Computer, Dimension of Positive Factors

H_0: With regard to the variable of availability of computer, medians for the dimension of positive factors, that is, the computer usage and education in preschool education are equal.
H_1: With regard to the variable of availability of computer, medians for the dimension of positive factors, that is, the computer usage and education in preschool education are not equal.

Table 9. Opinions about Computer Usage and Education in Preschool Education with Regard to Availability of Computer, Positive Factors, Hypothesis Test Values

	X	S	U	W	Z	p
It is important like educational books.	4.15	0.90	3813.5	18009.5	-0.389	0.697
It significantly increases the quality of education.	4.33	0.69	3472.5	17668.5	-1.405	0.160
It increases productiveness during activities.	4.24	0.77	3772.5	17968.5	-0.516	0.606
It can be used in every types of activities.	3.53	1.05	3395.5	17591.5	-1.529	0.126
It makes activities more enjoyable.	4.07	0.76	3668.5	17864.5	-0.832	0.406
It saves time in educational activities.	4.13	0.77	3536	17732	-1.203	0.229
It makes measurement and evaluation more reliable.	3.71	0.89	3229	17425	-2.016	0.044
Group Variable : Availability of Computer						

Looking at Table 9, the values of Mann-Whitney U, Wilcoxon W, Z and p have been observed. Since the p value showing the significance value in this table (except for that expression *"It makes measurement and evaluation more reliable"*) is bigger than 0.05, the H_0 hypothesis will be acceptable. That is, in accordance with the availability of

absence of computers at nursery schools, it has been determined that the medians for the dimension of positive factors are equal in the computer usage and education in preschool education are equal. There is no significant difference in the availability of computers.

Since *the p value* in the expression "It makes measurement and evaluation more reliable" *is smaller than 0.05, a statistically significant difference can be mentioned in the availability of computers at nursery schools. This difference reveals that the teachers having no computers at their schools agree that "It makes measurement and evaluation more reliable" rather than the teachers having computers at their schools.* The reason for this is that there may be difficulties in making measurement and evaluation proceedings at schools having no computers by hand. Because when there are computers available in schools, registering the children's forms of evaluation or development in a computerized environment, assessing them and transferring to the center units will be easier.

3.2. Computer Usage and Education in Preschool Education With Regard to Availability of Computer, Dimension of Negative Factors

H_0: With regard to the variable of availability of computer, medians for the dimension of negative factors, that is, the computer usage and education in preschool education are equal.
H_1: With regard to the variable of availability of computer, medians for the dimension of negative factors, that is, the computer usage and education in preschool education are not equal.

Table 10. Opinions about Computer Usage and Education in Preschool Education with Regard to Availability of Computer, Negative Factors, Hypothesis Test Values

	X	S	U	W	Z	p
It reduces a teacher's communication with children.	2.87	1.07	3629.5	17825.5	-0.896	0.370
Usage time for computers should not be over 15 min.	3.73	0.98	2948.5	4076.5	-2.776	0.006
The computer is as complex as everybody cannot use it, which makes its usage difficult in education.	2.96	1.23	3521	4649	-1.189	0.235
It causes setbacks in education due to technical problems.	3.03	1.07	3743.5	4871.5	-0.568	0.57
Group Variable : Availability of Computer						

When Table 10 is considered; the p value showing the significance level (except for that the usage time for computers should not be over 15 minutes) is bigger than 0.05, that is why, the H_0 hypothesis will be accepted. That is, with regard to the availability of computers in nursery schools, it has been explained that the medians for the dimension of negative factors are equal in the computer usage and education in preschool education are equal. There is not any significant difference in the availability of computers.

Within the expression "The usage time for computers should not be over 15 minutes" *the p value is smaller than 0.05, in accordance with the availability of computers in nursery school, there is a statistically significant difference here. This difference shows that the teachers having computers at their nursery schools think "The usage time for computers should not be over 15 minutes" rather than the teachers working at their nursery schools where there are no computers.*

The teachers having computers at their schools in preschool education are more conscious of time than the teachers working at schools where there are no computers, the reason for this is that the teachers study on computers with the children of small ages, can observe the children's developments, interests, considerations and concentrations well in a computerized environment, and give education to them in such a way.

3.3. Computer Usage and Education in Preschool Education With Regard to Computer Education, Dimension of Positive Factors
H_0: With regard to the variable of computer education, medians for the dimension of positive factors, that is, the computer usage and education in preschool education are equal.
H_1: With regard to the variable of availability of computer, medians for the dimension of positive factors, that is, the computer usage and education in preschool education are not equal.

Table 11. Opinions about Computer Usage and Education in Preschool Education with Regard to Computer Education, Positive Factors, Hypothesis Test Values

	X	S	U	W	Z	p
It is important like educational books.	4.15	0.90	3571.5	18277.5	-0.565	0.572
It significantly increases the quality of education.	4.33	0.69	3614	18320	-0.448	0.654
It increases productiveness in activities.	4.24	0.77	3204	17910	-1.68	0.093
It can be used in every types of activities.	3.53	1.05	3217.5	17923.5	-1.544	0.123
It makes activities more enjoyable.	4.07	0.76	3600	18306	-0.494	0.621
It saves time in educational activities.	4.13	0.77	3625.5	4615.5	-0.408	0.683
It makes measurement and evaluation more reliable.	3.71	0.89	3323	4313	-1.261	0.207
Group Variable : Computer Education						

Looking at Table 11 above, the p value is bigger than 0.05, the H_0 hypothesis will be acceptable. In other words, with regard to the computer education in nursery schools, it has been suggested that the medians for the dimension of positive factors are equal in the computer usage and education in preschool education are equal. There is not any significant difference in the computer education.

3.4. Computer Usage and Education in Preschool Education With Regard to Computer Education, Dimension of Negative Factors

H_0: With regard to the variable of computer education, medians for the dimension of negative factors, that is, the computer usage and education in preschool education are equal.

H_1: With regard to the variable of computer education, medians for the dimension of negative factors, that is, the computer usage and education in preschool education are not equal.

Table 12. Opinions about Computer Usage and Education in Preschool Education with Regard to Computer Education, Negative Factors, Hypothesis Test Values

	X	S	U	W	Z	p
It reduces a teacher's communication with children.	2.87	1.07	2888.5	3878.5	-2.518	0.012
Usage time for computers should not be over 15 min.	3.73	0.98	3515.5	4505.5	-0.701	0.483
The computer is as complex as everybody cannot use it. which makes its usage difficult in education.	2.96	1.23	3746.5	4736.5	-0.044	0.965
It causes setbacks in education due to technical problems.	3.03	1.07	3362	4352	-1.137	0.255
Group Variable : Computer Education						

When Table 12 is examined, the p value showing the significance level at the table (Except for that It reduces the teachers'communication with children" is bigger than 0.05, that is why, the H_0 hypothesis will be acceptable. That is, with regard to the computer education in nursery schools, it has been suggested that the medians for the dimension of negative factors are equal in the computer usage and education in preschool education are equal. Any significant difference cannot be mentioned in the computer education. *In the expression "It reduces the teachers'communication with children" the p value is smaller than 0.05, there is a statistically significant difference in accordance with the computer education. This difference explains that the teachers not having computer education think "It reduces the teachers'communication with children" rather than the teachers teachers having computer education.* The reason for this is that the teachers do not have educational background for computer, show positive attributes to the computer usage and have any experiences about these subjects to share with the children.

4. Results and Suggestions

In this study, the preschool teacher opinions about the computer usage and education have been analyzed, and the following results have been obtained:

- The participant teachers attach much more importance to the expression "It significantly increases the quality of education",
- Within the dimension of negative factors, they put emphasis on the expression "The usage time for computer should not be over 15 min.",
- In nursery schools where there are no computers, the teachers agree with this expression "It makes measurement and evaluation more reliable", rather than the others in nursery schools where there are computers,
- The teachers not having computer education think "It reduces communication between instructors and children" rather than the ones having computer education.

Based on these findings from this research, it is possible to make following suggestions:

- Increasing the numbers of the credit for the computer lessons in schools cultivating teachers,
- Providing teachers to take in-service training with a view to using computers actively,
- Making a schedule of lesson time and teaching materials, and considering students' developmental characteristics for the teachers using computers,
- Creating the educational environments having enough equipment in terms of techniques,
- Increasing the applied training about how to give computer education to the preschool children, the computer programmes, etc. as well as the computer education to be given to the teacher canditates can be realized.

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Teachers' self-efficacy beliefs and their English language proficiency: A study of nonnative EFL teachers in selected language centers

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Abstract

This study examined the efficacy beliefs of nonnative English speaking (NNES) EFL teachers in terms of personal capabilities to teach English as a Foreign Language (EFL) and their perceived English language proficiency in selected language centers in one Middle-East country. Data were collected through a survey administered to 187 teachers. A modified version of the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) was used to assess efficacy for classroom management, student engagement, and instructional strategies. The results showed that the teachers' perceived efficacy was positively correlated with self-reported English proficiency.

Keywords: Self-efficacy; English language profociency; English as a foreign language; Language centre.

Introduction

Research on teachers' beliefs and their impact on teacher cognition has been a relevant topic for educational inquiry over the last four decades. Understanding teachers' perceptions and beliefs is important because teachers, heavily involved in various teaching and learning processes, are practitioners of educational principles and theories (Jia, Eslami & Burlbaw, 2006). Findings from research on teachers' perceptions and beliefs indicate that these perceptions and beliefs not only have considerable influence on their instructional practices and classroom behavior but also are related to their students' achievement (Grossman, Reynolds, Ringstaff & Sykes, 1985; Johnson, 1992; Prawat & Anderson, 1988). Thus, knowing the perceptions and beliefs of teachers enables one to make predictions about teaching and assessment practices in classrooms. One important belief that appears to be an important influence on teacher and student outcomes is teachers' sense of efficacy.

This study is based on self-efficacy theory proposed by Bandura, 1997. Self-efficacy theory, applied in the educational realm, has sparked a rich line of research into how teachers' self-efficacy beliefs are related to their actions and to the outcomes they achieve (Tschannen- Moran et al., 1998).

It is important to note that self-efficacy is a motivational construct based on self perception of competence rather than actual level of competence. Actions and behaviors are better predicted by beliefs rather than actual accomplishments. Bandura (1997) suggested that it is most fruitful when teachers slightly overestimate their actual teaching skills, as their motivation to expend effort and to persist in the face of setbacks will help them to make the most of the skills and capabilities they do possess (Bandura, 1977; Tschannen-Moran et al., 1998).

Based on Tschannen-Moran et al. (1998) teacher self-efficacy is cyclical in nature. At first, information about one's efficacy comes from four sources: mastery experience, vicarious experiences, verbal persuasions and physiological arousals (Bandura, 1997). Teachers then process the information by analyzing the teaching task and assessing their personal teaching competence. After the information is analyzed, teachers generate efficacy judgments or teacher self-efficacy. Next, teachers use these judgments or self-efficacy beliefs to set their goals, determine the amount of effort they invest in achieving these goals, and their level of persistence. The performance

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and outcomes of their efforts provide new mastery experiences that lead to future efficacy judgments. It is noted that "like all self-efficacy judgments, teacher self-efficacy is context-specific" (p. 118).

Meanwhile, Language proficiency constitutes the foundation of the professional confidence of non-native English teachers (NNES). Language competence has been rated as the most essential characteristic of a good teacher (Lange, l990). According to Doff (1987), a teacher's confidence in the classroom is undermined by a poor command of the English language. Poor command of the language can affect the self esteem and professional status of the teacher and interfere with simple teaching procedures. Furthermore, it can keep the teacher from fulfilling the pedagogical requirements of a more communicative approach to language teaching. As shown by research, perceived language proficiency is an important issue for NNES teachers and has an impact on their professional self-esteem and confidence (Medgyes, 1994; Reves & Medgyes, 1994; Samimy & Brutt-Griffler, 1999; Kamhi-Stein & Mahboob, 2005).

As it is clear, language proficiency seems to be a factor related to EFL teachers feeling of self-efficacy. Therefore, the aim of this study is to examine the relationship of self-efficacy and language proficiency in EFL teachers working in the English language centers in one Middle-East country. To this end, the following questions were proposed for this study:

1. What are the current levels of the self-efficacy beliefs of English language center teachers?
2. What do teachers report to be their English proficiency level?
3. What is the interaction effect between teachers' self-efficacy beliefs and their proficiency in English?

Based on the above research questions the following null hypothesis was suggested:

HO: There is no interaction effect between English teachers' reported proficiency in English and their self-efficacy beliefs.

Method

participants

The target population for this study consisted of English teachers working in the English language centers in the TESOL context in one Middle-east country in Asia. The questionnaire adopted a convenience sampling method and the researcher distributed more than 200 sets of the questionnaires among the teachers.

Research Design

This study included both descriptive research methods and correlational research methods. The study was designed to explore English language center teachers' sense of efficacy and its interaction effect with their reported proficiency in English, so a descriptive correlational design was used.

Instrumentation

The instrument used in this study consisted of two questionnaires: 1) Teachers' sense of efficacy in teaching English and 2) Teachers' reported English language proficiency. Both questionnaires were Likert-type scale and the participants indicated the degree they could do with each item and assessed themselves on the scale provided.

Teachers sense of efficacy in teaching English

This section was designed to measure the teachers' sense of efficacy (or confidence) in teaching English. For this, the 12-item short version of the Teacher's Sense of Efficacy Scale (TSES) by Tschannen-Moran & Woolfolk Hoy (2001) was adapted to fit the English language center context.

The TSES items were Likert scale from one to nine. Participants would indicate the degree to which they could do with each item. A rating of one indicated that the respondent could do nothing about the statement presented. A rating of nine indicated that the participant could do a great deal about the statement.

Three factors were identified in the TSES: 1. Efficacy for student engagement, 2. Efficacy for instructional strategies, and 3. Efficacy for classroom management.

The reliability of the original TSES was 0.90 with all of the 12 items (0.86 with the instructional strategies, 0.86 with the classroom management, and 0.81 with the student engagement) (Tschannen- Moran and Woolfolk Hoy, 2001). This showed that TSES could have been considered a reliable measurement of teacher self-efficacy.

Teachers' reported English language proficiency

This section was designed to examine the teachers' self-reported current level of English proficiency that the teachers believed necessary for them to teach English effectively in the English language centers. To this end, 25 items developed by Chacon (2005, 2002) and Shim (2001) were adapted based on this study. The items asked teachers to assess their level of proficiency in English on a 6-point Likert-type scale from "Strongly disagree" to "Strongly agree" to indicate how teachers evaluated themselves in listening, speaking, reading, and writing.

After piloting the test, 4 items of the language proficiency questionnaire were deleted and it was shown that the reliability of the test increased significantly. So the final version of the language proficiency questionnaire which was later distributed among the participants of this study had 21items.

Concerning reliability coefficient, the Cronbach alpha of the four skills of listening, speaking, reading, and writing were .958, .912, .947, and .907 respectively. After deleting the four items the reliability increased to .973, .920, .947, and .947 accordingly.

Procedure

Validity

The construct validity of the instruments of the present study was partially established by the instruments on which the current instruments drew. However, as some items were modified and some were newly added to the present study, there was a need to reestablish the validity of the instruments.

In the present study, content validity and face validity were established by the judgment of a panel of 3 experts and field testing. A panel of the experts and 5 English language center teachers who were teaching at different levels were asked to review the instruments in terms of validity, suitability, and clarity. They were requested to comment on appropriateness of expressions and general readability of the instruments. Comments on instrument's wording, ambiguities, and appropriateness were welcomed. Based on the advice of the panel of experts and field test participants, the instruments were modified and later the approved and corrected format was distributed among participants.

Tschannen-Moran and Woolfolk Hoy (2001) examined the construct validity of the TSES questionnaire. The results of the analyses indicated that TSES could be considered reasonably valid and reliable. It is of reasonable length and is a useful tool for researchers interested in exploring the construct of teacher self-efficacy.

Reliability

After field-testing the instrument, the reliability coefficient of the test was calculated by using Cronbach alpha coefficient. Cronbach reliability coefficients of the scales were: 0.96 (Instructional Strategies), 0.95 (Classroom Management), and 0.95 (Student Engagement) for the present study. The Cronbach alpha coefficient of the whole test was .956 which is significant and considered high. It means that all the three sub-categories of self-efficacy beliefs are highly correlated and it supports that the whole test is a reliable measurement of self-efficacy beliefs.

In addition, the Cronbach alpha was calculated for each of the sub-categories of Language Proficiency questionnaire after conducting the main study. The Cronbach Alpha was .973, .921, .946, and .946 for each of the skills of listening, speaking, reading, and writing respectively, which were all significant and favorable. The reliability of the whole test was .96 which was considered high and favorable. It showed that language proficiency questionnaire was completely reliable.

Findings

Levels of English teacher efficacy dimensions

The mean score of each component was calculated in order to examine the teachers' level of self-efficacy in teaching English. The teachers rated their self-efficacy in teaching English at rather high level in the all dimensions of Instructional Strategies, Classroom Management, and Student Engagement (Table 1). In other words, they believed that they could have some influence in the three dimensions. The teachers responded that they felt more confident in Classroom Management (M = 7.54) than in any of the other dimensions. In the meantime, it was found that the teachers felt least confident in their Instructional Strategies (M = 7.10).

Table 1. Means and standard deviation of teacher efficacy in teaching English

	Mean	Standard Deviation
Student Engagement	7.21	1.558
Classroom Management	7.54	1.550
Instructional Strategies	7.10	1.870

Note: 1 = Nothing/not at all, 3 = Very little, 5 = Some influence, 7 = Quite a bit, and 9 =A great deal

In examining the teachers' self-reported efficacy or confidence levels in teaching English, note that the present study did not report the overall teacher efficacy level by aggregating the three factors. The researcher believed that each dimension had its unique domain, while not convinced of the absolute value of the overall score in explaining the teachers' sense of efficacy in English teaching in general.

Besides that, the researcher decided to calculate the inter-item correlation of the self-efficacy items for each sub-category. It was shown that the items in each of the sub-categories of student engagement, classroom management, and instructional strategy had quite high correlation with each other and all the correlations were above 0.80 which was considered high.

Later, the researcher examined the correlations among all three subcategories of self-efficacy (Table 2). It was shown that all of them are highly correlated. The highest correlation was between Student Engagement and Instructional Strategy dimensions.

Table 2. Correlations among dimensions of self-efficacy

	Student Engagement	Classroom Management	Instructional Strategies
Student Engagement	1		
Classroom Management	.880**	1	
Instructional Strategies	.905**	.883**	1

Levels of English teacher language proficiency

The means and standard deviations for each of the 21 items were calculated and the result is shown in table 3.

Table 3. Mean and standard deviation of English language proficiency

	Range	Minimum	Maximum	Mean	Mean/Max	SD
Listening Score	22	8	30	19.06	0.63	8.118
Speaking Score	20	16	36	26.46	0.73	6.408
Reading Score	17	13	30	23.11	0.77	5.031
Writing Score	14	16	30	24.80	0.82	4.700

By looking at Table 3 it can be concluded that the variety of scores in listening skill of the participants is more than the other skills (SD = 8.11). It means that we have different levels of listening proficiency among the participants of the study. On the other hand, the standard deviation of the speaking, reading, and writing is lower, 6.40, 5.03, and 4.70 respectively. It shows that the variety of scores is lower and most of the teachers are relatively at the high level of their speaking, reading, and writing skills compared to their listening.

Based on the value of Mean/Max, we can conclude that the participants are stronger in writing skills (.82) and weaker in Listening skills (.63). So, for the participants of this study the order of Language skills from the strongest to the weakest is Writing, reading, speaking, and listening respectively.

This result is understandable, as the context of the study is EFL and English is not used in the society and daily lives of the participants. The participants have quite limited access to English in their daily lives, so they can not improve their listening and speaking skills of their language proficiency.

In addition, the inter-item correlation of the language proficiency items for each skill of listening, speaking, reading, and writing was calculated.

Table 4 shows that the items in Listening skills have quite high correlations with each other and all the correlations are above .83 which is considered high and significant.

Table 4. Inter-Item Correlation Matrix of the listening skill

	Eng. Pro 3	Eng. Pro 4	Eng. Pro 5	Eng. Pro 6	Eng. Pro 7
Eng.Proficiency3	1.000				
Eng.Proficiency4	.880	1.000			
Eng.Proficiency5	.851	.959	1.000		
Eng.Proficiency6	.830	.931	.973	1.000	
Eng.Proficiency7	.836	.941	.964	.956	1.000

Correlation among the speaking skill items are shown in Table 5. The correlations are relatively high and significant.

Table 5. Inter-Item Correlation Matrix of the speaking skill

	Eng. Pro 9	Eng. Pro 10	Eng. Pro 11	Eng. Pro 12	Eng. Pro 13	Eng. Pro 14
Eng.Proficiency9	1.000					
Eng.Proficiency10	.686	1.000				
Eng.Proficiency11	.681	.755	1.000			
Eng.Proficiency12	.740	.760	.764	1.000		
Eng.Proficiency13	.727	.791	.786	.857	1.000	
Eng.Proficiency14	.735	.806	.760	.843	.963	1.000

Table 6 pictures the correlation among reading proficiency items. All the correlations are above .65 and are considered significant.

Table 6. Inter-Item Correlation Matrix of the reading skill

	Eng. Pro 15	Eng. Pro 16	Eng. Pro 17	Eng. Pro 18	Eng. Pro 19
Eng.Proficiency15	1.000				
Eng.Proficiency16	.909	1.000			
Eng.Proficiency17	.853	.934	1.000		
Eng.Proficiency18	.659	.735	.721	1.000	
Eng.Proficiency19	.692	.780	.766	.902	1.000

The correlation matrix of the writing proficiency items are shown in Table 7. As it can be seen, the correlations are high and significant.

Table 7. Inter-Item Correlation Matrix of the writing skill

	Eng. Pro 21	Eng. Pro 22	Eng. Pro 23	Eng. Pro 24	Eng. Pro 25
Eng.Proficiency21	1.000				
Eng.Proficiency22	.886	1.000			
Eng.Proficiency23	.865	.821	1.000		
Eng.Proficiency24	.884	.824	.861	1.000	
Eng.Proficiency25	.816	.751	.794	.856	1.000

Table 8 shows that to what degree the four skills are related together. The correlation among the skills is relatively high and significant.

Table 8. Inter-Item Correlation Matrix

	Listening.Score	Speaking.Score	Reading.Score	Writing.Score
Listening.Score	1.000			
Speaking.Score	.925	1.000		
Reading.Score	.927	.947	1.000	
Writing.Score	.924	.868	.913	1.000

Relationship between teachers' sense of efficacy and proficiency in English

Table 9 summarized the correlations of the language proficiency and the three dimensions of the teachers' self-efficacy (i.e., Instructional Strategies, Classroom Management, and Student Engagement). Overall, the correlations were significant and ranged from low (r = 0.202) to very high (r = 0.844).

Table 9. Correlation Matrix among teachers' sense of efficacy and proficiency in English

	L	S	R	W	SE	CM	IS
Listening	1.000						
Speaking	.925	1.000					
Reading	.927	.947	1.000				
Writing	.924	.868	.913	1.000			
Student Engagement	.842	.811	.831	.916	1.00		
Classroom Management	.816	.826	.800	.880	.880	1.000	
Instructional Strategy	.798	.779	.815	.898	.905	.883	1.000

**. Correlation is significant at the .01 level (2-tailed).

L= Listening, S= Speaking, R= Reading, W= Writing

ME=Mechanical, CM=Communicative

SE= Student Engagement, CM= Classroom Management, IS= Instructional Strategies

Very high positive relationships were found between the three dimensions of self-efficacy and the four dimensions of English language proficiency (i.e., listening, speaking, reading, and writing). The strongest relationship was between student engagement and writing (r = .916) which was considered very high. The weakest (yet still very high) relationship was between instructional strategy and speaking (r = .779).

Moreover, the student engagement was found to have a stronger relationship with English language proficiency dimensions (r = .811 to .916) than classroom management (r = .800 to .880) and instructional strategy (r = .779 to .898). It could be inferred that those teachers who are more proficient in English would engage students more in the English classrooms than managing the class and using the instructional strategies.

Discussion

In the current study, the teachers rated their self-efficacy in teaching English at rather high level in the all dimensions of Instructional Strategies, Classroom Management, and Student Engagement. In other words, they believed that they could have some influence in the three dimensions. The teachers responded that they felt more confident in Classroom management (M = 7.54) than in any of the other dimensions. In the meantime, it was found that the teachers felt least confident in their Instructional Strategies (M = 7.10).

In relation to the teacher efficacy levels among the teachers in the present study, it is important to note that the teachers' self-reported English teaching efficacy or confidence levels in the present study were found to be higher than those in the previous studies adopting the TSES. It indicated that the teachers in the present study felt more confident in carrying out the teaching tasks than the teachers in other studies. For example, in the only study that adopted the TSES to examine teachers' English teaching-specific self-efficacy beliefs in the EFL context, Chacón (2002, 2005) reported that her Venezuelan middle school English teachers rated their capabilities to carry out teaching tasks with their confidence at the "quite a bit" level (M = 6.59 on Student Engagement; M = 7.00 on Classroom Management; M = 7.13 on Instructional Strategies). Tschannen-Moran and Woolfolk Hoy (2007), taking a non-subject specific approach, have documented similar degrees of self-efficacy beliefs reported by U.S. teachers. Besides, Lee (2009) reported lower results in comparison with the others. Her teachers rated their capabilities to carry out teaching tasks with their confidence at the "some influence" (M = 5.53 on Student Engagement; M = 5.70 on Classroom Management; M = 5.36 on Instructional Strategies).

Although one should be cautious in making direct comparisons of the scores reported in different cultures due to the possibility that survey responses may reflect cultural biases (King, Murray, Solomon, & Tandon, 2004), Such a comparison can provide useful information in examining where the teacher efficacy levels reported by teachers in the present study are located in relation to other teachers, especially when there are no previous studies conducted in the Middle-East EFL context using the same instruments.

Regarding the self-assessment levels of English proficiency, this study found that the teachers tended to rate their current proficiency levels in writing skills higher than for the other skills (i.e., listening, speaking and reading). Based on the value of Mean/Max, it was concluded that the participants were stronger in writing skills (0.82) and weaker in Listening skills (0.63). So, for the participants of this study the order of Language skills from the strongest to the weakest was Writing (0.82), reading (0.77), speaking (0.73), and listening (0.63) respectively.

A possible reason for the teachers' lower proficiency in listening and speaking skills in this study could be found in the English education that the teachers received when they were students. English education in the EFL context of this study focused mainly on grammar and reading comprehension, not the development of listening or speaking ability. Also, in the EFL context of this study, teachers and learners have few opportunities to speak or listen in English for communicative purposes—the target language is not used in everyday life— but they can easily obtain writing and reading materials. Given this context, it seems unsurprising that the teachers felt less competent in listening and speaking skills than reading and writing skills (Park, 2006).

In Lee's (2009) study, it was found that the teachers tended to rate their current proficiency levels of receptive skills (i.e., Listening and Reading) higher than productive skills (i.e., Speaking and Writing). Park (2006) also found, by using a different instrument, that the Korean secondary English teachers rated their productive skills lower than their receptive skills. Meanwhile, language deficiencies particularly in listening, speaking were self-reported with low means in Chacon's (2002) study. English language deficiencies in speaking were mentioned as a factor that affected teachers' confidence in their capabilities to teach oral English.

The present study has found that self-reported English proficiency levels had high relationships with all of the English teaching-specific efficacy dimensions (r = .779 to r = .916), so the null hypothesis was rejected. This result means the teachers who rated their English proficiency higher in the four skill domains tended to believe more strongly in their capability for teaching English. This corroborates the previous studies that have reported significant relationships between teachers' sense of efficacy or confidence in teaching English and English language proficiency (Chacón, 2002, 2005; Lee, 2009; Shim, 2001).

The relationships of English proficiency levels with student engagement (r = .811 to .916) dimension of English teaching self-efficacy beliefs were stronger than with classroom management (r = .800 to .880) and instructional strategy (r = .779 to .898) dimensions. These results indicated that the variance on teachers' self-reported English language proficiency levels shared more variance on their beliefs about capability to carry out teaching tasks related to the student engagement than those related to classroom management and instructional strategies. Those who perceived they had sufficient English language proficiency tended to believe in their capability to carry out tasks related to student engagement more than the other dimensions of classroom management and instructional strategy.

In sum, the present study corroborates studies that have documented significant association between English language proficiency and teacher efficacy (Chacón, 2002, 2005; Lee, 2009; Shim, 2003). This suggests that improving one's English language proficiency can enhance English teaching-specific teacher efficacy or confidence.

Recommendation for future studies

As the first study that adopted the notion of teacher efficacy in conceptualizing teachers' confidence in teaching English in the EFL language center education context, the present study provides possible direction for future research as follows:

1. Teachers' perceived efficacy is a multifaceted construct that varies across tasks and contexts where teachers do their teaching. Additional research needs to be conducted to assess teachers' capabilities to teach English as a situated activity immersed in a sociocultural milieu. It would be useful to explore teachers' perspectives through additional studies that provide a deeper understanding of how teachers' sense of efficacy influences teachers' actions and decision-making in planning and conducting lessons. Observations of teaching performance, teaching techniques as well as multiple interviews should be used as another source of data to explore teachers' sense of efficacy and the teaching of foreign languages, English and others.

2. given the fact that the present study was based exclusively on self-reported data, additional research is needed that could include quantitative data on teachers' perceived efficacy in teaching English as foreign language using independent measures to investigate the relationship on this variable and student outcomes (e.g., ability to speak English as measured by purposeful sampling interviews) . This type of study is needed to determine if teachers' sense of efficacy correlates in statistically significant ways with student learning of English as a foreign language in certain contexts (e.g., language centers in EFL context).

3. Longitudinal studies are also recommended to investigate whether teachers' perceived efficacy to teach EFL varies across years. It is recommended to follow-up teachers to investigate whether or not and how their efficacy changes over the years.

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Teaching Across Cultures: Considerations for International Language Teachers in Kazakhstan

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Abstract

This study explores the expectations and possible mismatches that arise from cultural differences between local students and their foreign English language teachers with a global mindset in the classroom interaction as an important domain of the intercultural communication. The authors view the language classroom and teacher-student interaction as truly intercultural settings that need a close inspection which is likely to contribute to a high level of intercultural competence and improvements in the quality of language education. Thus, the aim of this study is to raise awareness in the English-medium intercultural communication in secondary and higher education ELT classes in Kazakhstan by describing several significant aspects of teacher-student interaction. The local and international teachers as well as the English language learners provided data on the role of the teacher, types of teacher guidance, attitudes to lateness, types of the tasks for assignments and exams, attitudes to cheating, responsibility for the learning process, teacher attitudes to students' questions and the degree of student's initiative to describe local ELT classes. The study includes practical recommendations particularly for international teachers of English in Kazakhstan; however, local teachers and educational administers, who need to work cooperatively with international teachers, may find the implications quite useful as well.

Key Terms: intercultural; communication; Kazakh; global; culture; ELT; class management

1. Introduction

Recent changes in the social and economic life after the collapse of the Soviet Union revealed a need in high competitiveness in all spheres including the education sector. ELT has become an important market where investors compete with others through their publications, technological innovations, and competent teachers in order to get superiority. In addition to the language schools that have been opened recently almost as many as supermarkets, universities, colleges, public and private schools comprise the organizations that invite ELT teachers from around the World. Nowadays respected language schools, universities or English courses have at least a few foreign teachers of English, usually native speakers. These international teachers of English are hired because they usually demonstrate a good standard of English at advanced levels. Since their existence also brings authenticity to the learning environment, they are treated with enthusiastic welcome. On the other hand, there is considerable concern about whether such foreign teachers really contribute to the quality of ELT services at their best. There seem to be three essential components that contribute to the success of English language teachers in any country. They are language, teaching techniques, and culture (Millrood, 1999). However resourceful a teacher is in the other two components, success is hardly an issue of end product that could be achieved if one of them is missing. Therefore, foreign language teachers' best contribution can only be provided if they are well aware of the peculiarities of the local culture and mindset, which determine the norms of learner behavior during the interaction in an ELT class.

In this paper, we will attempt to explore learner expectations on certain significant aspects of teacher-student interaction in ELT classes in Kazakhstan. These aspects focus on the authentic communication between the foreign teacher and local learners and comprise several issues such as the role of the teacher, types of teacher guidance, attitudes to lateness, types of the tasks for assignments and exams, attitudes to cheating, responsibility for the learning process, teacher attitudes to students' questions and the like. We further will compare them to those of the

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international teachers who we assume to have adopted a second identity as they work in Kazakhstan. This second identity requires the promotion of global values and trends in students' personal development and language learning. We are also aware of the fact what gives these values a global acceptance is their popularity through the mass media rather than their truthfulness. As such an international teacher of English is likely to be a native speaker or an advanced speaker of English who tends to use a communicative approach to language teaching which basically promotes 'facilitator' or 'interlocutor' roles of teachers, 'democratic' and 'indirect' styles of guidance, 'linear' and 'exact' concepts of time management, 'critical thinking skills' and 'creativity' in assignments, 'accuracy' and 'objectivity' of assessment. They tend to encourage learners to develop autonomy and take more responsibilities for their own learning in a learner-centered class atmosphere. As one can easily notice that these features are based on the values of western cultures and the product of language teaching methodology that has been developed by English-speaking scholars who were born to or exposed to the western cultural environments.

Owing to the fast economic growth and educational policies that emphasize the nation's integration into the modern world, language teachers from abroad has been hired to work in local institutions recently. Therefore, the study introduces a new issue for ELT in Kazakhstan. In fact, there has been some research comparing Western and East Asian cultures and their influence on teaching. Kazakhstan, nevertheless, is in the Central Asia and has a different unique Eurasian culture, which belongs to both the East and West, without being Eastern or Western, remaining original according to the official identification that is given at the website of the Emblem and Flag of Kazakhstan.

Thus, this study will be practically useful for both Western and local teachers as well as the ELT managers of local educational institutions.

2. Background of the Study

The first axiom for any teacher, especially in a cross-cultural setting, is to adapt your teaching to the context of the students, school and community in which you are working (Barnhardt, n.d). Therefore, when teachers from abroad come to teach English in Kazakhstan, they should be aware of the cultural peculiarities of the local students. In other words, they should clearly understand what local students expect from a teacher and the teaching-learning process on the whole. Such teacher-student interactions comprise authentic communicative situations with an intercultural dimension which is provided by cultural differences between learners and their foreign teacher as well as the expectations that arise from these differences. In order to compare the two cultural backgrounds, first of all there is a need to define the conceptual framework of culture and to develop a set of criteria that can at least roughly measure any culture as an essential component of context for communication.

2.1. Defining and Teaching Culture

Adopting a relevant definition of culture is an important first step of incorporating it into foreign language teaching. A broad definition that comes to the mind first would be "civilization" represented in manners, arts and crafts and their products that are acquired through education in a society. Geert Hofstede, a Dutch academic who put corporate culture on the map (Guru: Geert Hofstede, 2008), calls this meaning of culture as the domain of a "ministry of culture" on his personal website. Bennett refers to the same notion of culture with "capital C", which is about the great literary works, historical figures and thinkers, as opposed to "small c" culture meaning "the learned and shared patterns of beliefs, behaviors and values of groups of interacting people" (Bennett, 1998, p.3). This second type of culture is about the particular way a group of people think, feel, and act in general. Hofstede has defined it as "the collective programming of the mind distinguishing the members of one group or category of people from another". The "category" in this definition refers to one's socio-cultural identity determined by nationality, regional or geographical belonging, ethnicity, gender, religion, occupation, or corporal organizations (Hofstede, n.d.).

Culture teaching received considerable conscious attention in language teaching after the introduction of the construct of intercultural communicative competence. (Hymes, 1972) Culture and language are believed to be inseparable and intertwined. Therefore, culture has always been taught along with the language though in the forms of separate courses known as *background studies*, *area studies, British life and institutions*, in Europe (Byram, 1989, pp. 58-60, 1998, p. 2) and *country studies* in the Soviet and early post –Soviet era in Kazakhstan. However such courses were limited to factual knowledge pertaining to the structure and functions of institutions and people's lives through generalizations and stereotypical perceptions (Mountford & Wadham-Smith 2000: 1). These courses also viewed culture "as mere information conveyed by the language, not as a feature of language itself" (Kramsch 1993:8). In other words, the teaching of culture, which was particularly known as 'the capital C culture" (Bennett,

1998, p.3), was considered to be supplementary to language teaching, not a part of it. In Bennett's terms, "the small c culture", which is represented in everyday lives of people and in their beliefs, values and skills, was just ignored. Traditional Grammar-Translation approach to teaching foreign languages in Kazakhstan probably considered cultural skills as inferior to the knowledge and skills of grammar and translation. Now that communicative approach has prevailed language teaching, it is believed that "the person who learns a language without learning a culture risks becoming a fluent fool" (M. Bennett, J. Bennett, & Allen, 2003, p. 237).

2.2. Identifying and Comparing Cultural Dimensions in Intercultural Communication

Two of the research proponents who investigated cultural differences have been Geert Hofstede and Edward T. Hall. Geert Hofstede researched cross-cultural groups and organizations and as a result, developed a systematic framework for assessing and differentiating national cultures and organizational cultures. His studies demonstrated that there are national and regional cultural groups that influence behavior of societies and organizations. The values that distinguished countries from each other could be grouped statistically into five clusters (Hofstede, n.d.). These groups, which have become the Hofstede dimensions of national culture, are known as 'individualism versus collectivism', 'power distance', 'uncertainty avoidance', 'masculinity versus femininity', 'long-term/short-term orientation'(Guru:Geert Hofstede, 2008). Moreover, among the research on intercultural studies, anthropologist Edward T. Hall's constructs of polychronic versus monochronic time orientation describes how cultures structure their time. A very brief review of such constructs enables a relative comparison and a better understanding of cultural peculiarities that provide a more meaningful context of ELT for foreign teachers in Kazakhstan.

2.2.1. Individualism versus Collectivism

As one of the Hofstede dimensions of cultural variation, 'collectivism-individualism' indicates the degree to which individuals are integrated into groups. On the individualist side of the spectrum, we find societies in which the ties between individuals are loose: everyone is expected to look after themselves and their immediate family. On the collectivist side, we find societies in which people from birth onwards are integrated into strong, cohesive in-groups, often extended families - with uncles, aunts and grandparents - which continue protecting them in exchange for unquestioning loyalty (Hofstede, n.d.). In collectivist cultures, people promote respect for authority and group consensus. In individualist cultures, the emphasis is on self-expression and individual thinking. When individualists are dissatisfied with the group they leave it; collectivists tend to stay. While collectivist cultures emphasize developing and sustaining stable, hierarchical roles, individualist cultures are associated with equalitarian relationships and flexibility in roles. In collectivist cultures, the boundaries of property ownership are more permeable. In individualist cultures, personal items are private property and are not to be shared. (Ho, Holmes and Cooper, 2004).

Education is a way of gaining higher status in collectivist cultures. In individualist cultures, the aim of education is to acquire knowledge and to improve one's competence in order to earn a better living. In collectivist cultures, students expect to learn "how to do" and tend to perceive that there is only one right perspective to a given problem. Learning in individualist cultures is about how students experience and organize the subject matter of a learning task. It is about "how" they learn, rather than "how much" they remember. In collectivist cultures, students usually do not freely express their opinion in a large class situation unless they are being called upon personally by their teacher. In individualist cultures, students are generally more willing to speak up (Ho, Holmes and Cooper, 2004).

The difference of student behavior is also visible in students' acceptance of the authority of their teacher, which lead them to cooperation and support the teacher at all times in collectivist cultures. They avoid confronting the teacher even when they disagree with the opinions that their teacher or fellow students expressed. The students in individualist societies have a weak face consciousness, so giving appropriate information is more important than saving one's face (Chang & Chin, 1999)

2.2.2. Power Distance

Another dimension of cultural variation is 'power distance' which means to measure the degree to which power, prestige and wealth are unequally distributed in a culture. Cultures with high 'power distance' scores believe that control and influence should be concentrated in the hands of a few. In cultures with low 'power distance' picture, control and influence are believed to be more equally distributed. For instance, employers are expected to stand in a line with their employees in a low-power distance business corporation.

In a high -power distance class, teachers are greatly respected by students because of their age and profession. The lesson tends to center around the teacher - they initiate most communication and students are rarely proactive or challenging. Teacher's main goal is to transmit his knowledge to students. On the other hand, teachers and students from low 'power distance' cultures have equal responsibilities; both contribute to the learning process. Students are usually active and initiative.

2.2.3. Uncertainty Avoidance

Uncertainty avoidance deals with a society's tolerance for uncertainty and ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, and different from the usual. For strong uncertainty avoiding cultures something new and different is dangerous, whereas people from weak uncertainty avoiding cultures are curious about new unknown things and situations.

Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth. People in uncertainty avoiding countries are also more emotional, and motivated by inner nervous energy. The opposite type, uncertainty accepting cultures, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible, and on the philosophical and religious level they are relativist and allow many currents to flow side by side.. People within these cultures are more phlegmatic and contemplative, and not expected by their environment to express emotions (Hofstede, n.d.).

2.2.4. Masculinity and Femininity

The binary opposition of masculinity versus femininity refers to the range of emotional roles between competitive-assertiveness and caring-sharing-modesty. Hofstede's studies for the IBM company revealed that women's values differ less among societies than men's values and men's values from one country to another contain a dimension from very assertive and competitive and maximally different from women's values on the one side, to modest and caring and similar to women's values on the other. The assertive pole has been called masculine and the modest, caring pole feminine. The women in feminine countries have the same modest, caring values as the men; in the masculine countries they are more assertive and more competitive, but not as much as the men (Hofstede, n.d.).

2.2. 5. Long-term vs Short Term Orientation

Hofstede's fifth cultural dimension is long-term versus short-term orientation which is based upon the teachings of Confucius. Confucianism looks at life in the long-term rather than the short-term by promoting the stability of society, considering family as the prototype of all social organizations, appreciating the virtuous behavior toward others with the principle of treating others as one would like to be treated oneself and encouraging such moral values as patience and perseverance (Hofstede & Hofstede, n.d.).

2.2.6. Monochronic and Polychronic Cultures

The monochronic time concept follows the notion of "one thing at a time", time is inflexible, while the polychronic concept focuses on multiple tasks being handled at one time, and time is flexible (Tamas, 2007)

A manager's office in a polychronic culture typically has an open door, a ringing phone and a meeting all going on at the same time. Though they can be easily distracted they also tend to manage interruptions well with a willingness to change plans often and easily. People are their main concern (particularly those closely related to them or their function) and they have a tendency to build lifetime relationships. Issues such as promptness are firmly based on the relationship rather than the task and objectives are more like desirable outcomes than must do's ("Cultural", 2012).

While in monochronic cultures schedule coordinates activity and appointment time is rigid, in polychromic culture interpersonal relations coordinate activity and appointment time is flexible. In a monochronic culture, the work time is clearly separable from the personal time, whereas in polychronic culture it is not. Another difference is that in monochronic culture's tasks are measured by output in time, but in polychronic cultures tasks are measured as part of overall organizational goal. Interactions between the two types can be problematic. Monochronic businessmen cannot understand why the person they are meeting is always interrupted by phone calls and people stopping by. Is it meant to be insulting? When do they get down to business? Polychronic businessmen cannot understand why tasks are isolated from the organisation as a whole and how one can separate the work time from personal time? Why would you let something as silly as a schedule negatively impact on the quality of your relationships? (Bhattacharyya, 2010, p.54).

2.2.7. Other Approaches to Understanding Cultural Differences through Bipolar Constructs

Obviously there are more studies on cultural differences and the ways of comparing cultures through bipolar constructs are not limited to the ones that we reviewed so far in this paper. For example, a dialogic versus dialectic model describes whether a certain culture favors a student-centered and collaborative class or a teacher-centered and competitive class (Hammond & Gao, 2002, p. 235)

Similar to Hofstede's uncertainty avoidance dimension is Hall's high and low context dimension. *High context* implies that a lot of unspoken information is implicitly transferred during communication. *Low context* implies that a lot of information is exchanged explicitly through the message itself and rarely is anything implicit or hidden.

People in low context cultures such as the UK tend to have short-term relationships, follow rules and standards closely and are generally very task-oriented ("Crosscultural",2012) (Jandt,1998). It influences whether a direct or indirect style is preferred in a certain culture. (Gao and Ting-Toomey, 1998).

The choices of formal or informal styles of communication, use of verbal and nonverbal communication styles, the interpretation of silence (Samovar & Porter, 2004), the use of space or distance in high and low contact cultures (Nishimura, Nevgi and Tella, (2008) may be common causes of miscommunication in intercultural interactions between representatives of different cultures when they meet.

3. Data Collection and Analysis

This study, which seeks to provide data about classroom expectations of Western teachers and Kazakhstani students, is based on interviews and questionnaires that revealed relevant data relying on participant observations in appropriate intercultural contexts where Kazakhstani students are taught by Western teachers of English. The participants of interviews were five Kazakhstani students studying abroad, seven Western EFL teachers who are currently working or worked in Kazakhstan, and eight local teachers. Questionnaires were conducted to sixty students in their 2nd, 3rd and 4th year of education at Suleyman Demirel University and forty of the 8th grade pupils at a local secondary school in Taldykorgan. All of the participants have been to ELT classes as a student or teacher, or as an observer. Local teachers also have had worked with foreign teachers of ELT in Kazakhstan.

The questionnaires were available both in English and Russian, but presented in Russian to locals and were responded anonymously and conducted by a third person - a senior student at the university as a part of the undergraduate research project - in order to achieve reliable results. Participants were asked to respond to the statements by choosing one of the four options on the basis of an 'agree - disagree range'. Data from the questionnaires are assumed to reveal student attitudes and analyzed globally together with local teachers' detailed responses to interview questions. Local teachers were asked about their own views of the description of their ELT classes whereas international teachers were additionally required to comment on differences in their expectations. One of the authors of this paper has been working as an ELT teacher and teacher trainer for almost two decades in Kazakhstan. Therefore the conversations with participant teachers have been productive as the author described himself as an international speaker of English who is originally from Turkey.

A part of the results that is relevant to describing language learners in terms of their expectations during their interaction with teachers in the intercultural atmosphere of ELT classes have been shared in the following sections of this paper.

3.1. Exploring Culture in Kazakhstan

Kazakhstan is composed of a multi-ethnic, multi cultural nation. As the citizens of a post Soviet republic, people in Kazakhstan mainly use Russian for inter-ethnic cross-cultural communication. However, the native language of the majority and the titular nation is Kazakh, which is slowly becoming a dominant language in all spheres of life owing to its status as the state language. For quite a long time Kazakhstan has experienced a multi cultural life through peaceful means of successful communication in a diverse community. There is a lot in common though there are also differences between them. "These differences are welcome, well known and viewed as richness in the form of a beautiful mosaic of cultures" said a Kazakh scholar, Ahmetzhanova Z. in a roundtable discussion at the 5th International Conference on Building Cultural Bridges in Almaty in 2013 (personal communication, April 26, 2013) In the light of past activities of this conference and the public opinion reflected in other social and academic events and in mass media, we drew following assumptions about the cultural features of locals, their beliefs, values and behaviors that determine the attitudes in relationships, particularly between teachers and students in language education.

Kazakhstan is a collectivistic country where strong family relationships, loyalty to friends, neighbors and colleagues, hospitality towards guests, respect for the aged and mercy for someone in need are greatly valued. Kazakhs historically preferred to lead a collective way of life and there are many proverbs about the importance and power of living in groups, not alone. *"Adamga adamsyz kyun zhok"*, or *"Kozsyz ali omyr syurup, adamdarsyz omyr syurmeisin",* are two of such proverbs which mean life is impossible without having people around you.

On the other hand, power distance is quite high in Kazakhstan. Social roles are well defined in a hierarchical way and this is visible in a typical Kazakh family where individuals are ranked according to their age. Younger members are expected to be obedient to the elderly. Education is meant to shape the younger generation to serve the above mentioned values. In a European country children may be allowed for equal voice and encouraged to develop autonomy, while being consulted by their parents instead of being obedient ("Kazakhstan", 2012).

The Kazakh society shows the features of a mixture of both masculine and feminine societies, though masculine qualities may be a bit more dominant. When there is a conflict in communication, they believe that the resolution depends on the loss of one of the sides. Perhaps some people who have interacted with a feminine culture would strive for a win – win type of resolution. However, if you look at gender roles in Kazakh society, you would notice the respect for the higher status of the male which does not discourage the female to take up significant positions in the social, economic and bureaucratic life. Traditionally there is a strict role distribution between men and women and children are brought up with appropriate roles to their genders. A commercial video broadcast by an international brand may receive negative feedback and reaction if stereotypical gender roles are ignored in the video clip. For instance, the man in the family preparing breakfast and making tea with an international tea brand for the wife and children who get up quite later than him is not a likely picture of a Kazakh family; so it may be protested by some academicians and community leaders.

People in Kazakhstan want stability, structure and security and due to this they have strong uncertainty avoidance. This can be seen especially in political, social, academic spheres of life. However, this does not coincide with how they conduct business. Since the society has a high-context culture, unspoken rules play an important role in communication. Locals are well acknowledged about the unwritten regulations and they may assume that their international interlocutors are also aware of them.

An interesting stereotypical opinion about Kazakhs is that they have polychronic time orientation. Therefore they usually do not follow an agenda ("Kazakhstan", 2012). Completing tasks in time is subordinated to interpersonal relationships, which influences decisions and coordinates activities. People attempt to do many tasks at a time, and usually succeed them. Appointment time is flexible. As one of the authors of this paper reported, if you want to go to a wedding party at the exact time that you are invited, it is not unusual to wait for almost two hours until the party starts since everybody will almost often be late.

3.2. The Culture of the ELT Classes

In any class students' or teacher's expectations as well as their preferred learning or teaching styles are greatly influenced by their cultural background. Cultural expectations are often coded or implicit in intercultural communication. Cultural differences can have a negative impact on learning outcomes if they are not attended during the lesson. When a teacher and students have different cultural backgrounds teachers can misdiagnose cultural peculiarities as learning problems. This study shows that there are some differences in classroom expectations of students and international teachers of English in Kazakhstan. We have investigated the following peculiarities of learner preferences that can be useful for foreign teachers in Kazakhstan.

3.2.1. Role of the teacher

Based on the data collected from questionnaires and interviews, we can conclude that a teacher in Kazakhstan is likely to be viewed and expected to have adopted the roles of an *authority, parent and font of knowledge*. The level of authority is stronger with younger students than those who study at university. Although students prefer to conform to teacher authority and avoid conflict with teachers, they feel rather close to them. This indicates the influence of the high power distance of Kazakh culture on schools.

6. Table 1. Students' attitudes to teachers

Accepted teacher roles	University (% of positive answers)	School (% of positive answers)
Authority Teacher's word is a law for me.	49	79
I will not contradict my teacher, even though he/she is not right.	35	63
Friend Teacher is my best friend.	56	41
I can talk about my feelings with a teacher	50	50

Pupils and students show respect toward a teacher, use formal communication, address the teacher by the title name and surname (patronym) such as "Professor Chris Kennedy", "Mr Holland", "Mehmet Teacher", "Anna

Ivanovna", "Toktar Agay" or "Kymbat Apay", which is always formal regardless of the language background of communication.

Here are some of the responses to the questionnaire for international (western) teachers reflecting their experience and opinion about ELT learners in Kazakhstan.

An American teacher at university said:

"Students here in Kazakhstan act very respectfully to the most part, for the very most part. I think the students here are cheerful and very forthcoming to all teachers. They show to all teachers a high-degree respect. I am not sure if this is the case in the United States or Canada. Not so much… They have even terms…expressions of respect for educators: "hodjam" in Turkish or "apay/agay" in Kazakh. I feel very welcome with that reception. It impressed me very much – such a welcome!" (Personal communication, November 8, 2011)

Another university teacher from a European country said:

"They are very respectful, and very interested in people from other countries. In the bigger cities, people are very interested in the west and western ways." (Personal communication, February 24, 2011)

A university teacher from Canada said:

"One major difference between US and Kazakhstani students is that Kazakh students may expect the teacher to be strict with them and force them to work. (Personal communication, April 27, 2012)

This is different in Western countries where students address teachers just by their first names. Teacher plays the role of a *friend*. The distance between teacher and students in Kazakhstan is bigger than it is in the West. In Kazakhstan he is like a guru, but in West teacher and students are equals.

One of the western teachers told a story that happened to him in an ELT class in Kazakhstan because of the cultural differences in expectations. Here it is:

An international native-speaker teacher from the South East Asia working at a school said:

"I didn't realize that it is common in Kazakhstan for the teacher to enter the classroom after the bell has rung. I like to go to my classroom early to get materials prepared, to hang up posters, write some things on the board, etc. When my students would enter the room (before the bell had rung) they <u>would apologize.</u> *I couldn't figure out why they were apologizing and then I realized that since I was there they thought that they were late and that class had already started!*(Personal communication, April 12, 2012)

A university teacher from Canada said:

"I am an educator but I am a learner as well." (Personal communication, February 20, 2012)

As the teacher comments speak for themselves, an international teachers' tolerance for ambiguity due to the self view as One more difference is that Kz teachers are supposed to have a deep knowledge about their subject, whereas W teacher does not have to know everything, because he is also learning.

3.2.2. Guidance

All students and pupils who participated in the survey agreed to teacher's moral guidance and expect their teachers to set a good example for them. Local teachers approached to the same point with reservation at university level. As a Kazakh student in Canada reports, the international (especially western) teachers, however, focus on just the academic knowledge and achievements in their home culture. Those who work in Kazakhstan seem to be cautiously meeting students' needs for guidance by just acknowledging them about general and universal moral values although they avoid teaching how to behave or take personal action on specific issues.

3.2.3. Lateness

Kazakhstan being a polychronic culture is supported by the results of this study. Ninety five per cent of the students and two third of the pupils believe that lateness is tolerated in schools in Kazakhstan. School teachers said that they allowed late students to get in the class, because they feel responsibility for them. If something happens to the late pupil outside the classroom during the lesson time, teachers will be responsible for it.

3.2.4. Assessment

Western institutions usually use tasks that comprise such lesson objectives as *explain, justify, compare, discuss, contrast, describe, analyze, evaluate, and review* for assignments and examinations, in order to develop independent thinking and problem solving skills. The preferred type of exams may be multiple-choice, true/false or gap filling when objectivity is more important than measuring advanced cognitive skills. Local teachers also prefer multiple-choice tests when the number of students is high, although some 39 % believe open ended questions and oral reports contribute to better levels of knowledge[10].

Few students prefer open ended questions because they give them freedom to express their thoughts. A majority of university students (91 %) and school pupils (77 %) would like the exams to be in multiple-choice format. However, local teachers usually ask questions that students can answer if they remember the instruction. Foreign teachers' questions usually require more knowledge and skills than what has been discussed during the lessons as a local teacher reports.

A major difference in assessment between local and international teachers is that local teachers tend to help with test instructions and even questions during an achievement or placement test. Most of them seem to be indifferent to objective measurement and evaluation and they probably still think of teaching during any type of test. This might stem from the old Soviet habits of ideological teaching and learning which did not prioritize measurement to teaching, because the younger generation of local teachers rarely help or give hints to examinees when they are asked for. A significant part of students (about one third) and pupils (42 %) find teachers' help acceptable and seek for teachers' help during an exam. It seems that the local culture of assessment in education does not match international systems. A Kazakh student from Canada said that she realized that she had not known what a real examination was like till she went to study there.

Research also unveiled a big problem in Kazakhstani classrooms. That is cheating and plagiarism. It seems that most students are unaware of how serious it is to attempt cheating and turning in an assignment just copied from a wiki site. The reason might be that they interpret the issue wrongly as cooperation which is an important value in other spheres of life in Kazakhstan.

3.2.5. Responsibility *for the learning process*

Western educational systems use student-centered approach, which emphasizes student's independent learning. The teaching style in Asian countries is mostly teacher-centered, where the teachers would give all or most of the information to the students. This makes the learning easier for students because they do not need to take much responsibility for finding the information on their own. In Kazakhstan, education is usually still teacher-centered, and there are some people who can blame the teacher for students' failure by all means (one fourth of student participants and about the same ratio of local teachers). However, the education system in Kazakhstan has aimed to integrate into the global system since they signed the Bologna Declaration in 2007. Higher education of Kazakhstan is in the transitional period between using a strong-teacher centered approach, which was used in Soviet Union time, and a student-centered approach, which is one of the main requirements of western credit system adopted in Kazakhstan in 2010.

3.2.6. The other issues

The cultural issues for a description of ELT classes are not only the ones mentioned above or limited to everything that is referred in this study. For instance, when students voluntarily ask questions, both international and local teachers would view their questions in class as active learning in progress. However, few of the local students (5 % to 18 %) prefer to keep quite in order not to appear to be trying to check the teacher's knowledge. So, a quiet classroom does not mean that students are not following the lecture. They will ask questions if they really need so, not for showing the teacher their activeness. Teachers and students believe that working in groups is very important part of the learning process, as it helps to teach collective responsibility, mutual help and sociability.

4.   Conclusion

In this study, attempts have been made to describe the current state of ELT in Kazakhstan with respect to a cross cultural comparison of learners' expectations and international teachers' attitudes to some key issues of discussion pertaining to the intercultural atmosphere of ELT setting. Initially, a review of identifying how national cultures differ from one another has been presented with reference to Hofstede's dimensions, Hall's constructs and some other bipolar definitions of differences. The study showed that there are several differences in classroom expectations of Kazakhstani students and teachers from the West. In Kazakhstan a teacher is expected to play a role of authority and parent, whereas in western countries he is a friend. Western student is more responsible for the learning process, while in Kazakhstan a teacher holds almost all responsibility, consequently, students are not autonomous and do not have well developed critical skills. The goal of the western teacher is often to guide learners only academically, whereas in Kazakhstan it is very important to educate students morally. Western teachers prefer to assess learners objectively through various types of questions on examinations and assignments, while Kazakhstani teachers' attitudes do not match international systems of assessment as they tend to help students during the exams or tolerate cheating unlike the international teachers. Lateness is tolerated in Kazakhstan probably more than it can be tolerated elsewhere in the World. Kazakhstani students may be passive during the lesson, not asking questions to the teacher, but western students are more active. This is also true about answering the teacher's questions. Unlike the western learners, Kazakhstani ones may keep quiet until the teacher points out particularly them. The last difference in classroom expectation is that in Kazakhstan doing assignments in groups is believed to teach mutual help, sociability, collective responsibility, while in the West it presents a risk of cheating and contradicting. The results of the research at school and university were similar.

This study reveals some of the challenges for international EFL teachers as a result of intercultural differences. However, it also partly unveils the current picture of ELT in Kazakhstan. Following tips are also based on the authors' selection of collective experience that is mostly acquired during this study.

- **Learn a little of source language (Kazakh or Russian).** This is particularly important if you have classes with elementary and pre-intermediate students. Sometimes students do not understand your explanations in English, and then they turn to their friends, who know English better than them, to translate your words. If you know at least a little Kazakh or Russian, you may try to help them figure out the meaning. You will see that your students will appreciate your efforts for communication in a language that you do not know well. This will help you build a good rapport with your class. They will try to communicate in English using different strategies even when they feel they are unable to do so. Moreover, such code-switching is something they are familiar with when they communicate in both Russian and Kazakh outside your classes.

- **Give feedback.** It is very important for the local students to hear or to see teacher's comments on their performance.

- **Show interest in their lives.** Ask them how their weekend was, for example, and really listen to their answers. They will appreciate it.

- **Use pair and group work.** Kazakh students enjoy working in groups. However, remember different personality types in your class and adapt you activities and types of student interaction according to their needs. Group work may be an opportunity for some students to overcome anxiety before they demonstrate their skills in public.

- **Use games and songs fairly often.** But remember that some students may feel that you are not taking your job seriously if there is too much fun and too often in the lesson.

- **Be ready to fight with cheating.** You will be surprised to know the extraordinary ways of cheating in you class. Be strict from the first examination or a quiz. Show the students that you will not tolerate cheating. However, remember that the school authorities and the society will be unwilling to punish the students who cheat. It is still easier r to prevent them from attempting to cheat than catching them cheat and punishing them for it.

- **Be ready to fight with plagiarism.** Tell your students that you are practicing checking the assignments with the help of special websites or software. Warn them about the consequences of plagiarism in real modern life. Persuade them that plagiarism is not only immoral, but illegal as well. Specifically, give them appropriate feedback on their essays on plagiarism.

- **Explain the tasks/assignments in a detailed way.** Tell your students about how to produce a good assignment. They may need detailed guidance on where they can find possible sources for relevant information. You can show one example of a good essay and explain why it is good.

- **Be ready for lateness of students.** Of course, this does not mean that you should welcome it, but sometimes you should be able to tolerate it.

- **Be strict enough when you follow your teaching agenda.** This can help you to win your students' respect.

- **Be ready for formal communication.** Do not try to make them call you just by your first name. It will be strange and not very comfortable for them.

- **Be available at office hours.** If you tell your students that you have an office hour on Friday from 3 to 4 o'clock, this means that they can come to you at that time without making an appointment.

We hope that the study presented above will help international speakers of English, who want to try their pedagogical talent in Kazakhstan, cope with the difficulties, caused by the mismatches in expectations and be very successful in all their professional undertakings. We also suggest that they should be provided with a cultural orientation training seminar before they start working in Kazakhstan.

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Teaching of Simulation an Adjustable Speed Drive of Induction Motor Using MATLAB/Simulink in Advanced Electrical Machine Laboratory

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Abstract

The simulation of motor complicated applications conventionally can be a challenge for both undergraduate and postgraduate levels. To easy implementation for several kinds of control structures of an induction motor (IM) drive, some simulators such as MATLAB/Simulink to be necessary-especially for students-to develop and test various motor control algorithms in conducting electrical machines courses. In this paper, how to teach and simulate an adjustable speed drive of IM using Simulink blocks for an indirect field-oriented control (IFOC) algorithm is presented. The effectiveness of the adjustable IM drive is verified by simulation results at different operating conditions over a wide speed range.

Keywords: MATLAB/Simulink, Educational tool, Adjustable speed drive, Induction motor, indirect field oriented control;

Introduction

To date, academics and practitioners have focused on power electronics education and new computer-aided teaching tools to develop a better learning environment (Keyhani, Marwali, Higuera, Athalye, & Baumgartner, 2002; Mohan et al., 2003). One of the challenging subjects in these areas is IMs which have been applied extensively due to their advantages such as quiet operation, compact form, simplicity, reliability, low maintenance, economical, rugged, and reliable (Saghafinia, Ping, & Rahman, 2010). However, the IM drives are nonlinear, time-varying and complex systems owing to their characteristics (Ojaghi, Faiz, Kazemi, & Rezaei, 2011; Qaseer, Purushothaman, & de Leon, 2012) which require the complex control, circuitry, and inverter over sizing (Bakshi & Bakshi, 2009). Finding out of the theory and applications of the IM drives need to some courses including motion control (Lorenz, Lipo, & Novotny, 1994), power electronics (Goulart & Consonni, 2001; Jimenez-Martinez, Soto, Jodar, Villarejo, & Roca-Dorda, 2005), electric machinery, electric circuits, and electronic courses as well as the related laboratory of these courses. So, the IM drive is developed through some available simulation software to allow students to develop in all of the aforementioned areas in this paper. The simulation of IM drive, as a teaching tool, supports the classroom teaching as much as its laboratory through the computer-generated graphics, to illustrate easily steady and dynamic state operation of the IM drive under different operation conditions (Hoang, 2001). One of the most widespread simulation software is Mathworks MATLA/Simulink package (Ayasun & Nwankpa, 2005). The Mathworks MATLAB allows to user for analyzing of complex static systems to be modelled through 'numeric computation and visualization. Also, Simulink allows systems to be simulated dynamically and allows a controller to be modelled with the aid of block diagrams. Moreover, the user is allowed to concentrate on the model, rather than its implementation (Rodriguez-Resendiz, Herrera-Ruiz, & Rivas-Araiza, 2011).

This paper develops a learning environment for IFOC of IM drive using MATLAB/Simulink in advanced electrical machine laboratory. Several MATLAB toolboxes, tools, and Simulink Blocksets including power system Blocksets, signal processing toolboxes, Digital motor control (DMC) library, and IQMath library are used to

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optimize and design the Simulink model of IM drive. The Simulink model provides tracking of the speed and flux in the presence of an uncertain load disturbance and parameter variations using the real values of the d-axis and q-axis motor currents which utilized to estimate the stator flux angle. The IM drive is fed using voltage source inverter (VSI) which employed the space vector pulse width modulation (SVPWM) technique to optimize the harmonic content of current signal, and switching losses. To show the effectiveness of the simulated adjustable IM drive, simulation results are provided at different operating conditions such as a step change in command speed, load disturbance and parameter variations over a wide speed range.

Nomenclature

v^e_{ds}, v^e_{qs} Synchronous frame stator voltages

v^e_{dr}, v^e_{qr} Synchronous frame rotor voltages

i^e_{ds}, i^e_{qs} Synchronous frame stator currents

i^e_{dr}, i^e_{qr} Synchronous frame rotor currents

$\varphi^e_{ds}, \varphi^e_{qs}$ Synchronous frame stator fluxes

p Differential operator

$\dot{x}$ 1st derivative of x

ω_e, ω_r Synchronous speed and rotor speed, respectively

ω_{sl} Slip angular frequency

P Number of poles

R_s, R_r Stator and rotor resistance, respectively

σ Total leakage factor $\sigma = 1 - \dfrac{L_m^2}{L_s L_r}$

L_s, L_r Stator and rotor inductance, respectively

L_m Mutual inductance

J_r Inertia of rotor

B Friction factor

T_e Electromagnetic torque

T_L Load torque

Mathematical Model of IFOC for an IM Drive

This section explores the mathematical model of IFOC an IM drive for simulation purpose. The Control structure of an IFOC induction motor drive is shown in Fig. 1.
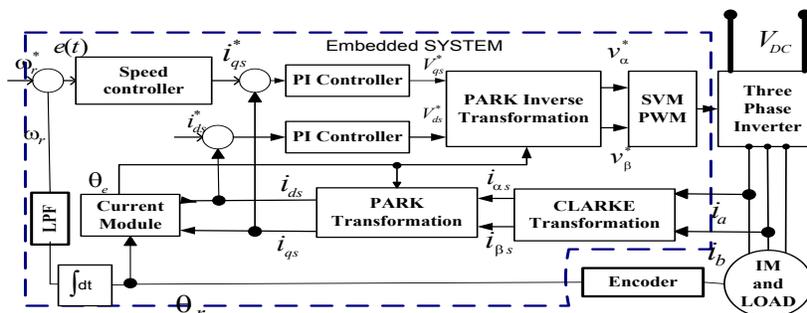
Fig. 1. Control structure of an IFOC induction motor

The mathematical models of the induction motor model in d-q synchronously rotating reference axis are shown in (1)-(2).

$$
\begin{bmatrix} V_{ds}^e \\ V_{qs}^e \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} R_s + \sigma L_s P & -\sigma L_S \omega_e & \dfrac{L_m}{L_r}P & -\dfrac{L_m}{L_r}\omega_e \\ \sigma L_S \omega_e & R_s + \sigma L_s p & \dfrac{L_m}{L_r}\omega_e & \dfrac{L_m}{L_r}P \\ -L_m\dfrac{R_r}{L_r} & 0 & \dfrac{R_r}{L_r}+p & -\omega_{sl} \\ 0 & -L_m\dfrac{R_r}{L_r} & \omega_{sl} & \dfrac{R_r}{L_r}+P \end{bmatrix} \begin{bmatrix} I_{ds}^e \\ I_{qs}^e \\ \phi_{dr}^e \\ \phi_{qr}^e \end{bmatrix}
\tag{1}
$$

and, $T_e = \dfrac{3}{2}\dfrac{P}{2}\dfrac{L_m}{L_r}(i_{qs}^e\varphi_{dr}^e - i_{ds}^e\varphi_{qr}^e)$ (2)

In IFOC, the rotor flux is oriented entirely in the d-axis by setting $\varphi_{qr}^e = 0$. So,

$$\varphi_r^e = \varphi_{dr}^e \tag{3}$$

The slip frequency is obtained as,

$$\omega_{sl} = \frac{L_m}{\varphi_r^e}\left(\frac{R_r}{L_r}\right)i_{qs}^e \tag{4}$$

The electromagnetic developed torque is given by:

$$T_e = \frac{3}{2}\frac{p}{2}\frac{L_m^2}{L_r}i_{qs}^{*e}i_{ds}^{*e} = K_t i_{qs}^{*e} \tag{5}$$

where,

$$K_t = \frac{3}{2}\frac{p}{2}\frac{L_m^2}{L_r}i_{ds}^{e*} \tag{6}$$

The mechanical equation of an induction motor can be presented as follows (Saghafinia, Ping, Uddin, & Gaied, 2012).

$$J_r \dot{\omega}_r(t) + B\omega_r(t) = T_e - T_L \tag{7}$$

7. Where J_r, B and T_L are represented as rotor inertia, friction factor and the external load disturbance, respectively.

8. As shown in Fig. 1, two Park's transformation and Clarke's transformation with along their inverse are used to implement IFOC for IM drive. Equations of Park's transformation and its inverse and Clarke's transformation and its inverse are shown in (8) to (10), respectively.

$$x_{dq} = T(x_{\alpha\beta}) = \begin{bmatrix} x_d \\ x_q \end{bmatrix} = \begin{bmatrix} \cos\theta_e & \sin\theta_e \\ -\sin\theta_e & \cos\theta_e \end{bmatrix} \begin{bmatrix} x_\alpha \\ x_\beta \end{bmatrix} \tag{8}$$

$$x_{\alpha\beta} = T^{-1}(x_{dq}) = \begin{bmatrix} x_\alpha \\ x_\beta \end{bmatrix} = \begin{bmatrix} \cos\theta_e & -\sin\theta_e \\ \sin\theta_e & \cos\theta_e \end{bmatrix} \begin{bmatrix} x_d \\ x_q \end{bmatrix} \tag{9}$$

$$x_{\alpha\beta} = T(x_{abc}) = \begin{bmatrix} x_\alpha \\ x_\beta \end{bmatrix} = \frac{2}{3} \begin{bmatrix} 1 & -1/2 & -1/2 \\ 0 & \sqrt{3}/2 & -\sqrt{3}/2 \end{bmatrix} \begin{bmatrix} x_a \\ x_b \\ x_c \end{bmatrix} \tag{10}$$

In the above equations, x can be phase variables of voltage or current so that α phase coordinates with d-axis. Since the Clarke's transformation has two inputs (shown in Fig. 1) considering balanced three phase induction motor, x_c is replaced with $-(x_a + x_b)$ and the Clarke's transformation is changed as,

$$x_{\alpha\beta} = T(x_{ab}) = \begin{bmatrix} x_\alpha \\ x_\beta \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 1/\sqrt{3} & 2/\sqrt{3} \end{bmatrix} \begin{bmatrix} x_a \\ x_b \end{bmatrix} \tag{11}$$

The PI controllers and speed controller as shown in Fig. 1 are initially tuned by the Ziegler–Nichols method based on stability boundary. The saturation of the controller is avoided by adding a correction of the integral term (*KC*) (Franklin & Powell, 2006) as shown in Fig. 2. This method has a good load disturbance attenuation which is also suggested by TI and MathWorks companies. According to the suggestion of the TI Company, KP (proportional gain), KI (integral gain), and KC (integral correction) are tuned (the readers are referred to (Akin; & Bhardwaj, 2010) for more details).
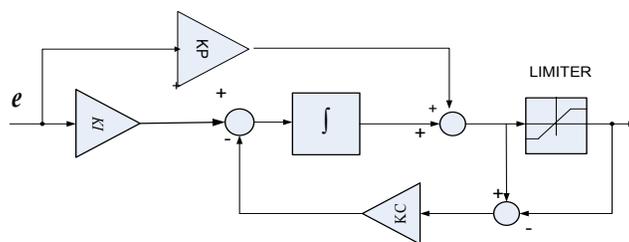
9. Fig. 2. PI controller structure with anti-windup correction term.

The Switching Technique of VSI Fed IM Drive

The SVPWM as the best method for switching technique (Bose, 2002) is considered for VSI fed IM drive in this work as shown in Fig. 3. In this method, the insulated gate bipolar transistors (IGBTs) must be controlled so that at no time are both switches in the same leg turned on or else the DC supply would be shorted. This requirement may

be met by the complementary operation of the switches within a leg. This leads to eight possible switching vectors for the inverter, V0 through V7 with six active switching vectors and two zero vectors as shown in Table 1.

The IM Drive Overview and Its Modeling

10. The digital motor control (DMC) suggested by TI and Mathworks Companies are used to optimize the Simulink models. TI and Mathworks Companies also provide a library of highly optimized and high precision math functions in the form of the IQMath library. These libraries allow the engineers/students to quickly build, or customize, their own systems. These libraries along with the discrete time Simulink libraries are employed to generate the IFOC of IM drive. The designed IM drive which configured using discrete-time Simulink with a sampling frequency 10 KHz for the tuned PI controller based IM drive are shown in Fig. 4. Parameters of the laboratory 1kw 2-pole IM are given in Table 2. To prepare the simulation of the whole system some consideration must be taken into account as follows:

11. • Since the Simulink models in the MATLAB library are designed carefully, the existing induction motor model in the power system library is used to simulate the induction motor in the proposed model.

12. • To implement the external load and speed reference command, the existing simulation signal in "Signal Processing" library along with manual switches are used to make different shapes of them as shown in Fig. 4.

13. • To change the sampling frequency from 10 KHz for each part of the model, the "Rating Transition" block must be employed.

14. • To implement the VSI inverter, the ideal switches are applied so that the switches are excited using the SVPWM technique as described in the previous section.

15. • The sensors including the rotary optical encoder as speed sensor and transducer as current sensor are modeled using a constant coefficient in accordance with their characteristics.

16.
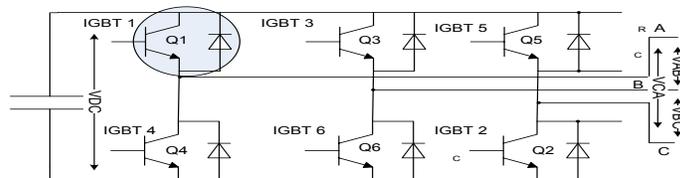
Fig. 3. VSI fed inverter of the IM drive.

17. As shown in Fig. 4, a subsystem block is applied to generate the three-phase inverter using 600 Vdc. The duty cycle of this inverter is controlled using the vector control Simulink model which shown in Table 1.

18. Table 1. SVPWM technique switching

Vector	Q1	Q3	Q5	Q4	Q6	Q2	VAB	VBC	VCA
$V_0 = \{000\}$	OFF	OFF	OFF	ON	ON	ON	0	0	0
$V_1 = \{100\}$	ON	OFF	OFF	OFF	ON	ON	+VDC	0	− VDC
$V_2 = \{110\}$	ON	ON	OFF	OFF	OFF	ON	0	+ VDC	− VDC
$V_3 = \{010\}$	OFF	ON	OFF	ON	OFF	ON	− VDC	+ VDC	0
$V_4 = \{011\}$	OFF	ON	ON	ON	OFF	OFF	− VDC	0	+ VDC
$V_5 = \{001\}$	OFF	OFF	ON	ON	ON	OFF	0	− VDC	+ VDC
$V_6 = \{101\}$	ON	OFF	ON	OFF	ON	OFF	+VDC	− VDC	0
$V_7 = \{111\}$	ON	ON	ON	OFF	OFF	OFF	0	0	0

19. "Vector Control" block as the main part of the model (shown in Fig. 4) is shown in Fig. 5. As can be seen in Fig. 5, the currents in ABC coordinates are converted into the rotating reference frame of d-q axes coordinates through Clarke and park's transformation from the DMC library. Since the prototype system of the model in advanced electrical machine laboratory employees an encoder 5000puse/revolution, the rotor position obtained from the motor is scaled in pulse resolution by multiplying 4*5000/2Π. Based on the measured rotor position, the rotor speed is computed using numerical backward differentiation with sampling time 1 kHz which its detail is shown in Fig. 6. Then according to the actual and command speed, the q-axis reference current is calculated. Considering the nominal value for d-axis reference current, the current controllers calculate the d-axis and q-axis reference voltages. Finally, the six SVM pulses for the inverter switches are made through the inverse park's transformations, space vector generator, and "PWM Scaling" block as can be seen in Fig. 5. The "PWM Scaling" block is employed to adjust the switching frequency of SVM-PWM for 18 KHz.

The motor currents (I_a, I_b) calculated from the motor is scaled (by multiplying their inputs by 2048/10 and the getting results plus by 2048) to match the transducer sensor inputs which applied in the prototype system. It is worth to note that the maximum current measured by transducers is 10A. These currents are given to "scaling" block (shown in Fig. 4) for preparing the suitable value (by multiplying their inputs by 10/2048 and the getting results subtract from 2048) in ABC coordinates.

20.   Table 2. Induction motor parameters

Parameters	Value	Parameters	Value
Rated power	1000W	Rated torque	3.37NM
R_s	6	J_r	.0055Kg.m^2
R_r	5.72	B	.001Kg.m^2/s
L_s	428.7e-3H	P	2
L_r	428.7e-3H	Rated speed	2830rpm
L_m	416.6e-3H		

21.
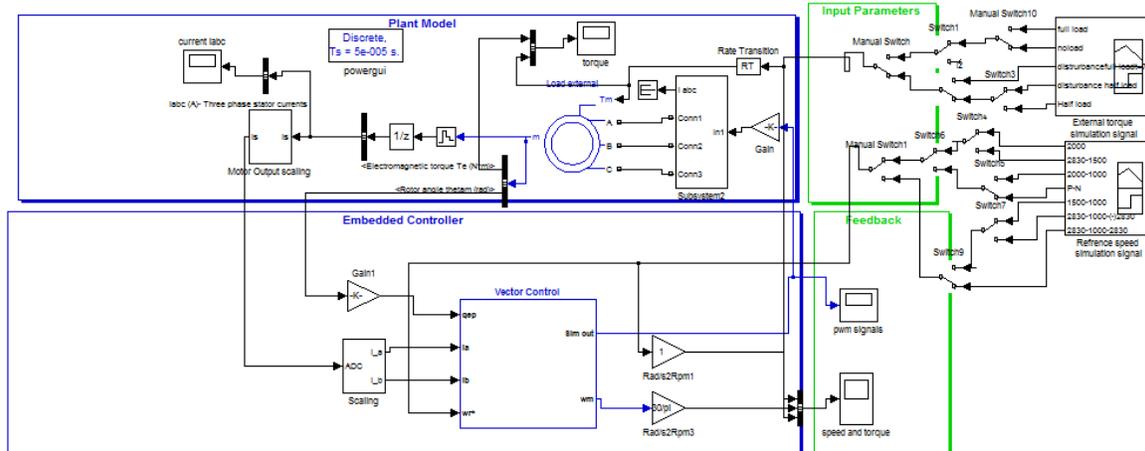
Fig. 4. The main Simulink model for the IFOC of IM drive.

Fig. 5. The Simulink Model of Vector control to generate the space vectors.

To implementation IFOC algorithm properly, the real values of the d-axis and q-axis motor currents are applied to estimate the stator flux angle as can be seen in Fig. 7. The accuracy of this algorithm depends on the accuracy of some motor parameters such as rotor time constant which obtained for the model equal to 0.07149 as shown in Fig. 7. Some parts of the laboratory 1Kw motor can be seen by right clicking on the motor and choosing the "look under musk". The modelled motor parameters also can be changed by choosing "link options" and "break link" by right clicking on the part of the motor which must be changed.

Fig. 6. The Simulink model of speed calculation.

Fig. 7. The Simulink Model of stator flux angle estimator.

Simulation Results

For simulation tests, following cases including parameter variations and external load disturbance are considered. If not mentioned, other parameters are considered nominal in all the cases for the tuned PI. The PI parameters are

found as, Kp=0.3, Ki=0.0001, and Kc=0.0001. Step changes in command speed with no load is considered for case-1. Also, step increase in load from '0' to 75% of rated load at t=7s is done in case-2. Finally, inertia and friction coefficients are increased three times of nominal value at t=7s while half rated load is applied from the beginning in case-3.

For case-1, simulation results are illustrated in Fig. 8. From Fig. 8a, it can be seen that the tuned PI shows the acceptable speed response in the case of the dynamic and steady-state performance. It can also be seen from Fig. 8b that the suitable tracking response of speed and flux has been obtained for the tuned PI which verifies the suitable performance of the implemented IFOC algorithm.

For case-2, simulation results are shown in Fig. 9. From Fig. 9a, it can be seen that the PI controller shows a significant dip in speed ($\approx$ 60 RPM) when the step increase in load is applied at t=7s. It is also found that the tuned PI follows the q-d-axis commands despite the large uncertainties which shows the suitable performance of the IFOC algorithm in this case.

In case-3, simulation results are shown in Fig. 10. It is found from Fig. 10 that the PI shows the suitable responses in spite of the parameter variations and it has acceptable tracking performance in both speed & current. Thus, the high accuracy of the implemented IFOC algorithm is obtained despite uncertainties such as external load disturbance and parameter variations in the simulated model.
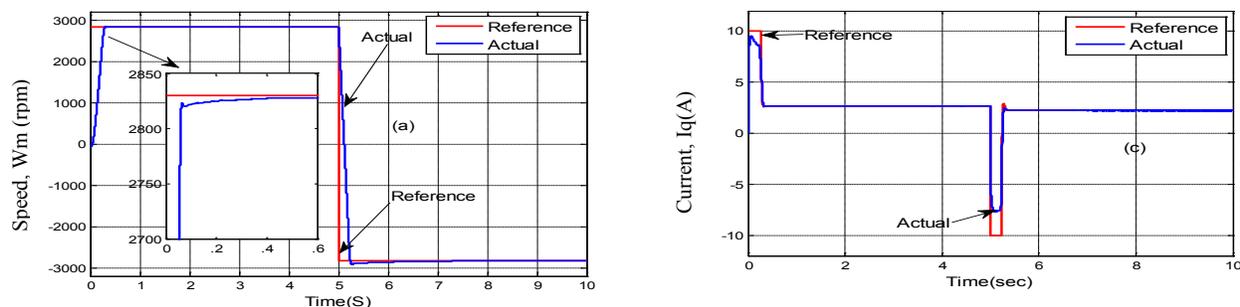
Fig. 8. (a) The simulated speed response of the PI based IM drive in case-1; (b) The simulated q-axis current response of the PI based IM drive in case-1
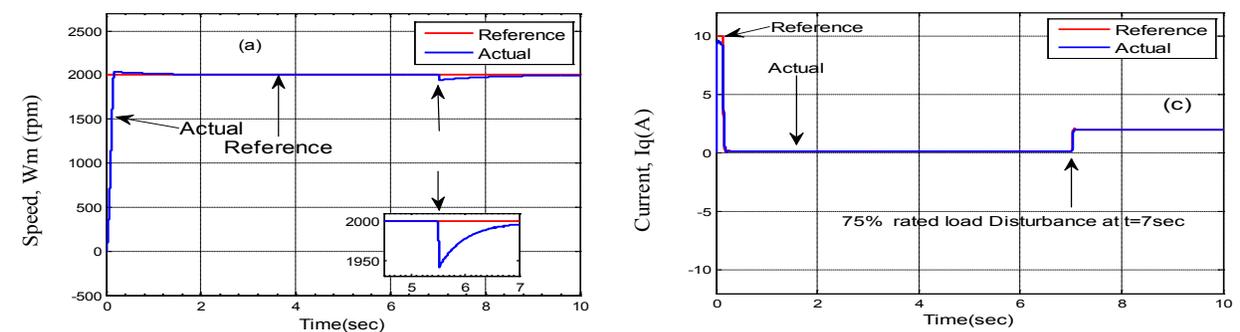
Fig. 9. (a) The simulated speed response of the PI based IM drive in case-2; (b) The simulated q-axis current response of the PI based IM drive in case-2
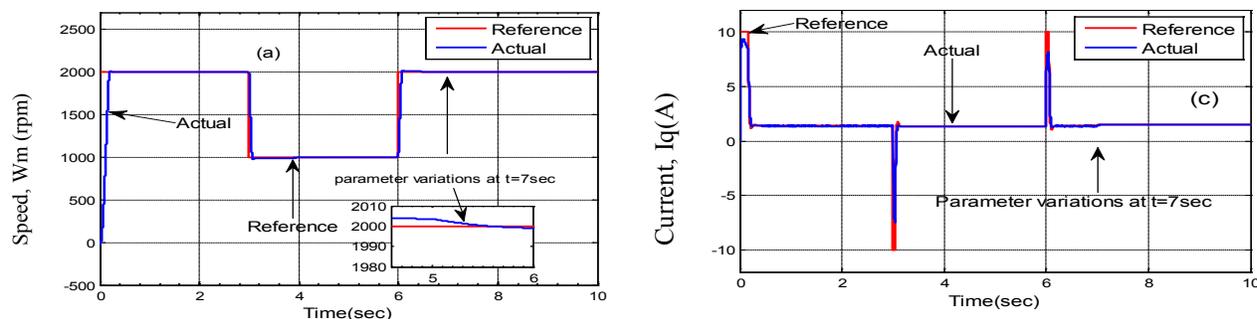
Fig. 10. (a) The simulated speed response of the PI based IM drive in case-3; (b) The simulated q-axis current response of the PI based IM drive in case-3

Conclusion

A simulation model of an adjustable speed drive of IM using the optimized Simulink blocks for an IFOC algorithm has been presented in this paper. The work presented has verified to be effective and valid for measuring IM drive parameters. Also, an educational tool in learning improvement of electrical machines course through the Simulink models for adjustable speed drive of 1 kW laboratory IM has provided in the method described. Moreover, all aspects of simulation implementation have been explored through the Simulink to give the student the opportunity to easy implement the IM drive. The system has been found to be well suited for simulation learning of the various motor control algorithms in advanced electrical machine laboratory for both undergraduate and postgraduate levels. The simulation results verify the effectiveness of the model.

Acknowledgements

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13th International Educational Technology Conference

Teaching Programming in the Higher Education not for Engineering Students

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Abstract

The algorithmic thinking is important in all professions, not just in the engineering work. My experiences show that the creating of the algorithmic thinking by the girls in secondary grammar school and in the higher education needs more time and other teaching methods. The numbers of the girls in not-engineering program is higher than in the engineering programs. I evolved a different (game-based) method to teach programming and to help them to acquire the algorithmic thinking easier for my not-engineering students. I thought programming for Economic information technology students with two colleagues. My colleagues used the conventional teaching methods that they use with engineering students in teaching programming and I used my evolved way and we had the same time to teach the learning material. At the end of the semester I separated the paper results of students by different teaching methods and compared. My starting hypothesis was that the group that I used my evolved teaching methods would achieve better results in the papers. Significance level was 5% through the analysis. Significant divergence in knowledge of students who took part on my lectures and the students who followed the conventional way was found. The students could get a one mark better paper results when they followed my method to learn programming and pass the test in higher percent. We can say my evolved teaching method is productive, and the students get better result when writing papers. At the beginning of the second semester more than 70% of students chose my course to learn the next level of programming.

Keywords: programming, teaching, algorithmic thinking, girl, higher education, method

INTRODUCTION

Economic information technology students of the undergraduate course Programming I get acquainted with the basic programming knowledge (structured programming) in PHP. The Hungarian students do not have chance to learn programming before finishing the secondary grammar school and make the final exam (Kiss, 2012a; Kiss, 2012b), except for the students specialized in Informatics.

My earlier personal experiences in Higher Education showed that the majority of the students can not acquire the algorithmic thinking by following the traditional teaching process and they do not have too much chance to pass it. Unfortunately, I am not alone with this feeling. Three of the expert participants claimed that the difficulty in understanding the concept of programming and coding is because of the ineffective teaching strategies used during problem solving and coding (Ismail, Ngah, Umar, 2010). We can see all students have different levels of computer usage abilities by same Information Technology Education in other countries too (Isman, Celikli, 2009, Gastelú, 2013). It is the reason, that I think the creating of the algorithmic thinking by the undergraduate students need more time, or other teaching methods.

First of all we need to see how the human memory is working (Bloom, B.S.; Engelhart, M.D.; Furst, E.J.; Hill, W.H. and Krathwohl, D.R., 1956), the taxonomy of learning, teaching, assessing (Anderson, Krathwohl and Bloom, 2001) and the levels of learning to guide the students through the process of learning (Hoffmann, 2011). The performance of programming ability and thinking skills of students needs hard and concentrated work by teachers (Kurland, Pea, Clement, Mawby, 1986) and also subject Programming is important to attend the didactical methods of mathematic too (Ersoy, 2005).

Using playing games in teaching programming is productive (Esper, Foster, Griswold, 2013) and the kids can take the advantage of the different teaching methods. The situation does not change by students. My experience

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shows the LEGO-Mindstorm is a very good tool for learning programming, because the students can construct a robot with different functions and write programs without syntax error (Kiss, 2010a). This tool is useful by teaching programming for girls too and the half of the economic information technology students are girls, who have more problems to learn programming (Kiss, 2010b) and they are not so motivated to learn programming than the computer science engineering students.

The subject Programming requires the logical and algorithmic thinking from the students and the teachers have to develop these skills in the students, but the teachers have to consider the motivation and the precognition of the students before starting to teach any topic.

Although I would be useful for the economic information technology students, I could not use LEGO-Mindstorm for teaching programming. I have to follow the formal of the programming subject and teach PHP as a first programming langue for these students.

I had an idea to write card games or dice games in my course. When the students could use the basic program elements like selection, iteration and can use the random generator in PHP after understanding the rules of the games, they could write a dice or a card games. The teacher can show the students how to use selection and iteration to build the ground for the game programs. For example the student play a dice game against the computer. The developed program generated randomly two (rolled) dice value, one for the student, one for the computer. We can choose a winner (who has higher value) by using selection. Another example can show how we can use the iteration combined with selection: the developed program generate randomly (rolled) dice values (more than one) for the two players (student and computer). The winner who has more rolled/generated "six" value. After this basic knowledge the students are able to combine these elements and write/develop complex game program with more rules.

We could not draw graphic for the game, we used just standard output opportunities to write the results after rolling the dices or taking a card and the computer was the second player with own decision progress. In this case the students could simulate a game against a computer. The students were very motivated to write different type of games (black jack, dice poker and so on) and they could understand easier how we can use the different programming elements to write complex program. The students were more interested for these examples than the traditional programming examples. I supposed those who learned programming by following this teaching method would have better paper results later. The economic information technology students attended the programming lectures held at same time in two groups. In the first group (group A) of lectures (36 students) I made the course by using the game oriented teaching methods while the courses for the second group (group B, 38 students) were followed the traditional way with normal examples from real life by my colleague who teach programming for computer science engineering students at the university. The learning material was the same in the two groups, just the type of examples and exercises were different. Now I wanted to know the usefulness of all the examples and exercises I used.

My starting hypothesis was that the group where the students followed the game oriented exercises would achieve better results in the papers.

After the semester I collected the paper results by groups and I tried to analyze whether this method was helpful or not for the students.

ANALYSING OF THE PAPER RESULTS

Some mathematical analysis was needed to decide whether using these game oriented exercises were helpful or not in understanding the lectures and get better paper results.

The Number of Participants in the Tests in the Two Groups and the Values of Mean and Std. Deviation

According to the table (Table 1.) the mean of the results of papers in group A is higher. This group wrote the papers with a better result. It does not give enough information to state that the use of game-based programming education results in better written tests because this can happen accidentally, too. So, we needed more analyzing to keep the chance of accident low. I used the IBM SPSS Statistics v.20 by analyzing the paper results.

Table 1. Group statistics of the test results

Group	Number of participants	Mean	Std. Deviation	Pass the test
A	36	2,72	1,28	82,9%
B	38	1,71	1,09	39,5%

If we spend more time looking at this table, we can see ~83% of economic information technology students who took part in the game-based programming education could pass the test and the students who used the traditional way of education passed the test in lower percent, but we still do not know if it is a coincidence.

Independent samples test

My null hypothesis was that the results of the paper written by the two groups of students would not differ significantly. Since we have two independent samples, we can use the independent sample test in SPSS to tell if the means of the paper of these groups differ or not (Table 2).

Table 2. Independent samples test of the test results

	Levene's test for Equality of variances		T-test for equality of means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	1,55	0,28	-3,67	72	0,00
Equal variances not assumed (Welch's t-test)			-3,66	68,85	0,00

An analysis of the results of the economic information technology students showed, the variance of two groups are different, because the value of Levene's test is not significant (p<0,05) (Levene, 1960).

In this case the means could be compared with T-test (Korpás, 2006).This showed difference between the means, because the value of T-test is significant (p<0,05). It means the use of the game-based programming education had influence on the results of papers of the economic information technology students.

Measures of Association by the Paper Results

Earlier, significant differences could be detected between the means of the papers written by the economic information technology students. It means it is profitable to make a deeper analysis to reveal the influence of the game-based lesson on the calculated means. I could reveal the influence with the calculation of the Eta-squared (η^2) (Cohen, 1973). The calculated value in percentage shows how much grouping influences the difference between means. Square root from the Eta-squared gives a value between 0 and 1 (η).

This shows the measures of association, i.e. how strong the connection between grouping and the achieved result is. The higher the value is, the stronger the connection is. In the next table we can see the calculated values and the strength of the connection (Table 3.).

Table 3. How strong the connections between grouping and the achived paper results

η^2	η	Strength of the association
15,8%	0,40	middling weak connection

Calculating the Eta-squared, I tried to make the effect of the web-based education on the result of the papers written percentable and got ~16%. This means there is a middle weak correlation existing between using the game oriented programming education and the results of the papers written by the students. It seems the students could take advantage of using a game-based learning method before the test. We can remember the students who took part in the game-based lessons could pass the tests in higher percent (83% vs 40%).

Conclusion

After the analysing process, we can say my starting hypothesis is correct; students get better paper results by using a game oriented programming education method.

The economic information technology students could take advantage of this learning method tool before the test. The students could get a one mark better paper results when they took part in the game-based lessons and the number of the students who could pass the test ~doubled. The reason for this could be the fact that the game oriented lesson was preferred by the students who were motivated to write different type of dice or card game programs and passed the test in higher percentage. Before the students need to know and use it well the basic program elements like selection, iteration and so on. The traditional way to teach programming for economic information technology students was not so successful than the game-based examples. The students were more motivated to write game programs and more students could pass the test. It means by same learning material and test exercises the student who learned programming in game-based method could have better paper results and pass the test in higher percent. The presented game-based teaching method is successful. The economic information technology students had to choose from two different courses to learn Programming 2 at the beginning of the next semester and my course was filled and closed in 3 minutes and the other was open days long.

Future work

One semester later the economic information technology students started to learn object oriented programming in JAVA, which needs other thinking method than the structured programming that the students learned in PHP.

It would be interesting to analyze the paper results to see the game-based learning methods working in this case too or not.

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Techi-Teaching: Productivity Analysis of Using Technological Devices in Teaching Business Subjects

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Abstract

This study aims to analyze the productivity and effective utilization of technological devices used by faculty members of the College of Business Administration of Bulacan State University, Philippines. Technological devices aids the faculty member in classroom instruction, report preparation and presentation, record keeping, updating and dissemination of information thru social networks, mobile communication and the like. With the integration of the these technological devices in the performance of the function of faculty members, this study will look into its contributory improvements or dis-improvements and bring to light its usefulness or uselessness and other issues that might impact the user itself.

Keywords: productivity; utilization; techological devices

Introduction

In the advent of technology explosion, faculty members are inclined to adapt their performance of duty for improvement and facilitate faster and accurate data and information recording. As technology devices are integrated in their function, the delivery of their services is expected to improve and may directly affect the effective discharge of their roles in the transfusion of knowledge process. But, both the faculty and the machine or technological devices are limited. The objective of this study is to measure the productivity of the faculty in terms of time consumed to prepare lesson plan, finish the discussion of scheduled topic of the day in a business subject, evaluation through quizzes, seatwork and the like, and calculation of final grades. This study also intends to measure the utilization of technological devices used by the faculty based on its expected capacity. In light of the foregoing objectives, the research may result to the measurement of the effectiveness of the faculty with the aid of the devices and the over or under capacity of the devices.

Research Problem

This study aims to measure the degree of productivity of faculty in performance of function with the aide of technological devices. Specifically, the study aims to answer the following questions:

1. What technological devices used by the faculty members in teaching business subjects?
2. What is the degree of productivity change in using these devices in instruction of faculty?
3. What is the level of utilization of these technological devices in performance of functions of faculty?

Literature Review

In a case study published in *The Technology Source Archives* at the University of Northern California, entitled Using Technology Productivity Tools in Teaching (Morrison, 1997), the integration of information technology productivity tools in instruction results to great improvement to the students' oral and written communication and competencies. In the advent of globalization and with a massive impact of telecommunication in the economy, as well as downsizing and reengineering in the workload, the students are expected to be technologically literate and able to lead their organizations in using technology to enhance productivity and learning. Although the experiment resulted to a successful improvement, the students' evaluation was low due to substantial incremental class workload and the author failed to convey the importance of written and oral communication skills and the use of technological productivity tools.

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Research Methodology

This study was conducted in the College of Business Administration of the Bulacan State University, Philippines involving thirty-five (35) faculty members. These faculty members are teaching business subjects to students from different courses and they were all using technological devices in one way or another. Survey method was utilized to quantitatively describe specific aspect of a given population. (Kraemer, 1991). The survey is used to gather data on the teaching load of the faculty, kind of technological devices used by the faculty and the frequency of time they spent in using these devices. An online questionnaire using Google documents was sent to their email if they were unavailable to answer the printed survey questionnaire. Individual and focused group interview was also utilized in the study to determine the time spent in every phase of instruction to analyze the productivity changes in terms of time spent by faculty. In some cases, a time log sheet were used to record their activity time spent and an observation was conducted to corroborate the time spent in preparing the lessons, discussion and evaluation of the students with and without the use of technological devices. A comparative analysis was conducted from these data to determine and calculate the changes in terms of time spent to finish each phases.

Research Instruments

The instruments used in this research were; a printed and online self-constructed survey questionnaire, equipment list from the College of Business Administration, time log for instruction observation, and a structured interview questions. The self-constructed survey questionnaire was used to gather data related to the number of hours rendered by the faculty, types of teaching devices used, and time spent in using these devices. This is a multiple choice survey questionnaire sent to the faculty via Google documents or personally in their faculty room. The questionnaire was answered in minimum time duration of about 3 to 5 minutes.

The equipment list from the College of Business Administration is used to determine the available teaching devices that can be provided to the faculty for instruction. This was used to determine the utilization rate of each technological device.

The time log sheet was used to record the time spent by the faculty under observation in the conduct of instruction. This is used only when the faculty was not available for personal interview or in a group interview. Both for with and without the use of technological devices, the time log were used.

The structured interview questions were used during one-on-one interview and focused group discussion with the faculty. This is to gather information on the time spent by the faculty in the different phases of instruction and to confirm or validate some data gathered in the printed and online survey questionnaire and the result of the observation. Also, descriptive or qualitative data that are not included in the survey questionnaire were collected during the interview.

Research Findings and Analysis

After summarizing the result of the questionnaire, the data revealed the most used technological devices by faculty as presented below. This data will be used to compute the utilization rate of each device to assess the sufficiency of supply.

Table 1. Technological Devices Used by the Faculty

Technological Devices*	F	%	Rank
LCD Projector	26	74	2
Laptop	30	86	1
Desktop	12	34	
Printer	19	54	3.5
Photocopying Machine	19	54	3.5
Digital Camera	5	14	
Mobile Phone	12	34	
Router (wifi)	9	26	
Tablet	12	34	
Lapel	0	0	

*multiple response

It can be gleaned from the table that Laptop is the most used devices by the faculty due to its portability. Since faculty transfer from one room to another during the change of class, they simply carry with them their personal laptops or the one provided by the college. And since lectures are already saved in their laptops, they find

it easier to present the topics or lessons. There is no need to rewrite it again in the board. Even during the class they can easily update their students records instantly. The second most number of responses is the LCD Projector. This implies that the faculty normally presents their lesson to a large class size, which is true in the university where class size ranges from 50 to 60 students per class. Normally, faculty borrows LCD projector from the college or if they have their own, they bring it with them during the class. The third and fourth most used devices are the printer and the photocopying machine. These devices aid the faculty in printing their lesson and disseminate it to the students in cases where the LCD projector is not available. Also, these devices are used to print quizzes, examinations and class records.

Utilization Analysis

Table 2. Utilization Analysis of Technological Devices based on Availability in the College

Technological Devices	Number of Units Available in the College	Total Number of Hours* Available per week	Average Number of Usage Hours of Faculty per week**	Utilization Rate (%)
LCD Projector	3	120	210	175
Laptop	1	40	420	1,050
Desktop	1	40	105	262.5
Printer	1	40	210	525
Photocopying Machine	1	40	210	525
Digital Camera	1	40	105	262.5
Mobile Phone	0	0	210	0
Router (wifi)	1	40	210	525
Tablet	0	0	105	0
Lapel	0	0	105	0

* 8 hours a day x 5 days x number of units available in the college
** based on the result of the survey

The table shows that almost all technological devices are fully utilized. In fact, it is more than 100% utilization, and therefore implies that there is insufficiency of available technological devices provided by the college. The excess of the utilization rate implies that the faculty provides their own devices used in their instruction function. Among the technological devices used by the faculty, laptop has the highest average usage time, and has the highest utilization rate and therefore very useful to the faculty. This also implies that faculty members of the college are becoming more reliant to this technological device.

Table 2. Recommended number of devices

Technological Devices	Number of Units Available in the College	Total Number of Hours* Available per week	Average Number of Usage Hours of Faculty per week**	Deficiency in time	Additional Units Needed***
LCD Projector	3	120	210	90	3
Laptop	1	40	420	380	10
Desktop	1	40	105	65	2
Printer	1	40	210	170	5
Photocopying Machine	1	40	210	170	5
Digital Camera	1	40	105	65	2
Mobile Phone	0	0	210	210	0
Router (wifi)	1	40	210	170	5
Tablet	0	0	105	105	0
Lapel	0	0	105	105	0

* 8 hours a day x 5 days x number of units available in the college
** based on the result of the survey
*** deficiency in time / total number of hours available per week per unit of device

Table 2 presents the number of additional units needed by the college to support the full utilization of technological devices by the faculty.

On the average, all faculty members render a total of 420 hours a week, or about 12 hours per faculty. The table below shows the utilization of technological devices within the hours of instruction of faculty.

Table 3. Utilization Analysis of Technological Devices per week during Teaching Hours

Technological Devices	Average weekly Teaching Hours of Faculty	Average Number of Usage Hours of Faculty per week	Utilization during teaching hours
LCD Projector	>9 but <15	>3 but <9	partial
Laptop	>9 but <15	>9 but <15	full
Desktop	>9 but <15	<=3	partial
Printer	>9 but <15	>3 but <9	partial
Photocopying Machine	>9 but <15	>3 but <9	partial
Digital Camera	>9 but <15	<=3	partial
Mobile Phone	>9 but <15	>3 but <9	partial
Router (wifi)	>9 but <15	>3 but <9	partial
Tablet	>9 but <15	<=3	partial
Lapel	>9 but <15	<=3	partial

As presented in the table, the faculty fully utilizes their laptops during instruction while other devices are partially utilized. This means that during instruction function, their teaching strategy is fully aided with technological devices and therefore makes them a techi-teacher.

Productivity Analysis

Table 4. Comparative analysis and Productivity Change

Activities	Average Time Spent		Difference in Time Spent (min)
	without devices	with devices	
1. Preparing and Conveying the Lesson Phase (i.e. reading and writing the lectures on the board and allowing the students to copy/preparing the power point presentation including set up of equipment/typing and printing and/or photocopying of lesson)	49 mins	120 mins	71 mins
2. Discussion Phase (i.e. explaining each topic in details, giving situational examples or applying sample calculation, interacting with the students thru question and answer)	87 mins	123 mins	36 mins
3. Evaluation of Students Phase (i.e. students were given quizzes, check it and record the score)	20 mins	30 mins	10 mins

The table above shows the average time spent by the faculty in each phases of instruction. It shows that in the preparation and conveying of lesson phase, the faculty took more time with the use of technological devices as compared to without the use of the devices with a computed productivity change rate of -1.45%. This implies that the faculty consumes more time in choosing and arranging or editing the topic from the source to the power point due to the fact they are not very much aware of the different shortcuts or functions. This includes choosing the amount of information to be included in the slides, rephrasing the sentence from the source, choosing the right font

size, color, font style and animation if necessary. Also, the faculty consumes more time in encoding formulas, tables, figures, operations and sample computations in the power point presentations. Other factors that increased the time spent are the set-up time, or the time used to set the projector and laptop; photocopying time and printing time. But, according to the faculty, it is more easy and convenient on the part of the students to have a copy of the lessons, since they can easily download it from their emails, group accounts, and social network site or simply reprint or reproduce for early distribution. And since the lessons in soft copy were available in advance, the students could study the topic before the scheduled classroom discussion.

The discussion phase shows that the faculty has more time of discussion and explanation of topic presented when technological devices are employed with productivity rate of 41%. This means that the time saved from writing the lessons in the board and allowing the students to copy were converted to additional time for more explanation and healthy discussion of additional topics. Also, since the topics are flashed on the board in a more concise form, and only a small space in the board is used, more topics were able to cover within the time allotted per meeting, and there is more space for writing of sample computation if necessary.

The student evaluation phase shows productivity rate of 50%, which means an additional time for the faculty to broaden the coverage of the quiz, seatwork or board work. The additional time available for evaluation is correlated to additional time saved from the discussion phase.

Result of the Interview

The individual and focused group discussion revealed other factors that affect the productivity of the faculty. In terms of preparing and conveying of lesson phase, the faculty states that they have difficulties in comprising as much information as possible in each slide, since the content in the slides is limited to the space available. On the discussion phase, they tend to focus on the topics flashed on board and forget other important information, which were not included in the slides but were provided in the source. The students also tend to limit their research and study on the topics included in the power point presentation only.

Conclusion

In general, the faculty of the College of Business Administration of Bulacan State University, Philippines is more productive when they use technological devices in their instruction in business subjects. Specifically, the study shows that there is a positive productivity in the discussion phase and evaluation of students phase during the instruction function of the faculty. The coverage of the discussion was broadened beyond the topics allotted within the day when the faculty utilized technological devices in instruction such as LCD projector, Laptops and printing devices. But since the preparation and conveying of lesson phase has a negative productivity, the study suggest that the faculty should be provided with ready-made power point presentation of topics in each business subjects to lessen the time of encoding and editing. A collection of the power point presentation of each subject should be maintained for updating and use of faculty. The research also shows that most of the technological devices are partially used during teaching hours. If funds will warrants, the technological devices needed to achieve full utilization of the faculty must be provided.

Acknowledgement

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Appendix A. Structured Questionnaire for Personal Interview

1. What technological devices do you use in performing your function as a faculty?
2. How often do you use these devices?
3. What are your considerations in choosing these devices?
4. In what area do you use these devices in performance of your function?
5. What are benefits or advantages do you derive from these devices?
6. How about disadvantages? If there is any.
7. Do you consider yourself productive? If yes, how did you say so? If not, why?
8. Do you prefer to use teaching devices? Why or why not?
9. Have you encountered any difficulties in using these devices in preparing your lesson, discussing it, and evaluating your students?
10. Have you encountered any difficulties in not using these devices in preparing your lesson, discussing it, and evaluating your students?

Appendix B. Self-made Survey Questionnaire
Name: (optional)_____
Please mark with check (/) the choices that correspond to your response.
Number of hours of teaching per week:
( ) 3 hours   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours   ( ) more than 27 hours

What technological devices you use in instruction?
1. LCD Projector	_____	6. Digital Camera	_____
2. Laptop	_____	7. Mobile Phone	_____
3. Desk top	_____	8. Router (wifi)	_____
4. Printer	_____	9. Tablet	_____
5. Photocopying Machine	_____	10. Lapel	_____

How many hours do you use theses devices in a week in instruction?
1. LCD Projector
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours   ( ) more than 27 hours

2. Laptop
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

3. Desk top
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

4. Printer
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

5. Photocopying Machine
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

6. Digital Camera
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

7. Mobile Phone
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

8. Router (wifi)
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

9. Tablet
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

10. Lapel
( ) 3 hours or less   ( ) more than 15 hours but less than 21 hours
( ) more than 3 hours but less than 9 hours   ( ) more than 21 hours but less then 27 hours
( ) more than 9 hours but less than 15 hours ( ) more than 27 hours

Appendix C. Time Log Observation

Faculty Name:_____ Activities	Average Time Spent		Difference in Time Spent (min)
	without devices	with devices	
1. Preparing and Conveying the Lesson Phase (i.e. reading and writing the lectures on the board and			

allowing the students to copy/preparing the power point presentation including set up of equipment/typing and printing and/or photocopying of lesson)			
2. Discussion Phase (Explaining the each topic in details, giving situational examples or applying sample calculation, interacting with the students thru question and answer)			
3. Evaluation of Students Phase (Students were given a quizzes, check it and record the score)			

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Technology Applications Used by First year Undergraduates in a Malaysian Public University

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Abstract

Malaysia has embarked Malaysia has embarked on several ICT programmes since 1996. These programmes have contributed to developing the ICT skills of the digital natives in the institutions of higher learning. This study was aimed at determining the technology applications which digital natives in the first year undergraduate studies in a Malaysian public university had utilized. A survey of 50 undergraduates in their first semester in the Faculty of Education showed that social media in the form of microblogs like Facebook, was used by all the undergraduates. Popular applications are repositories for video, mainly Youtube; website development, namely blogs; discussion tools, as well as maps and location applications. File sharing, online games and digital materials were used by some of the undergraduates but were less popular. The findings show that microblogs, discussion forums, content repositories and blogs were used by digital natives. The significance of this study is that these undergraduates were more likely to use these applications for learning, and in their careers when they graduate.

Keywords: Information communication technology tools; digital natives; technology use, software applications

Introduction

Media has been used to deliver lessons effectively. Audio-visual (AV) aids were used in Malaysia since the 1950s (Shamsuddin Hassan, 2012). The advent of educational radio, *Radio Pendidikan,* in 1966, and educational television, *TV Pendidikan,* in 1972 saw a further increase in the use of teaching aids in schools (Shamsuddin Hassan, 2012). The advancement in the field of technology has transformed media from the analogue form to the digital form. During the Smart School Pilot Project (1999-2002), teaching-learning materials in the form of browser-based courseware were developed for access on the school's Local Area Network (LAN), and was complemented with courseware on CD-ROMs (Ministry of Education, 2001). This was the era of browser-based courseware for learning (Roblyer & Doering, 2010). When the internet era commenced in 1994, the shift was towards delivering learning objects and digital materials such as educational videos (www.eduwebtv.com) online. These digital materials could be accessed through online learning portals.

The Ministry of Education had initiated several ICT programmes for computer literacy before embarking on the Smart School Pilot Project in July 1996: 'Introduction to computer', 'Computer Literacy Project', and 'Computer Assisted Learning' Project (MOE, 2001). The Smart School Pilot Project was a project which integrated the various aspects on the use of technology in schools for the 88 pilot schools. Both the teaching and learning processes as well as school management was catered to in the Smart School Integrated Solution. The Smart School concept was rolled-out to all schools following the end of the project (Multimedia Development Corporation, 2006).

The Smart School Pilot Project and other computer projects, such as the School Computerization Project (*Projek Pengkomputeran Sekolah*), assisted in introducing Information Communications Technology (ICT) faciliticies in schools, The SchoolNet project provided all schools with internet access, and the policy of teaching Mathematics and Science in English helped in equipping the infrastructure in schools as laptops and LCD projectors with courseware for teaching mathematics, science and English language were provided (MOE, 2008)

The undergraduates students in our universities are the digital natives who have been exposed to the use of computers and its applications for learning. They should be skilled in the use of ICT applications usch as word processing, spreadsheets, and digital editing tools. In addition, these digital natives would have used social media and online repositories of knowledge to gather information for learning.

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Objective of the study

This study provides an insight into the technology tools and applications undergraduates in their first semester in the selected public university are familiar with in order to answer the research question: What technology tools do first-year undergraduate students in a Malaysian public university use?

This study is important, firstly because lecturers need to be aware of the digital literacies of the digital natives they are teaching. This will in turn assist lecturers in planning and designing useful instructional experiences for the digital natives, optimizing the tools they are familiar with for learning.

This study is also useful for university administrators and policy planners can determine what systems need to be put in place for the strategic planning in producing a critical thinking and creative technology–literate work force. Effective staff development programmes can also be planned to equip lecturers with the technology skills to face these digital natives.

Finally, it is important for teachers in secondary schools as they would be aware of the technology applications their students have used in school before being enrolled in institutes of higher learning. Teachers could also determine how these tools can be optimized in schools for teaching and learning.

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Digital Natives

The students in the school system are the digital natives who are more knowledgeable than their teachers in using ICT tools (Prensky, 2001). These natives were raised in an environment which applies technology, both at school and outside school for teaching and learning, social interaction and entertainment. (Gu, Zhu, & Guo, 2013). Most digital natives have easy access to computer and internet connection and use ICT tools intensively and more effectively than digital immigrants (Jones, Ramanau, Cross and Healing, 2010; Balkan Kiyici, 2012; Lei, 2009). Digital natives are able to multitask, prefer multimedia to text, can process information rapidly and view technology as friend (Prensky, 2001). Hence there is a need for teachers who educate digital natives, to recognise the abilities of digital native abilities so as to make teaching more effective and productive (Pinheiro and Simões, 2012).

Research has shown that students use ICT for a longer period at home as compared to school (Gu, Zhu, & Guo, 2013). In addition, high school students used ICT more than primary school students, both in school and out of school (Gu, Zhu, & Guo, 2013). Girls scored significantly higher than boys for in-class use of ICT, while boys had significantly higher scores for use of ICT out-of-class (Gu, Zhu, & Guo, 2013). It was interesting to note that Gu, Zhu, & Guo's (2013) study showed that digital natives in Shanghai did not use more ICT than their teachers, but accessed more ICT applications and used a larger variety of tools at home than at school. In addition, these students had higher self-efficiency and ICT competency on ICT (Gu, Zhu, & Guo, 2013).

Availability of ICT facilities in students' home is strongly related to students' ICT usage (Gümüş, 2013). Hence, initiatives to increase ICT programmes in schools, such as programmes implemented in Malaysia, will be effective in increasing opportunities for students to be involve in ICT-related tasks. On the other hand, increasing the hardware, such as the number of computers or other ICT devices, does not contribute to the students' usage of ICT (Gümüş, 2013). More important is the development of human capacity for both teachers and students.

ICT competency is important for teachers and teacher trainees. A study of Science teacher trainees who are digital natives showed that those who could use ICT tools at an expert level were more likely to use these tools in their teaching activities (Balkan Kiyici, 2012). Hence, it is advantageous for teacher trainees in public universities to use ICT throughout their undergraduates' studies for them to be expert users of ICT in schools.

Applications Software

Social Media Tools

Social media tools, or Web 2.0 tools refers to the interactive use of the internet in which tools where the user can contribute to in terms of generating content, promoting collaboration and interaction as well as sharing new knowledge (Balkan Kiyici, 2012; Oliver, 2007). The highest usage of ICT tools among Turkish science teacher trainees was social media. The use of instant messaging was popular, while least popular were blogs and wiki

(Balkan Kiyici, 2012). Although teacher trainnees used wiki, they were passive users who just read wikis but did not contribute (Balkan Kiyici, 2012). Although there was a difference in the use of image and document sharing between the gender, with males using it more than females, there was no significance difference in the use of blog, wiki, social networks and instant messaging among gender (Balkan Kiyici, 2012).

The media for social interaction and communication, or social media, affords social interaction and dialogue between peers, as well as between experts and learner. In this study, social media tools considered are emails, forums, chats, blogs and microblogs, wiki and Youtube. The tools allow for media content to be shared and for interaction to take place.

Interactions through e-mails allow for messages to be transmitted immediately to an individual or a group using attachments of document, audio and video files. Google or Gmail, and Yahoo mail are examples of free email services. This relative control of privacy and readership allows discussion to be on a more personal nature (Andrews & Haythornthwaite, 2009).

Forums provide a platform for discussion, dialogue and social interaction where questions and suggestions to solutions can be formed. Forums are also learning communities for support, which has features such as threading of postings and groupings of topics for easy review (Andrews & Haythornthwaite, 2009).

Instant messaging or chats are immediate text-based interaction delivered either through the internet or short message text (SMS) on mobile phones. The number of characters or words is limited. Yahoo Messenger, Whats Apps, Google Chat, Facebook Chat, and online conferences and online games have the chat feature combined (Andrews & Haythornthwaite, 2009). The privacy settings can be adjusted to the intended audience.

Blogs are an abbreviation of Web logs and is a diary of events or a personal journal published on a web page on the world wide web. Blogs written by experts on topics of interest may have followers from a community of practioners. Edublogs exmples are Cerita Ginggo and E-learning Coach. Blogs in different media can also be distinguished: video logs are vlogs; a log of links is linklog, and of photos is a photolog; and blogs writen on a mobile device is a moblog. Example of platforms for blogs to be created are Blogger and Wordpress.

Mircoblogs such as Twitter and Facebook enables logs in the form of status posts, or tweets with a limit on the file size on the text, graphic and video posted. In Twitter, a follower of the Twitter account holder to receives tweets in text form. Photo and video links can also be tweeted. Facebook enables friends to view, like and comment on status posts and share text documents, photos and videos can be uploaded and shared.

A wiki is a website or webpage for collaborative writing as users contribute to building the website by adding new pages and information. Wikis are useful for collaborative writing and problem-solving tasks as learners collaborate in publishing their work, they not only gather information by representing it in a new way, generating novel ideas and knowledge (Bonk, Lee, Kim, & Lin, 2009).

Repository For Information and interaction

A repository is a platform for storage of digital content. Repositories may be specific video repositories, such as EduwebTV are for curriculum materials and related guidelines issued by Ministry of Education (MOE, 2008), TED Talks for inspirational talks by famous people; Teacher TV for teaching resources.

YouTube is considered a repository for materials and many instructional resources can be found on YouTube and on the Teachertube channel. However, the quality of the material may be questionable as the content is user-generated and there is no quality control. Both Blogs and YouTube have features such as interactivity, where comments and questions can be given online. Social interaction can continue through comments on the uploaded video, and is also considered as social media. However, because of its storage capacity, we classify it as a repository. Blogs and some social media tools like Facebook can be used for storage or links to videos and other learning materials. These are almost like a repository of content materials but offer limited storage.

Content Interactive Tools

The interactions in content interactive tools are limited to interaction between learner and content (Moore & Kearsley, 2005). It differs from social media which affords social interaction among peers, between experts and learner. These content interactive tools are the mindtools (Jonassen, 2000) which encourages the cognitive processes to occur.

Glogster, a graphicblog, which forms a portfolio to summarize, organize and present content and information in a visual manner. The interactivity enables learning to take place. Padlet is another interactive mindtool which

enables postings in the form of "stickies" to be made on a wall and allows brainstorming, concept formation and comparisons to be done. Wordle is a category of online web resources called **"**Word clouds" in which words and paragraphs of text are converted to visuals. Higher level skills such as concept and principle formation are developed. Google Earth is an online interactive portal which uses satellite images for virtual learning in an environment controlled by the user. The learner can experience moving in different parts of the world and control the experience.

Content Development Tool

Content development tools are tools used to develop digital materials in the form of learning objects to be linked to repositories and learning management systems like *Spectrum* and, FrogAsia. Some tools are *Storybird* (for digital stories), Bitstrips (for cartoons), and Camtasia (for video screen captures). The advantage of using these tools is that the animation and graphic features engage young learners. Web pages are also content materials in the form of hypermedia which is published on the world wide web.

   User generated content, developed by teachers for instruction or assigned to students for learning can be developed using these tools. The benefits of employing user-generated content for learning is that is that the users, or students are actively engage in the construction of knowledge, and allow for the development of soft skills as they collaborate on their projects (Balkan Kiyici, 2012; Mason & Rennie, 2007). This in turn motivates and engages the student.

Method

Sample

First year undergraduate students in their first semester in a public institution of higher learning were selected to participate. The students were new to life in the university as they had completed their standardized examinations in school several months earlier.

Instrument

   An online survey form was prepared using Google Drive application, and the url was posted as a link for students to access during their coursework. The instrument listed the major applications and ICT tools such as mircoblogs, repositories, discussion groups, collaborative workspaces, website development, file sharing, website and digital materials development, online games and maps-location which the student might have used. Specific tools, such as Facebook, Twitter and Google+ was suggested and there was a open-ended option where the student could add other tools that might have been used. The survey was done to indicate the applications the student as a digital native has used.

Results

The use of ICT tools among first year undergraduates was high (Figure 1). The survey showed that all undergraduates (100%) used social media in the form of microblogs. This was followed by video repositories (97.2%), discussion tools (91.7%) and maps and location (88.9%) and website development (86.1%). Almost two thirds of the undergraduates surveyed participated in file sharing (69.4%), online multi player games (66.7%), and development of digital materials (66.7%).
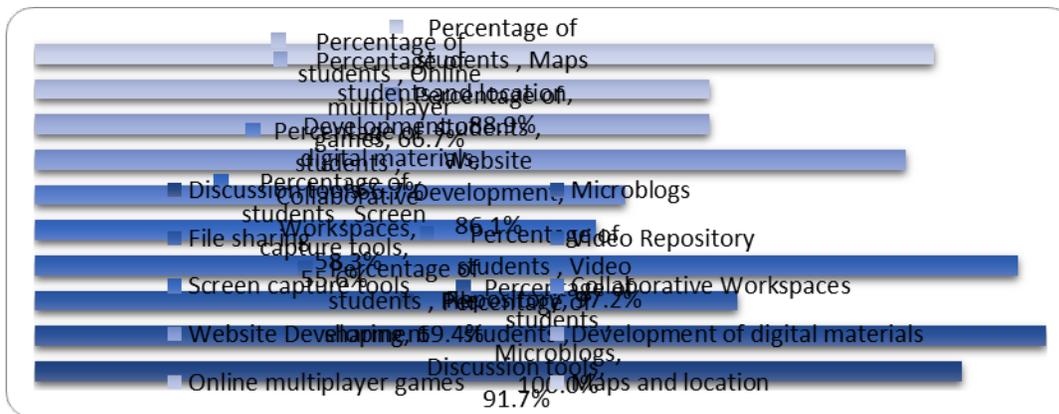
Figure 1: Use of ICT applications among first year undergraduate students in the Faculty of Education

A survey of the technology tools which were actively used showed that some tools were more popular than others. The most highly used tools is tabulated below (Table 1) The social media tool in the form of microblogs: most popular is Facebook (97.2%) while Twitter was less popular (36.1%). Among the video repositories, only Youtube was the prominent tool (97.2%). Discussion tools which were actively used included Skype (58.3%) and Yahoo (58.3%), while chat tools like MSN (33.3%) and WhatsApps (30.6%) had lower usage. The prominent Map and location application was Google Maps (86.1%), while other Global Positioning Systems (GPS) for location such as PaPaGo (22.0%) was also used. Website development tools were also used, with blogs being the most prominent application (77.8%). The other website development tools which were less user-friendly was lower in use.

Table 1: Technology Tools Highly Used by Undergraduates

Technology Tools	Percent
Microblogs	
Facebook	97.2
Twitter	36.1
Goggle+	77.8
Others	8.3
Discussion Tools	
Skype	58.3%
Yahoo	58.3%
MSN	33.3%
WhatsApps	30.6%
Freewebs	8.3%
Video Repositories	
Youtube	97.2%
TEDtube	2.8%
Teachertube	5.6%
Others	2.8%
Maps and Location	Percent
Google Maps	86.1%
Google Earth	30.6%
Waze	13.9%
Others	22.2%
Website Development	Percent

Blog	77.8%
Frontpage	13.9%
Freewebs	13.9%
Dreamweaver	11.1%
Others	2.8%

Other technology tools were used less but had significant numbers of students using is also listed (Table 2). File sharing applications were moderately popular with SlideShare (36.1%) and Tumblr (30.6%), followed by Photobucket (25.0%). The application the undergraduates were most familiar for collaborative work online was Google Documents (52.8%). Other wikis were used less often. The online games which were surveyed was limited to multi player games in which the most popular was Farmville (50.0%) which might indicate that the social media tool which hosted the game, in this case Facebook, was popular among undergraduates for entertainment. World of Warcraft was one of the massive multiplayer online role playing game (MMORPG) more popular among the serious game player (19.4%). As for development of digital materials, Flash was the most popular (50.0%). It was also interesting to note that audio editing applications such as Soundforge (5.6%) and Audacity (13.9%), was also used. In addition screen capture tools such as Screenr and Jing were being used.

Table 2: Other Technology Tools Used by Undergraduates

File Sharing Application	Percent
Photobucket	25.0%
Tumbler	30.6%
Dropbox	11.1%
Prezi	8.3%
Slideshare	36.1%
Collaborative Workspaces	**Percent**
Goggle Documents	52.8%
PBWiki	11.1%
Seedwiki	2.8%
Role playing games	**Percent**
Farmville	50.0%
Maplestory	13.9%
World of Warcraft	19.4%
Second Life	8.3%
Runescape	5.6%
Shadow Vanguard	2.8%
Others	11.1%
Development of Digital Materials	**Percent**
Macromedia	16.7%
Authorware	5.6%
Flash	50.0%
Audacity	13.9%
Exe	16.7%
Sound Forge	5.6%
Screen capture tools	**Percent**
Screenr	41.7%

Jing	22.2%
Snagit	2.8%

Discussions And Conclusion

Digital natives of the twenty first century are immersed in the use of technology. Social interaction is very important as blogs, microblogs, discussion tools and video repositories with social interaction were used by many. It is interesting to note that online social interaction was lacking in the teaching and learning materials developed by the Ministry of Education in the 1990s, but the digital natives have naturally undertaken this *digital socialization*.

The digital natives used tools which had a purpose. Maps and location finders such as Google Maps and Global Positioning System (GPS) devices, such as Gamin and PaPa Go were used. In addition blogs were used to develop their own content. Although less popular, digital content was also shared as well as developed by the digital natives. The culture of user-generating their content is not new to the students.

The implication of this study is that in institutes of higher learning, digital natives are highly socially interactive and used technology for a purpose while developing their own content. Lecturers in these institutes of higher learning should optimize these characteristics and design lesson that require online interaction to engage their students. In addition, opportunities for these learners to create user-generated digital materials may have attractive results. Further studies could be done to determine if the digital content generated by these digital natives were suitable and could fulfil their objectives. And what media was preferred in generating digital content.

This study also shows that teachers in schools could optimize their students' skills for social interaction and user-generated content to design their lessons for integrating ICT. The students were already using the internet for social interaction and developing digital content. Could not the students develop their own digital content for project-based learning? This may internalise learning and make learning more meaningful and relevant. This is relevant now as the Ministry of Education has provided a learning management tool for social interaction and storage of digital content, FrogAsia, which can be used by both teachers and students.

This study is significant as it shows the technology tools, and games, being used by the digital natives at present. The tools which are used by the digital natives may differ after three years in the institution of higher learning, and when they start to work. New tools may be developed and new literacies may be required. Teachers and lecturers will need to be aware of the changes in the world of technology and update themselves to take advantage of what technology has to offer.

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13th **International Educational Technology Conference**

Technology transfer training in the Czech Republic

– pilot of European certification

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Abstract

Low qualification of Technology Transfer professionals has been identified as a significant obstacle to improvement of TT in the CR. Trainings in this field are numerous but unsystematic and lack necessary quality standards. Situation being similar in many EU countries, EC funded two projects aimed at establishing standards for accreditation of TT training providers and certification of their students. As their outcome EuKTS was launched as EU-wide TT accreditation and certification body. The paper reports implementation of this initiative in the Czech Republic: in three related projects more than 900 students were trained and about 300 obtained the EU certificate.

Keywords: knowledge and technology transfer; accreditation; certification; training quality standards

Introduction

European Union pays a great deal of attention to improving competitiveness of its economy. In its Lisbon strategy approved in 2000 (Presidency Conclusions, Lisbon European Council, 2000) and again in its Europe 2020 strategy (Europe 2020, 2013) approved recently and still tuned, necessity to build knowledge-based society is stressed. An important role in this endeavour is attributed to increasing intensity and efficiency of the technology transfer (TT), nowadays more often denoted as transfer of knowledge and technology (KTT), between academia and industry and valorisation of R&D results by their practical utilization in all fields of industry and services. However, in spite of billions of EURs allocated to reach this goal, results are still regarded as not fully satisfactory (State of the Innovation Union 2012, 2013).

Czech Republic is a small country in the heart of Europe (10,5 million of inhabitants, area of 78 867 km^2) with long and colourful history. It has fairly educated populations and comparably robust R&D base of universities and other research facilities. It has become a member of EU in 2004 and currently occupies an average position among the EU countries in majority of parameters scoring the competitiveness, innovativeness, productivity of labour etc. Problems with low intensity and effectiveness of TT (KTT) and hence insufficient valorisation of knowledge resulting from R&D activities of its universities and research institutes trouble its government and scientific representatives equally, if no more, than officials of the European Commission (EC) and governments of many other EU countries.

Various analyses have been performed in the last decade on the EU as well as on the member states´ level aimed at finding out and analysing reasons of this unsatisfying situation and proposing appropriate measures for remedy. As early as in 1995, ERAC (European Research Area Committee, formerly CREST) has been established as a strategic policy advisory body of the European Commission and the Council of the European Union for research and technological development (see: Council of the European Union: Resolution on the developments in the governance of the European Research, 2010) and it has made many recommendations in this respect since. In the Report of the CREST OMC Expert Group on Intellectual Property (2006) is stressed, among other, that significant problem lies in the insufficient and unsystematic training of TT/KTT professionals in the EU. It pointed out namely

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- lack of TT/KTT skilled people in general,
- absence of registered TT/KTT profession,
- absence of TT/KTT education / training standards recognised,
- absence of career path for TT/KTT professionals

and gave several strong recommendations how to improve this weakness.

Cert-TTT-M and EuKTS projects

As a reaction to findings and recommendations of CREST (ERAC) in the field of training of TT/KTT, a bottom-up initiative has arisen among EU institutions interested in active promotion of TT/KTT professionals. It gave birth to two subsequent projects (funded from FP 6., and FP 7., respectively) that have marked out the direction how to implement the CREST (ERAC) recommendations.

Cert-TTT-M project

Already in 2006 consortium of 11 members coordinated by Austria Wirtschaftsservice GmbH (and bolstered by experts from nine other renowned institutions later on) designed a project Certified Transnational Technology Transfer Manager (Cert-TTT-M project, 2011) that won funding for its realization from FP 6. The project started in 2007 and was terminated in early 2009. Its aim was

- to create a training framework for technology transfer managers in order to professionalize their role,
- to help to create a more defined career structure for them and to assist with mobility of managers within the European Union,
- to provide a legal and organizational framework for the mutual recognition aiming at accreditation of the course on a pan-European level.

These goals were successfully reached and thus in this project a framework to qualify TT(KTT)-managers on a trans-national level and with mutual recognition in Europe has been built up.

EuKTS project

From Cert-TTT-M project grew up another project entitled European Knowledge Transfer Society (EuKTS project, 2013) financed from FP 7. In this project 14 European institutions, mostly participant in the Cert-TTT-M project, joined efforts under co-ordination of ERDPA (Emilia Romagna Region, Italy). Its realization started in 2010 and ended up in early 2013.

The original aim of this project was elaboration of a detailed Feasibility Study how to implement outcomes of the Cert-TTT-M project. During its realization, however, this aim was substantially extended to more ambitious one – not only the way how to build up the EU-wide structure for accreditation and certification of TT/KTT professionals was elaborated in detail, but also the accreditation and certification body (EuKTS, an association under the Belgian law) was launched and properly registered, and three pilot accreditation and certification projects were realized at the Charles University in Prague, University of Bologna, and Management Center Innsbruck (affiliated to Innsbruck University).

TT/KTT Curriculum

The pivotal role in the devised system is played by the "EuKTS TT/KTT curriculum" (EuKTS official brochure, 2013). It defines eight basic competences that should be mastered by TT/KTT professionals:

- Information analysis and management
- Strategy and IP portfolio
- Intellectual Property protection
- Opportunity assessment and valuation
- Knowledge transfer and innovation marketing
- Negotiation and contracting
- New businesses development and financing
- Project management

These competences are industry independent, it is supposed, however, that for different industry specializations, as well as for different TT/KTT the depth and broadness of mastering of these competencies may be different.

Moreover, the competencies are further structured into two levels – basic and intermediate – in accordance with structured certification levels (see below). Detailed breakdown of all competencies into teaching themes has been developed for both levels.

System of training and recognition of TT/KTT professionals

The system for accreditation and certification of TT/KTT professionals consist of two basic components:
- accreditation of training providers,
- certification of successful trainees (students).

Accreditation for training in TT/KTT according to EuKTS curriculum is granted to training providers upon request. The accreditation process encompasses demonstrating of the teaching curriculum compatible with the EuKTS curriculum, teaching history and capacity, as well as availability of qualified teachers. International committee supported by verdict of a local expert has the final word.

Certification of trainees – TT/KTT professionals is performed on three levels: basic, intermediate and advanced. For the level basis, which can by taught in any local language, is certification awarded by the training provider after successful passing the multiple choice quiz. The title for professionals certified on this level is "associate". Certified TT/KTT professionals are then registered with EuKTS. For the level advanced, which can be taught only in English, the certification is awarded directly by the EuKTS after successful passing the standardized multiple choice quiz. The title for TT/KTT professionals certified for this level is "professional". Certification for the level advanced is awarded by EuKTS on the basis of general assessment of the applicant by an international jury. The title granted to TT/KTT professionals certified for this level is "expert".

The whole system of certification developed by EuKTS is depicted in the Figure 1.
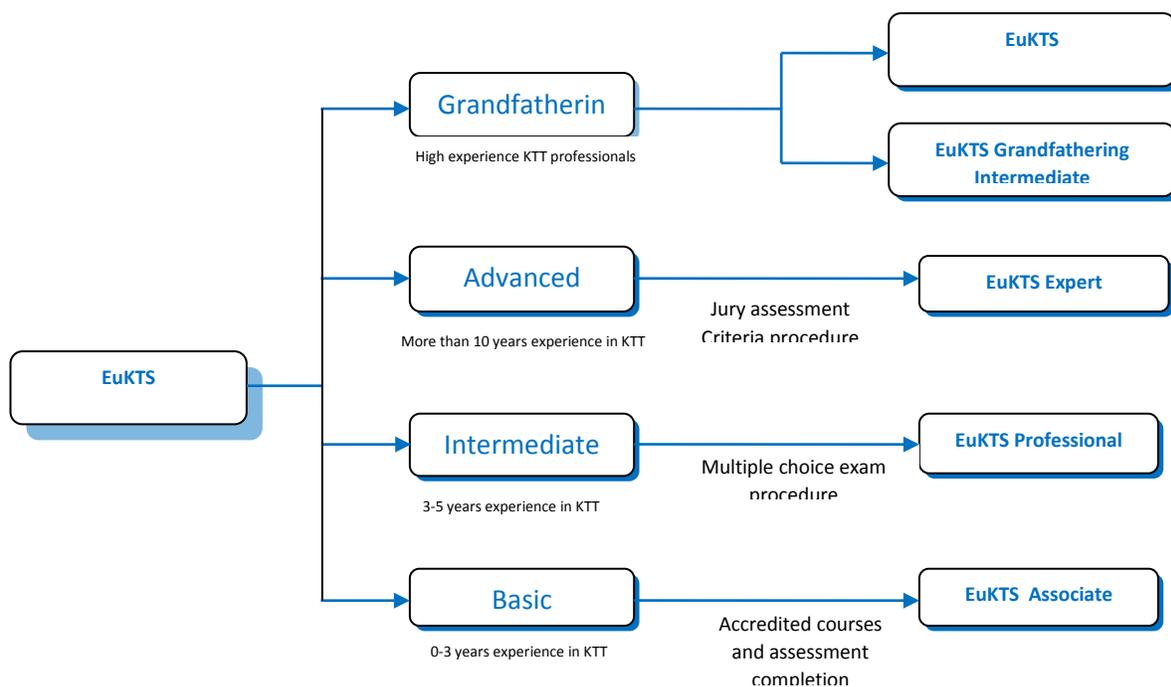
Fig. 1.: EuKTS certification scheme

The three certification levels described above are supplemented here by a fourth "grandfathering" level important for the take-off of the system, when at the beginning there will be virtually no certified TT/KTT professionals on higher levels. It is also intended for awarding of high qualified life-long experienced TT/KTT professionals who cannot be expected to pass the certification system from the very beginning.

Take-off and deployment of the whole accreditation/certification structure is a question of today. More than 30 institutions from 15 EU countries + Turkey, Macedonia and Serbia already expressed their interest to enter the scheme. Intensive discussions on further funding of the take-off (the structure is supposed to be self-financed from the accreditation and certification fees in the mature state) and official recognition by the EC authorities are going

on. The latter is a bit hampered by similar activities of ATTP (http://www.attp.info), but reasonable way of co-operation and mutual recognition of both systems is already on the horizon. Hopefully, in the next EU planning period (2014-2020) we shall see full deployment and thriving of the devised system.

Pilot implementation in the CR

Authors of this contribution participated in both Cert-TTT-M and EuKTS projects, first as external experts and later as representatives of the Charles University in Prague. Access to funding from EU Structural funds together with the close contact with the EuKTS "think tank" rendered them possible to initiate three successive projects in KTT training in the years 2009 – 2014. These projects originated first at the Charles University in Prague followed by the Biological Centre of the Czech Academy of Sciences in České Budějovice (South Bohemia), where subsequently another 9 partners entered them.

Thanks to close coordination of these projects with EuKTS project the Charles University won a chance to register the junior level of these training as pilot project for EuKTS accreditation on the level "basic", which paved the way for awarding a part of students by the EuKTS certificate.

As already mentioned, similar pilot projects were also realized at the University of Bologna and Management Center Innsbruck, but the number of registered and certified students was significantly lower there.

Structure of the teaching projects

In these teaching courses the curriculum followed strictly the EuKTS curriculum. Because of historical reasons the levels "basic" was labeled as "junior" and level "advanced" as "senior". The level "expert" was modified – instead on peer assessment it was developed as "project-based".

Teaching method used a blended model with introductory and closing seminary and tutored distant learning. Each course was composed of 16 to 24 modules devoted to all important topics of TT/KTT theme. One third to one half of modules have been explanatory texts, while another half or even two thirds of modules have brought the case studies.

Project KTT in the regions I

The first project of the series, which was realized in the years 2010-2012, was entitled Knowledge and Technology Transfer in Selected Regions based on European educational model "Technology Transfer Manager" (abbreviated "KTT in regions I"). It relied heavily on experience of the Charles University in Prague in teaching KTT accumulated during preceding project IPUK, which was realized in the years 2006-2008. In this project a blended teaching model with strong distant component (using MOODLE e-learning platform) was successfully tested and a core of trainers in all necessary specializations was formed.

The main coordinator of this project was Biological Center of the Czech Academy of Sciences in České Budějovice, Charles University in Prague, as the main bearer of the know-how, was a partner. Six other partners including the South-Bohemian University joined the project and send their students to the courses. ILA s.r.o. was a managing partner and the professional supervisor of the project. A part of students of the "junior" level, who passed successfully special tests, was awarded the EuKTS certificate for the KTT level "basic". The project was financed from Operational Program Education for Competitiveness funded from European Social Fund.

Project KTT at the CUNI

The second project of the series called Transnational Technology Transfer Manager - Application of European Educational Model at Charles University in Prague (abbreviated "KTT at the CUNI") was fully engaged with 14 faculties of the Charles University located in Prague. It was realized again in 2010 – 2012. In this project were no partners, its structure and teaching method was very similar to the preceding project. Experts of ILA s.r.o. guaranteed the high level of the courses. Also in this project a part of students of the "junior" level, who passed successfully special tests, was awarded the EuKTS certificate for the KTT level "basic". The realization of the

project was financed Prom the Operational program Prague – Adaptability, funded again form the European Social Fund.

Project KTT in the regions II

The third project Knowledge and Technology Transfer Manager – Extension of European Educational Model "Technology Transfer Manager" in other regions in the Czech Republic (abbreviated KTT in regions II) started in 2011 and it is still running on until February 2014. It was launched by the Medical faculty of the Charles University in Pilzen. Its structure and teaching method was very similar to preceding two projects. In addition to the Charles University, other three partners joined the project - University of West Bohemia in Pilzen, University Hradec Králové, and ILA s.r.o., who again guaranteed the high level of the teaching. Also in this project a part of students of the "junior" level, who passed successfully special tests, has obtained the EuKTS certificate for the KTT level "basic". This project is also being financed from Operational Program Education for Competitiveness funded from European Social Fund.

Number of students

Number of students that were registered and passed successfully the tests in all training courses in aforementioned three projects up to date is summarized in the following table:

22. Table 1. Number of successful students

Project	Level Basic			Level Advanced		Level Expert	
	Registered	Passed	EuKTS certified	Registered	Passed	Registered	Passed
KTT in the regions I	144	93	27	82	64	14	5
KTT at the CUNI	112	68	18	42	37	2	2
KTT in the regions II	344	277	256	238	?/*	3/*	?/*
Total	600	438 (73 %)	301 (50,2 %)/**	362	101/*	19/*	7/*

/* The number is not final as the last courses "S" and "E" in the project KTT in the regions II are still going on.
/** EuKTS certification of the courses "S" was available only for the second runs.

Number of students registered and their positive reaction in feedback questionnaires confirm that both the substance and the form of courses have been rather popular. Average success rate in the course basic (that are all completed now) has been about 70 %.

Lessons learned

As each course was repeated twice in each project, it was possible to tune the teaching materials with respect to students´ reaction. Among many interesting findings following main conclusions were made - the first of which resulted in rather considerable reworking of the teaching courses:

1. The first version of the teaching materials was descriptive and rather dry. After repeated remarks and complaints of students many case studies were added, not only "success stories", but also "brilliant failures stories". These studies were tied with the explanatory text into an organic "flow of knowledge". Reaction of the student was much more positive thereafter.

2. The students coming from different scientific branches were lost in the specific KTT terminology, thus asking for an explanatory dictionary, which has been added to the introduction of the 2nd run courses.

3. In the last course the budget was cut by the regulatory body so that the tutors for the distant learning were not available. Alas this resulted in considerable decrease of the course quality and commitment of the students. Unfortunately, it was not in powers of the course designers to correct this failure, but importance of tutors is a message for the future continuation of teaching activities.

In addition to these conclusions another interesting finding concerns the accreditation of teaching providers. All the trainings were in fact realized under one umbrella of accreditation obtained by the Charles University in Prague, though they concerned several different institutions. In the pilot project it caused no harm, but in the mature state of the accreditation and certification system the same approach would reduce the number of accredited bodies, bringing thus considerable decrease of accreditation fees for the accreditation body (that is EuKTS). This problem has not yet been solved.

Conclusion

Accreditation of KTT training providers and certification of their students in Europe is still in its early stage. The foundation has been laid, but there remains a lot to accomplish. Current state of the art is encouraging: system for accreditation and certification has been worked out and is being step by step implemented. Its formal recognition by the European Commission is being negotiated. Curriculum for KTT professionals training is generally consented and developed and improved further on. Hopefully also appropriate funding is found for take-off of the whole process. Experience gained in the pilot projects realized in the Czech Republic, where more than 900 students were registered, more than 400 of them successfully passed the tests in the course basic, and 301got the EuKTS certificate for this level, shows interest of students in EU accredited courses and their positive reaction to the devised curriculum. It discovered, however some unclear steps in the accreditation process that should be fixed in the future. The accreditation and certification process is not strictly limited to EU member states, it is open also to training providers and students from non-EU European countries and non-European countries as well.

Acknowledgements

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13th International Educational Technology Conference

The Analysis of the Effects of Olfactive Stimulus in Learning in Context of Educational Technology

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Abstract

When the educational Technologies, which are used in the process of learning-teaching process, are associated with sensory organs, the least used one becomes the olfactive stimuli. Nowadays, because of being foreground of visual-audio Technologies, Positivism is based on vision and audition but it ignores the other senses. Although seeing and hearing play important roles, the ineffectiveness of other senses is delusion in this process. In this delusion the impact of visual-audio Technologic devices from telescope to television, internet, mobile phones is inevitable. However sensation and learning is wholistic and based on togetherness of five senses. Thus, with the delusion olfactive stimulus which is rejected from the educational field is effective on senses, attention, concentration and memory in learning.
The purpose of this study, which is in form literature review, is to discuss the nature of olfactive stimulus , the effectiveness in education, areas of usage in context of educational technology, to deduce and to make suggestions.

Key Words: Olfactive stimulus, Olfactive educational technology, Sense of smell and learning.

1. Introduction

Can many notions, strategies and methods used in classes at present as if they were pedagogical principles and necessities in fact be composed of an inclination? When these practices, which are called inclinations since they have been implemented for a long time are considered closely, the case can be understood better. Moreover, it is a fact that these practices that are implemented without questioning in the classrooms are indeed inclinations "dressed with pedagogy", impositions, inducements and deceptions. This case is more common in countries like Turkey, which constantly import without knowing (in terms of source, meaning and context) what they get.

A typical example of this deception is concerned with the role of sense organs in the process of learning. Currently, sight and hearing have been regarded as the sole ways of learning in the notion of education in Turkey. This presupposition resulting from positivism, the source of which is a reality of the civilisation of the west, prevails all the phases of education in theory and practice. As a matter of fact, philosophers like Aristoteles, Darwin, Freud, Arnheim, Condillac and Kant, who are the important keystones of western culture, consider sight and hearing as intellectual "superior" senses; and other senses as animal "inferior" senses. Darwin and Freud among them overshot the mark and stressed "sight" as the sense of civilisation. These views gained ground and accepted as culture with the support of visual technologies like photograph, cinema, telescope and television that became widespread in the west especially in 19th and 20th centuries (Howes, 2002 as cited in Classen, 1997).

Another reason of ignoring the senses except for sight and hearing in the perception and learning process is that research on these senses is limited. Even though some part of this results from cultural bias, the subjective quality of senses with bio-chemical transmission system (olfaction and tasting) depending too much on personality characteristics is an important factor (Finnegan, 2002; Köster, 2002; Hudson and Distel, 2002; Bodnar et al., 2004). Finnegan (2002) stated that underestimating the olfaction in daily culture was an approach that is ideological and having a historical content. Departing from the studies carried out by Paabo, Holden (2004), who considered the subject anthropologically stated that smell genes adapted themselves to visuality by transforming as visuality was

assigned more importance. If all these are true, it can be said that visuality leads to functional defects in olfactive perception and it usurps the roles of olfactive sense not only in cultural respect but also in biological respect.

The culture (ideology) deeming sight and hearing senses as the sole way in education prevails in Turkey as if it were a scientific principle. All the central exams having a critical role in determining the destiny of individuals in Turkey are carried out with this presupposition in mind. When the issue is handled in the context of Multiple Intelligences Theory, it can be claimed that central exams favour the ones with dominant "visual" ability. The fact that people are mostly visual or sight has a significant role in perception and learning does not alleviate this problem. In education, each individual no matter what his/her personal qualities are is valuable and should not be pushed out of the system. Above all, this is necessary for "justice in education". The example cited here is a typical example of the fact that what wrong presupposition concerning pedagogy, epistemology, intelligence etc. can lead to in practice.

Another drawback of deeming the senses of sight and hearing as the unique ways of learning in education is that this viewpoint delays the comprehension of the phenomena of perception and learning with all their dimensions. Furthermore, this viewpoint, which can be summarised as sight and hearing's shadowing the roles of other senses, has resulted in an error (at least a deficiency) of "prioritising only visual-audio stimuli and ignoring others" in the practices of instructional design and educational technology. This notion has led to a one-way pedagogical notion like "the setting teaches" in the realm of educational technology with the support of behaviourism and resulted in the underestimation of instructional methods in the process of instruction and learning. Focusing on just the setting or prioritising one or two senses in the class restricts holistic perception and learning. It also prevents the stimuli other than sight and hearing in educational technology. All the senses should be used as ways to reach the individual in learning. Otherwise, how can stimuli-method variety be ensured in the process of instruction and learning. All these risk the quality in education. Also, although sight and hearing have important roles in perception and learning, the possibility of other senses' having significant roles in this process can open up new horizons for education.

For years, this information (perhaps statement) has been almost imposed on educators without questioning and doubt: "The influence of sensory organs in the process of learning; sight 83%, hearing 11%, olfaction 3.5%, touch 1.5% and taste 1%" (Ergin, 1998 as cited in Cobun). Is this information true for every culture and period? Or is it valid for all the ages? If this information was obtained through an experiment or observation as is the case with natural sciences, how many times was the experiment or observation repeated? These questions the number of which can be increased obscure whether the ratios pertaining to learning process-sensory organs should really be understood with quantitative reasoning or not. For example, is 3.5% role of olfactive sense in learning quantitative or qualitative? Is this 3.5 ratio valid for the realms of gastronomy and perfumery? These questions support the suspicion that visual and audio stimuli disabled the other stimuli in the process of instruction and learning after the enlightenment era (Howes, 2002 as cited in Classen, 1993). The experimental studies carried out especially in recent years have shown that olfactive sense may have an effect far more than the 3.5% allocated to it in learning process. Research on olfactive sense has demonstrated that it has significant influence on attention, perception, memory and mood. What is more, it was stated that olfactive stimuli used in learning environment in the context of olfactive sense had positive effects on cognitive performance, creativity, mathematical achievement and writing skill (Tildesley et al., 2005; Ceccarelli et al., 2004; Moss et al., 2002; Sprinkle, 1999). Hudson and Distel (2002) have described olfactive stimuli as cognitive organisers and they have attracted attention to their roles regarding behavioural, physiological and psychological functions. All these point to the fact that sight has limits in learning process and other senses should be involved so as to understand the learning process fully with all its dimensions. In order to acquire alternative perspectives on the implementations in both learning and educational technology, the roles of olfactive stimuli in the processes mentioned will be discussed in this study.

2. Olfactive Stimuli and Learning

The most important output of education process is undoubtedly learning. In order to regard any activity or attempt intended for people as "education", the process has to end in learning. Currently, complaints are made frequently about the issue that labour and money allocated to education aren't converted to learning at the same rate. It is undeniable that some of the complaints are concerned with the "transmission losses" in this process. So, these transmission losses should be minimised to increase productivity in education. Although there are a lot of dimensions of the problem of transmission losses in instructional process, the issue is somewhat concerned with extrinsic stimuli, which are intended to stimulate intrinsic processes, which we think lead to learning. It is known that multiple stimuli (rich environments) result in more efficient and permanent learning in this process. However, when the related literature is examined, it can be seen that multiple stimuli are restricted with visual-audio stimuli. Moreover, what is meant by multiple stimuli and rich environments is just visual-audio stimuli. Psychology,

philosophy, anthropology and medical data support the idea that these two stimuli play a significant role in learning. However, is it possible to ignore other stimuli in such an important issue even if they have relatively less contribution to the process? Isn't it a waste of resources to say the least not to take into consideration "the contributions regarded as minor" on the way to obtain a very precious product (learning), which has cost considerable money, labour and effort? The point where the learning environments taking into consideration the variables (stimuli), which are known and considered serious regarding learning have taken us is quite clear. This point, which houses a number of transmission losses is far from being satisfactory.

At the point where it is obvious that what is achieved in education is far from being satisfactory, what is lost by paying attention to alternative ideas that means a paradigm shift in learning process? These alternative perspectives may contribute to the understanding the nature of "learning", which is fairly complicated. At this point, discovering whether olfactive stimuli are efficient in learning process or not may contribute to the literature in terms of determining the limits (framework) of the phenomenon of learning. Because, learning is not only a phenomenon based on sight and hearing but it is also a multidimensional, complicated process, which interests learners as a whole. This process is a true living. If learning is a living, then doesn't this living process include sight, hearing, smelling, touching and tasting? Otherwise, basing learning on just sight and hearing is considering that other senses are "dead".

In this study, the roles of olfactive stimuli as alternative or more precisely complimentary learning variables have been studied departing from the fact that the objectives achieved in learning with variables, which are known and taken into consideration is not satisfactory. The roles of olfactive stimuli in learning process are handled in different contexts based on the literature. First of all, when the subject is handled in accordance with the existing literature, it is seen that the effect of olfactive sense in learning process is 6% (Küçükahmet, 1998; (Rıza, 2003) and 3.5% (Ergin,1998 as cited in Şahin and Yıldırım 1999) proportionately. The effects of olfactive stimuli in learning process can be classified as pharmacological (interaction with groups such as hormones and enzymes), physiological (stimulant effect) and psychological (Durell, 2004). Some information is found in the literature regarding the effects of olfactive stimuli on learning even though its framework hasn't been drawn clearly for today (Artan, 2003; Given, 1999; Getzels 1974 as cited in Türnüklü, 2000; Johnson, 1990 as cited in Taş, 1996; Akpınar and Ersözlü, 2008).The problem is concerned with not taking into consideration this information and how to utilise this information or how to reflect it in educational technology.

When the roles of olfactive stimuli in learning process are handled in the context of classroom atmosphere, which is an important factor in this process, the following can be said: the data in hand demonstrate that stress resulting from psycho-social and physical conditions of the classroom affects learning negatively; the comfortable and peaceful environments facilitates learning. This case is concerned with the chemistry of learning. During learning, the messages reaching the brain as a result of a complicated process are stored as chemical softwares. The learning capacity of the brain is explained through the relations among neurons and the number of bonds among them rather than its physical structure and number of neurons. When an individual feels well, the brain excretes "endorphin", which is called as "the chemical of pleasure" and this facilitates the formation of bonds among neurons and paves the way for more bonds. During this process, stress prevents the development of message receptors on brain neurons and restricts the bonds among neurons. This case affects the thinking process, reduces learning and even leads to mental retardation (Özden, 1999; Given, 1999). At this point, olfactive stimuli (Hofmann 1987 as cited in Mccutcheon, 2004), which are known to be influential in this case may help to facilitate learning. Keeping the genetic, personal and cultural characteristics of students in mind, the right olfactive stimuli serving to ease learning can make classrooms more peaceful for students than they are today.

Olfactive stimuli can be studied in the context of making the learning messages meaningful. Research has demonstrated that students don't perceive the messages only but they perceive them with environment properties. Concerning this issue, Özden (1999) points out that we should upload images, sounds and experiences into our brains regarding learning messages. To this end, olfactive images can be used as well as music and images. At this point, olfactive stimuli (aromas) (Donald et al., 2005; Hofmann, 1987 as cited in Mccutcheon, 2004), which are known to be supportive of memory and have effects on the perception of environment in learning process, can be used. The effect of olfactive stimuli in this process results from their ability to manipulate emotions, which are pretty important in attributing meaning to messages. Because, there is close relationship between considering a message attractive or repellent.

Olfactive stimuli can contribute significantly to the cognitive and affective education of normal students and the ones with learning disabilities. In literature, some information is available regarding the roles of olfactive stimuli

like controlling emotions and organising long-term memory (Aromafloria 2004, Brosh and Barkai, 2004; Dade et al., 2001). For instance, abstract and difficult concepts can be perceived more easily by matching them with aromas. Moreover, the concepts to be learned can be matched with nice scents and concepts to be avoided with bad ones and thus the efficiency of affective education in classrooms can be increased. When the fact that olfactive stimuli support memory and mental imaging (Herz, 1997; Bodnar et al., 2004) is taken into consideration, olfactive stimuli can be effective in supporting the codification of messages in learning process. Besides, since some olfactive stimuli are quite stimulative, these can be utilised in emergency as life saving association factor (Herz, 1997). Education intends to prepare individuals for life and all phases of life are important. In this case, olfactive sense can have role in preparing individual for life phases in which sight and hearing don't intervene.

3. Olfactive Stimuli and Instructional Technology

Educational technology, in the widest sense, is a bridge between information and learner; instructional technology is to organise (design) human and non-human resources in the classroom in the light of psychological, pedagogical and communication data so as to ensure maximum learning. Instructional technology basically focuses on solving instructional problems. One of the series of implementations that instructional technology applies to reach this aim is message design. The purpose in the design is to produce (fictionalise) the most effective message leading to maximum learning and to transmit it to receivers (intended population) with the most efficient ways possible. It is seen that visual-audio stimuli are employed to a great extent in current practices and other stimuli are neglected when the existing instructional technologies are evaluated from this perspective. If the receiver, learner (human), of instructional technology were composed of only eyes and ears, this application would be enough or true. In fact, instructional technology's sufficing with just visual-audio stimulants is a fortuitous case caused by enlightenment. However, this case, which has an ideological dimension, has by time been adopted as a pedagogical inclination. What is overlooked in this fortuitous case is that other senses including olfaction may have important effects in this process even though the senses of sight and hearing have the dominant effect in perception and learning. Besides, departing from the fact that senses work together, olfactive stimuli may increase the perceiving quality of visual and audio messages. Because, perception and learning are holistic like individual himself.

The holistic nature of learners each of whom are basically "human" consisting of a number of dimensions (body, mind, emotions, and spirit) and sensory organs requires that stimulants to be employed in the process of teaching should be designed so as to address maximum number of sensory organs if not all of them. Because, as a philosopher says, a person has a single sense with five channels rather than five separate senses. The efficiency of these senses in transmitting messages to the brain depends on their supporting eachother. Accordingly, it is pointed out that senses of sight and hearing have limits and efficient learning can be achieved through all the senses' working together (Howes, 2002). Hebbe (1959, as cited in Özyurt and Girgin, 2000) explains this as "sensory richness helps the organism to form more cell masses and successive phases". Based on this information, olfactive stimuli can play significant roles in augmenting the efficiency of visual-audio messages in teaching process. This role doesn't have to be equal in teaching each discipline or each of the areas of intelligence. For example, olfactive stimuli can play important roles in teaching gastronomy and educating individuals with dominant naturalist intelligence as well as supporting the efficiency of visual-audio stimuli in general.

The basic role of olfactive stimuli in teaching process is not getting ahead of visual-audio messages by playing a major role in sending messages to brain but augmenting the efficiency of these messages. For instance, the efficiency of a visual or audio message employed to teach an abstract subject can be increased by matching it with an appropriate olfactive stimulus selected in accordance with the genetic, individual and cultural characteristics of the learner. Here, the olfactive stimulus, in a sense, helps the visual or audio (or both) message to be coded by brain more efficiently by adding an emotional mode to them. Because, there is a close relationship between cognitive interpretation and emotional mode. In literature, it is stated that olfactive stimuli (aromas) may have important effects on efficiency, speed and permanence of learning by affecting the mood, which has a considerable effect in directing human behaviour (Barocelli et al., 2004; Tildesley et al., 2005; Roberts and Williams 1992 as cited in Mccutcheon, 2004; Buchbauer et at., 1991; Van Toller and Dodd, 1988 as cited in Moss et al., 2002). Regarding this subject, Hudson and Distel (2002) describe scents as cognitive organisers.

Supporting visual-audio messages with olfactive stimuli can be done as follows. During the learning process, learner can be directed towards positive information, attitudes and behaviour by matching positive information, attitudes and behaviour to be acquired by the learner with pleasant scents; and undesired information, attitudes and behaviour with unpleasant scents. This matching is directly related with message improvement mission of instructional technology. Besides, the use of olfactive stimuli in learning environment can contribute to make this

learning environment more attractive and peaceful. The peaceful learning environment mentioned here can contribute to reduce stress, which is an important barrier to learning. This, in turn, can support coding the messages in learning environment by learners more efficiently.

Attention is one of the most important factors in launching and ensuring learning on which instructional technology focuses. The research on this subject demonstrates that olfactive stimuli have notable effects on attention (Field et al., 2005; Kelvin, 2005; Warm, Denber and Parasuraman 1990 as cited in Köster, 2002; Degel and Köster 1999 as cited in Köster, 2002; Teerling and Köster 1988 as cited in Köster, 2002; Baron 1990 as cited in Köster, 2002; Sprinkle, 1999). The roles of olfactive stimuli on attracting attention can be made use of in teaching process. To this end, various olfactive stimuli can be employed by being arranged in accordance with the principles of instructional technology. For example, at the beginning of the class, the main themes can be presented in company with various scents or class materials can be adorned with different scents. This presentation can be in such a way that pure essence oils can be released to the setting by vaporising or the attraction of various materials can be increased by scenting them. It shouldn't be doubted that various technological applications will be developed in this subject as long as we believe in the importance of olfactive stimuli in educational process. Similarly, olfactive stimuli can be used in increasing concentration, an important variable in learning, and focusing. Because, it is known that olfactive stimuli have positive effects in this subject (Tildesley et al., 2005; Almedia et al., 2004; Barocelli et al., 2004; Moss et al., 2002). One of the reasons of using scents in temples and sanctuaries is this fact. So, olfactive stimuli that are selected in the light of the data of aroma literature and medical data can be released to the classroom setting in different phases of the course or scenting the stationery and class equipment may increase learners' concentration or at least sustain it.

Another very important variable of learning is memory. Memory is the ground of all perception and learning although it isn't emphasized much. This ground can be developed to code stimuli and messages more efficiently and easily. This development has a crucial significance for learning process. Thus, instructional technology, the main aim of which is to provide and develop learning, shouldn't neglect any method or means in supporting memory. Olfactive stimuli can contribute significantly at this point. It is known that aromas have positive effects on memory (Howes and Houghton, 2003; Engen 1991 as cited in Hudson ve Distel, 2002; Finnegan, 2002; Moss et al., 2002; Herz, 1997; Welzl and Stork, 2003; Lamprecht and LeDoux; 2004). Toller (2000 as cited in Köster, 2002) ,as an evidence of memory being supported by scents, has demonstrated that people who lose their olfactive sense have troubles in remembering. Thus, olfactive stimuli can be used in supporting memory. This support provided by olfactive stimuli is fairly important in terms of the permanence of the knowledge learned. This importance is more significant these days on which it is stated that intensive use of technology weakens memory. The use of olfactive stimuli in supporting memory can be in such a way to match the messages with scents, to release scents into the learning environment (for association), or to repeat the class with some scents. However, the use of olfactive stimuli isn't restricted with these applications and different ways of use are needed with the help of research to be carried out in the field of instructional technology.

Conclusion

Olfactive stimuli, which have been pushed out of the realm of perception and learning with the effect of positivism and enlightenment to a great extent, can contribute to the solution of problems regarding learning, the basic study domain of instructional technology. According to the existing literature, the contribution of olfactive stimuli to learning ranges from 3.5% to 6%. Can a proportion of 6% be neglected on the way to obtain a very precious jewel like learning, which is the most important focus of teaching process? Moreover, research demonstrates that this contribution can be more. Besides, focusing solely on visual-audio stimuli in education is in contrast with the contemporary educational notions like "enriching learning environment" and "referring to all domains of intelligence in education". Olfactive stimuli can contribute in preparing the individual for life more holistically by enriching the learning environment and referring to all domains of intelligence.

The contribution of olfactive stimuli to learning is increasing the effects of visual and audio messages or adding some value to them rather than replacing visual and audio messages, which are believed to have dominant roles in learning. Olfactive stimuli can do this by adding emotional mood to visual and audio messages, making them more meaningful and enabling the coding of them more meaningfully. To this end, classrooms can be converted into more peaceful learning environments which are filled with proper scents that are selected keeping the genetic, personal and cultural characteristics of learners in mind. Thus, learning rate can be increased by reducing stress, which is an important barrier to learning. This increase can be achieved by enhancing the secretion of

learning chemicals, which are admitted as the chemical software of learning and help brain cells come together. For this purpose, natural essence oils can be emitted to classroom environment by vaporizing and in proper doses.

Olfactive stimuli can contribute significantly in supporting attention, focusing and memory processes, which are important learning processes. For this purpose, olfactive stimuli selected accordingly (preferably obtained through natural essence oils) can be used by being added to stationery and instructional equipment used in teaching process somehow. Besides, olfactive stimuli can be used in affective learning. So, olfactive stimuli can be arranged in accordance with the principles of instructional technology. For example, learners' acquiring positive attitudes can be supported by matching the desired learning messages (or concepts) with pleasant scents and undesired messages or concepts with unpleasant scents.

Another possible usage area of olfactive stimuli is supporting the learning of individuals with learning disabilities. To this end, olfactive stimuli can be used to support attracting attention, focusing and memory as well as coding the learning messages for learners having learning disabilities. There are applications like "scent garden" in literature concerning this issue.

As the final analysis, olfactive stimuli should be considered as an alternative in addition to the existing processes and applications on the way to ensure maximum learning, which is the basic aim of educational and instructional technology. However, there are a lot of uncertainties on this issue due to the fact that olfactive sense is the least-known sense and there are few studies examining the relation of this sense and education. So, research findings are needed on the nature and use of olfactive stimuli.

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The Application of Information Technology among Trainee Counselors

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Abstract
The study seeks to establish the requirement for the Information and Communication Technology (ICT) competency among counselors in the effort to assist clients that is in need of guidance and counseling. A total of twenty students from the Department of Educational Psychology and Counseling, Faculty of Education, University of Malaya that is currently undergoing professional training in various organizations have been selected as respondents in this study. The study establishes whether or not the knowledge in ICT benefits the trainers in their professional training and facilitates their counseling activities at the respective organizations. Data collected through a combination of interactive observation, documentary analysis and recording sessions of structured interviews are analyzed utilizing a qualitative data analysis approach. Initial findings show that the knowledge and skills in ICT assist the trainers in assessing the needs requirements of the clients based on four areas identified as problematic to the client namely; (1) personal (2) social (3) education and (4) career. The findings also hoped to be able to further assist trainee counselors at institutions of higher educations to augment their skills in counseling and ICT in the pursuit to become competent counselors of the future.

Keywords: ICT Competency – Professional Training – Trainee counselors – Needs Assessment – Qualitative Approach

Introduction

The global advancement of technology today is also affecting counselors. Competent counselors must now possess skills in the ICT and adapt themselves to keep abreast with contemporary technology.

Research Background

Counseling is a process of assisting an individual carried out by the counselor through various number service approaches. These approaches have expanded and transcend the temporal and spatial limitations. Counseling process no longer is confined to a face-to-face approach. Rather it had gone beyond the usual use of available media and information technology. The Use of ICT in counseling processes is intended to provide a more efficient, interesting, interactive counseling service that is not confined to mere space. Despite that, the counseling process is still rooted in the counseling codes of ethics.

The Department of Educational Psychology and Counseling, Faculty of Education University of Malaya offers this program in the objective to prepare professional counselors that have the skills to function in a variety of organizational settings both public and private. All trainee counselors must complete132 credit hours and professional training (PPEC 3172) which is also known as practicum undertaken in Semester 8 for the duration of 3 months. The main objective of the practicum is to ensure that trainee counselors would be able to apply all the skills and knowledge gained throughout the duration

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of the study in real time environments. In addition the practicum also serves as mediator to gauge the knowledge, skills and competency of trainee counselors in real time environment.

The objective of this research is to identify the effectiveness of the ICT application to trainee counselors in undertaking the practicum in the effort to prepare them for employment. In addition the findings of the research are integral in informing the institutions with regard to enhanced effectiveness of the delivery of the counseling programs here in the University of Malaya. It is further expected that the trainee counselors at this faculty would become a competent and confident counselor.

The research questions are as follows:

a. What are the expectations of the trainee counselors when undergoing practicum?
b. How would a trainee counselor apply the ICT in preparing counseling materials during the practicum?

Research Method

This research is qualitative in nature in the effort to investigate in detail the perceptions of trainee counselors of their own expectations when undergoing practicum. As such, data are collected from a combination of methods such as interactive observation, structured interviews and review of documents in order to verify the collected data.

Data Analysis

Data obtained from interactive observation, structured interviews and review of documents are based on the discussions of earlier mentioned research objectives, that is:

a. What are the expectations of the trainee counselors when undergoing practicum?
b. How would a trainee counselor apply the ICT in preparing counseling materials during the practicum?

Expectations of trainee counselors undergoing practicum

Trainee counselors are required to answer a questionnaire on "what are your expectations in undergoing the professional practicum at your current training organization?" The response to this question is dependent upon their environment (public, private or school sectors) which provides for amenities during their stay as interns.

However, all 20 trainee counselors agree that they expected to be able to apply all the learned skills both in theory and practice at the faculty to their internship organizations. They responded that all the knowledge and skills obtained are very useful and assisted in their in their practicum. In addition, the mastery of counseling techniques in subjects PPEC2132, PPEC2133 and PPEC 3170 increased their level of confidence and competency in handling counseling sessions effectively.

Reports from field supervisors are also in agreement that ICT-savvy trainee counselors are able to master counseling techniques better that those who lack ICT competency.

ICT Assistance in preparing counseling materials

Respondents list the reasons for the need of ICT skills, among others:

  a. Understand and able to apply ICT
  b. Skilled in ICT
  c. Able to vary the use of ICT in counseling process
  d. Able to create, innovate and evaluate an interactive program
  e. Able to use technology as a counseling tool

The benefits of utilizing ICT

The use of ICT would be able to facilitate the counseling works in matters such as:

  a. Facilitate counselors in arranging, finding and using data
  b. Ensure data confidentiality through encrypting and secured access
  c. Facilitate communication among individuals and groups with ease and relatively lower costs
  d. Allow for non F2F communication with clients
  e. Transforming the ICT as enhancement tools in counseling programs
In undergoing the practicum, all trainee counselors utilize ICT in preparing counseling materials through needs assessment questionnaire forms. In this respect there are 4 emerging themes of clients' requirements; individual problems, social problems, academic problems and career problems. All programs are designed to overcome the problems are prepared in ICT assisted material such as poster, modules, booklets, pictures and comics.

Guidance and counseling activities that are assisted by electronic media are, among others:

Audio recording (role playing)

- Psychodrama
- Sociodrama
Video recording , Multimedia, Interactive CD and films

- Psychodrama
- Sociodrama
- Games

Proposals to enhance ICT in counseling

Findings of this research prove that the need for trainee counselors to master ICT skills would assist them in discharging the counseling functions effectively. Competencies in ICT have become a critical need for a counselor. In the digital age, this would mean that the competency would facilitate the works of a counselor saving precious time in accessing counseling materials and latest information. Counselors are

becoming more creative, enhanced knowledge and are able to vary teaching and learning techniques to be more creative and effective. Learning is no longer a dull process when ICT is utilized optimally.

Counselors that are ICT competent would benefit, among others:

a. Access to information, electronic documents and information from the internet
b. The use of email, webpage and others
c. Online counseling process
d. Software of interactive counseling program delivery
e. Enhanced counseling materials with interesting visuals and graphics
f. E-learning media platform, a new teaching and learning platform that uses the internet

Summary

In line with the advancement of ICT, the relevant skills and competency has become indispensable in the curriculum of counseling at institutions of higher learning. The spatial and temporal limitations of and individual need for counseling is obviated with the use of ICT. Counselors are now accessible with on-line sessions, emails and internet.

Proposals to enhance ICT in counseling

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13th International Educational Technology Conference

The Assessments of Media for Sufficiency Economy Project Public Relations in Krabyai Sub-District, Ratchaburi Province, Thailand

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Abstract

The Assessments of Media for Sufficiency Economy Project Public Relations in Krabyai Sub-District, Ratchaburi Province, Thailand aims to 1) Study the status and problems in the farmer's work. 2) Study the media exposure of the community. 3) Design and develop the media for project public relations. 4) Evaluate the project public relation media.

The research found that 1) the farmer needed to develop the knowledge in agricultural development, such as, appropriate soil management, farm management, and pest management for economic crops in the community, good practice for economic crops in the community and utilization from farm and household waste for cost reduction. 2) About the media exposure, there were a billboard, broadcasting tower, website, journal and personal media, moreover, there were four community radio stations in Ban Pong District that could broadcast to Krabyai Sub-District and three local newspapers. 3) The researchers brought the information from the studied of media exposure in the community to analyze, design and develop the media to suit for the media exposure in the community and conform to the project plans, which consisted of brochure, leaflet, radio spot, billboard, newsletter and website. These media has been approved from the media specialists and community leaders who worked as public sector committee. 4) About the public relation media assessment, the researchers had set up the focus group discussion to evaluate the media and project public relation plans by media specialists, executives and officers who concerned with public relations in the community, representatives from mass media associations in Ratchaburi province and concluded that the dissemination and public relation plans should be separated to two stages, that meant, before conducting the activities, they should use television, community radio and billboards because these media could be produced and disseminated immediately, which were appropriated to motivate, provide information and encourage the community to participate in the activities. Another stage, after the activities finished, they should use the local newspapers to provide the information of the activities or public relations. The contents should be mainly focused on the benefit for the community and the farmers. For the radio spot, they should make the public relation spot with no longer than one minute length because it would be suitable for radio station in broadcasting. Furthermore, there should be more project public relation sources in the schools in Krabyai community. The

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members of municipal council should be responsible for public relation in their own area. About the number of media and frequency in project public relations, there should be more dissemination by the mass media.

Keywords: Media assessment; Public relations media

INTRODUCTION

Media for development communication plays a major role in information distribution in developing countries. Communication is defined as a systemic process in which individuals interact with and through symbols to create and interpret meanings. It is ongoing and always in motion, moving forward, and changing continuously. Communication is a process, which depends on communicator's perception including culture, communication skill, physical-emotional states, experience, attitudes, memory, and expectation. Communication does not to inform but also influences the behavior of the receiver of information.

Media is also very important in agricultural extension; it is utilized for development in agriculture. However, the effective of utilized media for development in agriculture should be use participatory communication method under rural development as a shift from the dominant paradigm of top-down to self-development wherein villagers and urban poor would be the priority audience, and self-reliance and building on local resources would be emphasized. Participation is the exchange of information from both parties the people and organization. In this process, it is the people or grassroots that identifies the problem and the solutions for those problems. The people are given the opportunity in the decision-making.

Kasetsart University, Kamphaeng Saen campus has the community development for sufficiency economy project in Krabyai sub-district, Ratchaburi province. For this project to be successful, it should design development media for public relations the project for community members to motivate and transfer the knowledge. Consequently, it is interesting to explore the assessments of media for sufficiency economy project public relations in Krabyai sub-district, Ratchaburi province. The results will be used to determine and improve strategies for public relation the project in Krabyai sub-district, Ratchaburi province and could be used as reference for future studies concerning media for public relation in the community. This study can also provide policy-makers, researchers, agricultural extension workers, and community development workers, information that can be used as bases for evolving a functional framework of media for public relation, and help the Thai government to analyze, develop, implement, and evaluate media for public relation in the future.

OBJECTIVES OF THIS RESEARCH

This research generally aimed to study the assessments of media for sufficiency economy project public relations in Krabyai sub-district, Ratchaburi province in Thailand. Specifically, the study targets to: 1) Identify the status and problems in the farmer's work. 2) Study the media exposure of the community.   3) Design and develop the media for project public relations and 4) evaluate the project public relation media.

METHODOLOGY

The research followed these processes: 1) Surveyed the status and problems in the farmer's work by review of secondary data and available information about the research site is gathering from secondary source and personal inquiries 2) Determined media exposure of the community through key informants interviews and observation. 3) Design and develop the media for project public relations. 4) Evaluate the project public relation media by focus group discussion. The populations of this study were 16 respondents. They are media specialists, executives and officers who concerned with public relations in the community, representatives from mass media associations in Ratchaburi province.

RESULTS AND CONCLUSION

1. The status and problems in the farmer's work the research found that the farmer needed to develop the knowledge in agricultural development in five issues 1) appropriate soil management, 2) farm management, 3) pest management for economic crops in the community, 4) good agricultural practice for economic crops in the community 5) utilization from farm and household waste for cost reduction.

2. The media exposure the research found that there were eleven billboards for eleven villages, broadcasting tower for announcement community news, community website, community journal publishing by municipal and personal media such village headmen, municipal committees, moreover, there were four community radio stations in Ban Pong District: The community radio Ban Pong Mass Media FM 102. 75MHz, My House FM 96. 25MHz, Amazing Radio FM 95. 35MHz, and the Life Style Radio FM 101.00 MHz that could broadcast to Krabyai Sub-District and three local newspapers.

3. Design and develop the media for project public relations. The researchers brought the information from the studied of media exposure in the community to analyze, design and develop the media to suit for the media exposure in the community and conform to the project plans, which consisted of brochure, leaflet, radio spot, billboard, newsletter and website. These media has been approved from the media specialists and community leaders who worked as public sector committee.

4. Evaluate the project public relation media. the researchers had set up the focus group discussion to evaluate the media and project public relation plans by media specialists, executives and officers who concerned with public relations in the community, representatives from mass media associations in Ratchaburi province. The results of the focus group discussion can concluded following this:

4.1 The dissemination and public relation plans should be separated to two stages, that meant, before conducting the activities, they should use television, community radio and billboards because these media could be produced and disseminated immediately, which were appropriated to motivate, provide information and encourage the community to participate in the activities. Another stage, after the activities finished, they should use the local newspapers to provide the information of the activities or public relations.

4.2 The contents should be mainly focused on the benefit for the community and the farmers. For the radio spot, they should make the public relation spot with no longer than one minute length because it would be suitable for radio station in broadcasting.

4.3 The participating of community for public relation there should be more project public relation sources in the schools in Krabyai community and practice the students to be the press in their community. The members of municipal council should be responsible for public relation in their own area.

4.4 The number of media and frequency in project public relations, there should be more dissemination by the mass media such as television, radio, and newspaper.

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The challenges in the usage of e-journal amongst lecturers at a public university

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Abstract

This study was carried out to assess the usage of e-journals amongst education lecturers at a public university in Malaysia. A total of 55 education lecturers participated in the study by completing a self-developed questionnaire to answer the following questions: (1) What are the challenges or constraints that they faced in using e-journals? and (2) What are their suggestions which would improve the use of e-journals for academic purposes? The major findings revealed a "neutral" perception amongst the education lecturers on the challenges that they faced in using e-journals; although they were challenges none were too detrimental towards the usage of e-journals. The education lecturers also responded by giving 5 aptly suggestions on how to improve the usage of e-journals; by providing more training for lecturers, provide training for students, providing better Internet facilities, encouraging more sharing of information on e-journals, as well as encouraging the use of e-journals in teaching and learning.

Keywords: challenges, education lecturers, e-journal, teaching and learning

1. INTRODUCTION

Electronic journals, also known as ejournals, e-journals, and electronic serials, are scholarly journals or intellectual magazines that can be accessed via electronic transmission. In practice, this means that they are usually published on the Web. It is therefore probable that in this modern age of technology one can presume almost everybody has access to e-journals due to the simple fact that the Internet in its truest nature is basically, free. One only needs to have access to any piece of technology which allows them the ability to surf the web such as computers, personal digital assistant or commonly known as PDA, or even mobile phones which is considered to be an essential item for our every-day living nowadays.

Together with this presumption of the ease of accessibility of the Internet, one could also presume that it is not only logical that all academicians; lecturers and students, are able to easily use this advantage for their academic purposes but should also greatly integrate this technological advancement of e-journals into all of their scholarly works. In any practice of education, a piece of scholarly work is considered to be more exquisite in terms of its content, validity and professionalism if a good amount of journals related to its field is used as one of its data and referential tool. Furthermore even the effort of proclaiming the journals itself is highly deemed as one of the act of the true pursuit of knowledge and in some cases, being current.

2. THE USAGE OF E-JOURNALS

Journals therefore play a major part in any academicians' scholarly work and are also one of the most preferential tools of the trade apart from books. A survey done by Kling (2003) indicated that 85% of scholars preferred e-journals over print and additionally other research shows how this preference is transformed into reading patterns (Tenopir & King, 2003). Kling (2003) indicated that scholars highly value e-journals access and most of the scholars preferred e-journals over print mostly for the following reasons: e-journals saves time, makes work easier, result in better quality research, and enable the scholar to find more materials. One of the main key point in Kling's study (2003) is that the ease of accessibility and the wide range of e-journals on the Internet; literally being able to access

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a plethora range of journals from as many field as possible, highly promotes the usage of e-journals amongst scholars. Supported by this it is by all means safe to make the assumption that most scholars largely tend to use and accommodate e-journals in their scholarly works.

According to Isman (2012) educators are increasingly using technology in all aspects of the profession including work assignments. This trend can be enhanced by educating the educator about cultural and cognitive aspects of technology and technikos.

Ansari and Zuberi (2010) explore the use of electronic resources among academics at the University of Karachi, Pakistan. About one-third of 70 respondents use electronic resources for research. One-quarter to one third use it to prepare lectures and gain subject knowledge. The 90% of academic staff believe electronic resources are reliable, however majority of the respondents consider only those electronic resources are reliable which are produced by authentic organization or publisher (p.5).

Ollé and Borrego (2010) conduct a study of the impact of e-journals on scholarly information behavior of academics at Catalan universities. About 75% of the survey respondents stated that they consult more journals and read more articles than they did in the past. Regarding the benefits of electronic access the respondents stated that speediness and convenience of electronic access meant that they have more reading time and, more generally, more time for doing research (p.6-7).

A study by Upadhyay and Chakraborty (2008) shows that Science Direct and IEL online are the two most popular online journal packages about which researcher's and faculty members of Banaras Hindu University are aware. All 64 respondents answered the question on satisfaction with existing online journal and databases. 43.75% respondents indicated average, 34.37% indicated good, 12.5% indicated excellent and 9.37% indicated fair about satisfaction with content, coverage and availability in the subject area (p.651-653).

Gulbahar (2008) investigated the ICT usage in higher education in Turkey. Results show that 95% academic staff used computers for communication, preparing examination ad course material (92%) and research in Internet (90%). Majority of academic staff recognized computer as a supportive tool for instruction and other activities. Almost all of the respondents were willing to use technology in their courses effectively (p.35). Shuling (2007) conduct a study on the use of electronic resources in Shaanxi University of Science and Technology among the library users. It was found that that nearly 80% of respondents knew little about electronic resources. Nearly 50% the respondents use both printed and electronic resources.

Apart from these preferential, this study aims to uncover other aspects of characteristics which may or may not factor in the usage of e-journals. Certain preferences which would directly be in question relates to the possible constraints faced during the search and usage of e-journals online which would determine if any constraints might exists, and if it does would it discourage the usage of e-journals amongst students. Although it is suggested and proved that lecturers and scholars are avid users of e-journals, a study needs to be done to discover and assess their preferential characteristics in an e-journal and whether they are advocating or influencing their students to purposely accommodate and integrate e-journals in their studies. Due to mainstream use of e-journals by scholars, there is definitely a pre-emptive assumption that students should by all means incorporate the same tool in their works as not only is e-journals easily accessible but it is also held in high regards in the education world. As to how far scholars advocate the use of e-journals on their students, a study to determine this current situation needs to be carried out especially amongst lecturers and students at an institution of higher learning in Malaysia.

3. OBJECTIVES

The objectives of this study are to look at the challenges or constraints faced by the academic members or lecturers at the Faculty of Education at a public university when using e-journals and to identify their suggestions which would improve the use of e-journals for academic purposes. In order to achieve these research objectives these following research questions were developed for this study:

- What are the challenges or constraints that they faced in using e-journals?
- What are their suggestions which would improve the use of e-journals for academic purposes?

This study involves respondents who are academic members or lecturers from the Faculty of Education, Universiti Teknologi Mara (UiTM), which is one of the largest public universities in Malaysia. The selected participants in this study will be assessed by gauging their usage and preference of using e-journals for academic purposes and their usage of e-journals in their instruction. Through assessing the compiled data, it would represent the best model of influential power as by principle; it is the medium with the highest probability in spreading the influence as their main profession and perfection is in molding and developing future teachers.

4. METHODS

A mixed method combining both quantitative and qualitative research design was employed in order to get both quantitative and qualitative data. According to Creswell (2005), mixed methods research is a good research design as it allows the researcher to assess both outcomes of the study (quantitative) as well as the process (qualitative). The combination of research design provides a rich and comprehensive picture of any social phenomena. There are three types of mixed method research designs presented by Creswell (2005) which are the triangulation design, explanatory design and exploratory design. For the purpose of this study, the exploratory design was used as it permitted the researcher to simultaneously collect both quantitative and qualitative data, merge the data compiled and use the results to understand a research problem. A survey method using a questionnaire specially designed for this study was utilized to gather both quantitative and qualitative data.

The research population will consist of 70 lecturers from the Faculty of Education, UiTM, comprising of lecturers, senior lecturers, associate professors and professors. A minimum of 50 samples represents more than 70% of the total academic members of the faculty thus is adequate to provide a valid and reliable research data for the study. The total sample of this study is 55 lecturers from the faculty. The former will be implemented in the form of questionnaires which would assist in answering the study's two research questions. The questionnaires will attempt to identify what are the challenges or constraints of e-journals which factors in its usage amongst the respondents. This section contains eight (8) items which are constructed according to a 5 point Likert-scale from 1-Strongly Disagree to 5-Strongly Agree. Each question directly assesses the level of specific challenges or constraints of e-journals amongst the respondents for academic purposes. The questionnaires will ask for suggestion by the respondents which could improve the usage of e-journals amongst education lecturers.

5. ESEARCH FINDINGS AND DISCUSSIONS

5.1 The challenges on using e-journals

Table 1 presents the respondents' perception on the challengers or constraints of e-journals. Of the 8 items that were listed, 7 were rated as "Neutral" and one "Disagree". The data is presented in order of agreement as follows: were listed; (i) Internet connection issue (mean=3.34), (ii) limited facilities (mean=3.23), (iii) monetary issues (mean=3.20), (iv) technical difficulties (mean=3.12), (v) validity of e-journals (mean=2.90), (vi) too many to choose from (mean=2.72), (vii) lack of exposure (mean=2.69) and (viii) time consuming (mean=2.47). Each item was given a 5-point value ranging from 1 "Strongly disagree" to 5 "Strongly agree".

A mean of 3.34 or "Neutral" was achieved on respondents perception that Internet connection issues is one of the challenges of e-journals; which 3 (5.5%) respondents rated "strongly disagree" and 13 (23.6%) respondents rated "disagree". 8 (14.4%) respondents rated "neutral". However 24 (43.6%) respondents rated "agree" and 7 (12.7%) respondents rated "strongly agree"; with a standard deviation of 1.14.

A mean of 3.23 or "Neutral" was also achieved on respondents perception that limited facilities is one of the challenges of e-journals; while 2 (3.6%) respondents rated "strongly disagree" and 16 (29.1%) respondents rated "disagree". 9 (16.4%) respondents rated "neutral". 23 (41.8%) respondents rated "agree" and 5 (9.1%) respondents rated "strongly agree"; with a standard deviation of 1.08.

A mean of 3.20 or "Neutral" was achieved on respondents perception that monetary issues is one of the challenges of e-journals; with another 2 (3.6%) respondents rated "strongly disagree" and 15 (27.3%) respondents rated "disagree". 12 (21.8%) respondents rated "neutral". 22 (40.0%) respondents rated "agree" and 4 (7.3%) respondents rated "strongly agree"; with a standard deviation of 1.04.

A mean of 3.12 or "Neutral" was achieved on respondents perception that technical difficulties is one of the challenges of e-journals; with 3 (5.5%) respondents rated "strongly disagree" and 15 (27.3%) respondents rated "disagree". 11 (20.0%) respondents rated "neutral". 24 (43.6%) respondents rated "agree" and 2 (3.6%) respondents rated "strongly agree"; with a standard deviation of 1.03.

A mean of 2.90 or "Neutral" was also achieved on respondents perception that the validity of e-journals is one of the challenges of e-journals; with 5 (9.1%) respondents rated "strongly disagree" and 20 (36.4%) respondents rated "disagree". 8 (14.5%) respondents rated "neutral". On the other hand, 19 (34.5%) respondents rated "agree" and 3 (5.5%) respondents rated "strongly agree"; with a standard deviation of 1.14.

A mean of 2.72 or "Neutral" was achieved on respondents perception that there is too many e-journals to choose from is one of the challenges of e-journals; with 7 (12.7%) respondents rated "strongly disagree" and 17 (30.9%) respondents rated "disagree". 17 (30.9%) respondents rated "neutral". However, 12 (21.8%) respondents rated "agree" and 2 (3.6%) respondents rated "strongly agree"; with a standard deviation of 1.06.

Table 1. Challenges of E-journals

Perception on the challenges with E-journals	Frequency and Percentage					Mean	Std. Dev.
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Internet connection issue	3	13	8	24	7	3.3455	1.14209
	5.5%	23.6%	14.4%	43.6%	12.7%		
Limited facilities	2	16	9	23	5	3.2364	1.08804
	3.6%	29.1%	16.4%	41.8%	9.1%		
Monetary issue	2	15	12	22	4	3.2000	1.04350
	3.6%	27.3%	21.8%	40.0%	7.3%		
Technical difficulties	3	15	11	24	2	3.1273	1.03735
	5.5%	27.3%	20.0%	43.6%	3.6%		
Validity of electronic journals	5	20	8	19	3	2.9091	1.14298
	9.1%	36.4%	14.5%	34.5%	5.5%		
Too many to choose from	7	17	17	12	2	2.7273	1.06205
	12.7%	30.9%	30.9%	21.8%	3.6%		
Lack of exposure	6	21	12	16	0	2.6909	1.01603
	10.9%	38.2%	21.8%	29.1%	0.0%		
Time consuming	6	27	14	6	2	2.4727	.95945
	10.9%	49.1%	25.5%	10.9%	3.6%		

1.00 – 1.49 = Strongly Disagree   2.50 – 3.49 = Neutral
1.50 – 2.49 = Disagree   3.50 – 4.49 = Agree
4.50 – 5.00 = Strongly Agree

A mean of 3.20 or "Neutral" was achieved on respondents perception that lack of exposure towards e-journals is one of the challenges of e-journals; while 6 (10.9%) respondents rated "strongly disagree" and 21 (38.2%) respondents rated "disagree". 12 (21.8%) respondents rated "neutral". 16 (29.1%) respondents rated "agree"; with a standard deviation of 1.016.

All the data suggests that respondents were neutral or unsure with the statements as some who disagreed with the statements while there were also some who agreed with the statements. Only one items was rated as "Disagree" with a mean of 2.47 "Disagree" was achieved on respondents perception that e-journals is time consuming is one of the challenges of e-journals. 6 (10.9%) respondents rated "strongly disagree" and 27 (49.1%) respondents rated "disagree". 14 (25.5%) respondents rated "neutral". 6 (10.9%) respondents rated "agree" and 2

(3.6%) respondents rated "strongly agree"; with a standard deviation of 0.95. This data suggests that overall, they disagree that using e-journals is time consuming.

Analysis on open-ended question shows that perception on other challenges of using e-journals is the limited access to quality articles from cited or high impact journals as many are not readily available electronically since they are only available to subscribers. As such, in certain cases, lecturers only get access to abstract and titles only and not the full paper or article.

5.2. Suggestions on the use of e-journal for academic purposes
The following suggestions and recommendations based on the findings of the study are intended to assist the Faculty to increase the usage of e-journals amongst education lecturers for academic purposes and to incorporate e-journals in teaching and learning.

Training for Lecturers
The study indicated a high percentage of lecturers who preferred to use e-journals for academic purposes and in their teaching sessions. Respondents suggested training and retraining to be organized by the faculty on how to carry out better and efficient online searches while some suggested the faculty to organize workshops, seminars or talks on on-line search. Based on the feedback, it is recommended that the faculty conduct occasional training sessions through formal training, workshops, seminars or talks on effective online searches in order to increase the usage of e-journals amongst education lecturers.

Training for Students
Respondents also indicated that they encouraged students to use e-journals and some preferred their students to use e-journals in terms of their academic studies. Some respondents suggested that similar training be given to students on conducting online searches. Based on the data and to further encourage students to use e-journals for their academic studies, similar training, workshop, seminars or talks should also be organized for the students.

Better Internet Facilities
In relation to their perception on the challenges with regards to e-journals, four of the top challenges that respondents indicated were Internet connection issues, limited facilities, monetary issues, and technical difficulties. Respondents also indicated on the need to improve Internet connection and Internet facilities. Based on the responses, it is recommended that the Internet and related facilities be improved as an effort to increase the usage of e-journals amongst education lecturers.

Sharing of Information on E-Journals
Respondents also recommended that the faculty establish a sharing of information through bulletin, blogs or newsletter on current and related e-journals which are available. Based on these responses, it is recommended that the Faculty of Education, UiTM establish a printed bulletin or online information on current e-journals available in order to keep lecturers updated.

Encourage the Usage of E-Journals in Teaching and Learning
Responses on open-ended items indicated lecturers use e-journals in their teaching sessions and also encourages students to use e-journals for their academic studies. It is recommended that the faculty encourage more lecturers to incorporate e-journals in their teaching sessions as well as encourage students to do assignments involving the use of e-journals for their academic studies.

6. CONCLUSION
This study examined the challenges that the educations lecturers faced in using e-journals for academic purposes. The findings revealed a "neutral" perception amongst the education lecturers on the challenges that they faced in using e-journals. However, they gave some suggestions in improving the use of e-journals in teaching and learning. With more exposure, training and encouragement, the usage of e-journals amongst education lecturers for preparation for teaching may increase in the future.

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The Design of Quality Documentation System at Higher Education Using ISO 9000 Model

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Abstract

As a part of national education system under the authorization of the Ministry of Education and Culture, the objective of Higher Education in Indonesia must be in line with those of national education, namely: Indonesian national education based on *Pancasila* to improve the quality of Indonesian students, human possessing faith and belief to A Supreme God, noble character, good personality, high discipline, hard working, tough and responsible, self reliant, smart, and skill as well as physically and spiritually well.

To achieve such objectives above, the Higher Education in Indonesia needs to own a high quality of performance in running their education activities. To put more clearly, there must be directive standards on teaching activities at Higher Education in order to produce qualified human resources as national education objectives mentioned above.

The research is aimed at observing the possibility of the implementation of the ISO 9000 in Higher Education to yield an expected standard. Specifically, the objectives of the research is to make assessment as well as to design quality documentation system based on the ISO 9000 model – A Translation for Education extended by Edward Salis. The Higher Education selected, as observation object is Institute of Home Affairs Governance.

The result of assessment using the elements of the ISO 9000 – A Translation for Education shows that the entire performance of Institute of Home Affairs Governance is a **weak** category. In other words, there are many aspects not yet associated with the ISO 9000 requirements – A Translation for Education.

What to do in the following step is to design quality documentation system for the ISO 9000 – A Translation for Education linked with academic activities in Institute of Home Affairs Governance, for the system already operated and still has weaknesses according to ISO 9000 requirements – A Translation for Education.

Keywords: A Tranlation for Education; Higher Eucation; ISO 9000 Model

Introduction

Higher Education in Indonesia is an organization engaged service education for Indonesian people. Activities undertaken Higher Education always refer to Three Responsibilities of Higher Education that include: education, research, and community service. As a part of national education system under the authorization of the Ministry of Education and Culture, the objective of Higher Education in Indonesia must be in line with those of national education, namely: Indonesian national education based on *Pancasila* to improve the quality of Indonesian students, human possessing faith and belief to A Supreme God, noble character, good personality, high discipline, hard working, tough and responsible, self reliant, smart, and skill as well as physically and spiritually well.

To achieve such objectives above, the Higher Education in Indonesia needs to own a high quality of performance in running their education activities. To put more clearly, there must be directive standards on teaching activities at Higher Education in order to produce qualified human resources as national education objectives mentioned above.

One of the most popular quality management system standards now, and has been adopted by more 70 countries, is ISO 9000. At first, this standard only be considered as a market driven, but in its development, it provides a lot of value added for the companies that apply this standards, such as the increasing of productivity and efficiency, decreasing of cost, and increasing of customer satisfaction, so it began to be felt as a necessity for the companies. Edward Salis had developed an ISO 9000 model for education that known as ISO 9000 – A Translation for

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Education. This research wanted to see how far the possibility of ISO 9000 implementation in Higher Education to produce standards expected by all parties.

Research Objective

1) Doing assessment to performance of quality system and quality management in Institute of Home Affairs Governance based on ISO 9000 requirements.
2) Designing documentation system appropriated for Institute of Home Affairs Governance based on ISO 9000 requirements.

ISO 9000 – A Translation for Education

At first, both British Standards Institution and International Standards Organization were just talking about manufacturing. The increasing of industry practices on professional services such as lawyers, architects, and management consultants, so the registration was start to be required. However, not enough educational practices provide definitive answers about the feasibility of ISO 9000 in education. Edward Salis had held a variety of adjustments of ISO 9000 into the world of education as in Table 1, called as the term of ISO 9000 – A Translation of Education, and then became elements of this research.

Research Method

The design used in this study was exploratory study. Through exploratory, the researchers developed the concept more clearly and make a priority. Some of the tools used in the exploratory study are: literature review, experience surveys, focus groups, and two-stage approach. Sources of data used in this study are as follows: (1) primary data, there are data obtained directly from the original respondents. In this study, the respondents were: students, lecturers, the leader of institute, faculties, and departments, staffs, and public society; (2) secondary data, that are data obtained from the first data sources that has been collected and reported by other outside researchers, such as the organizations, number of employees, and the result of previous relevant studies.

Table 1 ISO 9000 – A Translation for Education

ISO 9000	Translation for Education
1. Management Responsibility	1. Management's Commitment to Quality
2. Quality System	2. Quality System
3. Contract Review	3. Contracts with Internal & External Customer (Student/pupil entitlements, & the entitlements of the external customer e.g. parents)
4. Document Control	4. Document Control
5. Purchasing	5. Selection and Admission Policy
6. Purchased Supplied Product	6. Pupil/Student Support Services, including Welfare, Counseling, and Pastoral & Tutorial Arrangements
7. Product Identification & Traceability	7. Records of Pupil/Student Progress
8. Process Control	8. Curriculum Development, Design & Delivery – Teaching & Learning Strategies
9. Inspection & Testing	9. Assessment and Testing
10. Inspection, Measuring & Test Equipment	10. Consistency of Assessment Method
11. Inspection & Test Status	11. Assessment Records including Records of Achievement
12. Control of Nonconforming Product	12. Diagnostic Procedure & Methods of Identifying Underachievement & Failure
13. Corrective Action	13. Corrective Action of Pupil/Student Underachievement & Failure, The System for

14. Handling, Storage, Packaging & Delivery		Dealing with Complaints and Appeals
		14. Physical Facilities & Environment, Other Entitlement Offered e.g. Sport Facilities, Clubs & Societies Unions, Drop-In Learning Facilities
15. Quality Records		
16. Internal Quality Audits		15. Quality Records
		16. Validation Procedures & Internal Quality Audits
17. Training		17. Staff Training & Development, including Procedures for Assessing Training Needs & Evaluating The Effectiveness of Training
18. Statistical Techniques		18. Methods of Review, Monitoring & Evaluation

The next step was data collection. This step has an objective to collect information about actual condition of quality management system in Institute of Home Affairs Governance. The data collection was done through some ways, namely:
- Interview that was guided by the use of questionnaire, made with focusing to assessment criteria explained above;
- Documentation of Institute of Home Affairs Governance related to research problems.

The assessment system was done based on scoring method, because the assessment developed was focused to see the appropriateness between actual conditions and standards, related to the existence of quality system element required ISO 9000. So, the questionnaire was not the assessment of internal party preferences about good or bad actual management system of Institute of Home Affairs Governance.

Each question in the questionnaire has own score, with 10 is the maximum score. The accumulation of questions score formed score for each element with 90 is the maximum score. Considering that quality system and quality management in Higher Education was specific, so the assessment obtained from respondents will be changed into the same of scale score that are 0-100. The assessment structure completely can be seen in Table 2.

Table 2 Structure of Questionnaire Assessment

Element	Number of Item	Maximum Score
1. Management's Commitment to Quality	9	90
2. Quality System	3	30
3. Contracts with Internal & External Customer	5	50
4. Document Control	7	70
5. Selection and Admission Policy	5	50
6. Pupil/Student Support Services	4	40
7. Records of Student Progress	4	40
8. Curriculum Development, Design & Delivery	9	90
9. Assessment and Testing	3	30
10. Consistency of Assessment Method	5	50
11. Assessment Records including Records of Achievement	4	40
12. Diagnostic Procedure & Methods of Identifying Underachievement & Failure	7	70
13. Corrective Action of Student Underachievement & Failure	4	40
14. Physical Facilities & Environment	5	50
15. Quality Records	4	40
16. Validation Procedures & Internal Quality Audits	5	50
17. Staff Training & Development	7	70
18. Methods of Review, Monitoring & Evaluation	5	50
Amount	95	950

However, the interpretation of each element can be seen in Table 3.

Table 3 Interpretation of Criteria Assessment Score

Score Interval	Category	Description
$0 \leq P < 25$	Nil	Practically there is no appropriateness with the requirement of ISO 9000 standards
$25 \leq P < 50$	Weak	Many aspects were not appropriate with the requirement ISO 9000 standards
$50 \leq P < 75$	Fair	Many aspects that were appropriate with the requirement of ISO 9000 standards
$75 \leq P < 100$	Strong	Most aspects that were appropriate with the requirement of ISO 9000 standards

P: score in 100 scale

To see the performance of Higher Education quality system at whole, score each element was summed then converted into 0-100 scale, so it will be visible the category of Higher Education quality system performance as shown in Table 3 above.

Data processing that was done on the next step cover the calculation of each element performance score and the sum of whole element. Processing method used is scoring method, with the objective to gain performance score for element that was measured. The steps are as follows:
- To add item score of each quality system element to gain each element performance score;
- To add each element of quality system score to gain Higher Education performance score based on the requirement of ISO 9000 – A Translation for Education;
- To transform performance score above into scale of 100 to uniform maximum score of the whole of quality system element.

Next step is analysis with the main focus to:
- Performance of Higher Education quality system elements and its interpretation;
- Analysis of Higher Education quality records and documents;
- Analysis of running system in Higher Education.

Based on the result of analysis above, so the next step is designing quality documentation system for Higher Education that consists of Level I Document (Higher Education Policy); Level II Document (Work Procedures); and Level III Document (Work Instruction and Supported Documents).

Result

Table 4 Performance Score of ISO 9000 – A Translation for Education Elements

Element	Assessment Result	Maximum Score	Score (Scale of 100)
1. Management's Commitment to Quality	25	90	27,78
2. Quality System	5	30	16,67
3. Contracts with Internal & External Customer	30	50	60,00
4. Document Control	0	70	0,00
5. Selection and Admission Policy	35	50	70,00
6. Pupil/Student Support Services	15	40	37,50
7. Records of Student Progress	25	40	62,50
8. Curriculum Development, Design & Delivery	50	90	55,56
9. Assessment and Testing	20	30	66,67
10. Consistency of Assessment Method	25	50	50,00
11. Assessment Records including Records of Achievement	30	40	75,00
12. Diagnostic Procedure & Methods of Identifying Underachievement & Failure	30	70	42,86
13. Corrective Action of Student Underachievement &	20	40	50,00

Failure			
14. Physical Facilities & Environment	40	50	80,00
15. Quality Records	10	40	25,00
16. Validation Procedures & Internal Quality Audits	15	50	30,00
17. Staff Training & Development	35	70	50,00
18. Methods of Review, Monitoring & Evaluation	5	50	10,00
Amount	415	950	43,68

Table 5 Interpretation of Each Element of ISO 9000 – A Translation for Education

Group	Score Interval	Category	ISO 9000 Quality Element
1	0 ≤ P < 25	Nil	Document Control
			Methods of Review, Monitoring, & Evaluation
			Quality System
2	25 ≤ P < 50	Weak	Quality Records
			Management's Commitment to Quality
			Validation & Internal Quality Audits
			Pupil/Student Support Services
			Diagnostic Procedures & Methods of Identifying
			Underachievement & Failure
			THE WHOLE OF PERFORMANCE
3	50 ≤ P < 75	Fair	Consistency of Assessment Methods
			Corrective Action of Student Underachievement & Failure
			Staff Training & Development
			Curriculum Development, Design and Delivery
			Contracts with Internal & External Customers
			Records of Student Progress
			Assessment & Testing
			Selection & Admission Policy
4	75 ≤ P < 100	Strong	Assessment Records including Records of Achievement
			Physical Facilities & Environment

Discussion

The grouping above shows the performance difference among each quality system element. The performance difference indicates the degree of appropriateness of quality system and standards requirement, which also shows the weak point of standards. Table 6 below shows the strength and the weakness of each element of quality system in Institute of Home Affairs Governance.

Category	ISO 9000 Quality Element	Strengths	Weaknesses
Nil	Document Control		No document master list, no written procedures to identify, publish, and replace documents, no responsible parties.
	Methods of Review, Monitoring, & Evaluation		No method that be committed by all parties about monitoring and evaluation; no identification, usage, and evaluation of the methods

			used
	Quality System		No quality guidance, no procedure and work instruction based on the requirements of ISO 9000
Weak	Quality Records		No guidance and system to identify, use, maintenance and replace of quality records.
	Management's Commitment to Quality	There is quality policy	No job description; no work instruction; no management representative; documentation of management review result is still weak
	Validation & Internal Quality Audits	Internal quality audits every year	No follow up of audit results
	Pupil/Student Support Services	There are academic supervisors	Not effective and no written procedure
	Diagnostic Procedures & Methods of Identifying Underachievement & Failure	There improvement action	No written procedure, the causes of failure are not identified
Fair	Consistency of Assessment Methods	There are assessment method to evaluate student achievement	Rarely to evaluate the methods
	Corrective Action of Student Underachievement & Failure	There are corrective action to help students who are fail	Rarely to evaluate corrective action
	Staff Training & Development	There are training program depends on the invitation from another party	No initiative to create training based on needs assessment
	Curriculum Development, Design and Delivery	There are curriculum based on national curriculum	No written procedure and work instruction for lecturers
	Contracts with Internal & External Customers	The requirements of student and lecturer are complete	No written procedure
	Records of Student Progress	Records of student progress are well documented.	No written procedure
	Assessment & Testing	Records of assessment and testing are well documented.	No written procedure
	Selection & Admission Policy	- There are special committees for new admission. - Clear criteria for new	No written procedure

		admission and lecturer	
Strong	Assessment Records including Records of Achievement

Physical Facilities & Environment | There are some records about student status and achievement completely.
- There are many physical facilities that can be used by lecturers, students, and staffs.
- The responsible of physical facilities inventory, store, and maintenance has been defined, that is under Affairs Section authorization;
- The activities of inventory, store, and maintenance have been run well that proofed by tidy records about it. | No written procedure to identify student status and achievement.
No written and documented procedures for the activities of physical facilities inventory, store, and maintenance. |

Closing

1) The whole of quality system performance in Institute of Home Affairs Governance based on ISO 9000 – A Translation for Education was include weak category. It means many aspects were not appropriate with the requirements of ISO 9000. The un appropriateness indicator are:
   - No job description for all function;
   - Work procedures just cover some works;
   - No written work instruction for all works;
   - No good controlling about quality records and documents.
2) The reform priority that must be done by Institute of Home Affairs Governance in order to improve the process of education service providing was the design of quality documentation system that appropriate with the requirements of ISO 9000 – A Translation for Education.

Acknowledgements

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The development and evaluation of a Kinect sensor assisted learning system on the spatial visualization skills

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Abstract

In this study, we proposed a cubic net assisted learning system by using Kinect sensor technologies for enhancing learners' spatial ability. The content of the system is based on the geometric learning theory, and 3D real-time objects used to provide the different viewing angle control. The goal of the proposed system is to facilitating learners' motivation by providing realistic 3D-visual materials and to evaluate the effects of specific operating experiences. As the advantages of Kinect SDK (Software Development Kit), our system employs body and depth tracking function to help learners using their hand to operate objects. The result of the System Usability Scale (SUS) showed that our system is usability and learnability. According to the evaluation results, we concluded that Kinect sensor assisted learning system not only could promote in developing the students' spatial visualization skills, but also encourage them to become the active learner.

Keywords: Kinect sensor; augmented reality; spatial ability; geometric learning theory; system usability scale

Introduction

Learning with virtual objects integrated into reality interactive technologies has led to new digital learning type (Lin, Chen, Hsieh, Lee, & Huang, 2012) in recent years, and has become the heated discussion issue of e-learning research. However, in order to guide learners to learn scientific knowledge quickly and efficiently, the integration of innovative technologies into scientific learning activities without distracts their focus of learning should be an important research topic.

With the increasing usage of physically interactive and augmented reality, game-based learning requirements for digital learning application have become more critical. Learners are able to learn better since they use multimedia assisted learning system, which would make them more motivated to pay attention to the information presented and better retain the information. Lu & Yao (2002) also stated that presenting abstract material using multimedia enables learners to understand the material better, and audio and visual displays allow learners to interact with the material. Although teachers' professional education seemed to play an important role in the teaching process, but we still need an innovation instructional designs which differ from traditional teaching. We have to change education mode from "Technology-adapted Instruction" to "Instruction-adapted Technology" (Sung, Chang, & Hou, 2005). It is difficult for most learners to reasoning and conversion of Shape and Space in the field of elementary school mathematics education, so it causes lower learning achievement than the other units (Wang & Wang, 2008). However, spatial ability plays a very important role in the learning of mathematics geometry (Wheately, 1990; Wu, 2004; Wei, 2005).

The NCTM (2000) consider that the geometry help students to analyze characteristics of geometric shapes, as well as to use visualization, spatial reasoning, and geometric modeling to solve problems. Van Hiele (1986) describes a theory of mathematics education, the development of geometric thought, to enhance the achievement of learning and to promote learners' comprehension. Van Hiele suggested five teaching phases to design teaching methods and materials step-by-step. This model of teaching phases is used as the main theoretical framework for this

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study. Game-based learning (GBL) is an instructional method that incorporates educational content or learning principles into video games with the goal of engaging learners. The use of this method in the field of natural science and technology has increasingly been the object of study in recent years. Learning through digital games not only increase motivation, active learning, and provide individual learning opportunities, but reduce the learning pressure of learners (Wu, 2007).

The main issues of this study focus on developing and evaluating a cubic net interactive system by using Kinect sensor for enhancing learners' spatial ability. We will develop a courseware for interactive learning on cubic net in elementary school refers to a lesson of "Mathematics Space Geometry". The content of the system is based on the geometric learning theory, and 3D real-time objects are used to provide the different viewing angle control. A qualitative analysis is also performed to show learners' interactive of the Kinect sensor design through observation record, video recording, and structural interviews. And the questionnaire of system usability scale is utilized to evaluate system usability.

For these objectives to be achieved, the article is structured as follows. The first section deals with the foundations for the development of the research. After which research methodology is presented, with full details of the system development, and of the instrument and procedures used. Results and then presented, with a thorough description of the system usability. Finally results are discussed and conclusions are drawn.

Literature Review

Spatial visualization skill

Bishop (1989) refers to the power of spatial ability to help learner in visual and figural representation and to introduce complex abstractions in mathematics. Piaget & Inhelder (1967) think that the child first recognizes various objects by sense of touch alone and is followed by building up and using certain primitive relationships (topological space). Contrary to the historical development of geometry which began with treatment of straight lines, angles, distances, and plane figures, the child begins by noting the topological as opposed to the metric properties of objects (projective space and Euclidean space). Lohman & Kyllonen (1984) and Linn & Petersen (1985) think that spatial ability includes spatial visualization, spatial perception, spatial orientation, spatial imagination, and spatial translation and transformation. In this study, we focus on the spatial visualization skill which is the ability to mentally manipulate complex spatial 2-dimensional and 3-dimensional figures. Van Hiele (1986) describes a theory of mathematics education, Development of Geometric Thought, to enhance the achievement of learning and to promote learners' comprehension. Van Hiele suggested five teaching phases to design teaching methods and materials step-by-step (see Table 1).

Table 1. The model of the Development of Geometric Thought

Level	Phases of learning
Level0 Visualization	Inquiry/information
Level1 Analysis	Directed oriented
Level2 Informal deduction	Explication
Level3 Formal deduction	Directed oriented
Level4 Rigor	Integration

Kinect for Windows

Kinect for Windows gives computers eyes, ears, and the capacity to use them (Kinect for Windows, 2013). Its OpenNI framework and SDK architecture show in Fig. 1. Kinect sensor gets the information stream (such as video, depth, and audio stream) and delivers to Natural User Interface (NUI) library. We operate through application interface (API) to control all functions of Kinect sensor, such as hand tracking, skeleton tracking (Kar, 2010), speech commands, and face tracking.
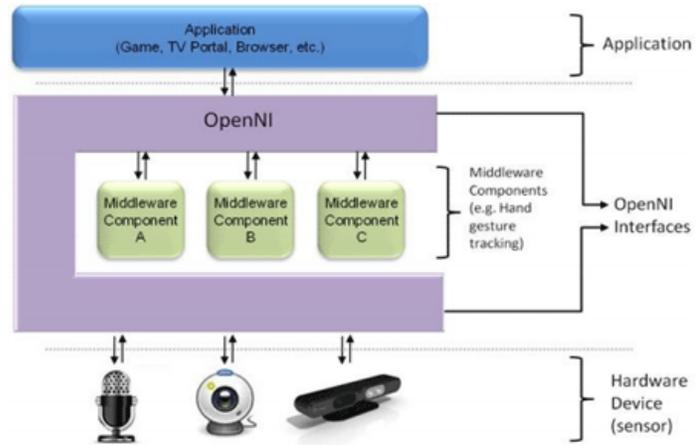
Fig. 1. Kinect for Windows OpenNI framework. (Data source: http://yannickloriot.com/)

Game-based learning

Game based learning (GBL) is a specific term of instructional strategy or activities that deals with applications that have defined learning outcomes. As an emergent learning process, game-based learning is designed to balance the subject matter with the gameplay and to help the player to retain and apply the subject matter to the real world (Kiili, 2005; Prensky, 2001). Game-based learning usually uses video-game technology, scoring strategy, interactive interface, flexibility course, and real-time feedback to engage learners into their learning (Drummond, 2003). It not only makes learning more meaningful but also creates a mental model which is response to participants' motivation (Chumbley & Griffiths, 2006; Provenzo, 1992).

With the rapidly development of information and communication technology, computer and simulation games have become the most popular leisure activities in our daily life. Many educational scholars claim that computer game is the natural and necessary element of student's learning and it should be integrated into the instructional design as well as learning environments (Kiili, 2005; Prensky, 2001). They also believe that playing computer games applies the concept to "learning by playing", which helps students overcome the boredom of learning in the classroom (Nanjappa, 2001; De Freitas, 2006). However, there are still some weaknesses and drawbacks in the implementation of game-based learning: (a) Game-based learning needs a lot of preparations and efforts; (b) the subjects and contents usually are pre-defined and fixed. More specifically, the workload of these tasks is very large and the completion of the application may not really meet the demand (Charles, Charles, & McNeill, 2009). On the other hand, e-learning systems are usually designed to support alternative methods for traditional instruction in order to improve the quality of student learning and to reduce the costs of instruction (Twigg, 2003). Hence, the game-based e-learning has been proposed. As Clark and Mayer (2003) noted in their review of e-learning, well-designed system can help generate the contents of entertaining scenario that correspond to the learning subject. Stated another way, game-based e-learning system should make the preparations of learning applications with less efforts and better efficiency.

System Development

Teaching materials

To develop material employing Kinect sensor, different programming frameworks must be surveyed, the OpenNI architecture to control Kinect sensor and OpenTK to provide cross-platform library (Fig. 2). By employing Kinect senor to present the questions and interactive games, and including a hand-mouse function, learners can learn the geometric learning theory and related information (Fig. 3 shows the system process.).
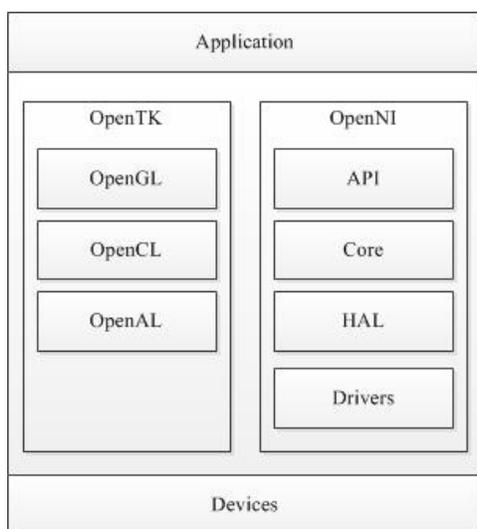
Fig. 2. System stack overview
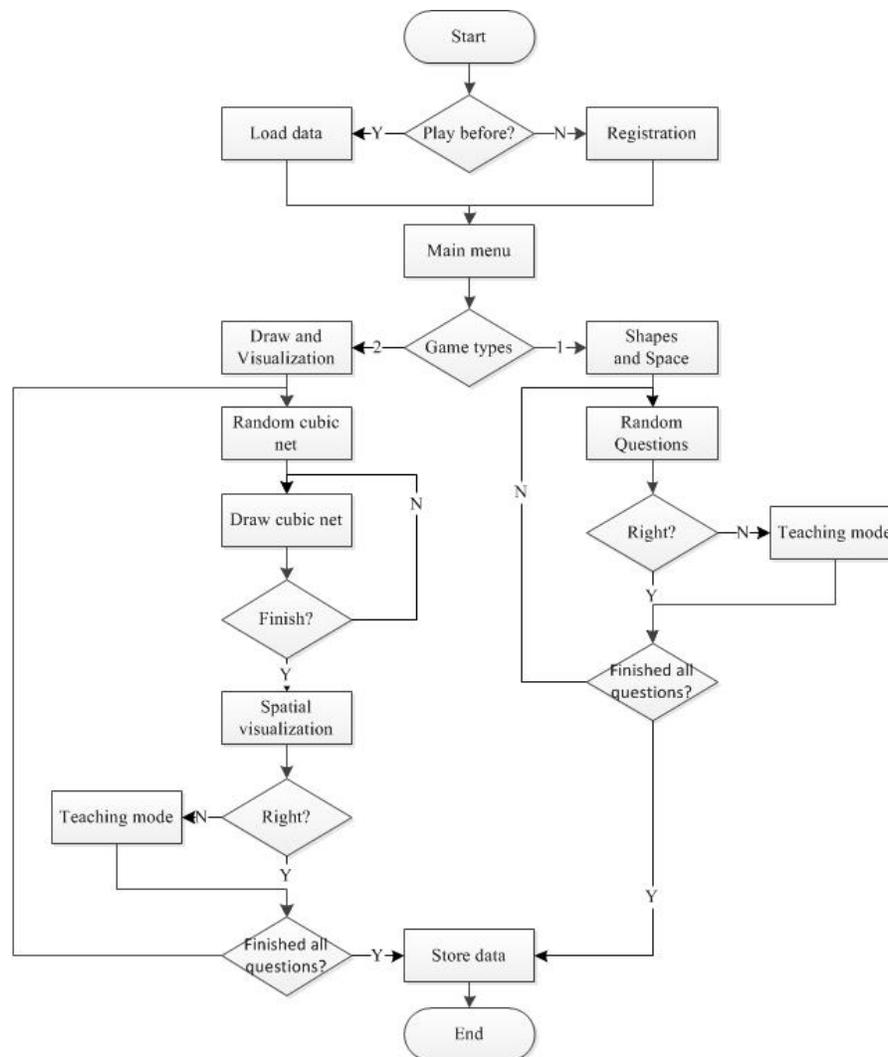
Fig. 4. Kinect sensor assisted learning system process.

Experimental subjects and operation

Subjects are 98 students from the University of Technology in north Taiwan and they take information technology and science courses. We utilize System Usability Scale (SUS) (Brooke, 1986) which is a questionnaire of Likert Scale to assess system usability, learnability and users' subjective satisfaction with specific aspects of the interactive interface. In addition, we add an adjective scale to rating our SUS scale (Fig. 5), this SUS was highly reliable (alpha = 0.91) and useful over a wide range of interface types (Bangor, Kortum, & Miller, 2009). While SUS was only intended to measure perceived ease-of-use, Lewis, & Sauro (2009) show that it provides a global measure of system satisfaction and sub-scales of usability (items 1, 2, 3, 5, 6, 7, 8, 9) and learnability (items 4 and 10) (multiplied their summed score contributions by 3.125 and 12.5, respectively).
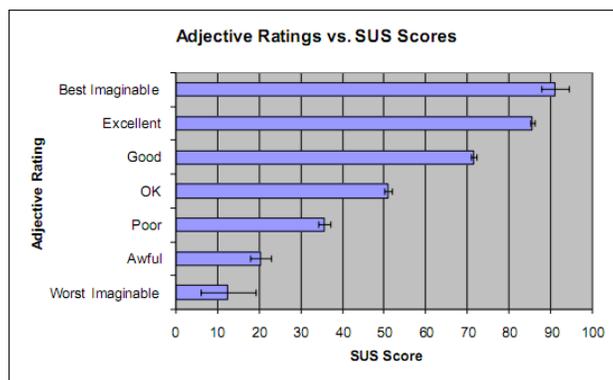
Fig. 5. Mean SUS score ratings corresponding to the seven adjective ratings.
(Data source: Bangor, Kortum, & Miller, 2009)

The teaching materials employing Kinect sensor developed in this study required the use of computers. The learners were stand in front of Kinect sensor and provided information regarding the course (see Fig. 6).

Fig. 6. Learner operation example.

Evaluation Results

Subjects finish operating the system and fill out the SUS questionnaire. As summarized in Table 2, the mean score of SUS is 71.73 (SD=13.06). According to the adjective ratings score, the assisted learning system in this study closely matches subjective label between Good and Excellent. We have discussion with these subjects on their idea about the interactive learning system after they complete operating the system and filling out the SUS questionnaire. Subjects generally agreed that interactive learning system increase their interest in the concept and make them to find different things.

For the analysis of the questionnaire, will further discuss the mean score, usability score, and learnability score and help us to improve system. Hence, we summarized the following reasons may affect the system satisfaction.
- The control and learning interface are not smooth enough.
- The materials cannot display properly due to the angle and distance, this situation may confuse learners' operation.
- Learners need the support of technical assistant. Some learners do not understand how to operate the system. So we will provide teaching documents or assistant to help them.

Table 2. SUS scoring

Mean	SD	Min	Max	Median	Usability	Learnability
71.13	13.06	45	100	70	71.08	74.36

Conclusion and Future Work

In this paper, we present the results of the usability and the learnability of cubic net assisted learning system by using Kinect sensor. Regarding the SUS questionnaire, most learners highly appreciated the teaching materials employing Kinect sensor and considered the materials interesting, easier to control and play, and easy to operate using the interactive functions. The learners also reported that the teaching employing interactive system enhanced

their motivation to learn and was helpful for learning spatial skills. In the future, there are still many parts of system to improve. A small portion of the learners reported that the teaching material employing Kinect sensor performed less desirable response speed during interactive operation. The buttons should be clearly defined, the cubit net knowledge should be highlighted, and proper instructions should be provided to ensure the learners are more focused on learning the knowledge expressed in the teaching materials.

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The Development and Testing of Multimedia-assisted Mastery Learning Courseware with regard to the Learning of Cellular Respiration

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Abstract

This paper discusses the development and testing of Multimedia-assisted Mastery Learning Courseware (MMLC) with regard to the learning of cellular respiration. The model for the instructional system design and the a combined theory of instruction are introduced as the macro and micro stages of developing the courseware. The design of the prototype is reported followed by the alpha test using usability evaluation. Beta testing was carried out after revisions were made based on expert comments. The findings of this study show that the courseware is well designed in terms of using mastery learning elements which goes through a series of systematic testing stages. In conclusion, the MMLC is ready to be implemented in order to discover the effectiveness in terms of enhancing student's performance with regard to learning cellular respiration.

Keywords: multimedia learning, learning biology, computer-assisted learning, e-learning, mastery learning, testing prototype

1. Introduction

Recently, the advent of Information and Communication Technology (ICT) systems offers new capabilities for the delivery of instruction throughout the range of educational settings. At the moment, educators are exploring ways of providing flexible learning systems that will meet the ever-increasing demands of a complex and diverse student group. Moreover, many cases regarding student performance are reported, such as the difference between low achievers and high achievers (Guskey, 2007). To overcome this problem, various interventions have been suggested, including curriculum-based assessment (Hintze, Christ & Methe, 2006), tutoring (Sleeman & Brown, 1982), mastery learning (Bloom, 1984), formative assessment (Guskey, 2010) and so forth. Unfortunately, most of these interventions required additional resources such as teachers' effort, workload and time. However, the advancement of ICT has eased the burden on the resources needed for teaching and learning processes. The employment of computers in teaching and learning is seen as the only way to maintain and promote the quality of instruction.

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2. Multimedia-assisted Mastery Learning Courseware in Biology

Biology is one of the subjects offered as part of the Matriculation science programme in Malaysia. This subject contains many abstract concepts that are difficult to understand. Students must be able to conceptualise and construct abstract concepts in biology in order to understand and make sense of them. Many students' demonstrate common misconceptions concerning biology, including their understanding of topics such as respiration, photosynthesis, ecology, genetic, classification and the human circulatory system (Tekkaya, 2002). Furthermore complex processes and the use of technical terms such as in the topic of cellular respiration, make them difficult to learn (Patro, 2008). Hence, it is important to design a high quality instructional system to enhance the teaching and learning of difficult and abstract topics as part of the subject of biology.

The mastery learning method divides subject matter into units, each of which has a module with predetermined objectives which has to be completed. In doing unit tests, students should achieve mastery, typically 80%, before moving on to subsequent units. Students who do not achieve mastery receive remedial instruction, while students who achieve mastery have the opportunity to participate in enrichment activities. With the use of computers, mastery learning has a high potential to become an effective and extensive teaching and learning tool (Kulik et al., 1990; Fike et al., 2011) For each learning module, students are allowed to test and re-test until competency is achieved with regard to each unit. This allows students to proceed at their own pace based upon their unique learning styles and capacities for learning. Each time that students complete a test on a learning module, they are informed promptly of their performance, and receive immediate feedback on those items with regard to which they have not demonstrated competency. Accordingly, students who learn at a slower pace or who have an inadequate academic background, are provided with an opportunity to catch up with those students who have stronger backgrounds or who learn at a more rapid pace. This tends to create an equalizing effect for students. In this research, all the instructional elements as part of the mastery learning strategy, are delivered via multimedia interactive tools. With the advent of ICT as a teaching tool, and the availability of computer hardware in schools, the problem of applying mastery learning can be improved by using interactive courseware. Feedback activities could also be easily conducted using computers. In addition, in terms of recording the students' performance, the technology could also reduce the time and effort required to implement the comprehensive interventions needed as part of the mastery learning process.

3. Methods

Learning courseware is a relatively recent application with regard to Computer Based Learning. This refers to the use of computers for the delivery of instruction involving an interactive approach. The researcher had developed courseware entitled "Cellular Respiration" to improve student's performance and understanding with regard to this topic. The design of the courseware was based on a macro and micro design. Bloom's mastery learning strategy (Bloom, 1984), Mayer's Cognitive Theory of Multimedia Learning (Mayer, 2003) and Alessi and Trollip's instructional design model (Alessi and Trollip, 2001) were used for the macro design. Gagné's nine events of instruction (1985) was used for the micro design of the courseware. Motivational elements were incorporated into the courseware which was created based on Keller' ARCS model of motivation. These were incorporated into the courseware which was created based on Gagné's nine events of instruction. Keller's model suggests strategies for increasing the motivation to learn. ARCS is an acronym for the four essential strategy components for motivating instruction, namely (1) Attention strategies for arousing and sustaining curiosity and interest, (2) Relevance strategies linked to learner' needs, interests and intentions (3) Confidence strategies that help students develop a positive expectation for successful achievement, and (4) Satisfaction strategies that provide extrinsic and intrinsic reinforcement for effort. Attention involves the arousal of interest on the part of learners, the stimulation of an attitude of inquiry and the maintenance of attention. Relevance refers to tying instructions to the student's personal interest or goals. Confidence refers to the students' expectations for success, while satisfaction refers to the process or results of the learning experience. In this research, an authoring software, Adobe Flash CS4, was used to design the courseware. Thumbnails that allow the development of the courseware through rapid prototyping were created by using this software. It allowed and illustrated the correct navigation within and among the modules. Furthermore, objects in the form of animations, graphics, texts and sounds were built as a knowledge base by using Micromedia Fireworks, Adobe Photoshop and Sound Forge. Figure 1 explained the flowchart of the courseware in general.
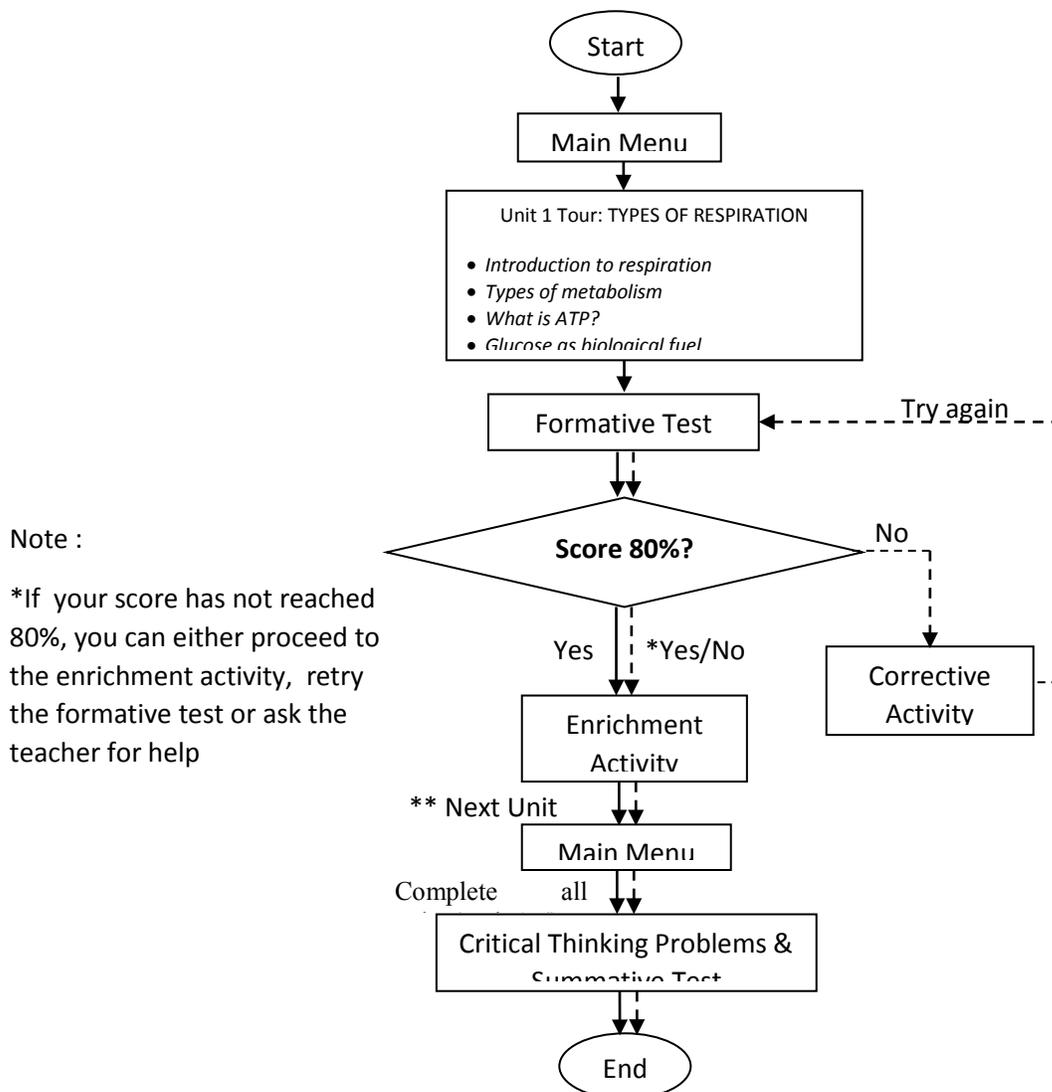
Figure 1 : Flow chart of Multimedia-assisted Mastery Learning Courseware

4. Testing and Revision

The final step of the development process was testing and revision. At first the researchers checked in advance with their two experts biology lecturers experienced in the Matriculation program to ensure that all the teaching content be included in the courseware was correct, accurate and timely before the programming process. After the prototype was developed, the researchers conducted a comprehensive evaluation involving two phases. The first phase was the alpha testing while the second phase was the beta testing. These two phases were part of the assessment process as proposed by Alessi and Trollip (2001) to ensure the validity and reliability of the courseware being developed. Alpha testing involves the process of quality inspection involving content experts who undertook an evaluation of the courseware design. The evaluation process was done by each evaluator using a checklist evaluation of multimedia instructional materials. Three other biology teachers and two instructional design experts determined the validity of the content and evaluated the accuracy of the design and content presentation.

5   Results

5.1 Alpha testing

The alpha test results involving content experts indicated that the courseware met the learning needs associated with the cellular respiration topic. The contents of this courseware was accurate, complete and timely in terms of the Matriculation biology syllabus. Content experts also found that the audio quality used by the narrator was good and matched the quality of the animated video presentation that had been constructed. However, the content experts identified several minor errors in spelling such as acetyl-CoA, mitochondria and the symbols for oxygen (O_2) and carbon dioxide (CO_2). Some of the illustrations used such as in the Krebs cycle and the oxidative phosphorylation process was not clear and could be further improved. They also advised that the researchers used graphics relevant to the topic as a display montage and interface.

From the instructional design experts' point of view, they were not satisfied with the selection of the background graphics for the montage display and the interface. In addition, the control button arrangement was also thought to be disorganized. The video animation did not have a complete set of control buttons (just a stop and a pause button). A video control button should be included so that students can control the speed of the video to match their individual needs. This is relevant to one aspect of multimedia design principles in the form of the principle of segments as proposed by Mayer (2009). The experts also suggested that the researchers should build a more uniform systematic control buttons set up below the display interface to clarify the teaching segments. However, they found that the design and programming of the mastery learning strategy was easy to follow. Using a biology teacher as a character is suitable since it acts as an important guide during the exploration of the courseware. Based on the feedback, a few modifications and amendments were carried out. All the modifications were carried out before the beta testing was done on students from the target population. Figure 2 shows prototype interface screen displays before and after a series of modifications were done.
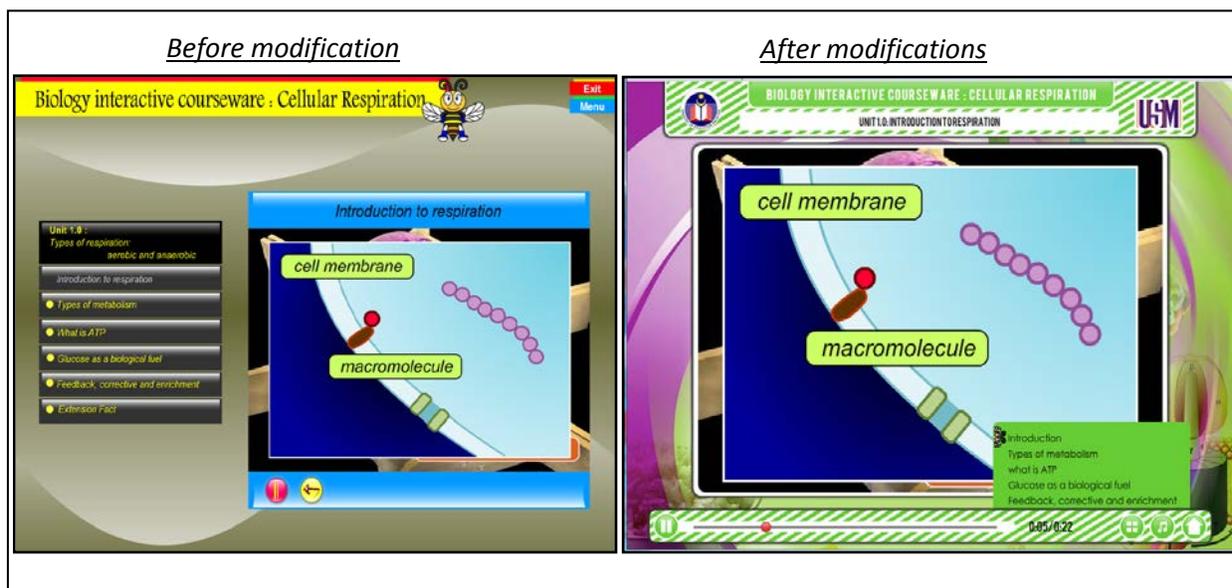
Figure 2 : Ordering interface display reconfigured to create a more systematic button control. Background graphic interface display changed to be more relevant to the topic and the video display

5.2 Beta Testing

Beta testing follows revisions and utilises the full product for testing. The beta test was performed by the students with collaboration with the researcher. It was a formal process to determine the usefulness and the usability of the courseware, with clear procedures about what to do and what to observe. Usefulness refers to the extent that the courseware was useful in supporting the learning process. Meanwhile, usability was related to software technical

operations which consisted of the interface and the interaction. The beta test was carried out to serve as a useful trial run of the courseware. Also, it provided the researcher with information with regard to any unexpected problems which may arise from the usage of the computer or the contents of the courseware. Indirectly, the researchers were able to identify any weaknesses or problems from the perspective of the students in relation to the use of the developed software. The researcher conducted two stages of beta testing namely; 1) one-to-one evaluation and 2) small group evaluation by students. One-to-one evaluation involved three target users with a range of biology academic achievement. Firstly, the researcher explained the procedure by informing the learners the reasons they were testing the courseware. During the evaluation session, the researcher observed the students going through the courseware. The researchers unobtrusively made note and observed the changes in behaviour, facial gestures, and the body language of the students. A short interview was conducted to get their reactions and feelings. From the testing, the three of them were satisfied with the courseware they explored. They responded positively especially from the aspect of language level, animated graphics and exercise provided. After the one-to-one evaluation, the researcher continued with the same method to a small group of students in a real classroom environments. Twenty seven students were brought to the computer laboratory to run the courseware and give feedback. This is regarded as a summative evaluation whereby a student's approval is needed (Alessi & Trollip, 2001). Overall, it was found that the students were satisfied and could cope with the courseware without any problems. Figure 3, Figure 4, and Figure 5 show two scenes of the MMLC for the topic of cellular respiration.
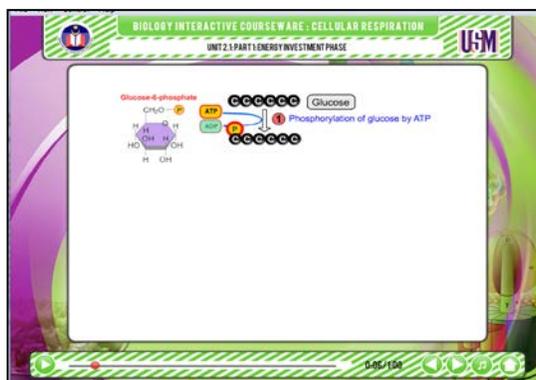
Figure 3: The presented instruction material created through enhanced cues

Figure 4 : Screen shot of a biology teacher character giving immediate feedback

Figure 5 : Screen shot of the feedback given on a formative test

Conclusion

Based on the evaluation carried out at all levels, it was found that the courseware was built to consider ideal characteristics such as interface design, audio quality, quality graphics, use of appropriate colours, good quality animation and ease of use. In addition, the results of the beta test and feedback from random interviews conducted with the students showed absence of programming errors. Overall, the students were satisfied with the content and operation of the courseware. It is hoped our MMLC will be a viable alternative approach for students leading to a significant increase in student achievement in terms of learning about cellular respiration. There are also positive possibilities to extend this courseware beyond biology with fruitful results.

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13ᵗʰ International Educational Technology Conference

The Development Model of Knowledge Management via Social Media to Enhance Graduated Student's Self-Directed Learning Skill

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Abstract

This research explore that the model of knowledge management and social media technology for graduated student as well as its impact in the classroom on learning and teaching, especially in graduated student's self-directed learning skill and practices that refer to knowledge creating, analyzing, nurturing, disseminating, and optimizing process as part of the learning quality improvements. In this process, web technology particular social media has a necessary role to drive and integrate knowledge and learning activities within the knowledge management process. In this respect, this research aims to study the appropriate model of knowledge management via social media and enhance the graduate student's self-directed learning skill.

Keywords: Knowledge Management (KM), Social media, Self-Directed Learning skill.

Nomenclature

A	Knowledge Management via Social media
B	Self-Directed Learning skill
C	Graduated student

Introduction

Graduate student quality is the top contributing factor to student achievement. Quality ongoing professional development contributes to student growth and success. The needs for professional development that can meet today's educators' demanding schedules, that uses quality content and resources that are available to teachers from any place and any time, and that can deliver relevant, accessible, and ongoing support has stimulated the development of online teacher professional development programs. Online teacher professional development programs make it possible for educators to communicate, share knowledge and resources, and reflect via asynchronous interactions. Moreover, Dabner (2011) suggest that the many current ICT-supported reform efforts demand teachers to assume the role of epistemic facilitator of knowledge construction supported by technology. In addition, Davis et al. (2011) explored the characteristics of such technology training programs were discussed to help students learn how to use technologies as instructional tools to enhance their teaching and students` learning. The condition of education in Thailand today still has several problems. Especially, the quality of learners seems shortages (Secretariat of the Council of Education, 2010: 53). Along with the lack of pedagogy skills that is not match in the actual practical needs for higher education. Particularly, the lack of the self-directed learning skill of graduate students to use that knowledge management let the opportunity to exchange and share knowledge is decreased between them and focuses on the upstream of training from real situations process furthermore, Lee, et al (2010) have suggests that the common difficulties and limitations regarding the implementation of knowledge management into classrooms cultures. In addition, Erkunt (2010) exhibited that students' collective inquiry relied on socially distributed cognitive resources that were generated by their social interactions in class and online using

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technology. The concept of social media that based on the appropriate tool and the medium to deliver knowledge, and helps learners can communicated with each other (Catherall, 2008) especially in teaching and learning using the potential of internet network to access with various sources of learning (Belleghem, 2011). The main purpose of this study is to research and develop activities to be appropriate with the learners that integrated with the concept of knowledge management and social media. The question then becomes, "How to develop the appropriate model of knowledge management via social media". The expected benefits are the appropriate model that is the systematic approach to enhance graduated student's self-directed learning skill. More over the results of quality assessment of model that is body of knowledge to develop the learning skill of graduated students. In addition the results can be the information to support the higher education systems policy maker.

Objective

This research primarily sought to study, develop, and evaluate the model of knowledge management via social media to enhance graduated student's self-directed learning skill.

Methodology

The first phase: Studying the model of knowledge management via social media to enhance graduate student's self-directed learning skill.

1. Analyzing the elements of knowledge management (KM) are included the knowledge management activities: Creating (Explore and Capture), Analyzing (Identify and Organize), Nurturing (Utilize and Demonstrate), Disseminating (Transfer and Diffuse), and Optimizing (Evaluate and Improve)

2. Analyzing the elements of social media are included the elements of web-based learning (instruction, interaction, and internet) and web technology (collaboration, communication, and storage technology).

3. Analyzing the elements of self-directed learning skill.

4. Integrating the elements of knowledge management, social media and self-directed learning skill.

The second phase: Developing the model of knowledge management via web-based learning to enhance graduate student's self-directed learning skill and assessment tools.

1. Developing the model of knowledge management via social media.

2. Developing the competency assessment tools that include the achievement test, attitude test, and performance test.

3. Developing the efficacy of the model of knowledge management via social media to enhance graduate student's self-directed learning skill.

The third phase: Evaluating the model of knowledge management via social media to enhance graduate student's self-directed learning skill.

1. Research design by following the Two-Group Posttest Only Design.

2. Population and samples:

2.1 Population is the graduate students (Master and Doctoral degree) who study in 2nd semester, 2012 academic year at Faculty of Education, Kasetsart University, Thailand.

2.2 Samples are random sampling the 60 graduate students that divided into 2 groups: The first group is 32 peoples for experimental group and the other group is 30 peoples for control group.

3. Research tools:

3.1 The model of knowledge management via social media.

3.2 The competency assessment tools (knowledge test, attitude test, and performance test).

4. Data analysis:

4.1 Descriptive statistics ($\bar{x}$ and S.D.) are used to describe the basic features of the data.

4.2 Inferential statistics (t-test with independent sample) are used to compare the data between control and experimental group.

Results

The model of knowledge management via social media to enhance graduate student's self-directed learning skill was appropriated with the criterion of quality, detail are as follow:

1. Knowledge management are include the KM activities of <u>C</u>reating (Explore and Capture), <u>A</u>nalyzing (Identify and Organize), <u>N</u>urturing (Utilize and Demonstrate), <u>D</u>isseminating (Transfer and Diffuse), and <u>O</u>ptimizing (Evaluate and Improve).

2. Social media are driven the Knowledge management by Facebook, Tweeter, YouTube, Wikis, and Blogs.

3. Self-directed learning skill are include the components of Planning, Strategies, Resources, Motivation, Monitoring, Evaluating, and Summary (Figure 1).

Figure 1: the model of knowledge management via social media to enhance
graduate student's self-directed learning skill.

Conclusions

The research results exhibited that the model of knowledge management via social media to enhance graduate student's self-directed learning skill was appropriated and fit to the quality of educational media. Online learning skills development is an emerging trend it is still a "new frontier." Educators around the world experience many demands on their knowledge, time, and professional development. Developing and sustaining an effective online

learning community can be challenging even in the midst of an era of much technological advancement. More over developing and sustaining an effective large-scale online community is even more challenging. In addition, professional development has mainly centered on learning processes that involve updating knowledge, yet it has made little headway as a construct that includes both the professional and personal characteristics and working conditions. It has also focused more on developing. Finally, online learning technologies have the potential to transform the professional development of students; penetrate cultural, discipline, and other barriers; bring educators together to learn, share successes and challenges; and co-construct and transfer learning.

Acknowledgements

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The Development of a U-Learning Instructional Model Using Project Based Learning Approach to Enhance Students' creating-innovation skills

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Abstract

This study aimed to develop a u-learning instructional model using project-based learning approach to enhance the students' creating-innovation skills. In addition, this model will be used as a framework in the development and evaluation of effective u-learning systems in higher education in Thailand. The design of the model was based from the analysis of various researches and literatures on u-learning. The model illustrated the four factors that influence u-learning. This research highlighted the interplay of these factors in the processes of project-based learning. Finally, the model discussed the four creating-innovation skills for 21st century learners.

Keywords: u-learning instructional model, project-based learning approach, creating-innovation skills

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Nomenclature

A   U-Learning Instructional Model

B   Project-Based Learning Approach

C   Creating-Innovation Skills

Introduction

Developments in science and technology have continuously evolved through time. Everybody has moved to an era of an information society that affects the ways of living of the consumers regarding using technology to make life easier and more efficient in the social, political, economic and educational aspects.

In the field of education, recent developments in science and technology applications have influenced the learning process. The education in this present time is classified as the education for a social learning focusing on the integration of modern technology. A result of the integration of information technology with borderless communication makes this society become a timeless learning society. In the 21st century learning, computer and internet technologies have greatly affected the delivery of learning. These technologies made learning accessible to everyone, anywhere, and anytime. One of the learning approaches that have been used today is Ubiquitous Computing which responds to continuous learning that happens anywhere and anytime and leads to Ubiquitous Learning or U-Learning.

In Thai educational context, a model of U-Learning has yet to be developed and designed in order to effectively facilitate and implement the learning approaches adopted by various higher education institutions. Educational management is one important mission of any educational institution, especially in higher education, which is expected to produce qualified graduates to the labour market and to develop the country. Thai education has to

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develop both educational management, and engaging teaching and learning activities in order to make it at par with recent innovations in educational communications and technologies and to cope with the recent issues trends in the international educational system.

Objective

This study primarily aimed to develop a u-learning instructional model using project-based learning approach to enhance the creating-innovation skills of students in higher education in Thailand.

Methodology

The development of a u-learning model is the first phase of a research on u-learning applications in higher education in Thailand. The second phase of the research will involve the testing and evaluation of this model to different higher education institutions in Thailand.

This study only discussed the first phase. In developing the u-learning instructional model in higher education, this study analyzed various researches and literatures on u-learning. The process of developing the model included the following:

1. Analyzing the elements of the u-learning
2. Analyzing the elements of project based learning
3. Analyzing the elements of creating-innovation skills
4. Designing and developing the model.

Results

Based from the analysis of various literatures on u-learning, this research highlighted the three factors that influence u-learning.

The first group of factors includes the elements of u-learning. These elements are Person, Approach, Context, and Technology. Person refers to the participants of the learning process – student and teacher. They possess different characteristics and share knowledge and skills. They engage in different Contexts or learning environments using various Approaches such as using internet and computer applications and Web Blog. Learning activities inside the classroom such as teacher-learner approach and learner-learner approach can also be utilized. To facilitate the learning process, different Technologies are used. These educational technologies include mobile and wireless technologies such as tablet PC and smart phones.

The second group of factors involves the six processes in project-based learning – Introduction, Selection, Planning, Collecting, Presentation and Evaluate of U-Learning activities. The first process, Introduction, aims to attract the attention of the students to motivate them to learn, The second process, Selection, allows the students to carefully choose topics during the learning process that interest them. In the third process, Planning, students design and develop their own work plans and implement these plans. The fourth process, Collecting, involves gathering of data, information, and other resources to prepare them for the fifth process, Presentation. The last process, Evaluation, assesses the project implemented and all the components involved in the implementation such as goals and objectives, tasks, and resources used, among others.

The third group of factors includes the levels of creating-innovation skills developed by the students after engaging in u-learning. Tenkely (2010) explained these creating-innovation skills of Bloom's taxonomy at various levels from Plan (Level 1), Design (Level 2), Imagine/Invent (Level 3), Create/Compose/Construction (Level 4) (Tenkely, 2010).

The first Group   The Second Group   The Third Group
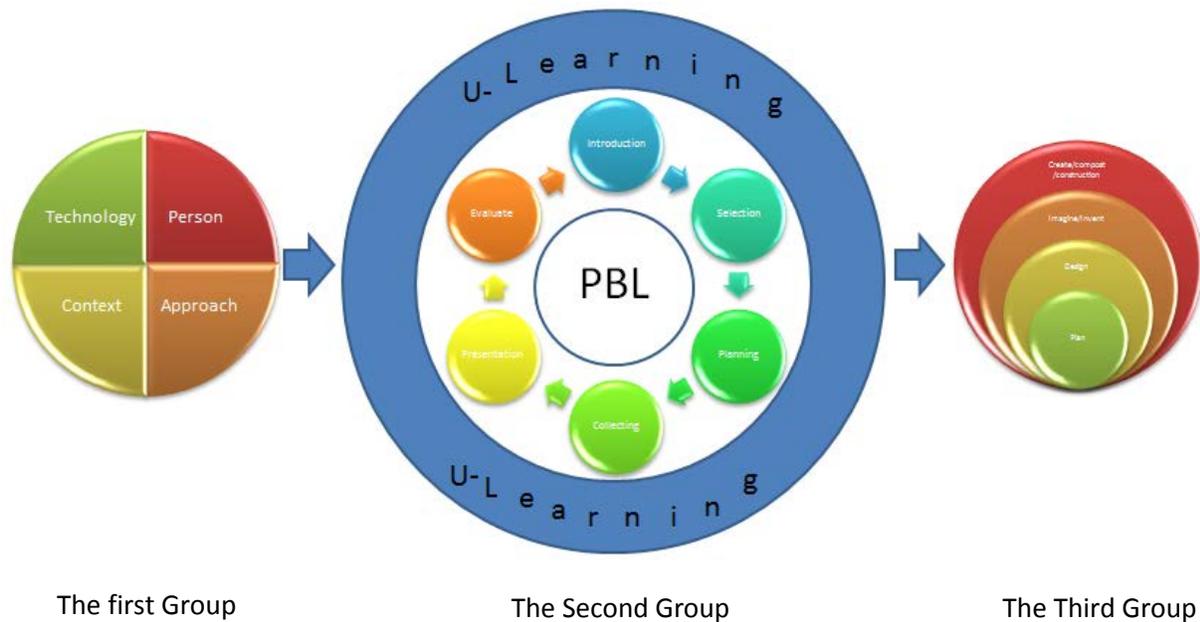
Figure 1: The U-Learning Instructional Model Using Project Based Learning Approach to Enhance Students

Conclusions

This study reported the first phase of the research on u-learning in higher education in Thailand. This showed the three groups of factors that were involved in the development of a u-learning instructional model using project-based learning approach to enhance the creating-innovation skills of the 21st learners. This model will be evaluated during the second phase of the research which involves the actual implementation of u-learning in higher education using this instructional model.

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13th International Educational Technology Conference

The Development of Working Design through Characterized Technology Pedagogy and Content Knowledge in the Elementary Schools' Instructional

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Abstract

ICT-based characterized instructional can lead the learners become more creative and get higher quality output. This study aimed to determine the practicalities and potential effects of the use of characterized technology pedagogy and content knowledge to the learners' outcome. This study is a development research through characterized TPACK model and the evaluation will use Tessmer' procedure. The sample of this research is 38 students of the third class of elementary school in Palembang. The steps in doing this study are: 1) emerging, 2) applying, 3) infusing, and 4) evaluating. This model possess a very good validity, the potential effect of this model can be seen from the students' outcome, that is 65,79% success with good score, which means more than half of the students manage to learn based on this model.

Keywords: Technology, pedagogy and content knowledge, character education

Introduction

Nowadays, the ICT relevance in the instructinal which was originally only as a tool to increase its role as a learning resource. According Hinostron JE, et al (2008) (Sutrisno, 2012:11) in his paper entitled "Traditional and emerging ICT applications for learning" stated that there are three trends of instructional based ICT, namely: 1) provide opportunities in broadening the learning opportunities in flexible and easy way, 2) teachers can develop their creativity in developing the instructional scenarios, 3) ICT can enhance the instructional process for teachers and students. Teacher readiness in responding ICT integratively in the instructional is the main goal in developing the instructional activity, the ideal and competitive students need creative, innovative, and reflective teachers. to respond the demands, it is needed supporting program: , standardization, assessment, curriculum development, instructional development, professional development and the provision of a conducive learning climate. Especially in the development of teaching programs and profesional teacher, the teacher should be able to use ICT and the develops the instructional by integrating ICT. According to the American Associon Colleges of Teacher Education (AACT 2010) (in Sutrisno, 2012:16) it is stated that 21st century's teacher must master the competencies that can facilitate the students in accordance the learning outcomes that have been required, so the teacher must: 1) successfully combines the technology

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with instructional materials pedagogy, 2) incorporate appropriate instructional with specified in the curriculum with 21st century the demands of, 3) the balance of the instructional strategies and problem-based learning method. 4) masters the various assessment models to determine student performance, 5) acts as a mentor and exchange the ideas with the students, 6) always develops his/her professionalism.

The integration of ICT in the instructional

In 2010, there were three important issues concerning the development of what is called the Technology Pedagogy and Content Knowledge (TPCAK), namely: 1) professional teachers development on strategies, understanding and application of TPACK, namely the relationship analysis with technology (T), pedagogy (P) and subject matter (C) applied in the instructional process. 2) TPACK focused on learning technologies which are designed in accordance with the stages. 3) designing an observation measurement

Instructional-based Tecnology Pedagogy, Content dan Knowledge (TPACK) **model**

Tecnology Pedagogy, Content dan Knowledge (TPACK) model: this model was developed by Mishra and Kohler, (2008). The focus of this model as a framework for teacher or designer in integrating ICT in the instructional. This model is based on the development of models of Pedagogy Content Knowledge (PCK) proposed by Shulman (1986) (in Sutrisno, 2012). The basic concept of TPACK emphasis more on the relationship among the subject matter, technology and pedagogy. The interaction of the three has the power and appeal to foster active learning focused on students, can also be interpreted that it was teacher-centered learning, and TPACK student-centered learning. TPACK in the model is described as follows:
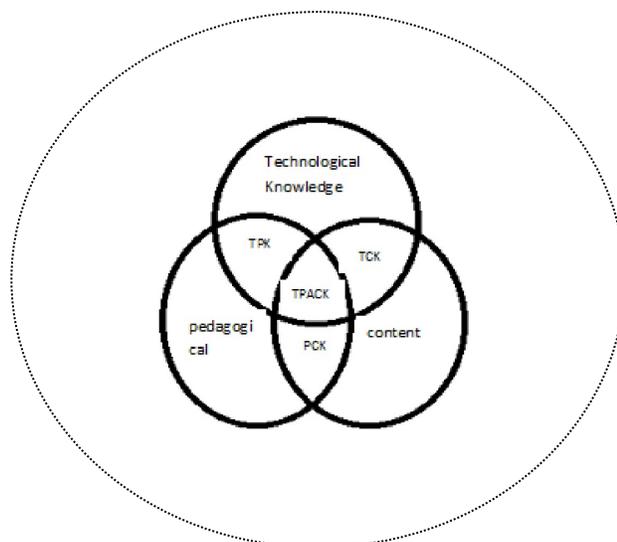
Explanation: TPACK = Tecnology Pedagogy, Content dan Knowledge

TPK   = Tecnological PedagogicalKnowledge

TCK   = Tecnological Content Knowledge

PCK   = Pedagogy, Content dan Knowledge

Figure1: *Tecnology Pedagogy, Content dan Knowledge (TPACK)* Model *adopted from Koehler dan Mishra 2008*

The Form of Character Education in School

The implementation of character education in all life aspects, especially school life, refers to the basic form of character education that writer can explain based on the configuration of elements of character education. Can be seen in the following table:

Table 1   value and material proposed by teacher in subject and material taught

Basic value of character	Instructional material
Honesty	The concept of self-knowledge, self-motivation, self-control, relationship with God, self righteousness, self-value system, sincerity, and sincerity, self-sacrifice, giving and sharing
Smart	Self concept as an achiever, analyzing ability, decision making ability
Tough	The concept of environmental influences destructive or constructive, working ability, resilience
Caring	Realize a wide range of interests, the community concept, understand social ethics, the concept of the common goodness, the concept of tolerance
Discipline	Consistent, clear, paying attention to self-esteem, praise reward, punishment, being supple, be firm, not be emotional
Self confident	Giving compliments to every achievement, teaching students to be responsible, teaching students to be friendly, glad to help others, do not reprimand in front of many friends, support something that interests the students, not coddle students
Independent	Forming students' independent attitude, allowing students to organize their own time, students are given the responsibility, implementing a healthy body condition and strong, giving freedom to the students to define their own goals, students realize that teachers are parents who are always at their side
Firm	Giving the students opportunity to express their opinion, giving a freedom to be creative, giving a chance to make decision.

Responsible	Giving tasks and reprimand, amends when doing wrong, consequent, discussing about the importance of responsibility
Creative	Learning beyond the facts, learning the correct way of thinking, constructing learning new facts
Critical	Explaining about the forbidden cause and effect thinking, thinking about something that happens for some reason.

Widely, the application character education in school can be classified into three events, namely: the development in instructional from each subject, the development in extracurricular activities and in school culture development, strategy development of character education in school subject of elementary school included in sport, religious, Indonesian, science, math and social studies. Ahmad Tafsir (2009:85) states that the process of integrating the character education in the instructional can be done in several ways, among them: (1) instructional material, (2) selecting material, (3) selecting instructional media integration.

Reserch problem: Tecnology Pedagoy, Content dan Knowledge (TPACK) model which is developed suit to the indonesian society, namely: technology pedagogy model, content and characeterized knowledge. The research question is: do Tecnology Pedagoy, Content dan Knowledge (TPACK) model have practical character and have potential effect to the learners' learning, while the objective of this research: to find out the potential effect of the use Tecnology Pedagoy, Content dan Knowledge (TPACK) model to the learners' outcome.

Research Methodology

Research methods: the initial apporach is by using survey, observationa, interview and documentation, then proceed by research and development proposed by TPACK theoretical framework developed by Mishra dan Kohler, (2008), and Tessmer (1998) will be applied as the evaluation. Then, this model is developed into certain situation, tested, revised and retested until it becomes perfect and productive result. Finally, it is found a characterized TPACK instructional model. The sample of this research is the third class of elementary school in Palembang

Characterized TPACK flow

ENERGING STAGE

Preparation

Media Setting

Action 1

The researcher introduces to the teacher the animation program, simulation, laboratorium, instructional system throuch internet access

Character value

Action 2

Teacher observes, tries, get to know the access program from the internet adjusted to the teaching material

APPLYING STAGE

Application

The teacher design the lesson plan explored by the curriculum, instructional based theme syllabus

Stage 2

The researcher equips the teacher the characterized TPACK and finds the suitability for the program animation, simulation, and well structured by the teacher

Character value

Stage 4

The teacher connects and designs the correspondence among technology, learning objectives, and pedagogical material

INFUSING STAGE

Continued

Continuation

INFUSING STAGE
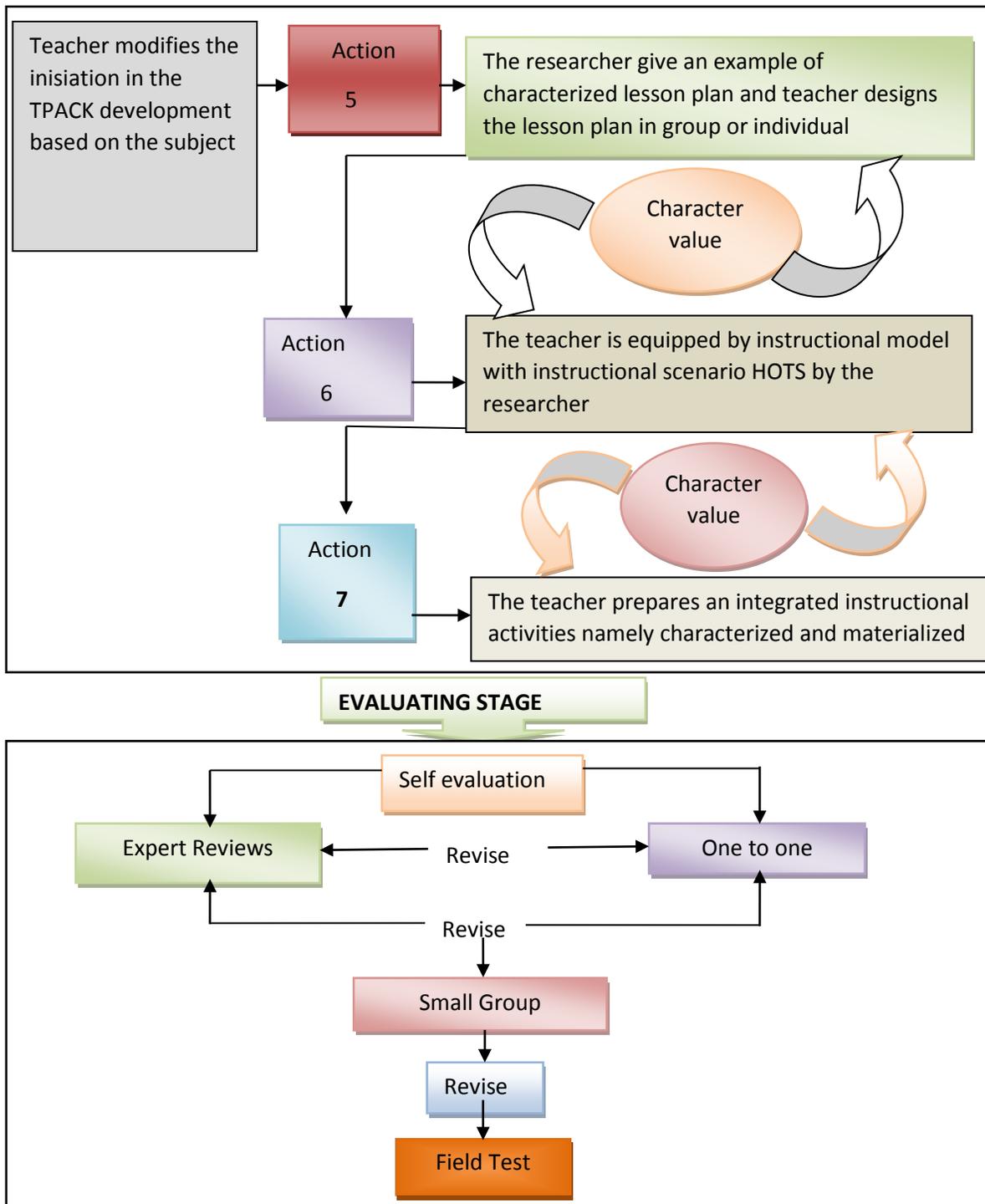
Figure 2: Characterized TPACK Model Development and Tessmer (2011)

The Development Results and Discussion

This instructional model is a student-centered instructional model and provides opportunities to use strategies and ICT-based instructional method. The instructional model

which is developed in this research is characterized TPACK instructional model that is intended to foster critical thinking skill and ICT mastery for third grade elementary school. Instructional model created in this study include, the design, implementation, characterized TPACK instructional evaluation, in terms of practicality and potential effect.

Validity test of TPACK model

1) Design

Material validation and media accuracy were done three times. The final validation get very good score (90%) were seen on the accuracy model with characterized TPACK model and the scope of character values to the used media was appropriate (87%). The validity test of instructional material is compliant to the theme taken from the third class with 85% score. Lesson plan validity is 88% or very good because it contains materials and characters and the media related to ICT in elementary school

2) Practicality

The result of small group or one to one: instructional activity: respondent A category low scored 40, respondent B good category scored 75 and respondent C very good category scored 88. While the achievement gained by each student in small group is respondent A get 80, B get 90, and C get 60. It means they get high achievement

3. Final evaluation (potential effect)

To see the potential effect of the use of characterized Tecnology Pedagoy, Content and Knowledge model, it is done a small group and carried on with test. The potential effect of instructional media in the application of PATCK viewed by learner's activity: 1) the students can follow the instruction of the used media, 2) they can listen teacher's explanation, 3) learners take note to the important aspect, 4) learners can solve the task given, 5) they can answer teacher's question and express their arguments, the potential effect of the instructional media to the learners' outcome. It can be gained through three ways, they are: a test which is conducted after teaching and learning process, exercises, and homework. The final score was analyzed by combining the test result, exercises, and homework, then, it is gained from 38 students, 10 (26.32 %) categorized very good, 25 (65.79%) are in good category and 3 (7.90%) in fair category

Conclusion

The development of characterized TPCK model in the instructional development for elementary teacher is vey useful. It has good validity level, practicality and potential effects from characterized TPACK model. The experts say that this model is valid. In practicality test , characterized TPACK is effective in the third class of elementary school, while the potential effect of this model shows very high level, where 65.79% of the students applies ICT-based instructional

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13th International Educational Technology Conference

The Education of Analytical Chemists in Polish Universities

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Abstract

Analytical Chemistry plays a very important role in the modern world. The main reasons are; the need of environmental monitoring, quality of food and water control, human health, quality of industrial production control, nanotechnologies and material science. Together with Inorganic Chemistry, Organic Chemistry and Physical Chemistry, Analytical Chemistry is a fundamental chemical course. The education of Analytical Chemists is carried out in 52 Polish universities introduced already in the Bolonia Process, ECTS points and three steps of education: Bachelor's degree (at universities of technology – Engineer's degree), Master's degree and Doctoral Studies. The first level, Bachelor's degree, contains the basic knowledge: gravimetric analysis, electrogravimetry, acid-base titration, oxidation-reduction titration, precipitation titration, complexometric titration and quality assurance and quality control of results. The second level (Master's degree) contains more developed analytical techniques: gas and liquid chromatography, spectrophotometric methods, electrochemical methods, elemental analysis etc. A bachelor's projects as well as a diploma and doctoral thesis very often are prepared in the field of Analytical Chemistry. It is very popular with students, each year we have in Poland about 100 doctorate in this field. The laboratory on Polish universities are well equipped in specialist apparatuses, but it's strongly depended on university profile and how big it is. Some students are doing studies and thesis abroad, in the frame of LLP ERASMUS Program or other international programs. It promotes the international dimension and improves the quality of education by encouraging innovation in education.

Keywords: analytical chemistry, teaching, Polish universities

Analytical Chemistry plays a very important role in the modern world. From the society there is the huge demand for information on various material objects that can be obtained in the course of analytical examination of collected samples. Therefore, the analytical information resulting from the work of analysts is a response to society's demands, as is pictured in the diagram shown in Figure 1. The crucial role plays the specialist education.

During the 20th century Analytical Chemistry had expanded from the discipline treated commercially to the independent and very important science. Analytical Chemistry can be divided into:

- *Analytical Chemistry* - the basic discipline about the analytical process, which covers development of new analytical methods and techniques together with apparatus, and
- *Chemical Analysis*, named *Analytics* - practical application of analytical methods.

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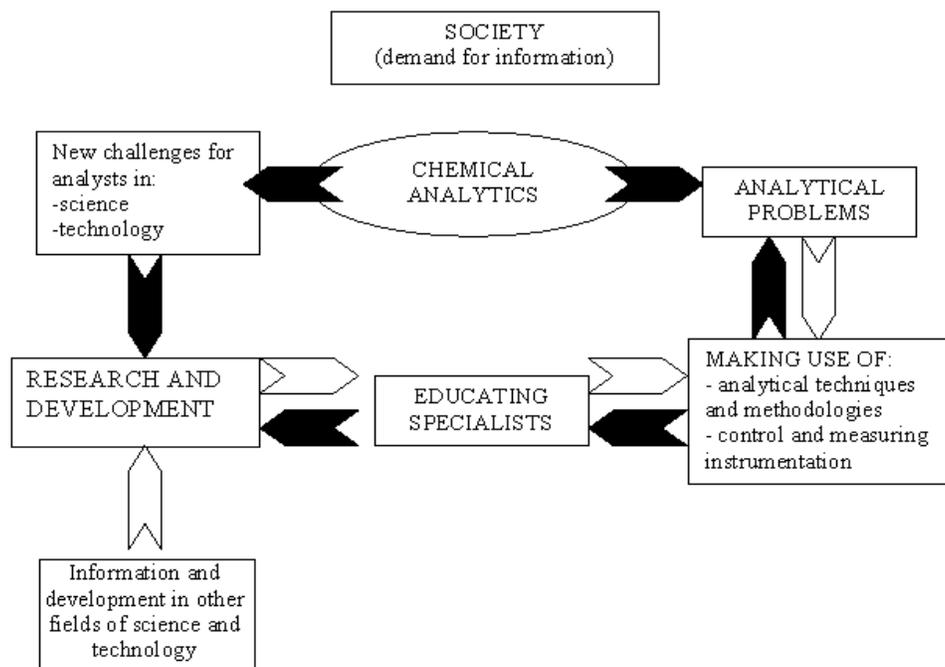
Fig. 1. Demand for analytical information as a stimulus for the development of analytics

Generally, Analytical Chemistry responds to a few basic questions, such as: what is in our surroundings? (qualitative analysis), how much is it? (quantitative analysis), how is it organized? (structural analysis) and how does it change over time? (process analysis and monitoring). The source of information is the analyzed sample. A information is obtained by decoding the analytical signal (of the measured physical or physicochemical value). Almost each physical or physicochemical property can be the basis for determination of a given element or compound. On this stage, it should be underlined that Analytical Chemistry can be treated as a challenge for scientific staff and people, who are responsible for the arrangement of the programmes of studies.

Analytical information is indispensable in different industrial branches, medicine, biology, agriculture and food industry, judiciary and criminology, atomic power engineering, environmental protection, archeology, history and geology. The obtained result should be reliable, it is extremely important in analysis. Analytical chemist is officially, disciplinarily, penally and financially responsible for the reliability of the analytical results. The quality control of the results of measurements can be treated as a next challenge for Analytical Chemistry programmes and teachers. The Committee on Analytical Chemistry of the Polish Academy of Sciences developed the main assumptions and standards for education in Analytical Chemistry. The aim of education within the framework of the subject named „Analytical Chemistry" is to introduce the students to the chemical and physical principles of analytical techniques, basic chemical operations, analytical apparatuses and to prepare them to take an active part in the analytical process. It means the knowledge of the particular steps of the analytical process, specificity of the analytical problem, collection and preparation of the sample for analysis, analytical measurement and interpretation of the obtained results. Each graduate of the chemical studies should have the ability to :

- use monographic and normative treatises and original literature,
- calculate masses and volumes of the reagents appropriate for preparation a solution of a given concentration,
- prepare the standard solutions for volumetric determinations,
- choose the appropriate analytical method in relation to the type of the analyzed material, determined analyte(s) and the aim of analysis,
- collect the representative sample and prepare it for analysis,

- choose the separation method and apply it to a given analytical problem,
- make the measurement by applying chemical and physical techniques suitable for a given analytical problem,
- calculate the analytical result, estimate the possible uncertainties, determine the parameters characteristic for a given analytical method and the obtained results,
- know the basics of validation process of a given analytical procedure and apply it in practice.

The course Analytical Chemistry should be included in the programmes of studies after, or in the worst case during, the subjects, such as: Inorganic Chemistry, Organic Chemistry and Physical Chemistry. The knowledge of these subjects is essential for proper understanding of Analytical Chemistry.

The education of Analytical Chemists is carried out in 52 Polish universities, including medical universities. All these universities are introduced already in the Bolonia Process, ECTS points and three steps of education: Bachelor's degree (at universities of technology – Engineer's degree), Master's degree and Doctoral Studies. The lectures are carried out by a highly qualified scientific staff. The main university and the staff carrying out courses from Analytical Chemistry and related subjects are listed in Table 1. The number of independent employees (professors and habilitated doctors) reaches 13 at Adam Mickiewicz University in Poznań, 12 at Warsaw University of Technology and 11 at Gdansk University of Technology and Poznan University of Life Sciences. Other employees have in a great measure long teaching experience. Obviously, it is difficult to compare well-known universities with diploma profiles connected with analytics with small institutes of other teaching profile.

| University | Faculty/Department | Teaching staff | | Docto-rants |
		Σ	Prof.	
University of Bialystok	Faculty of Biology and Chemistry, Institute of Chemistry	19	5	
University of Gdańsk	Faculty of Chemistry, Dept. of Analytical Chemistry, Dept. of Environmental Analytics, Chair of Environmental Chemistry and Ecotoxicology	29	4	18
Jagiellonian University in Krakow	Faculty of Chemistry, Department of Analytical Chemistry	14	5	17
	Collegium Medium, Departament of Inorganic and Analytical Chemistry	17	2	
Maria Curie- Skłodowska University in Lublin	Faculty of Chemistry, Department of Analytical Chemistry and Instrumental Analysis, Department of Chromatographic Methods,	19	7	6
University of Lodz	Faculty of Chemistry, Department of Instrumental Analysis, Department of General and Inorganic Chemistry	20	4	5
University of Warmia and Mazury in Olsztyn	The Faculty of Environmental Management and Agriculture, Department of Agricultural Chemistry and Environment Protection	7	3	2
	The Faculty of Food Science Chair of Commodity Science and Food Analysis	8	3	
	The Faculty of Environmental Sciences and Fisheries, Department of Environment Protection Engineering	6	3	
Opole University	Faculty of Chemistry, Department of Analytical and Ecological Chemistry	4	1	7
Adam Mickiewicz University in Poznań	Faculty of Chemistry, Department of Water and Soil Analysis, Deportment of Analytical Chemistry, Department of Supramolecular Chemistry, Department of Water Treatment Technology, Department of Rare	28	13	12

	Earth's, Department of General Chemistry, Advanced Chemical Equipment and Instrumentation Facility			
University of Silesia	Institute of Mathematics, Physics and Chemistry, Inst. of Chemistry, Department of Analytical Chemistry	16	3	
University of Szczecin	Faculty of Life Science, Department of Chemistry and Environment Protection	4	1	
Nicolas Copernicus University in Torun	Faculty of Chemistry, Department of Environmental Chemistry and Ecoanalytics Dept. of Analytical Chemistry	28	9	19
University of Warsaw	Faculty of Chemistry, Dept of Inorganic and Analytical Chemistry	26	9	9
University of Wroclaw	Faculty of Chemistry, Dept. of Analytical Chemistry	16	4	
University of Zielona Góra	Faculty of Civil and Environmental Engineering, Institute of Environmental Engineering	11	2	
Medical University of Gdańsk	Fac. of Pharmacy, Chair and Department of Analytical Chemistry, Dept of Food Science	21	8	
Medical University of Wroclaw	Fac. of Pharmacy, Chair and Department of Analytical Chemistry	10	2	
Poznan University of Medical Sciences	Fac. of Pharmacy, Chair and Department of Analytical Chemistry	13	4	
Medical University of Lublin	Department of Chemistry	25	5	9
Medical University of Warsaw	Fac. of Pharmacy, Chair and Department of Inorganic and Analytical Chemistry	21	1	
The Jan Kochanowski University in Kielce	Faculty of Mathematics and Sciences, Department of Analytical Chemistry	13	6	6

Poznan University of Life Sciences	Faculty of Food Science and Nutrition Website, Dept of Chemistry, Dept of Food Concentrate, Dept of Biochemistry and Food Analysis	31	11	
Gdańsk University of Technology	Chemical Faculty, Department of Analytical Chemistry	13	11	36
The Silesian University of Technology	Chemical Faculty, Department of Analytical and General Chemistry	10	2	3
Koszalin University of Technology	The Department of Civil and Environmental Engineering, Division of Water, Sewage and Waste Technology, Division of Water-Sludge Technology and Waste Utilization	4	1	
AGH University of Science and technology	Faculty of Materials Science and Ceramics, Dept. of Analytical Chemistry	13	6	12
Cracow University of Technology	Faculty of Engineering and Chemical Technology, Dept. of Analytical Chemistry	11	2	
Poznan University of Technology	Faculty of Chemical Technology, Departament of Analytical Chemistry	8	2	
Technical University of Radom	Faculty of Materials Science and Technology, Dept of Environmental Protection, Dept of Chemistry, Dept of Polymers	13	2	
Rzeszow University of Technology	The Faculty of Chemistry, Dept of Inorganic and Analytical Chemistry, Dept of Organic Chemistry, Dept of Polymers	17	5	
Warsaw University of Technology	Faculty of Chemistry, Dept of Analytical Chemistry, Dept of Microbioanalytics, Fac. of Chemical and Process Engineering	25	12	19
Wrocław University of Technology	The Faculty of Chemistry, Dept of Analytical Chemistry	15	4	

Table 1. Polish universities and the staff teaching Analytical Chemistry and related subjects

The following aspects should be involved in the fundamental course of analytical chemistry :

- basic determinations in the model systems as a test of competence for people working in the laboratory : titration (**acid-base titration** – preparation of the titrant solutions, chemical indicators, chemical equilibrium, titration curves, pH determination by means of pH indicators and potentiometric methods; **redoxometry and precipitation analysis** – titrant solutions, indicators, chemical equilibrium, titration curves, determination of the end point of the potentiometric titration; **complexometry** – complex formation equilibrium, stability constants of complexes, properties of complexons and indicators), gravimetric and electrogravimetric determinations;

- **separation techniques** in the multicomponent systems: ion-exchange chromatography, solvent extraction, precipitation without and with carrier. Volatility, electrolytic separation. Selectivity. Analysis of real multicomponent systems;

- **evaluation of the reliability of the analytical results**: statistical evaluation of the analytical results, quantitative characteristics of analytical methods, elements of information theory in Analytical Chemistry, evaluation of precision and accuracy. Basics of chemical metrology. Method validation, reference materials, interlaboratory studies;

- application of physical and physicochemical techniques to analytical chemistry. **Spectroscopic methods** (flame atomic emission spectroscopy, atomic absorption and emission spectroscopy, UV, VIS, IR spectroscopy, mass spectrometry), **electrochemical methods** (potentiometry, amperometry, voltamperometry, coulometry, conductometry); **separation methods** (chromatographic and electromigration techniques);

- apparatus aspects of instrumental methods and their analytical application;

- application of analytical methods to particular analytical processes (for example : environmental, industrial, clinical etc.).

Table 2 Examples of courses carried out at chosen Polish universities

University	Courses
Jagiellonian University in Krakow	Basis of Statistics and Chemometry, Chemometry and Biometry, Flow Analysis, Pharmaceutical Analysis, Ecotoxicology and Environmental Toxicology, Clinical Toxicology, Forensic Toxicology, Radiometric Analysis, Analytical Calibration, Criminological Physicochemistry, Mass Spectrometry, Environmental Chemistry
University of Lodz	Applied Electrochemistry, Electrochemistry and Nanoelectrochemistry as Methods and Tools for Modern Technology, Environmental Analytical Chemistry, Monitoring and Analysis of Surface Water, Speciation Analysis, Basis of Chromatographic Analysis and Its Application in Modern Environmental Research, Application Modern Analytical Techniques in Monitoring and Environment Protection, Affinity Chromatography, Hyphenated Analytical Techniques in Environmental Analysis, Basis of Criminological Analysis, Analytical Techniques in Archeology
Adam Mickiewicz University in Poznań	Cosmetic Analysis, Spectrophotometric Methods, Environmental Monitoring, Bioanalytic Chemistry, Water and Soil Pollutants Analysis, Chromatographic Methods, Atomic Spectrometry, Air Pollutants Analysis, Speciation Analysis
Copernicus University in Torun	Environmental Chemistry and Ecology, Analytics and Control in Environmental Chemistry, Separation Techniques in Trace Analysis, Statistic Methods, Biomedical Chemistry, Toxicology, Basis of Separation Techniques, Mass Spectrometry in Analytics, Miniaturization and Automatization in Analytics, New Materials for Chromatography
University of Warsaw	Chemical Metrology, Methods of Isolation and Preconcentration, Chemometry, Liquid Chromatography, Instrumental Analysis, Environmental Analysis, Electrochemical Sensors, Automatization in Chemical Analysis, Speciation Analysis in Biological Samples, Trace Analysis of natural Samples
Medical Univ. of Gdańsk	Spectroscopic Methods in Drug Analysis, HPLC as a Method for Phenolic Extracts from Plants Analysis
Medical University of	Analytical Chemistry, Instrumental Analysis, General and Inorganic Chemistry, Medical Analysis, Environment Protection, Toxicology, Drug Analysis, Food Science,

Wroclaw	
Gdańsk University of Technology	Analytical Chemistry, Modern Analytical Techniques, Monitoring and Analysis of Environmental Pollutants, Water Quality Control, Air Quality Control, Ecotoxicology, Statistical Methods and Data Analysis, Chemical Metrology, Chemometry, Separation Techniques, Methods of Structural Analysis, Modern Techniques in Food Analysis, Biological Methods in Environmental Analysis, Process Analysis, Technical Analysis,
The Silesian University of Technology	Instrumental Analysis in Environment Protection, Speciation Analysis, Industrial Analysis, Analytics in Environment Protection and Clinical Research, Modern Apparatus in Physicochemical Measurement, Monitoring and Analysis of Environmental Pollutants, Trace Analysis, Separation Methods in Bioanalytics, Bio- and Electrochemical Methods in Analytics, Electrochemical Methods and Biosensors,
Warsaw University of Technology	Environmental Pollutants Analytics and Monitoring, Modern Analytical Techniques, Miniaturizations in Analytical Chemistry, Analytical Control in Industry, Chemical Sensors in Analytical Control, Spectrochemical Methods for Material Research, Chromatographic Techniques in Materials Characterization, Analytical Ford Control Using Mass Spectrometry, Bioanalytic Methods, Spectroscopic and Spectrometric Techniques, Analytical Electrochemistry, Methods and Techniques for Separation, Chromatography and Electrophoresis, Speciation Analysis

Both a Bachelor's (engineer's) projects as a diploma thesis very often are prepared in the field of Analytical Chemistry. The same is with Doctoral Studies, very often students choose subject matter connected with Analytical Chemistry. It is why each year we have about 100 doctorate (Table 3) in the field of Analytical Chemistry. The laboratory on Polish universities are well equipped in specialist apparatuses (HPLC, GC, GC-MS, LC-MS, NMR, CI, ICP-OES. ICP-MS, AAS) but it's strongly depended on university profile and how big it is. Students can participate in the scientific research carried on by the didactic staff, especially doing diploma thesis or doctorate. Other way of teaching are summer schools, postgraduate studies and courses from specific techniques organized at the most of Polish universities.

The big challenges for teaching is its international dimension. International cooperation is very important for education. It gives the chance for students to realize their ideas in different laboratories, where their can meet new problems and new tools for solving the problems. It's very important also for a students self-development. Such cooperation is especially profitable in the field of analytical chemistry. Students can utilize a modern and expensive equipment, which doesn't exist at home university, for example for neutron activation (INAA) methods there is a need of nuclear reactor, which can be available only in few scientific centers.

Table 3 Masters, PhD, habilitation and professors in 2003-2012

University	Master	Bac.	PhD	Habilita-tion	Prof.
University of Bialystok	96	48	8	3	1
University of Gdańsk	82		36	7	1
Jagiellonian Univ. in Krakow	166		49	9	1
Maria Curie- Skłodowska University in Lublinie	45	71	19	2	1
University of Lodz	40	40	16	3	1
University of Warmia and Mazury in Olsztyn	70		7	2	0
Opole University	**26**		**7**		**1**
A. Mickiewicz Univ. in Poznań			**10**	**4**	**2**
University of Silesia	**75**		**18**	**2**	**0**
Nicolas Copernicus Univ. in Torun	**120**		**16**	**8**	**1**
University of Warsaw	**198**		**47**	**2**	**5**
Medical University of Gdańsk	**179**		**20**	**6**	**2**
Poznan Univ. of Medical Sciences	**75**		**26**	**2**	**5**
Medical University of Lublin	**290**		**35**	**11**	**4**
Medical University of Warsaw	**35**		**4**	**0**	**1**
The Jan Kochanowski University in Kielce	**74**	**58**	**3**	**2**	**0**

Gdańsk University of Technology	**357**	**229**	**67**	**10**	**5**
The Silesian Univ. of Technology	**248**	**87**	**13**	**1**	**0**
Koszalin University of Technology			**4**		
AGH Univ. of Science and Technol.	**120**	**17**	**6**	**4**	**2**
Cracow Univ. of Technology	**43**		**6**	**0**	**0**
Poznan University of Technology	**30**		**5**	**0**	**0**
Technical University of Radom	**61**		**1**	**1**	**0**
Rzeszow University of Technology	**40**		**0**	**0**	**2**
Warsaw University of Technology	**222**	**76**	**29**	**4**	**4**
Wrocław University of Technology	**75**		**8**	**2**	**1**

Students and staff exchange can be realized in the frame of LLP ERASMUS Program, very popular in Europe. Our department (Department of Analytical Chemistry, Gdansk University of Technology) has more then 50 Bilateral Agreement with different universities in Europe. Each year about 10-12 students are doing their thesis abroad in the field of Analytical Chemistry. Also some of our doctoral students are preparing part or even all their PhD thesis abroad in cooperating universities. Each year about 5 foreigner students and doctoral students are doing their thesis or part of Ph.D. thesis in the field of Analytical Chemistry in our department. We cooperate in this field not only with European universities, but also with Canada, USA, South Africa, Israel etc.

Our department participates in two European projects for Master Studies. The first one - *European Joint Masters in Quality in Analytical Laboratories (emQal)* (in the frame of ERASMUS-Mundus) - is coordinated by University of Algarve and except of University of Algarve and Gdansk University of Technology also universities from Barcelona, Cadiz and Bergen participate in this project. GUT in the academic year 2009/2010 played role "the host university". The second program, *Euromaster, Analytical Science at the Interface* is coordinated by University of Pau and University of Aberdeen, Gdansk University of Technology, University of Oviedo and University of Liege are the member of the project.

23. The other activities in the frame of international cooperation are exchange of teaching staff. Our teachers give lectures at other European universities and we invite teachers from abroad (each year about 15 scientists), the best specialists, for courses at our university, especially for doctoral students. Its courses (free of charge) are open also for teaching staff from our university as well as for students from other universities located in Gdansk and the vicinity. It promotes the European and world dimension and improves the quality of education by encouraging innovation in education. From 2003 to 2006 Gdansk University of Technology has the Centre of Excellence in Environmental Analysis and Monitoring (CEEAM) financially supported by the European Commission. During this time CEEAM, among other things, edited 6 books in the field of Analytical Chemistry and organized as the educational activity:

- summer school 2003 "New Horizons and Challenges in Environmental Analysis and Monitoring" (50 participants);

- summer school 2004 "Analysis of Environmental and Food Pollutants (30 part.);
- summer school 2005 "Chemometric Aspects of Environmental Analytics" (30 part.);
- 3 courses: High Performance Liquid Chromatography, Sample Preparation for Analysis and Biotests in Assessment of Environmental Pollution;
- International Seminar for PhD students.

Similar activity you can find also in other Polish universities. Very popular is also CEEPUS (Central European Exchange Program for University Studies). Other activities, for example:

- Nicolas Copernicus University from Torun has more then 10 Bilateral Agreements in the frame of Erasmus Program. In The Research Educational Center BioSep, located at Faculty of Chemistry, each year more then 25 Polish and more then 10 from abroad participants attend courses from Analytics in Environment Protection. It's the center training in the field of chromatographic and electromigrative methods, validation and sample preparation. There are 2 Net-programs CEEPUS;

- Jagiellonian University in Cracow has very active cooperation with Nottingham Trent University (common diplomas), Université des Sciences et Technologies de Lille (courses), Lund University, Strathlyde University etc. UJ is a member of Erasmus-Mundus (ASC – Master of Science: Advanced Spectroscopy in Chemistry) and TEMPUS, projekt nr JEP_41105_2006 pt. „Education System in Forensic Sciences for the Republic of Macedonia" (EDUFORMAK);

- Wroclaw Univeristy organizes summer schools from analytical chemistry for students from University of Minnesota, Duluth, USA (for 11-16 students);

- Warsaw University of Technology has more then 20 Bilateral Agreements in the frame of Erasmus Program;

- Technical University of Radom participates also in a lot of programs, as: courses „Principles and Applications of Metrology in Chemistry; TrainMic - Training in Metrology in Chemistry (network in the frame of EC Research Center, coordinated by Institute for Reference Materials and Measurements, Belgium) and SURUZ - Scientific Network-Surfactants and Dispersed Systems in Theory and Practice, AIRCLIM – NET.

In our opinion teaching of Analytical Chemistry at Polish universities is on good level and is realized by well prepared stuff with modern aspects of teaching. The courses contains, except of traditional classical Analytical Chemistry, also very modern techniques and the assurance of results quality and validation of methods are included. The practice part is carried on in well equipped laboratories with modern apparatuses. The graduated students are well prepared to the work in modern industrial and environmental laboratories.

13th International Educational Technology Conference

The effect of different interaction levels on instructional design learners

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Abstract

The study examines the effect of different interaction levels on instructional design learners, the instrument of this research was a Assessment sheet to collect data about students' instructional design course, The sample consisted of (26) males and (21) females from master program students at the Islamic university of Gaza- faculty of education, the web environment of this study based on different interaction types such as learner to (learner, teacher, content and interface), the web environment also used different interaction levels (passive interaction, limited interaction, complex interaction and real time interaction). The findings from this study showed that there was an statistical difference at($\alpha \leq 0.05$) between instructional design skills before and after the study in favor to using different interaction levels after the study, also there no statistical difference at($\alpha \leq 0.05$) between males and females in instructional design skills after the study

Key words: Instructional design, interactive levels, web environment.

Introduction

Interaction in a traditional classroom is much different than the interaction that occurs in a Web-based course (Thurmond & Wambach, 2004), This difference due to the environment of the web, it consist of much stimulus and response.

Gilbert and Moore (1998) note that an accepted definition of interactivity in the literature on computer-mediated instruction is a reciprocal exchange between the technology and the learner, a process which he says is referred to as "feedback." Gilbert and Moore use the terms "interaction" and interactivity" interchangeably, Wagner (1994, 1997) draws a sharp distinction between them. Like Gilbert and Moore, she says that "interaction" is an interplay and exchange in which individuals and groups influence each other Roblyer & Ekhaml(2004), Chickering & Gamson (1987) also define The concept of interaction as a core element of the seven principles of good practice in education.

Literature review

Types of interaction

This research used four types of web-based interaction (learner-teacher, learner-learner, learner-content and learner-interface), see fig.1, these types of interaction are used the most by previous studies (Moore & Kearsley, 1996; Swan, 2001; Leasure et al., 2000; Palloff & Pratt, 2001; Chen, 2002; Ehrlich, 2002)

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E-mail address: msaqel@iugaza.edu.ps
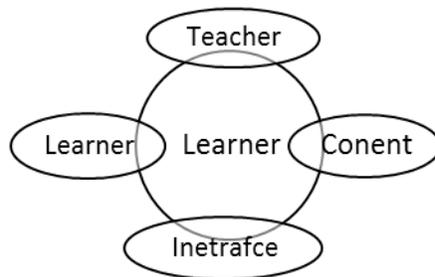
Fig. 1. Types of interaction

levels of Interaction

"The Levels of Interactivity as defined by the Department of Defense (DoD) provide a basis for developing effective and interactive eLearning in accordance with your corporate and training objectives". (Carter & Lange, 2005).
Carter & Lange(2005) also classified the interaction into Four levels:

Level I: Passive
The interaction in this level is so simple, The learner acts solely as a receiver of information. The learner is required to read the text on the screen, view graphics, illustrations, charts, and use the navigational buttons to progress forward through the program or move back.

Level II: Limited Interaction
The learner makes simple responses to instructional stimulus, The eLearning includes learning activities that listed in Level I as well as scenario-based multiple choice and column matching related to the text and graphic presentation.

Level III: Complex Interaction
The learner makes a variety of responses using varied techniques in response to instructional stimulus, The responses include those listed for a Level II as well as text entry boxes and manipulation of graphic objects to test assessment of the information presented.

Level IV: Real-time Interaction
The learner is directly involved in a life-like set of complex responses.This involves engaging the learner in a simulation that mirrors the work situation with stimuli-and-response coordinated to the actual environment.

This research used all of previous levels in learning the student how to start there instructional design, see fig.2-6, web-based environment was built using all the previous levels, students used very simple interaction(Passive) as button navigations, also the students used the others levels such as answering question(Limited Interaction), Write sentences(Complex Interaction) and work in simulation screen(Real-time Interaction) to design an activity.
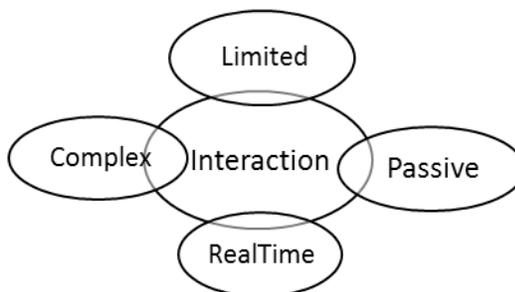
Fig. 2.Ineraction levels

Fig. 3.Passive Interaction level(hyperlink navigation)

Fig. 4.Limited Interaction level(explore the content)
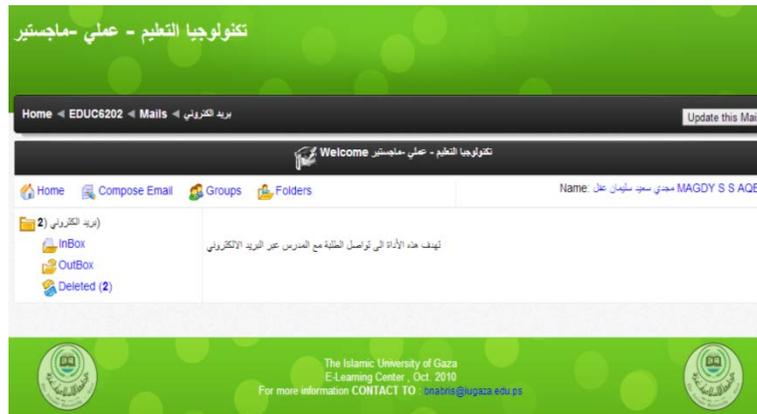
Fig. 5.Complex Interaction level(internal email)
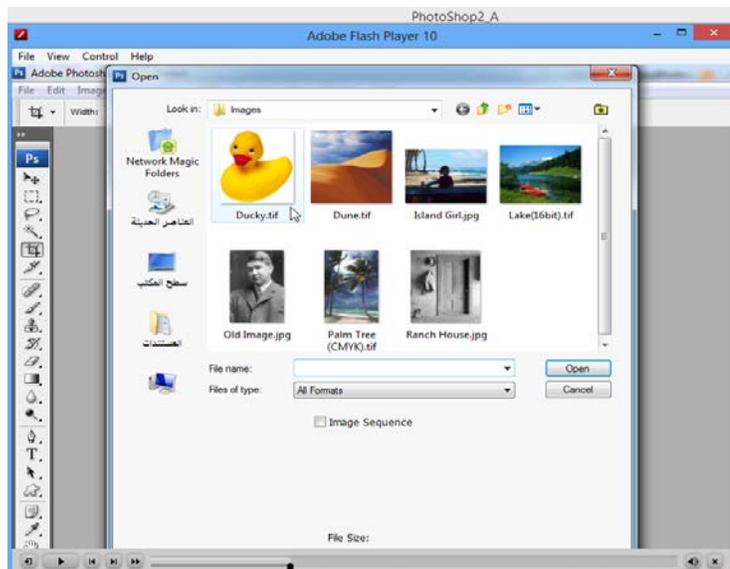
Fig. 6.Real-time Interaction level(Using simulation)

Instructional Design

Effective teaching begins with effective planning, Instructional design provides a systematic process for planning instructional events based on a systematic process of applying principles of learning and instruction to plans for instructional systems (Gagné & Driscoll, 1988; Gagné, Wager, Golas, & Keller, 2005), instructional designers and developers use principles of learning and instruction to inform their instructional design practices (Seels & Glasgow, 1998).

In this research, students tried to build their suitable instructional design by themselves, that is like shifting instructional design principles and practices from objectivism to constructivism (Bonk & Cunningham, 1998; Cooney, 1998; Jonassen, 1992).

In this research, The researcher developed web-based environment with different interaction levels, see fig7, learning course management system(Moodle) was used in this research that is already available at the Islamic university of Gaza(IUG), also the students learned many instructional design software such as (MS PowerPoint, Adobe Photoshop, Adobe Audition, Windows moviemaker and adobe Captivate), as shown in figure6, all interactive levels mixed in the web-based environment.
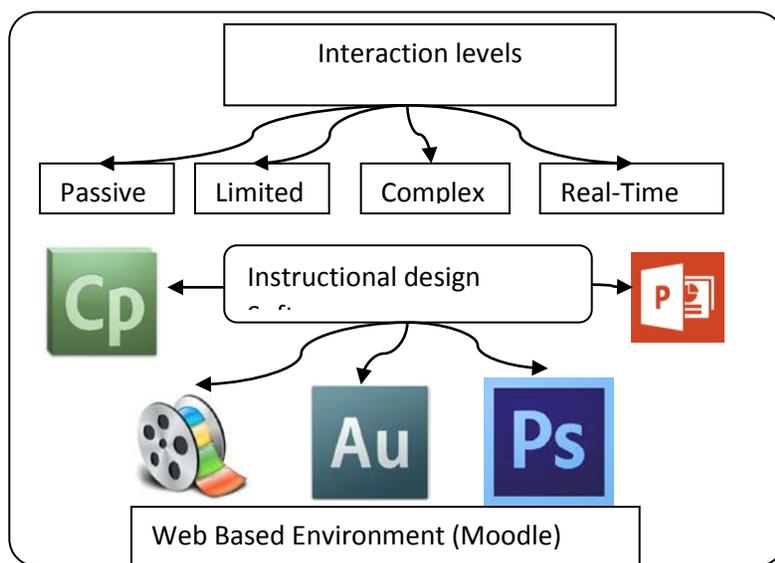
Fig. 7.Instructional design environment

The Aim of Research

The aim of this research is to examine The effect of different interaction levels on instructional design learners, This study seeks to answer the following research questions:

- What are the interaction levels that need to learn the master student how to design their instructional program?
- is there any statistical difference at($\alpha \leq 0.05$) between instructional design skills before and after the study?
- is there any statistical difference at($\alpha \leq 0.05$) between males and females in instructional design skills after the study?

Scope and Limitations

the sample of this study consisted of (26) male students and (21) Female student from the master program at the faculty of education level(1), the sample included all that students at level(1) in the term (2012-2013), Four interaction levels were used in this study(passive, limited, complex and real time).

Instruments

The research develop an Assessment sheet to measure the difference in students skills before and after the study (appendix A), the Assessment sheet consisted of (7) main domain and (30) sub domain, The instrument has a Cronbach alpha reliability score of (0.82).

The content of the instrument was validated by three methodology teachers and five instructional technology teachers with more than 10 years working experience.

Results

To answer the first question of this research which titled " What are the interaction levels that need to learn the master student how to design their instructional program?", the researcher used four levels of interaction (passive, limited, complex and real-time) that classified by Carter & Lange(2005).

The second question of this research titled as "Is there any statistical difference at($\alpha \leq 0.05$) between instructional design skills before and after the study?", the researcher used t-test to determine if there were significant differences between the groups in the instructional design skills. Table 1 and Table 2 shows the results of t-test comparison of pre/post test skills for (males).

Table 1. t-Test comparison of pre/posttest instructional design skills for males

Group	N	Mean	SD	t-value	p	Effect size
Pre Test	26	7.78	5.33	58.9	< .05	0.9
Post Test	26	84.28	4.51			

Table 1 shows that there is a significant difference between pre-test (mean = 7.78, SD=5.33) and post-test (mean = 84.28, SD=4.51) marks, t (25) = 58.9, p < .05. The mean scores indicate that post-test have significant higher achievement towards the interaction levels than pre-test.

Table 2.t-Test comparison of pre/posttest instructional design skills for Females

Group	N	Mean	SD	t-value	p	Effect size
Pre Test	21	7.71	4.95	75.02	< .05	0.9
Post Test	21	84.648	3.66			

Table 2 shows that there is a significant difference between pre-test (mean = 7.71, SD=4.95) and post-test (mean = 84.64, SD=3.66) marks, t (20) = 75.02, p < .05. The mean scores indicate that post-test have significant higher achievement towards the interaction levels than pre-test.

The Third question of this research titled as" is there any statistical difference at($\alpha \leq 0.05$) between males and females in instructional design skills after the study?", the researcher used t-test to determine if there were significant differences between the males and females in the instructional design skills. Table 3 shows the results of t-test comparison of males/females after the study.

Table 3: t-Test comparison of males/females instructional design skills after the study.

Group	N	Mean	SD	t-value	p
males	26	84.28	4.51	0.29	> .05
females	21	84.64	3.66		

Table 3 shows that there is no a significant difference between males (mean = 84.28, SD=4.51) and females (mean = 84.64, SD=3.66) marks, t (45) = 0.29, p > .05. The mean scores indicate that males have not significant higher achievement towards the interactive levels than females.

CONCLUSIONS

This study aimed at investigating how different interaction levels affects students' skills in instructional design, four interaction level(passive, limited, complex and real-time) were used at web based environment(Moodle). Assessment sheet was developed to collect data about students' instructional design, From the results of this research, using interaction levels was very effective table(1,2), also males have not significant higher achievement towards the interaction levels than females.

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Appendix A. Assessment sheet

Instructional design Skills	Weak	Good	Excellent

A-Analysis in instructional design model.

1. Use exact instructional model.
2. Follow the instructional model steps.
3. Write the learning objectives in details.
4. Using suitable evaluation.
5. Detect the learning content.
6. Design content scenario.

B- Learning Resources.

7. Collect the needed learning object from the web.
8. Design the suitable learning object.
9. The learning resources suitable for learning objectives
10. Use learning object in high quality.

C- Texts in instructional design.

11. Use the font color with suitable background
12. Highlight the main object learning
13. Use suitable font size
14. Use suitable font style

D- Images in instructional design (Using Adobe Photoshop).

15. Add a suitable filter for the used image.
16. Use high quality image.
17. The image relate to leaning object.
18. Merge one more image file.

E- Sound in instructional design (Using Adobe Audition).

19. Add a suitable filter for the used sound .
20. Use high quality sound.
21. The sound relate to leaning object.
22. Merge one more sound file.

F-Implementation in instructional design(MS PowerPoint).

23. Build his/her master slide.
24. Use button navigation.
25. Use specific motion.
26. Detect interactions navigation.
27. Use mouse effects.

G- Evaluation in instructional design.

28. Use suitable evaluation after each learning objective

29. Validate the instructional design by the experts

30. Build the suitable feedback according to student results

13th International Educational Technology Conference

The Effect of Game-Based Learning on Students' Learning Performance in Science Learning – A Case of "Conveyance Go"

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Abstract

Many previous studies have demonstrated that learning motivation and efficiency can be enhanced through educational games, and the recent introduction of enriched gaming elements has made such games increasingly popular. The main purpose of this study was to help elementary school student learn science-related concepts by participating in an educational card game, named Conveyance Go. We then investigated the perceptions of students regarding the integration of the game into science learning as well as the educational benefits of the game with regard to learning performance. A one-group pretest-posttest design was used with eighteen 5th grade students from a single elementary school in northern Taiwan. The students demonstrated positive attitudes toward the use of the educational card game in science learning. Our results also demonstrate the effectiveness of the proposed education card game in improving the students' scientific knowledge of transport and energy.

Keywords: game-based learning; educational card game; science learning; game design

INTRODUCTION

Papert (1991) advocated the promotion of learning through real-life situations and the shaping of concepts through making. In recent years, many researchers have investigated the effectiveness of digital technology in the promotion of learning, the process of which is often conducted using games. The incorporation of games into education is often more effective than traditional teaching methods in enhancing learning motivation, active participation, and concentration among students. Furthermore, games can enhance the social skills of students as well as improve their skills in understanding and solving problems (Kirikkaya, Iseri, & Vurkaya, 2010).

Game-based learning has recently become an important domain of research. In a review of articles in seven major SSCI journals associated with technology and learning between 2001 and 2010, Hwang and Wu (2012) discovered that Taiwanese researchers published 22 articles on game-based learning, second only to researchers in the US (30 articles) and followed by researchers from the UK (20 articles). These studies focused primarily on the achievements, motivation, and attitude of students involved in learning various subjects and most of the researchers in Taiwan investigated the issue of learning achievements (Liu, Lin, Hsiao, Chen et al., 2009). Game-based learning has been applied in many science-related school subjects. Yien, Hung, Hwang, & Lin (2011) used game-based learning in a nutrition course, discovering that this approach was more effective in enhancing the learning effectiveness and attitudes of students than traditional PPT teaching and even influenced their dietary habits. Using a game similar to Monopoly to teach students about the area of circles (Lin, Liu, Chen, Liou, Chang, Wu, & Yuan, 2013) and obtained similar results. Through game-based learning, participants learn more actively and with greater interest, enabling the learned content to leave a deeper impression than would be possible using conventional methods (Papastergiou, 2009).

Most studies on game-based learning have focused on digital game-based learning. Digital games provide animated graphics and audio effects as well as immersive stimulation. Lin and Liu (2009) included game

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mechanisms in typing practice, inviting learners to beat their rivals. Although the progress of these learners was not significantly greater than that of learners using conventional teaching techniques, their typing skills were significantly better than before the experiment. Lin and Liu also observed that learners in the game mechanism group spent considerably more time practicing typing than their counterparts in the regular class, thereby demonstrating that multimedia can influence the learning motivation of students. Chiang, Lin, Cheng, and Liu (2011) explored the influence of various computer games on the flow experience and positive emotions of students and discovered that violent games did not induce violent emotions or conduct in students. Moreover, they found that both violent and non-violent games were capable of eliciting flow experience and positive emotions. As shown in these studies, digital games can enhance learning motivation and arouse positive emotions in students; however, a digital game environment cannot provide face-to-face interaction.

In a classroom situation, teacher-student interactions and student-student interactions exert a profound impact on learning. Unlike interactions in digital games via computers, face-to-face interaction exposes people to human expressions, physical action, and verbal tones (Billinghurst & Kato, 2002). Thus, using educational card games as a medium for game-based learning could enhance the direct interpersonal interaction between teachers and students as well as among students to a degree unmatched by the sound and audio effects of digital games. This study designed a science lesson using an educational card game. By handling the cards and moving the character pieces themselves and competing or cooperating with peers through direct verbal communication, students can interact with one another and learn happily from within.

In recent years, research on learning with card games has made a substantial contribution to the discipline. Siegler and Ramani (2008) speculated that a lack of skills in the use of numbers among children from low-income households might be due to their limited opportunities to play number games during their childhood. Thus, a series of number card games for children from low-income households was designed to narrow the differences between poor children and those from middle-income households. Their results demonstrate that the learning effectiveness of high-priced equipment for digital games can be matched by using inexpensive or even self-handmade card games. Alexander, Sevcik, Hicks, and Schultz (2008) designed a card game to teach students the symbols of chemical elements and gain subject knowledge. Kirikkaya, Iseri, and Vurkaya (2010) designed a card game to assess one's knowledge of galaxies and space; the game is also applicable in areas other than learning. Through semi-structured interviews, they discovered that this educational card game not only increased the learning motivation of students but also assisted them in the formation of higher conceptual abstractions. The use of such a card game for assessment purposes could help to reduce test anxiety and promote better learning effectiveness. Using thematic cooperative learning, Huang, Liu, Liu, and Lin (2012) had participants in a teacher education program divide into groups to design card games with subject knowledge for secondary level students. Their results showed that the process of designing educational card games significantly increased self-efficacy.

Few Taiwanese studies have explored game-based learning in the form of educational card games. It is hoped that the achievements of this study will demonstrate the effectiveness of card games in promoting interpersonal interaction during the process of learning.

2. Methodology

2.1. Research participants

This study recruited 18 students from an elementary school in northern Taiwan, of which 10 were male and 8 were female. In age distribution, the participants comprise 3 third graders, 2 fourth graders, 7 fifth graders, and 6 sixth graders.

2.2. Procedure

The total duration of the teaching experiment was 120 minutes. Prior to the formal learning activity, a 20 minute pre-test was administered to assess science knowledge according to a standard assembled by the authors. Following the pretest, the participants were randomly divided into groups of 4 or 5 students. The rules of the game, Conveyance Go, were outlined in a 10 minute explanation. The formal learning activity with educational card game then proceeded for 60 minutes. After the learning activity, a a post-test (containing the same questions as the pre-test but reordered) as well as a learning satisfaction questionnaire were administered. The post-test and questionnaire required 30 minutes for completion.

2.3 Design of science educational card game Conveyance Go

This study referred to the revised Bloom's Taxonomy established by Anderson and Krathwohl (2001) as the design standard for the educational card game. In the knowledge dimension of the revised Taxonomy, knowledge is divided into four levels from concrete to abstract: factual knowledge, conceptual knowledge, procedural knowledge, and meta-cognitive knowledge. Cognitive processes are divided into six levels from low complexity to high: remember, understand, apply, analyze, evaluate, and create. The primary scientific concepts selected for development in the card game were found in the "Means of Transport and Energy" unit of a fourth grade science text. The subject knowledge was divided as follows (Chen, Liu, Lin, Chang, Hsin, & Shih, 2012):

1. Remember – Factual knowledge: Pictures and text on the game cards present the appearances and names of various forms of transport.

2. Remember – Conceptual knowledge: Game cards explain the amount of energy required by each type of transport.

3. Understand – Conceptual knowledge:
(1) If a given form of transport consumes petroleum products (oil), then the game card will also show a pollution value, demonstrating the principle that the use of oil produces pollution. Transport modes that use electricity, wind power, or solar power, do not produce pollution.

(2) Solar power energy cards can be used to replace other energy cards such as oil to demonstrate the convenience and wide applicability of solar power.

(3) Two types of terrain are included in the game (land and sea) and three forms of transport travel by land, sea, or air. This helps students to understand the differences among various modes of transport with regard to their appearance and the environment in which they operate. In the game, ship transports can only travel by sea, land transports can only travel by land, and aviation transport is not limited by terrain. This helps students to understand the limitations of each form of transport.

(4) Problem cards require that students group transport modes according to energy source, appearance, or function. Based on the answers provided by the students, appropriate feedback may be given.

4. Understand – Meta-cognitive knowledge:
(1) Event cards integrate daily environmental concerns (such as vehicle emissions testing) into the content of the game.

(2) The event cards also include an 'Oil Crisis' card. When this card appears, all oil energy cards are useless, demonstrating that oil depletion will occur someday.

5. Apply – Procedural knowledge: Once the students understand the rules of the game, they can play the game smoothly according to a given procedure.

6. Analyze – Procedural knowledge: Two strategies are provided to score the games and students may adjust their tactics according to the circumstances of the game.

7. Evaluate – Meta-cognitive knowledge: During the game, students learn via self-discovery by evaluating the pros and cons of each transport mode.

In designing the educational card game in this study, we referred to the seven design principles proposed by Liu (2011): Analyze the traits of the learners and understand their prior knowledge; establish clear teaching objectives and select appropriate gaming equipment, combine the teaching objectives with the game content; remember that teaching is the primary goal and that the game is a supplementary tool; take advantage of game characteristics to arouse student interest; enable students to enjoy learning while they take control of learning; and periodically assess learning effectiveness and improve teaching.

We also evaluated the game design according to the five indices proposed by Liu and Lin (2009): Whether the game information is in accordance with the game descriptions of the learners and the game includes a learning theme; whether the pictures in the game are associated with the learning theme and can arouse student interest; whether the structure of the game is simple and operations are easy to learn; whether the overall content of the game

is interesting, and include many pictures for presentation; and whether the game provides instant feedback. By referring to these principles, we ensured that the card game designed in this study is capable of conveying subject knowledge that is easy to learn and elicits the interest of participants.

2.4 Learning satisfaction scale

We developed a satisfaction scale according to the structure of the technology acceptance model (TAM) to evaluate the degree to which students accepted the educational card game according to four constructs: Perceived usefulness, perceived ease-of-use, attitude towards usage, and intention to use (Davis, Bagozzi, & Warshaw, 1989). Each construct included five question items. To improve scale validity, we enlisted the aid of three experts (two elementary school science teachers and a scale development expert), to revise the descriptions in the question items. A pilot test was administered to twenty students. Reliability analysis of the pilot test results returned a Cronbach's α and remaining number of question items in each construct after item elimination were $\alpha=.84$ and 4 items in perceived usefulness, $\alpha=.66$ and 3 items in perceived ease-of-use, $\alpha=.78$ and 4 items in attitude towards usage, and $\alpha=.63$ and 3 items in intention to use. The questionnaire included 14 question items after item elimination, with a reliability of $\alpha=.82$. We employed a five-point Likert scale in which the students answered strongly agree (5 points), mostly agree (4 points), agree (3 points), disagree (2 points), or strongly disagree (1 point) based on their learning satisfaction.

2.5 Science assessment

The primary objective of the science assessment tool was to gauge the comprehension of elementary school students with regard to scientific concepts associated with transport modes and energy. The content of the assessment was based on the learning content in the unit. In the development of the assessment, we referred to problems and questions in textbooks compiled by Ministry of Education and made revisions according to suggestions provided by three elementary school science teachers. The assessment included eight true or false problems, six multiple choice problems, and six matching problems, each contributing points for a total score of 100 points. The assessment was given to the participants before and after the learning activity, with the problems from the pretest reordered in the posttest to reduce the effects of repeated exercise.

3. Results

3.1 Acceptance of elementary school students towards educational card game

Mean and standard deviation derived for each construct of the satisfaction scale are presented in Table 1. The results show that the students exhibited consistently positive responses for all constructs. Perceived usefulness and intention to use received particularly high scores, indicating that the students felt they could gain scientific knowledge by learning with the card game and that it was useful to the learning of science knowledge. These results also show that game-based learning aroused student interest. The results in future intention to use and perceived ease-of-use show that the students readily accepted this learning method, felt that it facilitated learning, and hoped to continue using this method in the future.

Table 1 Mean and standard deviation of scores in the student satisfaction scale

	Mean	Standard deviation
Perceived usefulness	4.14	1.08
Perceived ease-of-use	3.85	1.16
Attitude towards usage	4.00	1.10
Intention to use	3.85	1.21

3.2 Influence of educational card game on science learning achievement among elementary school students

We performed a dependent sample t-test to examine whether the participants improved in the science assessment after playing the educational card game. The results indicate that the posttest scores of the students (M=92.13, SD=8.80) were significantly higher than the pretest scores (M=83.33, SD=11.43) (t=-3.319, p<0.01), as shown in Table 2. According to these results, we can infer that the scientific card game designed in this study, Conveyance Go, can assist students in gaining knowledge regarding transport modes and energy.

Table 2 Results of paired sample t-test on science assessment for elementary students

	Mean	Standard deviation	t
Pretest	83.33	11.43	
			-3.32**
Posttest	92.13	8.80	

** p<0.01

4. Discussion

The purpose of this study was to determine whether game-based learning using cards could assist elementary school students in the acquisition of knowledge related to energy and transport. The participants displayed positive attitudes toward the use of the science card game and felt that the approach contributed to learning. The majority of students accepted this learning method and hoped to continue using this approach in the future. The students also expressed that learning with the educational card game could assist them to gain scientific knowledge and that the game-based learning method increased their interest in modes of transport and energy. The pretest and posttest results demonstrate that the card game significantly increased the student's scientific knowledge related to energy and means of transport. These results correspond to the use of digital games in game-based learning in previous studies (Lin et al., 2013; Papastergiou, 2009; Siegler & Ramani, 2008; Yien et al., 2011). Moreover, the use of the card game to promote game-based learning also enhanced learning motivation and learning effectiveness.

We suggest that future studies conduct in-depth surveys on student attitudes towards learning using card games to identify the elements that arouse interest and how knowledge is acquired from playing games. The authors and the homeroom teachers discovered that following the interactions elicited by the card game, the students became closer to their teacher and their peers. The students also preferred a grouped arrangement rather than single separated arrangement in rows. Thus, future studies could conduct further analysis on the learning process and student-student interaction during educational card games and investigate how they influence game-based learning. Finally, this study focused on science; we suggest that future researchers create educational card games for other subjects such as English and mathematics.

Acknowledgements

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The ehea qualification level in the context of changing values in higher education: A conceptual framework[•]

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Abstract

Today, the situation of the higher education in the state and the society has been more important. While the values of higher education have been determining by the external factors, itself has been increasing the effect power on higher education institutions as an external factor. The cause and result of this transformation has been intersection ares of universities with the dynamics of global competition. As a result in this process universities have taken care of their relationship with stakeholder to able to read the changes beter. Academicians are in the first place among stakeholders without a doubt. Gaining qualifications of universities in the sense of regional and international in this environment is appearing as an important result of this process. This point has provided a platform of European Higher Education Areas theorotical reasons. Thus, both the variation process and the discussions about theories and applications of European Higher Education Area have always been tha agenda.
From this point the subject of this study is researching the correlation between the changing higher education values and EHEA requirements in the axis of a conceptual model designed for the satisfaction of stakeholders and the quality level of universities. In this study first, historical and conceptual transformation of higher eduation and university has been discussed. Second, an analytical evaluation of changing values of higher education has been presented. Also the history of European Higher Education Area and its components have been searched with a critical view. Consequently the process and system suggestions have been developed for building up cooperation with stakeholders and meeting the targets of EHEA through a conceptual model.

Keywords: Changing values, EHEA, higher education,

1. Introduction

Higher education is a description which has problem and discussion in what accepted as "higher" in higher education and used for third degree education institutions after all second degree education (high school) that awards diploma or not at the end of study (Denman, 2005: 17).

Until the 19th century, according to the dominated thought, Universities, the most fundamental higher education, is a place where universal knowledge is taught and its purpose is intellectual. In the 20th century, under pressure of commercial thoughts, education has been redefined with thought of that education should be practicable to daily living immediately and practical. According to this understanding, education is considered as a process which has been generated as a public sphere, collecting these people as nationals who have power on knowledge generation and acquisition and being generated political agents at the same time with not only knowledge (Giroux, 1996).

Today, universities have an important role to develop and advance countries. Universities, which are ranked as head actor in social transformation in itself and contributing for changing, rank on focus point of transformation based knowledge society and globalization. Generally, reflection of political, economic and social developments on higher education brings up management and quality into the agenda (Vidovich, 2002).

Influences of middle age, which is called as feudal period, generating agricultural society and after then modern period which nation states increase with industrial revolution after commercial development and post-modern period with knowledge age and globalziation, are great to the history of world. In research of university history, it is shown that three periods have been based on literature.

Three mentioned periods are called as three generations as well as being transition period among these periods. Obtaining three generation as interactive with together, being principles of modern period university influences

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which has been accepted commonly among today's university, show that university history is an articular and integrated structure (Wissema, 2009; Kyrö and Mattila, 2012). Three periodic university histories under Middle Age have been summarized on Figure 1.1:
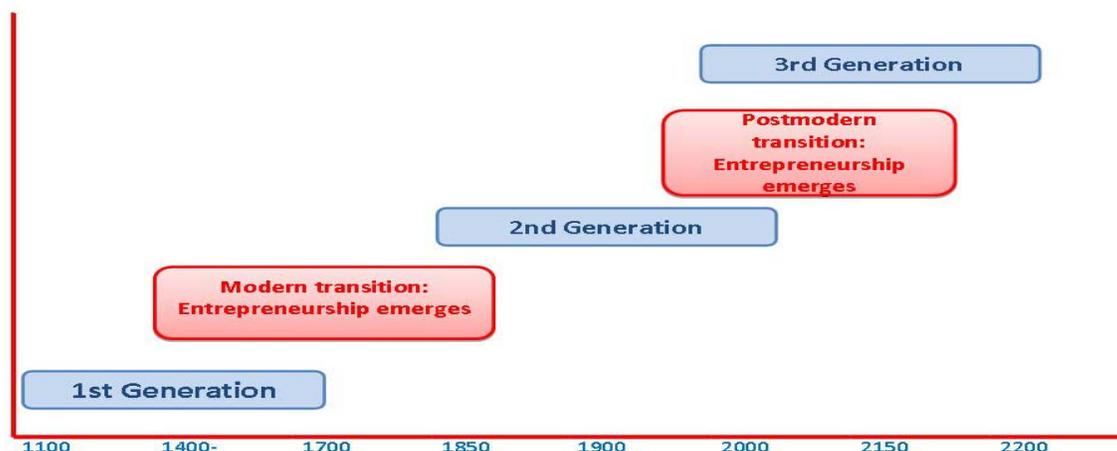
Resource: Wissema, 2009; Kyrö and Mattila, 2012.

Figure 1. Universities development history

University, which has taken shape in Middle Age, has brought some qualifications into today. A name and central place, academicians, students, courses, exams and degrees which have autonomy in a certain extent, an administration, which has "faculties", may be shown samples for extant fECTS. Besides, Bachelor of Arts, master's degree and doctor of philosophy terms have been used for Middle Age (Kerr, 1982).

According to Humboldt who is the founder of the first sample of modern university, ideal university purpose is to be increased total human knowledge with research method. It is required to be redefined the relation between student and academician. According to this, one sided relation led to from academician to student between these give way to a relation based on interaction. Thus, true science may be generated from interaction between experience and excitement. Here, lecturer presents experience while students present excitement. Relation based on interaction, provides to reach true science. Thing to relate is to reveal the characteristic structure of model. According to this, university institution should have academic freedom. Academic freedom has two dimensions called "*lehrfreiheit*" and "*lernfreiheit*". It is defined that *Lehrfreiheit* is freedom to choose the subject which lecturer will research and teach and *lernfreiheit* is freedom to choose thing that the student want to learn. This freedom, given to lecturer and student provides to relate priceless intellectual relations between them (Lay, 2004: 48).

Modern university is organized in various shapes in different counties from 1900s until today and relates different relations with society, state and business world. Especially, at the end of the 20th century, it is considered that university institution is not organized and arranged around only one idea with globalization, incorporating-business administration and becoming marketable in a part of countries influenced by America and America. "Market" is replaced instead of "government" on higher education policy of some countries with free market conditions. Student leads to "customer", lecturer/assistants lead to "supplier" and learning/teaching relation lead to "a secret contract" between seller and purchaser (Peters, 2007).

For 1980s, the mentioned developments, which generate in the field of innovation policies, result to be established close relations different from past between university and industry. This tendency concretized with science parks, innovation center and autonomous brokerage establishment which has been established in order to generate the required ground for cooperation and gathering the university and industry, has been referred as rise of "entrepreneur university" system (Lazzeroni and Piccaluga, 2003: 38-39).

The other important name which contributes to development of "entrepreneur university" term is J. G. Hans Wissema. In 2009, published "Towards the Third Generation University: Managing the University in Transition" he stated that research and education activity are two fundamental components of modern university mission; pointed out that entrepreneur university mission includes knowledge sage in addition to this two activity (Wissema, 2009: 29).

According to Wissema, typical modern university deals with only research and education activity. In the end of this activity, it is not made effort to practice the produced knowledge; this field is left for other institution entrepreneur (Wissema, 2009: 39).

Increasing role of knowledge in society and university in economy, results to be analyzed with triplex of university-industry-government (Triple Helix) relations. This triplex has been generated around university, industry and government as interlocking circles with motivation of encouraging the academic research and economic development. Entrepreneur University, which is a product of constellation, goes beyond education and research functions limits which are primer academic mission. Economic development mission contributes to systematic scientific innovation development and re-establishment of knowledge base (Leydesdorff and Etzkowitz, 2001).

In current situation, change dynamics, which influence the higher education over the world, can be summarized as follow (Aktan, 2007):

- Globalization
- Regional cooperations
- Knowledge society and new Technologies
- Competition
- State reforms
- Increasing the higher education demand in result of population increase
- Becoming widespread of English

The changing process of higher education has driven the universities to create regional and international cooperations. The most widespread of these dynamics developed to keep up with the internationalizing tendency is the Bologna Process. Bologna Process is a structure in which the member countries have no obligation to obey any treaty among nations and put no force over them and in which they are also free to go in accordance with this process. This process, started with the participation of 29 countries – into which Turkey has become a member in 2001, initially aimed to create a European Higher Education Area, but reached to 47 member countries today with their participation outside Europe.

The most important development transforming the European higher education system after the Bologna Process is the transition to the two-three-level system. Most of the member countries in Bologna Process completed their transition to two-three-level system. However, such countries as Germany, Spain and Austria didn't complete their process yet and they have a low number of students involved in this new system (Rauhvargers *et. al*., 2009). For such applications as ECTS and diploma supplement, taken as a key to success in an easily comprehensible and comparative higher education system, which is another important dynamic in Bologna Process, the process has been completed thoroughly in 23 countries starting from the year 2012. The application level of this system is between 50-77% in Turkey (Eurydice, 2012).

In the framework of qualifications, it is seen that such countries as Germany, England and Portugal completed the process in terms of work load, level, learning outcomes, skills and profile description and work steps, and that Turkey has completed most of them. The area in which the countries fail in these terms is the inability to provide a systematic integration by defining the previous education system (Eurydice, 2012).

In terms of quality assurance system, 28 agencies from 13 countries got involved into the European Quality Assurance Register for Higher Education (EQAR) in 2012, which was established in 2008. Such countries as Germany, Austria, Romania, Holland, Spain, Finland, Denmark, France and Ireland are involved in this list at least with a single agency (Eurydice, 2012).

The realization level of the objective to increase the mobility of students, researchers and academicians and to make European Higher Education Area (EHEA) more competitive as one of the biggest aims of Bologna Process was quite low. The rate of becoming a member of EHEA other than EHEA itself was lower than 5% (Eurydice, 2012).

2. Aim and Methodology of the Study

This study aims to contribute to the explainability of the connection between the changing values of higher education and the requirements of European Higher Education Area, which is a regional cooperation, within the transformation process in terms of historical and conceptual context of higher education as evaluated in the introduction in a conceptual model framework. By using the conceptual resolution methods via literature review and

research model in the investigation, the interaction between EHEA requirements are explained within the context of changing values of higher education.

The changing values of higher education and the interaction of EHEA requirements are explained via four main elements. These elements are as follows:

- Quality Level of Higher Education
- Stakeholder Satisfaction in Higher Education
- Cooperation with Stakeholders in Higher Education
- Requirements of European Higher Education Area
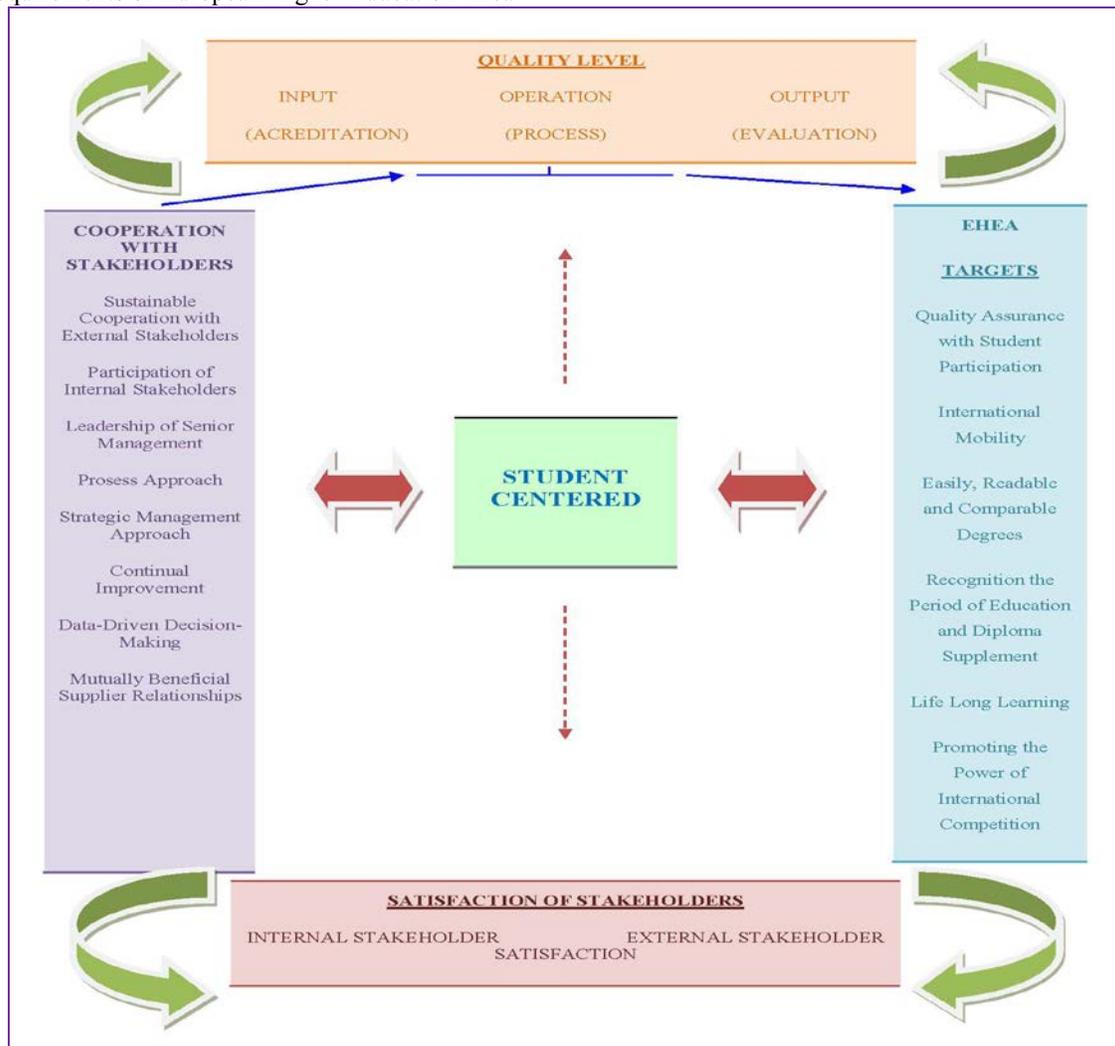
Figure 2. Interaction Scheme for the changing values in Higher Education and requirements of EHEA

While the elements of cooperation with stakeholders seen in quality management systems as a variable to affect the quality level and stakeholder satisfaction in higher education are prioritized as a primary factor in the dynamics given in Figure 2, the dynamics of EHEA objectives seen as an exit gate to internationalize the regional universities are taken as a secondary factor. While the circular and integrated interaction setup of the model makes a reference to the dynamic and complicated structure of the changes in higher education, the phenomenon of student-focus, the applications of which have increased a lot inside EHEA and American Universities, is placed in the center. As the models, in which the students are actively involved within all processes and active participation and student centered issues other than student-focus are classified as other elements under this concept, "center" is preferred instead of using the term "focus" in this model. Therefore, it is believed that the participation of both internal and external stakeholders must be involved in all processes at universities. It is agreed that the priority in stakeholder

participation (because the students are both the important stakeholders of the process and direct benefactors of this service) must be directed to the student participation.

3. Conclusion

Bologna Process aims to increase the international power of competition in European higher education system, to generalize the cooperation and mobility among universities in Europe and to protect the autonomy, uniqueness and diversity of these universities. There is also another criticism, which claims that a uniform higher education system removes the diversity in Europe in spite of the positive developments on this issue. Examples of these claims are indicated as overloaded bureaucracy in ECTS, qualifications and quality assurance studies after the transit into two-three –level system (Appleton, 2009; Grove, 2012; Keim and Keim, 2010).

On the other hand, it is thought that the connection and interaction between European Higher Education Area and one of its biggest competitors in American higher education within the competitive system of European Higher Education Area. The studies in accordance with leveling structures of Europe and ECTS applications have increased the interest of America into Europe. With this new three-level structure, it is expected that higher education institutions in EHEA will be more appealing to American students just like the other countries (Ward, 2007).

Many harsh criticisms have been made upon this process in such countries as Germany in which a serious structural transformation underwent in higher education systems after the Bologna Process. The most important criticisms made are that the process has not realized most of its objectives. The scope of these criticisms involve the development of European competitiveness, inability to bring in more students outside of the EHEA, and inability to realize the objectives of student, academician and researcher mobility in higher education (Rauhvargers *et al*., 2009; Eurydice, 2012).

The most important criticism is that uniformization is seen as the worst feature in terms of the standards and qualifications of higher education system in relation to the Bologna Process. It is argues that learning quality is degraded by the shortening of learning durations and lessening it into three years besides compressing the curricula in higher education. In addition to this conclusion, it is also determined that early-graduated students are unable to bring in the economy (Eurobarometer, 2007).

The criticism made to EHEA is summarized under these titles:
- Standardization (Accreditation, ECTS, work load, plans and programs)
- Uniformization (ranking system and qualifications framework)
- Decrease of learning quality (reducing the learning duration)
- Quality control and commercialization of higher education by accreditation
- Starting of a paid education
- Bureaucratization
- Weakness of student mobility

In parallel to the criticisms made so far, the interrogative systematic provision of formational requirement of universities in terms of local needs in European Higher Education Area will cause the perceptions of internal and external stakeholders to be positive in relation to the European Higher Education Area. Taking the criticism into consideration about the applications basing on the systems other than Continental Europe tradition in order to increase the competition between European Higher Education Area and American Universities will contribute to the effectiveness of this process. As a result, the evaluation of this issue with a critical viewpoint on the qualifications levels of European Higher Education Area will reduce the dilemma between standardization and uniformization of European Higher Education Area.

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The Entrepreneurs' Expectations and Satisfaction Level in Today's Accounting Education: A Survey of Aksaray Organized Industrial Zone

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Abstract

The accounting information system, considered as sub-branch of the management information system, produces needed information about internal and external environment of enterprises to make major decisions. In this sense, the accounting information system can be defined as a system that produces financial and nonfinancial information about enterprises' goods, services, market, and consumers etc.

In today's global competition environment, the accounting information system offers information that entrepreneurs need to make versatile decisions about past, present, and future periods. Moreover, a business manager takes various strategic decisions and directs the operations to ensure sustainability of business by using accounting data.

Developing technology, increasing competition and changing consumer demands affect production. These developments have brought the necessity of realization a number of changes to enterprises, as well. In other words, the changes accounting at external around of businesses have forced internal changes within businesses. As a requirement of sustainability, businesses have had to change/renew the strategies (policies) of management, production, and marketing in accordance with the current changes. These changes have also affected the accounting information system which has direct relation with other units of businesses. Furthermore, changes have made the accounting information system insufficient and have made it necessary to turn to the new systems.

The accounting information system, besides the functions it holds within the enterprises, provides enterprises with healthy communication with tax and social security institutions by preparation (submission) of information and documents timely and accurately.

In this study, a research about today's accounting education sufficiency, enterprises' owners and top managers' expectations related to accounting information system have been carried under the accordance of business with current changes at the Aksaray Organized Industrial Zone. The Enterprises' expectations and satisfaction level in today's accounting education have been examined in the research.

Keywords: Accounting Education, Entrepreneurs, Accounting Information System

1. Introduction

It requires moving systematically to get, classify and canalize truly of continuously renewed information in today's era of information, because management of information has become a more important term than getting it. So, various systems have been developed in order to manage information that continuously rises and becomes more sophisticated effectively, and focus has been on the right use of the gained information truly in mechanism of decision making.

Obviously, enterprises also need the information element that leads the steps of countries, states, non-profit organizations and consumers in daily life, and they make their movements in the light of information. Like any

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organization or individual of the society, enterprises that always interact with the environment also get information and they use it appropriate to their aims (Rebele, 2002). Here, information is an important input element like other production factors. In other words, the required element in order an enterprise to be successful in its decisions is information (Gökçen, 2007: 3). Especially, the information produced by accounting departments that are directly in relation with all departments of enterprises and its (inner/outer) environment is vital in the point of sustainability of enterprise operations.

2. Accounting Information System (AIS)

As being a sub-branch of management information system, AIS is related to following increases and decreases of an enterprise's assets and resources, evaluating and reporting it. In other words, AIS is the process of recording assets that an enterprise has and are represented as money and the resources of those assets. AIS passes the information it produces, such as changes in assets and resources, measurement of the performance related to the business, to managers, shareholders, credit providers etc. Presenting the outputs gained as a result of activities to information users, AIS holds an important role in delivering the information completely, at the right time and rightly (Atabey et al, 2012:3).

Besides presenting information in order to enlighten the public, AIS gives information about how the enterprise is managed and the performances of enterprise units and in general. Managers take decisions related to the future and existing activities depending on this information. This situation makes AIS more important (Güzel and Mersin, 2007).

Enterprises states the necessity of having enough AIS knowledge to meet the needs of the enterprises by those that take professional accounting education and/or students taking accounting education at university (Chang and Hwang, 2003), because accuracy, timing and reporting of the information provided by AIS are directly related to system user's vocational adequateness. No matter how well the system is built, knowledge and ability level of AIS user effects system outputs like any other interactive systems. In addition, sub systems of AIS, financial accounting and cost and management accounting systems provides basic information on financial decisions, such as product pricing- costing- investment- production volume, related to the future. As being the system that produces the information which stands as the basic of important decisions for the enterprise, AIS users' adequacy in knowledge and ability becomes more important.

- *2.1. Accounting Education and AIS Relation*

AIS has the feature of being basic information source of the enterprise through its life, starting from foundation until ending its activities and divestment. AIS- due to the information it provides- is at the center of the process of activities such as planning enterprise activities, determining the amount of the investments, counting the costs and determining product sale prices etc. Also, it provides light to the steps through the future by showing the past in evaluating the enterprise activities (Hatunoğlu, 2004). Generally, AIS provides information related to following aims (Güzel and Mersin, 2007):
- Creating long-term plans and developing strategies related to them,
- Taking decisions on distribution of enterprise resources,
- Costing planning of activities and its control,
- Evaluating and analyzing of performance,
- Creating of financial information required by laws and its reporting.

Technologic developments affect AIS as well as the production. An important part of data processing and recording have been transferred to the electronic environment together with technologic developments. This situation has made information management and commenting on the financial status of the enterprise and developments it make easier. Besides, it enables reports that make the results of enterprise activities understandable, reliable, adequate and comparable with the past. Control of these results have also been adapted to technologic developments and the operations of making the reporting appropriate to the laws and determining its reliability have become easier (Acar and Aktaş, 2010). Enterprises generally expect the followings from accounting education (Korukoğlu, 1998):
- Integrating the theory and practice in accounting education and increasing practice part,
- Sharing education programs, publication and information by establishing a cooperation with enterprises,

- Increasing the knowledge of the personnel by forming practice centered (master's etc.) programs for accounting staff of the enterprises,
- For sustainability of accounting science, organizing seminars and conferences on accounting; providing an environment in which practical information and experiences are shared by invited experienced accounting managers,
- Providing students with integrating the theory and practice by giving more importance in their apprenticeships.

The expectations of the enterprises from AIS and accounting education take place in various studies. However, according to Karasioğlu and Duman's (2004) study on function of the accounting in the point of practitioners and taxpayers, practitioners apply AIS due to the enforcement by legal obligations. From this point of view, it is possible to say that the expectations of enterprises from accounting education and AIS will be in the frame of legislations and legal obligations. So, we can say that enterprises expect from individuals educated in accounting to have required knowledge and ability in using AIS to form and report the information required by laws rather than using it in activity planning, performance evaluation and distribution of resources.

3. Literature Review

In the studies on accounting education, there generally exists the idea that theoretical and practice sides of accounting education do not match up with each other. Accounting education is typically given theoretically in the frame of basic terms of accounting related to AIS, widely accepted accounting principles and standards and legislations in effect. Although it is stated in the studies that participants with an education on accounting should have an ability to transfer theory into practice, it is observed that participants have inadequate education in terms of practice (Boyce, 2004; Rebele, 2002; Dellaportas and Hassal, 2012). Determining educational policies that will train the staff adaptable to the developments in economy, technology and legislations and meet the expectations of the entrepreneurs and forming the education standards and quality that will carry out these policies hold great importance (Demir, 2012).

Kelly, Davey and Haigh (1999) claim the necessity of using "holistic education" that combines the student and environmental factors in education. Similarly, Boyce (2004) states that accounting education given at universities does not carry out needed functions in today's conditions in which rapid changes are experienced due to globalization, so reforms should be done. The reasons of this inadequacy are stated as lack of communication between academicians and students and not taking environmental conditions that are prominent in practice into account in accounting education. In the study, it is argued to use "critical accounting classes" model as a suggestion for efficiency of accounting education.

In his study, Korukoğlu (1998) tries to show to what extent enterprises include accounting education and practices in their organization and current situation in cooperation of enterprises with universities in this education process. The results show that enterprises do not give enough importance to their accounting personnel's education, and they prefer to employ personnel studied accounting instead of educating their staff.

Study by Acar and Aktaş (2010) argues that accounting education cannot carry out its function because of changing conditions and suggests using "practice education model" in order to meet the expectations from accounting education.

Çürük and Doğan (2002) researched expectations of large scaled enterprises in Turkey on accounting knowledge level of and which accounting courses should be taken by the staff that they would employ. According to the results, enterprises expect from the staff they will employ to take courses on practice centered accounting education. Also, they expect accounting classes to be given in detail to students that are educated in accounting. Besides, enterprise managers state their expectations on directing students towards apprenticeship that will support theoretical information given in accounting education and increasing the opportunities of apprenticeship.

Ünal and Doğanay (2009) made a research on expectations of lead auditors, auditors, vice auditors working at Audit Court from accounting education given in undergraduate level and adequacy of these courses. The results show that accounting group courses are adequate among all the courses given in undergraduate level, but curriculum of accounting cannot meet the expectations and needs of organizations. Followings are suggested: this inadequacy can be resolved by updating accounting curriculum; efficiency in accounting education can be increased and the shortfall between theory and practice can be resolved by joining of experienced managers and practitioners to the lessons.

Çelik and Ecer (2009) evaluated the adequacy of accounting education in 45 public universities in Turkey according to American Assembly of Collegiate Schools of Business (AACSB) criteria. According to the study, while the education is found to be generally adequate, the quality of it can be increased more in the condition of improving use of resources.

Yıldız and Durak (2011) evaluated the expectations of small and medium sized enterprises in Kırklareli region from accounting education. The data gained by the survey shows that accounting education at universities does not satisfy the needs of enterprises in Kırklareli region.

İbiş and Çelikdemir (2011) evaluated the expectations of banking sector from accounting education. The results show that knowledge of legislations and judicial information will generally enable accounting education to be permanent; however, those that have been educated on accounting cannot transfer the information they learned at school into practice. According to the study, the expectations of banking sector, in short, is an accounting education in which theory and practice are combined, supported by real examples and case analysis and adaptable to the developments rapidly.

In their study on thoughts of independent accountants working in Antalya about vocational adequacy of students that are educated in accounting at universities, Kultuk, Dönmez, Utku and Erdoğan (2012) found that their knowledge of accounting is inadequate. Defending that students graduate without adequate accounting knowledge, accountants also think that students are inadequate in understanding modern enterprises' AIS processes and financial structures and satisfying the expectations of enterprises.

Dellaportas and Hassal (2012) state that students getting their knowledge by traditional teaching methods used in accounting education may have difficulties in using them in professional life. The study supports using concept of experiential and situated learning in order to resolve the inadequacy of theoretical information given to students in meeting the needs of professional accounting occupation.

Empirical studies show the need of a reform in increasing efficiency and productivity of accounting education. AS a result of International Accounting Standards' becoming local by converging, a student educated in accounting in any university in the world will need to have the adequacy of carrying out this occupation in any country and/or region. So, a model of accounting education should be presented that will satisfy the needs of modern entrepreneurs globally, enable students to get minimum vocational adequacy, lead the theoretical information into practice within the enterprise, take vocational ethical codes into account and infuse life-long learning into students. The important point here is the requirement of providing the harmony by critical thinking on both accounting education that is affected by economic developments and changes and professional life (Çelenk, Atmaca and Horasan, 2010). By the enforcement of change by business world, it is really important in accounting education: how an organization will be designed and managed; constructing an information system on determining problems and solutions; carrying out the activities that will change risks-opportunities caused by the change into advantages in terms of organization and business; infusing life-long (Kaya, 1999).

4. Research

In order to determine the expectations of entrepreneurs from Today's accounting education and the level of the expectations met survey study was carried out in the Aksaray organized industrial zone (AOIZ). Research findings are evaluated through data obtained from one to one meetings and e-mail.

- *4.1. Scope and Method*

About 130 businesses that operate in the Aksaray organized industrial zone is crossed and from 92 businesses survey data obtained. The survey measuring the expectations of enterprises from accounting training consists of 2 parts. The first part aims to obtain demographic characteristics of enterprises; with the questions in the second part is intended to measure the expectations of enterprises from the accounting education and accounting staff. The questions in second part are organized on a scale as *1 = Never/None* and *5 = Complete* (Likert scale). The research process the data obtained analyzed with the SPSS package program, 20.0. Demographic characteristics of enterprises took part in the survey carried out, are shown in table 1.

Table 1 : Demographic characteristics

	Frequency	Percent (%)		Frequency	Percent (%)
Business-Type		**Facility Field Of the Business**			

Private	47	51,1	Manufacturing	24	26,1
Limited	34	37,0	Service	32	34,8
Joint-stock	11	12,0	Trade	32	34,8
Other	-	-	Other	4	4,3
Total	92	100,0	Total	92	100,0
Level of education of the person Answering the questionnaire			**Number of Employee Employed in enterprise**		
High School	19	20,7	1-30	59	64,1
Associate	8	8,7	31-60	16	17,4
Undergraduate	56	60,9	61-90	4	4,3
Graduate	9	9,8	91 and over	13	14,1
Total	92	100,0	Total	92	100,0
Position of the person answering the questionnaire			**The preferred method of accounting personnel's employment**		
Owner of the business	60	65,2	Having Professional experience	37	40,2
General manager	3	3,3	Raising in the company	8	8,7
Manager of the business	6	6,5	Purchase service outside	28	30,4
Manager of the accounting	7	7,6	Conduct by myself	19	20,7
Chief of the Accounting	9	9,8	Other	-	-
Other	7	7,6			
Total	92	100,0	Total	92	100,0

According to the results of the survey 47 enterprises in AOIZ continues their activities as private (51.1%), 34 as limited (37%) and 11 as joint stock (12%) company. 32of enterprises in the sample (34.8%) are in the service sector, 32 are in trade sector (34.8%) and 24 are (26.1%) in the manufacturing sector. 59 of the enterprises (64.1%) employ between 1-30 staff, 16 (17.4%) between 31-60, 4 (4.3%) between 61-90 and 13 employ 91 and over staff. 65% of survey respondents is the owner of the business, and 60.9% have a graduate degree. Survey respondents who consist of business owners (60 people) and Bachelors (56 people) makes the research findings acceptable and reliable in today's competitive environment in order to meet the expectations of the accounting education of entrepreneurs. According to the survey, businesses would like to have professional staff having experience in employing accounting staff (Table 1). Training accounting personnel within the company is not preferred.

- *4.2. Findings and Analysis*

Before the assessment of the data obtained from the survey for measuring the reliability of posed questions to the participants Cronbach alpha value is determined (Table 2). Cronbach alpha value is greater than 70% (90%) and the scale is reliable and the analysis is appropriate to do.

Table 2 : Reliability Statistics

***Cronbach's Alpha* : ,905**	*N of Items :* 41

As a result, enterprises ' accounting unit interviews entrepreneurs employed staff receive training in universities (s) of expectations reached the conclusion that it should be "sufficient" level. In this respect the value of test is determined 4 (sufficient) in the research and analyses conducted over this value. Here are the research hypotheses.

H_0 = *the average level of today's accounting training meeting the expectations of entrepreneurs is 4.*
H_1 = *the average level of today's accounting training meeting the expectations of entrepreneurs is not 4.*

In the process of analysis of the study the questions in the second part of the scale (41) has been converted into a single question and the One-Sample T-test was performed. One-sample t test, the results shown in Table 3.

Table 3 : One-Sample Test

	Test Value = 4				
	T	df	N	Sig. (2-tailed)	Mean
Mean	-11,590	91	92	,000	3,4401

Corresponding to the value of the Sig-test performed -11,590 T (2-tailed) value of $P \leq 0.05$ so H_1 hypothesis is accepted whereas H_0 hypothesis is rejected. According to the H_1 hypothesis, the expectations of entrepreneurs in AOIZ from today's accounting training are not met in adequate levels. So business owners cannot meet the expectations from the accounting staff that they employ.

Similarly, the questions in the second part of the survey are grouped as factors according to their content of accounting courses given at universities. These factors are identified as follows;

1. *Tax laws*: sufficiency in legislation, applicable tax laws and accounting standards Turkey,
2. *General Accounting*: sufficiency regarding accounting registration scheme, preparation of financial statements and the use of accounting programs.
3. *Cost accounting*: sufficiency in cost calculations and the inventory process
4. *Managerial accounting*: sufficiency regarding investment decisions, capacity, sales and performance evaluation
5. *Entity and resource management*: sufficiency in management of entity and resources effectively,
6. *Market*: sufficiency in making healthy relations with market and public institutions of enterprises.

Depending on the outcome in Table 3 accounting education offered in universities do not meet the expectations of entrepreneurs. in order to determine the factors which impact this, accounting courses given at universities are grouped and factors are determined. In other words, it is tried to name the accounting courses that do not meet entrepreneurs' expectations. For this purpose, the survey questions are grouped according to accounting courses and their content. As for the question groups created on factors One-Sample T test is done, and the analysis are made according to the hypotheses test value. The results achieved are shown in Table 4.

Table 4 : One-Sample Test

	Test Value = 4				
	T	df	N	Sig. (2-tailed)	Mean
1.Tax_Acts_Compute	1,559	91	92	,122	4,0408
2.General_Accounting_Compute	1,865	91	92	,065	4,0628
3.Cost_Accounting_Compute	1,519	91	92	,132	4,0696
4.Management_Accounting_Compute	-12,871	91	92	,000	2,8090
5.Assets_Resource_Compute	-11,020	91	92	,000	2,8540
6.Market_Conditions_Compute	-14,224	91	92	,000	2,7138

According to Table 4, the result obtained from table 3 is affected by *Tax laws, General Accounting and cost accounting* factors in a positive direction; *Management accounting, asset and resource management and market* factors in a negative way. According to Table 4;

- In terms of *tax laws* factor accounting education meets entrepreneurs' expectations (T = 1,562 corresponds to the value of the Sig (2-tailed) $P \geq 0.05$).
- In terms of *general accounting* factor accounting education meets entrepreneurs' expectations (T = 1,865 corresponds to the value of the Sig (2-tailed) $P \geq 0.05$).
- In terms of *cost accounting* factor accounting education meets entrepreneurs' expectations. (T = 1,519 corresponds to the value of the Sig (2-tailed) $P \geq 0.05$).
- In terms of *management accounting* factor accounting education does not meets entrepreneurs' expectations (T =-12,871 corresponds to the value of the Sig (2-tailed) $P \leq 0.05$).
- In terms of *asset and resource management* factor accounting education does not meets entrepreneurs' expectations (T =-11,020 corresponds to the value of the Sig (2-tailed) $P \leq 0.05$).
- In terms of *market* factor accounting education does not meets entrepreneurs' expectations (T =-14,224 corresponds to the value of the Sig (2-tailed) $P \leq 0.05$).

According to the factors shown in Table 4 the first three factors which meets the expectations of the entrepreneurs from accounting education may be accepted as a result of law and legal legislation. Tax laws and legislation requires all transactions of cost accounting and general accounting transactions to be accurate and complete. In this case the accounting information system and accounting personnel are employed as system users are naturally sufficient. Especially the entrepreneurs' preference of employment of trained personnel in the field indicates that students have theoretical education in universities will not meet the expectations of entrepreneurs unless they get sufficient level of experience in the business. Therefore, the evidence of the first three factors in terms of the expectations of entrepreneurs are met, in addition to the accounting education in the universities of individuals is a result of the experience in business life. For inexperienced individuals first three results can be said to be negative.

The study reached the conclusion that the formal accounting education at the college level and ahead cannot meet entrepreneurs ' expectations. The reason for this is that changes occurring in commercial activities with the globalization are also affects the accounting profession. In order to train staff who has professional competence and to meet the expectations of entrepreneurs, lifelong education centers should be founded (Şengel, 2010).

Conclusion and Suggestions

AIS is an important element in the company sustainability. It provides important and useful information in the establishment, continuing their activities and liquidation periods of businesses. The expectations from AIS, which is in a continuous interaction with both the company's internal environment and the external environment, is changing due to the globalization and the changing environmental conditions and hence associate and graduate accounting education is also affected.

In order to measure the expectations of today's entrepreneurs from accounting education the data were obtained via research carried out in Aksaray Organized Industrial Zone. The analysis carried out in accordance with the data obtained and it has been concluded that accounting education in general does not meet the expectations of today's entrepreneurs. Similarly, as a result of the analysis of the survey data it has been concluded that accounting education is focused on the tax laws and the functioning of AIS required by legislation. This result met the expectations of entrepreneurs in terms of financial reporting required by the tax laws, so it can be said that AIS is used to the extent required by the legal obligations. Entrepreneurs cannot get a large part of the benefits offered by AIS because of poor accounting education received by the staff employed to use AIS.

Entrepreneurs prefer qualified personnel in the accounting field rather than training accounting personnel and external service procurement, this indicates that individuals receive accounting education are insufficient in terms of the ability to combine theory and practice. In general, we can say that today's entrepreneurs and universities have some tasks to increase the efficiency of accounting education and to meet the expectations. These are:

- In accounting education offered in universities more focus should be given to practice-oriented education. With this education that supports and assimilates the theoretical knowledge, the participants will be able to have an advantageous position in business life and be able to meet the expectations of entrepreneurs.
- Lecturers of accounting education in universities should shift learners from passive to active learners by interacting with them. Lecturer and learners may review the issues together by questions and discussions and increase the efficiency in accounting education with of case studies.
- In cooperation with enterprises students should be guided to do internship during their university education so that they may learn about the business world and to combine their theoretical knowledge and practice. This may also help to create job opportunities after graduation.
- It should be provided to discuss the expectations of business world from students by contacting accounting firms operating in different sectors during the training of entrepreneurs and inviting accounting managers to give a seminar. In this way, students will be able to find the opportunity to learn the business world and structure their study in line with expectations.
- The use of technology in accounting education and teaching practical accounting package software will enhance the effectiveness of accounting education as a large portion of accounting transactions are on the electronic environment.
- The tutor factor which is one of the factors affecting the effectiveness of the accounting education, also affects the effectiveness of the students. In this context, to make tutors have pedagogical formation will increase the effectiveness of an accounting education and so entrepreneurs' expectations will be able to get met.
- With the provision of university-industry cooperation and mutual sharing of information and documentation effectiveness in accounting education will be provided.
- Establishing and supporting lifelong education centers will increase effectiveness of both students after graduation and individuals employed in enterprises in their fields with the philosophy of lifelong learning.
- Harmonization of the teaching content and teaching resources of universities to change is important for the effectiveness of accounting education. Similarly, accounting education should be supported with practices adapted from real business world to course content and resources.
- By increasing internet facilities in universities, reaching scientific databases should be facilitated and by providing access to these databases the students should be encourage to follow innovations in their fields.

To meet the expectations of today's Entrepreneurs on accounting education will be provided with the improvement and harmonization of factors affects accounting education such as the tutorial, the student and the physical facilities. Similarly, the provision of university and industry cooperation will enhance the effectiveness of accounting education in general. This is because of that measurement of the quality of education is only possible to

know the expectations beneficiaries and to reform the process in line with the expectations. As well as universities, entrepreneurs also have some tasks to do at this point. Exchanges will take place with increased interaction with entrepreneurs and expected and inaccurate trends will be able to be determined. With the innovations in this context, process will be improved and the quality of the outputs will be increased.

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The Evaluation of University Students' Views on Internet Resources

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Abstract

The present time, which is described as the information age, internet is a very important source of knowledge. It is known that students widely make use of internet resources for their courses, research and projects. However, at this point, it is discussed that how reliable the internet resources are. Regarding this issue, there are people defending that internet resources are reliable as well as people suggesting that they are not. In order to make the discussions on this issue clear, it is useful to evaluate internet resources epistemologically and scientifically. So, students' views on internet resources, their point of view and finally getting information about their awareness concerning this issue are important.

In this study, the aim is to determine university students' views on internet resources and to analyze them interms of different variables. The analyses will be realized in the context of educational technology. The study is a descriptive one and the data are obtained through likert-type items and analyzed with descriptive statistical techniques. It is expected that the results obtained through analyses will contribute to the discussion in question.

Keywords: Internet, Internet resources, Epistemology, Educational technology and internet

Introduction

Mankind, who got knowledge from oral and written sources of knowledge for a long time, met a new source of knowledge in late 20th century described as virtual. Being different from the one stored in mind, tablet, signboard and paper, this knowledge travels on internet, which is called the virtual environment. Internet (web) is basically a strong communication system linking a computer anywhere in the world to another (Davenport ve Erarslan, 2001). In another definition, internet is the largest network of communication and data bank consisting of computers linked to eachother (Şahan, 2005). This source of knowledge on the internet line has led to a radical change in habits like accessing, saving and sharing knowledge to the extent that it has given 21st century its name, the information age.

In short, the knowledge in virtual environment described as internet resources, has changed the progress of philosophies, theories and activities concerned with knowledge. Thus, with the pervasion of the internet technology, accessing knowledge (information) is no longer a problem. So, internet is accepted as the fastest and cheapest way to access knowledge at present. When it is remembered that people went far away from their hometowns in the past to to access knowledge facing a lot of difficulties, this transformation can be onderstood better.

One of systems that the internet has fundamentally changed is the education. Essentially being a "knowledge-making process" and have organized for this purpose, the school system has been degraded almost to *a centreless circle* with the widespread of internet. As a result, to establish schools and classes only to reach knowledge has largely lost its meaning. It is because the internet has made knowledge (and education as well, if it is merely transferring knowledge) free from time and space. Internet is a time-and-space-free technology that offers the whole world to school, teachers and students. Furthermore, the internet frees students from chalkboard, teacher, and book trilogy and provides them opportunity-rich environment full of visual materials, resources, and experts; and thus

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learning becomes more meaningful, more enjoyable and longer lasting (Sen, 1999). Removing the boundaries of learning, the internet provides students the opportunity of virtual school without walls and global learning (Halis, 2001; Askar, 2003). From a different perspective, internet eliminates significant differences in education such as age, class, gender, nationality, religion, special needs etc. (Ergun, 1998). As for the internet which is called as wider source of information than a teacher, Baykal (2008), has evaluated that "computer is a more patience test expert, magnetic memory has already left organic memory in the lurch, artificial intelligence is at the door" and asks "what is left to school?" and answers himself that "what is left to school is a pair of eyes gazing into your eyes, a head leaning on your shoulder, a compassionate hand patting you on the back, the taste of the anger, the pain of separation".

What is the point in erecting buildings costing a lot which are so-called schools and which have been established on valuable premises particularly in cities merely for teaching while the internet cut the ground out from under school that they have deployed for centuries (school for transferring knowledge and teaching)? When the matter is handled from the perspective of accessing to knowledge or getting knowledge, it can be said that school has experienced a significant loss of meaning against to the internet reality. In this case, it can be foreseen that the school system cannot lean to a goal like merely teaching but it will have to find some other rightful bases in these times when the internet is common as such. If school will remain as its present form (a centre for information or knowledge distribution) in the future, it will have to find new forms and bases concerning its mission by making radical knowledge-based changes. The leading debate about education in the years to come can already be estimated to be on school's mission of giving knowledge. It is because epistemological problems have always been at the forefront in educational process, which is a process of giving knowledge in a sense (Büyükdüvenci, 2001).

In the last twenty years, internet has been included in every aspect of life in Turkey as in the world. According to the data, %30.5 of the world population is internet users in 2011. This rate is %41.6 in Turkey (Esgin, Baba and Aytaç, 2011). Correspondingly, it is observed that there is a radical change in school systems. This change can be seen in a wide range from using the internet as the source of knowledge or learning environment to online universities. However, in Turkey, the reflection of internet to school systems appears in the classrooms equipped with internet facilities and students to access it. The most typical example of it is Fatih Project which is put forward with great hope and with its huge cost.

Internet which has been included into the education system resulting in important changes may have a lot of functions. One of them is to use it as the source of knowledge in the classrooms. With this function internet has become one of the fundamental learning variables. In the historical process, in terms of knowledge book-teacher-student triplet with the addition of the internet has changed into quartet or internet has replaced the book and the system has turned into student- internet- teacher.

With different forms and positions internet is now one of the fundamental variables in the classrooms as well as in higher education. It can be said that internet has been gradually replacing the teacher and the book and is candidate to become the unique source of the classroom and the problems occur at this point. These problems are all about the new position of internet as the source of knowledge. The first problem is that internet is seen as the only source of knowledge. And this situation is not appropriate for Constructivist approach which has been applied since 2005-2006 education year. The first problem is the inconsistency between internet and the current education system principles because in constructivist approach the primary source of knowledge is individuals like teacher, students, others...etc. The second one is that based on a verbal culture if the social culture will adjust to an imaginary culture constructed via internet and how correct it is. The third one is that basically based on informative approaches. Turkish education system has lost its prestige and the question is that how this situation will be prevented. The fourth problem which is arising from the perception of internet as the only source of knowledge in the classroom is also the focus of this study. This problem is the reliability of internet sources in the process of learning. As the school and education construct mind, this problem in fact is a problem which has roots in philosophy, epistemology, and axiology. This construction problem is a future problem for the society, because the survival of a society is also a problem of national mind construction. In this sense, it is important that internet sources are studied to understand the problem.

Method

This study was carried out in survey design and it is a descriptive one. Survey design is a model based on describing and explaining the existing situation by taking samplings from the population (Arseven, 1994; Balcı, 1995; Karasar, 2005).

2.1 Population and Sampling

The studying population of the study includes the last year students attending various faculties of Fırat and İnönü Universities in 2012-2013 Spring term. The sampling consists of 517 students chosen from the population using the random sampling method and volunteered to be involved in the study. The distribution of these students into universities is as follows; Fırat University (n=234; %45.3), İnönü University (n=283; %54.7). When the fact that a sampling of 356 participants is enough for a population of 5000 people in 95 % confidence interval in a scientific study (Balcı, 1995:110 as cited in Anderson, 1990), it can be said that a sampling consisting of 517 students for this study is enough. The distribution of students making up the sampling according to some variables is seen in Table 1.

Table 1. The Distribution of Students Making up the Sampling According to the Variables

Variables		N	%
Gender	Female	273	52.8
	Male	244	47.2
Faculty	Education	169	32.7
	Science	115	22.2
	Humanities and Social Sciences	105	20.3
	Engineering	67	13.0
	Divinity	61	11.8
Total		517	100

2. 2. Means of Data Collection

The data in this tudy were obtained through questionnaires developed by the authors. While preparing the questionnaire, an item battery was formed consisting of a sum of 22 items, 2 items for personal information and 20 for internet resources, as a result of searching the related literature. And then, these items were given to five academicians to get their views on content validity. Following this, the draft questionnaire was ready for pilot study as a result of making necessary corrections in accordance with the suggestions of the experts. The pilot application was carried out for 68 students who weren't involved in the study. Factor analysis was made for the data obtained from the pilot study so as to test the content validity of the questionnaire. The results obtained from the factor analysis were KMO= 0.631; Bartlett= 151.890 (p=0,000) Cronbach Alpha= 0.67. In the analysis, the items with a factor load of 0.35 or more were taken and eight items below this value were omitted and a questionnaire of fourteen items was shaped finally. The factor loads of the items in the questionnaire were between 0.381-0.657. Taking these values (Büyüköztürk, 2002:120) into consideration, it can be said that the questionnaire was reliable. The items in the questionnaire was graded as "yes", "partly" and "no".

2. 3. Collection of Data and Analysis

In this study, the items were analyzed with percentage and frequency techniques. Chi square (X^2) technique was applied to determine whether there were significant differences among students' views according to the variables. Only the items with a significant difference among students' views were involved in the study.

3. Findings and Interpretations

Table 2: Students' Views on Internet Knowledge Sources

	Views	(1) Yes		(2) Partly		(3) No	
		%	f	%	f	%	f
1	Do you make use of internet as a source of knowledge?	46.8	242	42.9	222	10.3	53
2	Do you question the knowledge sources on the internet?	17.6	91	28.6	148	53.8	278
3	Is the knowledge on internet reliable in your opinion?	62.9	325	27.5	142	9.7	50
4	Is the knowledge on internet reliable in terms of ethics in your opinion?	52.4	271	40.2	208	7.4	38
5	Is the knowledge on internet scientific in your opinion?	66.5	344	24.6	127	8.9	46
6	Do the resources on internet have the quality of knowledge in your opinion?	47.2	244	37.7	195	15.1	78
7	Do the resources on internet have the quality of knowledge in your opinion?	51.1	264	39.7	205	9.3	48
8	Can knowledge at wisdom level be reached on internet in your opinion?	42.9	222	37.9	196	19.1	99
9	I s your aim of reaching knowledge sources on internet just "getting knowledge"?	63.6	329	24.0	124	12.4	64
10	I s your aim of reaching knowledge sources on internet just "learning"?	50.7	262	35.4	183	13.9	72
11	I s your aim of reaching knowledge sources on internet just "surfing"?	64.5	334	20	103	15.5	80
12	Is the primary source of knowledge in the class course boks in your opinion?	54.2	280	33.3	172	12.6	65

When the opinions of students in Table 2 are analyzed, it is understood that they take advantage of the internet to a large (%46.8 yes+%42.9 partly) extent. This evidence could be interpreted in a way that the monopoly of the teacher and books has been overcome as a traditional source of knowledge. If it is considered that the internet is involved in every phase of life, it also reflects on education process as a matter of course.

Here 42.9% "partial" rate could be related to the problem of students in getting access to the internet rather than their distrust of the internet. Because same students find it reliable to a large (62.9%) extent. Also the students accept knowledge on the internet without questioning and it supports this interpretation. Furthermore, the students consider knowledge on the internet reliable by 66.5% and they find the knowledge ethical by 52.4% and these can be considered as a sign of reliance. This would be pleasing if the source of knowledge on the internet was really reliable.

However in literature many suspicions are uttered against knowledge originating from the internet. (Ergönül, 2011). In this case, students' reliance on knowledge from the internet might be based on two possibilities. First, students might be unaware of the aspects of knowledge as the source of knowledge, its types or its being ethical, since students are epistemologically inefficient. Hence there is no (except one or two) epistemological lectures or contents in higher education. Second, students' reliance on the internet sources might be related to easy access to this source. Because it is more difficult to obtain knowledge from textbooks and lecturers than the internet. Therefore in this regard, it is defined as a technology developed in accordance with needs of humanity on "sharing/keeping the produced knowledge and getting access to it easily". It is possible to reach knowledge on many subjects with the help of this technology in an easy and a cheap, fast, reliable way (Korcuklu and Balay, 2005).

The internet has three functions as a source of knowledge. These are scanning, presenting and linking. (Syidoğlu, 1997:221). Akkoyunlu and Orhan (1998) state the benefits of the internet as "researching, reviewing, answering questions, sharing knowledge". When the answers of students participating in the research are analyzed it is understood that 64.5% of the students use the internet "for browsing", 63.6% of them use it "to obtain knowledge" and 50.7% of them "to learn something." These evidences can be interpreted in a way that students use the internet to receive superficial knowledge and for browsing as well as they use it for the purpose of learning and education. In fact, the knowledge (more like information) obtained pointlessly and acontextually (almost through skimming) does not mean so much for learning. Because the benefits of knowledge for mankind make it valuable and meaningful (Yalçın, 2012)

Knowledge can be defined differently in literature. This diversity is related to adoptions about knowledge. Mengüşoğlu (1992, Akt: Cihan, 1998) defines knowledge in general as "the result of relation between the subject and the object." The diversity in the definitions of knowledge -according to its nature, dealing context and the philosophy relied on- is also a case in classification of it. For instance, the most classical classification of knowledge in educational sciences is Bloom's Taxonomy. In this taxonomy the simplest form of cognitive knowledge is "remembering", the most complex one is "evaluation." (Bloom, 1998).

Knowledge can be classified as verbal and cognitive knowledge. Knowledge, with a more traditional approach, is classified as "ilm-el yakin" (knowing by knowledge), "ayn-el yakin" (knowing as seeing) and "hakk-el yakin" (knowing all about). In literature, information is classified as "phenomenon","information", "knowledge" and "wisdom". Bellinger, Castro and Mills (2013) grade this classification as: Data, information, knowledge, understanding, wisdom. In this classification the nuance between information and knowledge is missed. In contrast to information, knowledge provides a sound base. (Akgün, 2000). Furthermore, within the context of diverse disciplines, knowledge is also classified as phenomenal knowledge, conceptual knowledge, principle-generalization, law-hypothesis (Kaptan and Korkmaz, 2012). Apart from those, in respect of its sources, knowledge can be classified as given and gained knowledge.

In this study, several questions are added to find out how the students perceive internet-based knowledge and whether they are aware of various forms of knowledge. The answers given by students are seen in table 2. According to this, %51.1 of the students perceive internet-based knowledge as *information*, %47,2 of them perceive it as knowledge and %42.9 perceive it as *wisdom*. Although this finding can be interpreted as students are aware of the order of knowledge from simple to complicated or from superficiality to profundity, the fact that the rates of grading are close to each other brings presence of students' awareness into question. Hence, the same students considering schoolbook as the primary source of knowledge at the rate of %54.2 supports this suspicion. When these findings are handled as a whole, it can be said that students don't have *information* about knowledge indeed or they are confused. Taking into account that they haven't had classes related to this in education process, the situation can be considered as normal. In order to demonstrate the depth of students' perception of internet based knowledge in the context of classification of knowledge, more comprehensive studies (including interviews) are needed.

Chi square test was applied to determine whether there are significant differences among students' views on the items included in Table 2 in terms of variables. Test result shows that there is significant difference according to gender for the items 1. (X =17.135; p=0.000) and 7. (X =8.465; p=0.015). The difference of the 1st item is in countenance of male students. Accordingly, male students has answered as 'yes' to the question 'Do you make use of internet as the source of knowledge?' at the rate of %60.3 while female students has given the same answer at the rate of %39.7. Consequently, it can be said that male students make use of internet as the source of knowledge more than female students do. Similarly, the significant difference in 7th item is in the countenance of male students. According to this difference, male students answer 'yes' at the rate of %56.8 to the question of "Do the resources on internet have the quality of knowledge in your opinion?" while female students do at the rate of %43.2. When this finding is taken into account, we can say that male students find internet based knowledge more superficial than female students do.

Among the students opinions about the items in Table 2, only the item 5 (X =20.192; p=0.027) has the significant difference in terms of faculty variable. According to this, Faculty of Science students are the ones who said 'yes' to the question of "Is the knowledge on internet scientific in your opinion?" more than other faculties(%80) while Faculty of Social Sciences students do the opposite (%55). This finding shows us that students of Science Faculty consider internet sources as scientific more than students of Social Science Faculty do. One of its potential reason could be the way students of Social Science Faculty approach knowledge. They do it more questionable as the nominees of social scientist.

4. Results and Discussion

The results found out in this research which aims to evaluate the views of students on internet sources and the suggestions asserted through these results are pointed out below:

●The Internet, one of the main realities of the Information Age, has influenced the structures and representations of curricula in instruction process through education and school system just as it has influenced almost every area of life. The internet has not only cheapened and facilitated the way to reach the information but it also has made the knowledge independent of time and location. Apparently, it is no more a problem to reach the information. From this point, universities which are based only on the instruction phase have faced a gradual erosion

on their chance of leading status with this only mission. Furthermore, it seems that lecturers, against the internet, have lost their role as the only authority from the aspect of knowledge in class forever. In light of these circumstances, universities and lecturers are required to take on valid and effective positions against this recent information source.

● Internet is one of the ways which are frequently utilized to reach information in all instruction levels as well as higher education. However, this virtually-unlimited information source brings about a reliability problem. Nevertheless, according to the conclusion of this study, university students define their web sources as reliable and get each piece of information without questioning through these sources. This circumstance is likely to cause troubles on students' intellectual stimulation and their perceptions of science and reality. On this point, universities should take the necessary precautions in order to enable students to be competent at questioning, deciding and recognizing the correct information. For this purpose, new courses can be added into the curriculum or present course contents can be reconstructed if necessary. Moreover, informative activities can be arranged.

● Another result achieved in this study is that the purposes of students' internet use are as in the sequence of surfing, getting information and learning. The purpose of surfing on the internet should especially be converted into a learning objective. Thus, universities should encourage the students to use the internet for sharing, reinforcing, rewarding and extending the information they learn.

● It is concluded that the university students in this study consider the internet-based knowledge mostly as information. However, it is a suspicious fact whether this kind of an evaluation depends on an epistemological awareness according to the answers achieved in this study. From this point, extensive research is required to determine students' epistemological perceptions on internet-based information.

● Internet-based knowledge may bring out scientific and ethical problems. Universities, from this aspect, should carry out studies for developing scientific and ethical criteria on internet-based information.

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13th International Educational Technology Conference

The follow up of the trainee from the training via internet by the Extension and Training Office of Kasetsart University during 2009 - 2012.

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Abstract

When properly trained through training programs via the internet on webpage designing and eForm creating, members' organizations could be helpful for their work and carrier system. During 2009-2012 the Extension and Training Office of Kasetsart University has organized periodic editions of a training program for representatives of organizations. After four editions of this training program, a survey of the satisfaction, the utilization and the impact on follow up activities has been carried out.

A follow-up questionnaire has been developed. The sample comprised 123 sampling people who had taken part in the training program edition. The data were analyzed by descriptive statistics: percentage, mean and standard deviation.

For web designing, it was found that 56.70 percent of them used this knowledge gained in their work, and 36.70 percent used this knowledge gained to develop their work. Photoshop was the most useful topic. For eForm, most of them did not use it. The factors impacted on follow up activities on the training via the internet were computer accessories, communication infrastructure via internet net work. The difference between the utilization according to the impact factors were significant at 0.05

The trainees suggested that the duration of the course should be increase, the software should be update, should be emphasis on practical aspect, and should have more templates.

Keyword: trainee, training via internet

Introductions

Education one of the most important tool in developing human resource. Both government and non government organizations are focus on and interested in developing their personnel.Human resources policies and practices in Thailand have become the mainstream of national development, and has been listed in the National Economic and Social Development Plan No. 7 and No. 8 (Suchart: 2540).

Training is one of the strategies using in human resource development to increase individual knowledge, abilities, and skills. This is pinpoint to the better efficiency and effective of work .The final process of training is follow up. The follow up will reveal that the trainee applied the knowledge and skills they have got to their work appropriately, the problems of utilization. The results from this follow up can be used to improve and develop the training courses for more efficiently. As Suchart (2540:14) state that

... follow up is necessary and more necessary in the future for the professional human resource development training conductors. This is because of the competition in conducting the training course. It should be authentically prove that it can developed human resource, useful to the trainees, and direct to the objectives. And also showed the problems on training management, and how to make it more efficiently...

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Kasetsart University, with various of research units, is one of educational institutions that focus on professional development and training. The university provides services and trainings by Extension and Training Office.

Objective

After four editions of this training program on wave, a survey of the satisfaction, the utilization and the impact on follow up activities has been carried out.

Methodology

A follow-up questionnaire has been developed. The sample comprised 123 sampling peoples who had taken part in the training program edition. The data were analyzed by descriptive statistics: percentage, mean and standard deviation.

Results

The study of this follow up is used to develop the curriculum of the training course. The training program were issued during the year 2009-2012 by Extension and Training Office of Kasetsart University. The purposes are to study the satisfaction, and the utilization of the trainees on two training courses: "Designing and building a website" and "Creating electronic form (e-Form)" and to study the impact factors to the follow up through the internet.

The study of the knowledge gained from the training adapted to the design and building professionals found that most of the trainees have the knowledge to good use. 56.70 percent was used in the development of most applications accounted for 36.70 percent of the knowledge in the course of designing and building a website. To deploy in occupations classified by topic, the results show that subjects who trained with knowledge in Photoshop to design the home page with the most benefit.

For the program to create an electronic form (e-Form), it was found that most of the trainees, 63.50 percent, did not use the knowledge and 36.50 percent used the knowledge after training. 25.40 percent used the knowledge to solve problems in their work. For the application of creating electronic form (eForm), classified by topic, found that most of the trainees create the form by using Adobe Acrobat 8.0 Pro program and print with highest average.

For web designing, it was found that 56.70 percent of them used this knowledge gained in their work, and 36.70 percent used this knowledge gained to develop their work. Photoshop was the most useful topic. For eform, most of them did not use it.

The factors impacted on follow up activities on the training via the internet were found that there were factors totally impact to follow up activities with high level (3. 94score). Those factors were computer accessories, communication infrastructure via internet net work. The difference between the utilization according to the impact factors were significant at 0.05

The trainees suggested that the duration of the course should be increase, the software should be update, should be emphasis on practical aspect, and should have more templates.

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The Impact of Digital Mind Maps on Science Achievement among Sixth Grade Students in Saudi Arabia

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Abstract

The purpose of this study was to examine the impact of digital mind maps on science achievement among sixth grade students in Saudi Arabia. A total of female 44 students at the second-semester of the academic year 2012 /2013 participated in the study. The students were randomly assigned to two experimental groups to receive different treatments. The first group (DMM) utilized digital mind maps during their learning process, while the second group (PMM) utilized paper mind maps. The results revealed that using digital mind maps had a significant effect on students' science achievement. Based on the obtained results, it was concluded that the utilization of digital mind maps for Saudi sixth students could be helpful in improving their achievement.

Keywords: Digital mind maps; paper mind maps; science; achievement

1. Introduction

Instructional design has moved through a series of development phases. The move from behaviorism through cognitivism to constructivism represents shifts in emphasis away from an external view to an internal view of learning. To the behaviorist, the internal processing is of no interest; to the cognitivist, the internal processing is only of importance to the extent to which it explains how external reality is understood. In contrast, the constructivist views the student as a builder of her knowledge (Terhart, 2003). This turning point of learning processes asks for designing of instruction that deals with students as builders not receivers of knowledge, students who construct knowledge through interaction and connecting their experiences and their prior knowledge with the current situations, and students who have learning strategies to help in building their knowledge and understanding. Therefore, effective instruction emphasizes on the teaching of strategies that enable students to learn with understanding.

Based on a constructivist approach principles, the utilization of mind maps facilitates meaningful learning (Akinoglu & Yasar, 2007, Buzan, 1993, Erdogan, 2008). Researchers confirmed that visual presentation is an essential for students to understand new knowledge. One of the most powerful tools for visual presentation is mind map which is a "useful tool for helping younger students with the process of building conceptual understanding of content and promoting achievement" (Mona & Khalick, 2008, p. 298). Buzan (1993, p.59), defined the mind map as

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"an expression of Radiant Thinking and is therefore a function of the human mind. It is a powerful graphic technique which provides a universal key to unlocking the potential of the brain". The mind map has four essential characteristics: The subject attention is crystallized in a central image, the main themes of the subject radiate from the central image as branches, branches comprise a key image or key word printed on an associated line, and the braches form a connected nodal structure.

Learners who utilize mind maps are more likely able to learn effectively by organizing maps and add images and color to them (Nesbit & Adesope, 2006). Mind maps let learners to produce a visual image to enrich their learning (Budd, 2004). Farrand, Hussain, and Hennessy (2002) found that mind maps not only aided medical students in studying, but also encouraged a deeper level of learning, especially when paired with a problem-based learning curriculum. Mind maps have also been used as reflective tools that allow for broader associations to be made to the material (Budd, 2004). Moreover, utilizing mind maps aids teachers vary their teaching methods which may be more likely to reach diverse learners (Nesbit & Adesope, 2006). The utilization of mind maps can be assisted with "the adoption of colors, images, codes, and multidimensional approaches to help human memory, so that one could concentrate the mind on the central part, which is, the crucial subject" Chen, 2008, p.1034). Buzan (1993) stated that mind maps help learners to use graphic representation which may help in the brainstorming process. McGriff (2000) confirmed that relating images to concepts is a creative task which requires thinking instead of memorizing. Adam and Mowers (2007) found that learners who could express their learning with visual skills had a 40% higher retention rate than that of just verbal learners.

Although many research findings (Akinoglu & Yasar, 2007; Buzan, 1996; Chiou, 2008; Erdogan, 2008; Farrand et al. 2002; Riley & Ahlberg, 2004) have showed the effectiveness of employing the paper mind maps, paper mind maps have been considered by some writers not to be a useful skill. For example, sometimes it could be time consuming for the teacher to present and for the student to understand, especially if the student is inexperienced, or uncreative (Buzan, 1993). In the digital word and the age of ICT, writing anything out long hand is unfavorable, and therefore, paper mind maps creation seems to be time consuming and a huge step backward. However, it is valuable to benefit from computer to create mind maps, namely, digital mind maps.

By utilizing digital mind maps, students can move objects and concepts around simply by drag and drop them, in contrast, with paper mind maps, students need to erase and rewrite again and again (Erdogan, 2008).

Moreover, digital mind maps can be saved as files, the file can be shared among learners, and bits of it may be copied for other maps. Further digital mind maps enable students to include hyperlinks and email links to their maps. Students can also attach and view video clips, animated pictures, and images (Riley & Ahlberg, 2004).

1.1 Purpose of the study

To date, however, various research studies have been conducted to investigate the effect of paper mind maps on learning science. Research has provided relatively little insight into the role of digital mind maps on young learners' science achievement. Thus, the purpose of this study is to investigate the impact of digital mind maps on science achievement among sixth grade students. Particularly, the study was conducted to investigate if there were any statistically significant differences in science levels between students who were taught and learned by utilizing digital mind maps (DMM) and students who were taught and learned by utilizing paper mind maps (PMM).

1.2 Research Question and Hypotheses

This study seeks to answer the following research question:

Does the utilization of digital mind maps make more significant difference on students' achievement in learning science when compared to paper mind maps?

Based on the above research question the following hypothesis was formulated:

There is no statistical significant difference in science achievement between Students taught via the utilization of digital mind maps and students taught via the utilization of paper mind maps.

1.3 Significance of the Study

It is hoped that the findings of this study will contribute to further understanding of the role of digital mind maps in improving science academic achievement. If the utilization of digital mind maps proves its effectiveness in improving science academic achievement, teachers in Saudi Arabia will have additional instructional media that can be used to support students' learning with understanding. Moreover, this will help educators in Saudi Arabia in their search for an effective and efficient pedagogical strategy or model for improving learning with understanding.

2. Method

It is important to note that everyday classroom instructions and all reading materials used in the participating school are in the Arabic Language (except for classes focused on the teaching of English). Therefore, all the materials and instruments used in this study were in Arabic.

2.1 Population and Sample

The population of this study comprised of all female sixth grade students enrolled in the National Guard elementary schools in the capital city of Saudi Arabia –Riyadh- during the second semester for the academic year 2012 / 2013. The National Guard Office includes (15) female elementary schools that comprise (729) sixth grade students. Schools in Saudi Arabia are not coeducational.

In order to implement this study in a naturalistic school setting, existing intact classes were selected. One school from the (15th) elementary schools was randomly selected and two classes from the selected school were randomly selected. The sample consisted of (44) female students who were studying in two sixth-grade classrooms. The size of the classes was similar (22 and 22) and the mean age of the students was 11.6 years. Students in the selected classes were from approximately equivalent socioeconomic status as defined by the National Guard Office.

2.3 Experimental Conditions

The two groups were different from one another in terms of the mind map type. The DMM group was taught and learned by using the digital mind maps. The PMM group was taught and learned by using the paper mind maps. The followings are the details of each group:

DMM Group (N = 22)**:** In this group, the teacher and learners used digital mind maps two weeks before the formal experiment with practice lessons. In the present study, in each session, the teacher introduced and explained the new topic for about 10 minutes to the whole class by using and presenting digital mind maps. After the teacher's explanation, students worked individually using the digital mind maps that guided and supported students to achieve the learning objectives. In other words, students under this condition were instructed and reminded frequently to use the digital maps to facilitate their learning. During the learning process, the teacher monitored each student and intervened by guiding student to the usage of the digital mind maps if necessary. At the end of the session, the teacher asked student to turn off their computers and assessed and evaluated students' performance, discussed with the whole class to ensure that students carefully processed the effectiveness of their learning.

PMM Group (N = 22)**:** In this group, the teacher and learners followed the same method in the DMM group, except they utilized the paper mind maps instead of digital mind maps, and at the end of the each session, the teacher collected all paper mind maps.

After three weeks of implementing the study, namely in the last science session of this experiment (session 15), students in both groups were asked to complete the science achievement test.

2.4 Instructional Materials

In order to investigate the students' science achievement in a naturalistic setting of the classroom, the instructional materials that used in this study were based on the fifth unit from the science textbook (Matter) designed by the Ministry of Education for all fifth-grade students in Saudi Arabia, teacher's lesson plans, digital mind maps, and paper mind maps. Both types of mind maps were developed by the researcher and one of his graduate students who have B.Ed. major in science.

2.5 Measurement Instruments

To measure students' science achievement, a pre- test and a post-test were developed in this study. The pre-test and post-test questions were similar in content but their order and numbering were randomized. Two weeks before the beginning of this study, the pre-test was conducted; the results were collected and used as a covariate.

2.6 Test Validity and Reliability

Three experienced science teachers, two education science supervisors, and three science education university lecturers reviewed the test. Each viewed all question and rated their confidence in their response, using scale from 1 (very weak) to 5 (very strong). Only questions, which had received 4 or more scores from all evaluators, were selected as test questions. The evaluators' suggestions, feedback, and comments were taken into account until there were no discrepancies among them. Prior to the beginning of the study, a pilot test was carried out and the scores from the pilot study test were collected to determine the Cronbach's Alpha reliability coefficient. Cronbach's alpha reliability coefficient of the test was .91.

3. Results

Testing the study hypothesis: "There is no statistical significant difference in science achievement between Students taught via the utilization of digital mind maps and students taught via the utilization of paper mind maps".

Table 1 presents means and standard deviations of the pre-test and post-test by the group, DMM and PMM.

Table 1: <u>Means and standard deviations of the pre-test and post-test by the group, DMM and PMM</u>

Group	Pre-test			Post-test			
	N	**Mean**	**SD**	**N**	**Mean**	**SD**	**Adj.mean**
DMM	22	5.93	1.14	22	17.90	.97	17.90[a]
PMM	22	6.25	2.32	22	16.09	1.53	16.10[a]

Maximal Score: 20
   a.   Evaluated at covariate appeared in the model: pre-test = 6.0909

To examine if there was statistically significant differences in science achievement adjusted mean scores between the DMM and the PMM groups, while controlling the pre-test, analysis of covariance (ANCOVA) was conducted. Table 2 presents the results of ANCOVA.

Table 2
<u>ANCOVA Results</u>

Source	Sum of Squares	df	Mean Square	F	Sig
Pre-test	.468	1	.468	.279	.600
Group	35.35	1	35.35	21.11	.000
Error	68.66	41	1.67		
Total	12821.5	44			

The results of ANCOVA indicate that there is statistically significant difference between the groups (DMM and PMM). The *F* ratio was 21.11 (*p* = .000). This means that the instructional method had a main effect on science achievement. These results indicate that the DMM students (Mean = 17.9, SD = .97, Adj.mean = 17.9) significantly outperformed the PMM students (Mean = 16.1, SD = 1.5, Adj.mean = 16.1) with an adjusted mean difference of 1.8.

4. Discussion and conclusion

The results of the current study indicate that the digital mind maps improved students' science achievement more than the paper mind maps. The improved science achievement could be referred to the following reasons:

- Digital mind maps had a much more consistent appearance than paper mind maps, and had the potential to appear much cleaner.

- Hide and show features helped students to concentrate on a specific idea and to avoid visual clutter.

- Digital mind maps supported students to arrange information in expandable and collapsible topic trees. This enabled students to store much more information without overwhelming them.

- Students saved digital mind maps as files, shared files with colleagues, and easily retrieved them.

- Multimedia (videos, sounds, and animations) reinforced students to use different senses, and therefore to learn with understanding (Lih-Juan, 1997).

- Hyperlinks, email links, file attachments, and pictures are essential features that enabled students to achieve higher. Riley and Ahlberg (2004, p.253) indicate that "ICT capacity enables storage and revisiting of mapping and automatic functions, and creating concepts and vectors enable immediate linking and labeling that increase the ease and speed of mapping".

- Colored pictures and videos may assist students' learning motivation and attention (Lamberski, 1980), and accordingly influence their performance (van Schaik & Ling, 2001).

- The use of keyboard and mouse as input devices, enabled students to navigate through the digital mind maps easily and faster than the paper mind maps.

- Digital mind maps offered a dynamic, distributed learning environment which expanded the physical learning space and afforded students a means of developing, organizing and structuring their ideas using higher-order thinking skills and thereby enhanced their understanding (Novak & Cañas, 2006.p.15)

It can be concluded that the utilization of digital mind maps enhanced students' science achievement. When students actively employed the features of digital mind maps such as hyperlinks, hide and show, navigation, attachments, video, audio, animations, and file saving, they could achieve higher than employing the paper mind maps in science.

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The Impact of PowerPoint on Undergraduates' Technical Communication Achievement

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Abstract

PowerPoint, one of the most well known ICT tools, plays a vital role in our society nowadays as it has been utilized widely and actively in facilitating the process of teaching and learning, especially in the educational domain. The study examined the effect of PowerPoint lecturing on undergraduates' Technical Communication final examination grade. The experimental group was taught in a PowerPoint lecture format while the control group in a traditional whiteboard lecture format. The results revealed that the experimental group grades were significantly higher than the control group at $p = 0.00$.

Keywords: Final examination grades, PowerPoint, Technical Communication

Introduction

The importance of ICTs in the education changes has been recognized by the Government of Malaysia by inaugurating Multimedia Super Corridor (MSC) status to higher learning institutions that use ICTs to produce and enhance their teaching and learning experiences. This award symbolizes "world-class service and achievement" (Multimedia Development Corporation, 1996-2012). In this context, the use of applications, such as PowerPoint, enriches the teaching and learning processes. PowerPoint application enriches teaching and learning experiences in a number of ways. First, it enables lectures to be delivered through a neat and organized presentation which eventually gets the students' attention (Holzl, 1997; Hashemi et al., 2012). Second, the uses of multimedia in the application enable the lectures to cater for different learning styles (Hashemi et al., 2012). In addition, the file format of PowerPoint is generally compatible to most systems, and thus, students can easily download the presentation slides and add more relevant information after or during lecture. Finally, PowerPoint presentation revolves around the most important points of the topic lectured.

Many studies have been carried out to examine the impacts of ICTs on teaching and learning but there are limited empirical studies of the effect of PowerPoint in learning. The European Higher Education Area (EHEA) is evolving their teaching and learning processes to provide better education experience. Valentín et al. (2013) reported that universities are transforming from a traditional controlled and directed instruction to autonomous learning, and hence, it is essential to focus on developing diverse competencies based instructions. ICTs play important roles in restructuring the educational setting, transforming it from teacher centered to students centered. In their study, Valentín et al (2013) proved that there were significant associations between the uses of different ICTs and 543 undergraduates' improved performance and satisfaction.

Gürbüz et al. (2010) explored the effect of PowerPoint as a learning tool. The sample for the study was a group of 109 freshman undergraduates taking a biology education program. They were assigned to two different groups: experimental group (n = 56) preparing and presenting with PowerPoint, and control group (n = 53) learning through traditional approach. To inquire the effect on academic achievement and attitude, two different tests were administered as pre- and post-tests, namely the Biology Achievement Test (BAT) and the Biology Attitude Scale (BAS). The results supported that using PowerPoint as learning tool may improve academic achievement and attitudes among undergraduates enrolling biology education program. This is due to the PowerPoint presentation

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itself promotes auditory and visual information representations, reflecting the cognitive benefit of multimedia learning.

Szabo and Hastings (2000) conducted three studies to investigate the efficacy of PowerPoint lecturing on undergraduates' academic achievement and attitudes in different modules: Motor Learning, Strength, Power and Endurance in Sport and Exercise, Research Methods in Sports and Exercise, and Social Psychology of Sport and Exercise. In the first study, comparisons were made between (i) the students' attitudes towards PowerPoint lectures and traditional overhead or blackboard assisted lectures, and (ii) the effect of the lecture styles on students' test result. The students were found to have positive attitudes toward PowerPoint lectures because they felt that PowerPoint lectures were interesting, able to get their attention, and help them to have better understanding. However, this did not reflect their achievement; both lecture styles had no significant differences on the students' test result. In the second study, a series of mock tests was conducted on the three groups of students receiving three different lecture styles respectively (i) overhead or blackboard lectures, (ii) PowerPoint lectures, and (iii) PowerPoint lectures with distribution of lecture notes. The results indicated that students performed better with PowerPoint lecturing. In the third study, two groups of students were compared for their performance in two mock tests using counterbalanced research design (PowerPoint and overhead). Both groups obtained higher grades for Test 1 compared to Test 2 despite different lecture styles.

Susskind (2005) provides the latest account on PowerPoint lecturing. In this study, the effects of PowerPoint assisted instruction were examined on two sections of students in Introduction to Psychology college classes. Lectures for section one and section two were conducted by the same instructor using whiteboard and PowerPoint presentation software in two blocks of time. Lectures were conducted in counterbalanced order for the two sections. After each block of the two different lecture methods, a test was carried out. In total there were two tests. Both sections obtained higher grades for test one compared to test two despite the two different lecture methods.

Although these four studies in the last decade provide some emerging evidences on the benefits of PowerPoint lecturing, there has been no attempt to undertake an inquiry on language and communication classes to our knowledge. In order to address this, the aim of the present paper is to report a preliminary study on the efficacy of PowerPoint lecturing on undergraduates' academic achievement in Technical Communication classes.

Methodology

Participants

Participants were engineering undergraduates of College of Engineering at Universiti Tenaga Nasional (UNITEN). All participants were enrolled in two of 11 Technical Communication sections. Each section met two times a week for 60 minutes and 120 minutes each session. The first section was composed of 60 students and the second section was composed of 60 students also.

Research Design

Experiments were carried out on two different groups of participants. They were identified as sections one and two. Section one students received PowerPoint-assisted lectures in contrast to section two receiving traditional lectures. PowerPoint lectures were referred as "Lectures delivered with the aid of PowerPoint presentation software and with minimum uses of whiteboard." On the other hand, traditional lectures were referred as "Lectures delivered with the aid of whiteboard and with occasional uses of PowerPoint presentation software." Each class was conducted by different lecturer. The participants were tested after 14 weeks of classes.

Instrument

The only instrument used was the final examination questions developed by the Department of Languages and Communication in the university. This exam paper contained 20 multiple choice and two long answer questions. The multiple choice questions were about theories in writing experimental research report, business proposal, and information gathering processes. Each of the multiple choice questions was worth two marks. Meanwhile, the students were tested on the ability to review previous research studies and present research results on the other two long answer questions. This section was worth 60 marks. The total marks for the exam paper were 100 marks.

Procedure

The experiments were conducted for 14 weeks during the second semester of 2012-2013 academic year. All of the 120 students and two lecturers were given the same course outline which contained the scheme of work to be covered for the semester. The same lecturer provided the same lectures and notes to the same section of students.

All classes for section one students were lectured via PowerPoint slides prepared by the lecturer herself. The slides were displayed to the students on a screen in a lecture hall. After every main concept presented by the lecturer, students were given opportunity to ask questions and/or discuss short task assigned in groups. When needed occasionally, whiteboard was used by the lecturer to write down explanations for certain questions asked by the students. In contrast, all classes for section two were conducted by a different lecturer throughout the semester via traditional method by using mainly whiteboard, with PowerPoint presentation occasionally. The students were given in-class writing assignments to complete. Nevertheless, class discussions were encouraged as well in this section. After 14 weeks of lectures, all students took the final examination in week 15 in an exam hall at the same time.

Statistical Analysis

The final examination marks were analyzed using IBM SPSS Statistics Version 20. An independent-samples t-test was carried out to compare means, standard deviations and the level of significant differences at *p <0.05* between the experimental group and control group. The experimental group received PowerPoint lectures, but the control group received traditional lectures. Table 1 clarifies the data labeling used to key in data into the software.

Final examination marks	Grade awarded for the marks obtained	Value used to represent the grade
85 – 100	A	1
80 – 84	A-	2
75 – 79	B+	3
70 – 74	B	4
65 – 69	B-	5
60 – 64	C+	6
55 – 59	C	7
50 – 54	C-	8
45 – 49	D+	9
40 – 44	D	10
0 – 39	E	11

Table 1. Data labeling used in the study

Results and Discussion

The results of the analysis (Table 2) revealed that there was significant difference between section one and section two students' grades (*p*=0.00). Students in section one had better and higher grades (M = 3.95) for their final examination than students in section two (M = 6.28). The average grade obtained by section one students was *B+*, and section two scored *C+* at average.

	n	M	SD	*t*	*p*
Experimental group (section one)	60	3.95	1.44	-7.54	0.00
Control group (section two)	60	6.28	1.91		

Table 2. Means (M), standard deviation (SD), and t test scores of students' final examination marks or grades

These findings reinforce partially those of Szabo and Hastings (2000), who conducted a study on the effects of blackboard or overhead projector lecturing, PowerPoint lecturing and PowerPoint with lecture notes lecturing on students' academic achievement. It was found out that students performed better with PowerPoint lecturing. The current results imply that lecturing with PowerPoint has significant effect on students' academic achievement. As described by Susskind (2005) and Szabo and Hastings (2000), lecture delivered with PowerPoint presentation is more organized and systematic which might assist students to understand the content better. In other way, students

might be more attracted by the design of the slides, and hence, they would pay more attention during the lecture. Paying attention to lectures is important in the sense that this facilitates effective teaching and learning to take place. In fact, interesting and well-design slides with animation and variation of color could capture the students' attention better, leading to establishing of interaction between lecturer and students. Lecturers would have more control over the teaching and learning processes.

Conclusion

The current findings show that the uses of PowerPoint in lecturing could help technical communication undergraduates to perform better academically compared to traditional lecturing where whiteboard is used mainly in lecturing. Lectures for both control and experimental groups were conducted by two different instructors; this was seen as a limitation for the current study. Distinct teaching notes or experience could have play significant role in affecting the students' understanding and academic performance in addition to using PowerPoint slides and whiteboard as teaching aids. Researchers should examine the uses of PowerPoint slides and whiteboard as teaching aids by the same instructors to determine whether the PowerPoint-assisted lecturing establishes differences in students' academic achievement or not. This would also allow improvement in result reliability.

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The Impacts of Gender Inequality in Education on Economic Growth in Turkey

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Abstract

A large number of literature on education of women clearly suggest that educating a woman is equal to educating a family and that woman are worth training more than their counterparts, men, in many respects. However, despite the fact that positive contribution of women education to the economy and society has long been known, education of women in many nations, particularly in developing countries, needs to attract more attention.

The education level of women is quite low in Muslim countries which are mostly developing countries. Increasing the level of education is dependent upon eliminating gender inequality in education. Muslim countries need to use all of their resources in order to reach their economic development targets. Women participation in economy is a major economic resource which is not frequently used in Muslim countries. A large amount of literature (Dollar and Gatti, 1999; Barro, 2001; Schultz, 2002; Klasen, 2002; and Knowles, 2002) suggests that, gender equality has a positive effect on economic growth. Taking Muslim countries into account, one can reasonably claim that the rate of the effect of gender equality on economic growth is higher in developing countries.

In this paper, the impact of gender inequality in education on economic growth for Turkey will be explored, using econometric techniques. The relationship between such variables as primary school graduation, high school graduation, vocational high school education and university graduation with economic growth will be discussed in detail. The paper will take into account of all variables for the period 1968-2005.

The contributions of educated women in an economy are threefold. First of which is that increasing the level of human capital, correspondingly, decreasing the fertility rate of the women. Second argument is that infant mortality rate might decline by virtue of decreasing the fertility rate of the women. Thirdly, increasing women education level may affect the education level of next generation positively.

Within this framework, co-integration approach will be applied in order to understand long run relationship between these variables which is gender inequality in education and economic growth. The empirical results indicate that there is a long-run relationship among these variables.

Although Turkey has the biggest national income among OIC countries according to 2011 data, she has not been successful in fully eliminating gender inequality. Furthermore, Turkey is an interesting case in terms of education level of women and position of women in labor force. For instance, women are represented in academic life with 38% in Turkey, while the rate of women in quite low in many other sectors. Similarly, it is quite interesting to note that the rate of university graduates among Turkish women are only 3.9%, the rate of women participation in Turkish labor force is 28% and the rate of schooling among women are 32%, while women representation in academic life in quite high. Another interesting and unique situation in Turkey is that half of the female workers are placed in agriculture sector. These facts reflect significance of our study and its contribution to the field.

Keywords: Gender inequality, education, economic growth, Turkey

Introduction

Education is considered to be one of the most important driving forces of economic and social development. The efficiency of education in economic development emerges depending on its level and distribution. For this reason, as well as increasing levels of education, training levels of women needs to be raised. Since, half of the qualified labor potential, which is one of the important components of competiton in economic life, formed by women, makes women's education important. The potential to increase a country's human capital significantly depends on raising the level of women's education.

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Increase in the level of education of women provides their active participation in the economic life. An increased level of education is primarily an effect on women's participation rates to labor force. Women's labor force participation as an employer or as an employee provides, effective use of the labor factor, and consequently a higher level of production achievement. Increase in the level of women's education, increases productivity through education, which is considered as a form of human capital. Recognition of equal opportunities for women in economic and social life provides the rise of their level of education, such as increasing their participation in market activities and enables households to give better decisions. The inclusion of women in working life is effective on the current and future economic growth through the channels of income, consumption and expenditure. In addition, increase in the level of women's education, developes human capital by increasing the quality of child care and education. This is especially effective on the performance of future growth. On the other hand, elimination of gender inequality in economic and social life, lead to an increase in the levels of education of children and an increase in the women's labor force participation rate, as well as the feedback effect of these two developments help to ensure gender equality.

Education investments, provides positive returns both for the individual and for the society. Education, increases individuals personal gains, at the same time, creates positive externalities for society. When the personal and social returns provided by education are calculated according to gender, types of programs, education level and level of development of the countries, determining the priorities of education policies to be applied and increasing the achievements in practice will be possible.

The conclusion of the studies in order to calculate the returns of education are that the personal gains of education is higher than calculable social gains, and the education level that provides most personal and social gain is primary schoool. In addition, education provides higher returns to women than men. Personal and social gains of education in developing countries, is higher than developed countries.

According to these findings, personal and social gains to be obtained from women's education are higher than the gains that the men will get. In developing countries, gains provided by the education are higher than the developed countries. Therefore, in developing countries, women's education is more important than in other countries. Developing countries must remove the gender gap in education by giving more prominence to women's education, and must give priority to policies aimed at expanding primary education.

Women's education has significant gains except the market-oriented activities. Especially the time women spend on household chores such as cooking, cleaning and child care, is much more than men. Since these activities are not performed market-oriented, there may be some difficulties in identifying the exact equivalents in the market. However it is obvious that, considering the costs incurred when the works that, are carried out by women without expecting any fees, are met from the market, it provides a significant gain to the family budget. While, providing household chores such as cooking and cleaning from market has quite low alternative cost, especially providing childcare from market may have higher alternative cost since the child would be away from his mother. In addition, to increase the level of women's education by reducing their interest in household chores can positively affect the efficiency of home affairs. In economical literature, empirical evidences between women's education and the efficiency of housework are generally positive. While the studies within the framework of economics are in this direction, in some studies except the economics literature has negative effect. In non-economics literature the negative effects between the education of women and household chores are generally depends on their decreasing attention towards household chores and not satisfying them quite well. In studies investigating the economic size of the education, the number of findings concerning the gender inequality has negative effects on economic development is very high.

These effects are both emerge directly or indirectly and not simultaneous or not the same degree in each country. The researches examining the economic effects of education inequality, cannot fully measures many factors or ignores some of them. Despite these shortcomings, achieving gender equality in education can be considered as a strategy that allows their development for developing countries.

1. Relationship between Women's Education and Economic Development

The importance of women's education in the economic and social development is well known. Comparative studies between countries and evidences obtained from households' investigations a show that, educating women has contributed to the community in many ways. Development economists also emphasize the importance of girls' educational attainment in reaching out development goals. In developing regions, it is stated that the investment with the highest rate of return is investment in girls. Studies about positive relationship between national income and gender equality in education and/or positive contribution of women's education on national income and economic growth is substantially increased since the last ten years (Lewis and Lockheed, 2008: 2-3).

Impacts of the provision of women's education or gender equality in education, on the growth and development, occur in different channels. First of all, increase in the level of education of women, is being effective by enabling human capital form's development. At the same time, in parallel with an increase in levels of education, increasing the participation of women in economic life, thus manufacturer aspects become efficient. On the other hand, there is a significant association between women's educational level and population growth, fertility and infant mortality rates.

Despite the absence of sufficient empirical studies of education in terms of macro-economic externalities, it is generally agreed that education to children, by cutting the consumption of the current year, increase investments in the next period. Thus, positive externalities that the future generations will gain through education, are subsidized. According to empirical studies, raising maternal education increases the quality of children more than father's education for the reasons such as, good and healthy nutrition of children and well-education before and during school (Schults, 2002: 212). According to the findings of Thomas, the effect of the income earned by the mother on the child to live longer is 20 times more than the income derived by the father (Klasen, 1999: 8).

The low level of women's education causes negative consequences on growth, due to environmental influences. There are plenty of evidences that, environmental impacts are decisive factors in the success of children (Engin-Demir, 2009:27). In a study by Chen, it is indicated that, not being able to provide gender equality in education with the intellectual environment, by affecting adversely the abilities of children and the quality of students, caused negative effect on quality of labor, productivity, and therefore on growth. In this study, the second channel that is formed on the growth by gender inequality is, reducing the marginal product of capital by low quality of labor, through the household's life-long learning level, it does cause less investment and growth. In addition, employment gender inequality impresses on the growth by means of the quality of labor (Chen, 2004:31). In the studies about, raising the level of education of the women would be effective on growth through population increase, a right way relationship is determined between gender equality in education and growth. According to one of them, since increasing the women's level of primary education reduces the fertility, it may alert economic development indirectly (Barro, 2001: 38). According to a study of Lagerlöf by using a dynamic method, the initial gender gap in education causes continuation of the deficit by a later period, through the high fertility and low economic growth. This result constitutes an important reason to break the vicious circle of gender gap (Ghulam, 2005:8). In addition, the elimination of gender inequality in education reduces child mortality as well as fertility (Klasen, 1999: 23).

Whether male or female, enhancing the quality and number of employees with higher education levels, will reduce the income and technology diversity between the countries that has higher levels of education and produce new technologies, and the countries that are applying them (Kim and Lawrence, 1994: 235-6). Closing the gender gap in education will provide more efficient use of resources for developing countries, and will allow more easily to close their the difference between developing countries.

There is not a definitive answer to the question if, making lower levels of human capital investment in women in terms of education and health, can be considered as a market failure or not. However it is referred, reduction of gender inequality that causes an increase in the income level can be regarded as a market failure for the developing countries (Dollar and Gatti, 1999: 21-22). In addition, it is stated that with the development of the pension and social security system, to ensure their senility parents will reduce the investments in sons. Hence, with the increase in national income of the countries, market failures experienced in women's education is expected to decrease (Ghulam, 2005:5).

The theoretical basis of the researches examining the relationship between women's education and growth starts with the studies of Schutz and Denison, dating back to Solow, Roemer, Lucas, Barro's studies. Especially in studies using endogenous growth models, emphasizes the importance of human capital form on growth, which consists of investments in education and health care. In these studies, women's education is often considered as an element of the form of human capital, it is considered as a part of the educational factor. Studies' examining the effects of women's education on growth independently is fairly new.

Studies done by Dollar and Gatti (1999), Lagerlöf (1999), Schultz (2002), Klasen (2002), Knowles (2002), are the major studies that reveal the relationship between women's education and economic growth, and development in the last decade. In these studies, the nature of the relationship between women's education and growth are analyzed. Women's education, as measured by indicators such as women's enrollment rate, literacy rate, indicators which measures the inequality between women and men in education also used in. In studies, however measured the women's education is concluded to be effective on growth, albeit on different channels.

2. Impact of Gender Inequality in Education on Economic Growth

The work of Dollar-Gatti, significantly sheds light on the subject of macro-economic effects of Women's education. According to this study of Dollar-Gatti, there is a strong correlation between secondary education enrollment rates of women and per capita income. In this study, concluded that gender inequality in education leads to a negative impact on the growth, as well as economic reasons for women compared to men receiving a lower level of education, cultural elements and civil rights are also effective.

In a study by Chen, achieving gender equality in education on national income per capita, is explained by the demographic impact channels. According to this study, providing gender equality in education enables the rise of the level of women's education. Indeed, except for a limited number of countries, especially in developing countries, educational inequality is disadvantage of women. The most important demographic effect of the rise in women's level of education, reduce the number of children, by decreasing fertility. Reduction in the number of children ensures, reduces in the expenditures of children and thus provides increase in savings and therefore investments. Another effect of the decrease in the number of children, takes place in the form of increasing the relative size of the working age population. Reduction in the number of dependent children decreases the dependent population. Decline in the dependent population, increases the marginal efficiency of capital through investments, but also directly increases national income per capita (Chen, 2004:31).

Of the grounds for girls receiving a lower level of education, since boys seen as a tool of social security in old age, girls' education investments have lower returns, women's low-income from education and socio-cultural preferences are included. However, considering that, in the majority of developing countries, women return from education is more than men; it is not possible to say that the economic reason for the occurrence of low investment in women's education is available in all countries. Together with the economic reasons, it is more accurate to take into account socio-cultural structure and other conditions in the country (Ghulam, 2005: 3-4).

According to one of the studies that deal the economic size of the dimension of women's education, in the framework of macro-economic indicators, positive effect of women's education on economic development is statistically more clear than the effect provided by men. At the same time, the educational gap between men and women hinders economic development (Knowles,

2002: 143). According to a study by Klasen, education gap between women and men in East Asia, Sub-Saharan Africa, North Asia and in the Middle East, explains %0.4 and 0.9 of differences in the annual growth increase and this ratio shows the trend of increase. According to this study, a small gender gap in education affects a high growth rate decisively (Klasen, 2002: 367).

3. Econometric Methodology, Data Set and Implementation Results

In order to determine the effects of women education in Turkey on growth, the relationship between gender indicators in education and annual growth rates will be investigated.
Since population censuses are pentetric, it has not been able to reach an annual education indicator. Since 1996, annual training series are displayed. 12 years of data is not possible to make the econometric analysis. For this reason, for gender inequality in education covering the period 1968-2006, series of sex ratio will be used for, elementary school, middle school, high school, vocational and technical high school and university graduates.

3. 1 Econometric Methodology

The changes in political and economic life that occur at various times for various reasons, can be effective between relationships on the time series related to changes. When examining the relationship between the analyzed variables, not taken these changes into consideration, even in the lack of structural change taken into account, it causes to obtain incorrect results.
In this study, if there is a relationship between gender inequality in education and economic growth, and if this relationship exists in which years these changes have occured will be investigated, by cointegration test that does not allow the structural break as well as cointegration tests that allow single and double structural breaks. In this way, which events are effective in this relationship will be understood. In this context, firstly, at which level the variables that are conducted a survey have become stagnant will be investigated, then it will be investigated whether there is a long-term relationship between them.

3.2. Unit Root Tests

In order to understand whether are there long rung relationship between all variables, applying cointegration test, it should be checked that all variables at the same level stationary or not. If these series not stationary at level, it should be precede first deference to get stationary positions. When all series become stationary at the first difference level, it can use cointegration test. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP)[159] Unit Root Tests are employed to test the integration level and the possible cointegration among the variables (Dickey and Fuller, 1981; Phillips and Perron, 1988). The ADF test is proceeded to check out whether the series are stationary or not and the ADF test is based on the following regressions:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum_{i=1} \alpha_i \Delta y_{t-i} + \varepsilon_t \qquad (1)$$

Equation is consisting of lag of dependent variable. In the equation y is a time series, t is a linear time trend, Δ is the first difference operator, α_0 is a constant, n is the optimum number of lags on the dependent variable, and ε is the random error term. The main difference between Phillips-Perron (PP) Unit Root Tests and the ADF test, in the PP unit root tests in order remove autocorrelation it is adding lag of its and it is applying a nonparametric correction.

3.3. Cointegration Tests

3.3.1. Engle Granger Cointegration Test

Engle-Granger (1987) cointegration test is consist of two stages, first stage regression model is set up:

$$y_t = \alpha_0 + \alpha_1 x_t + u_t \qquad (2)$$

In the second phase, error terms that is acquired from the model is applied the Augmented Dickey-Fuller (ADF) Unit Root Tests.

$$\Delta u_t = \alpha_0 + \alpha_1 u_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta u_{t-i} + e_t$$

At this point it should be considered that applied critical values are different from Augmented Dickey-Fuller (ADF) Unit Root Tests.

3.3.2. Gregory-Hansen Cointegration Test

In order to determine long-run relationship between the variables generally applied to cointegration tests, because of time series sometimes have some structural breaks it will not submit the correct results. Therefore instead of standard tests for cointegration

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[159] PP approach allows for t he presence of unknown forms of autocorrelation with a structural break in the time series and conditional heteroscedasticity in the error term.

if the presences of structural breaks are time series, it has been applied tests that deal with structural break in the cointegrating relations.
Cointegration that is developed by Gregory and Hansen (1996) is considering possible structural breaks in the series. Gregory and Hansen developed tree different models that are considering changing in intercept or trend, through those models investigate is there any cointegration vector among the variables.

$$y_{1t} = \mu_1 + \mu_2 DU_t + \alpha_1 y_{2t} + e_t \qquad \text{(Model CC)} \quad (4)$$

In the model while μ1 represents constant term μ2 is changing in the represent constant term that time in the structural shift. Structural shift included in model by dummy variable that can be defined as here:

$$DU_t = \begin{cases} 0 & t \leq [n\tau] \ iken, \\ 1 & di\u011fer \ durumlarda \end{cases}$$

While n represents that number of observations, τ parameter show data that are between (0.15T and 0.85T).
When level shift with trend inclusion of a linear trend it would get model that regime shift where Intercept, slope coefficients and trend change (C/T).

$$y_{1t} = \mu_1 + \mu_2 DU_t + \mu_3 t \ \alpha_1 y_{2t} + e_t \qquad \text{(Model C/T)} \quad (5)$$

Before the structural change slope coefficient is α1 and after the shift occurred slope coefficients is represent with α2.
In the Gregory and Hansen test (1996), to determine breaking time, trough time period, all possible breaking point (τ) will be calculated by applying contiguous ELS methodology. The residuals from the calculations employed in Phillips-Perron (PP) Unit Root Tests and the ADF test by which to get minimum value to determine the breaking time.

$$\text{ADF}^* = \inf \text{ADF} (\tau)$$

It is known that standard tests for cointegration are biased towards non-rejection of no cointegration if the data is subjected to a structural break. Hence a researcher relying on standard cointegration tools may erroneously fail to reject the null of no cointegration if the presence of a structural break is not accounted for. In a response to this problem there have in recent years emerged a number of tests that deal with structural breaks in the cointegrating relations. If in the time series is there more than one endogenous break Gregory and Hansen (1996) test will not be fit for it. In this situation, we should apply the Hatemi-J cointegration test.

3.3.3 Hatemi-J Cointegration Test

The method that is developed by Gregory and Hansen (1996) is taking account just a breaking however, Hatemi-J (2008) cointegration test developed for two endogenous breaking. Hatemi-J (2008) model that is explain the effect of two structural shifts, has showed below.

$$y_t = \alpha_0 + \sum_{i=1}^{2}(\alpha_i D_{it} + \beta'_i D_{it} x_t) + \beta'_0 X_t + u_t \qquad (6)$$

In the equation α0 is constant term that is before the structural shifts, α1 is appear because of first structural break, α2 is second structural shift that is lead to change in the constant term. β0 is before the structural shift represent of slope parameter, β1 is effect of first structural shift on slope, β2 is represent that second structural shift in the model.
In the model the unknown parameters $\tau_1 \in (0, 1)$ and $\tau_2 \in (0, 1)$ signifying the relative timing of the regime change point and the bracket denotes the integer part. $D1t$ and $D2t$ are dummy variables defined as

$$D_{1t} = \begin{cases} 1 & t \leq [n\tau] \ iken, \\ 0 & t \leq [n\tau] \end{cases} \qquad\qquad D_{2t} = \begin{cases} 1 & t > [n\tau_2] \ iken, \\ 0 & t \leq [n\tau_2] \end{cases}$$

In order to test the fundamental hypothesis which shows a cointegration relationship among the variables, ADF* statistics are frequatly used. ADF* statistics are got out of applying unit root test statistics on the remainders of Model 2.
ADF test statistic does not standard normal distribution. The applicable test statistics are the smallest values of these three tests across all values for τ1 and τ2, with $\tau_1 \in T_1 = (0.15, 0.70)$ and $\tau_2 \in T_2 = (0.15+\tau_1, 0.85)$. The critical value of these test statistics are in the Hatemi-J (2008) table.

3.4. Data Gathering Methodology

In this study, the relationship between gender indicators in education and annual growth rates will be investigated, in order to determine the effects of women education in Turkey on growth. Gender in education is calculated through the rate of girls among all graduates from primary, secondary and high schools as well as university graduates. These variables are as follows:
lgrt: Logaritm of growth in Turkey by years

prm: rate of girls among all primary school graduates by years

hgh: rate of girls among all high school graduates by years

unv: rate of girls among all university graduates by years

As population census is carried out in each 5 years in Turkey, the researchers failed to get all annual education indicators. Therefore, for gender inequality profile, gender rate series among primary, high school and university graduates between 1968 and 2006 are used. Growth rates data used within the framework of this research have been taken from World Bank databanks and education data from Turkish National Statistics Institution.

1968-2006 data about above-mentioned variables are presented below in graphs. As a general outlook for these graphs, it seems to be that these series are not static. The rate of girls among primary school graduates were increased in 1997 when a law (Law Number 4306) about uniting primary and secondary schools and making education in these levels mandatory.

Dickey-Fuller method which is used to analyse whether time series are stable or not will also be used fort his research.
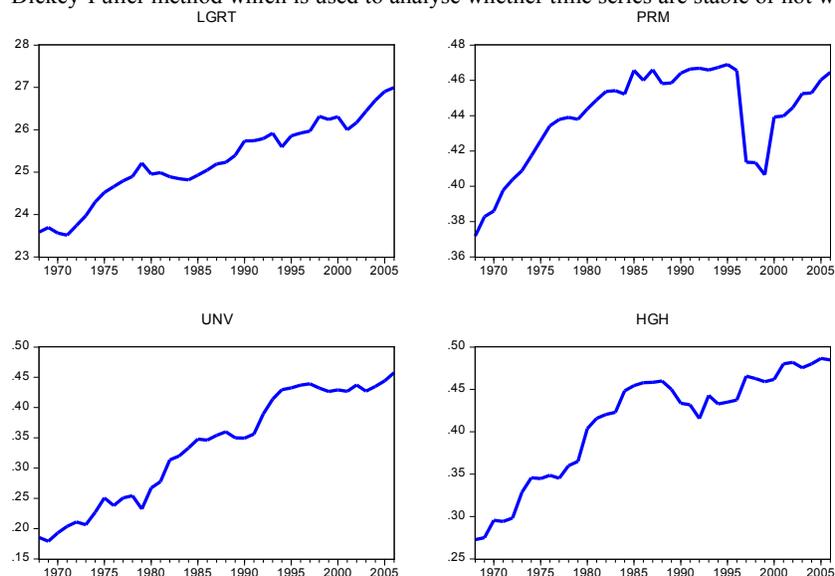
Figure 1: Time Series in Economic Growth and Gender Inequality in Education in Turkey

3.5. Empirical Results

Within the framework fort he research presented in this paper, the effect of gender inequality on long term economic growth is investigated, through using "cointegration analysis" econometric method. First of all, whether these series are integrated series I(1) and these series are cointegrated CI (1,1), in other words whether all series are stable when their differences are taken into account from the first level are investigated. In order to understand stability levels of the series, ADF and PP unit root tests have been carried out and the results of these tests are presented in Table 1.

Table 1: The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP)[160] Test Results

Variables	ADF-Level	ADF- First difference	PP –Level	PP- First difference
Lgrt	-0,4547	-5.9559**	-0,4547	-5,9559**
Prm	-2.5655	-5.7868**	-2.5754	-5.7828**
Hgh	-2.0907	-5.9645**	-2.1627	-5.9652**
Unv	-0.9654	-6.0124**	-0.9654	-6.0126**

Note: Lag length criteria is chosen with Schwarz information criteria. (**) Critical values at 1% levels.
* MacKinnon (1996) critical values for rejection of hypothesis of a unit root; %1 critical value -3.639407, %5 critical value -2.951125, %10 critical value -2.614300

As can be seen from the table above, when ADF and PP results are scrutinized, it is clearly seen that these series are not stable at their levels, in other words they include unit roots in their levels. When taken primary differences, series become stable in 1% significance level. Taking together results of both tests, it is seen that all series are I(1). Engle-Granger (1987) cointegration test which does not take structural breaking into account has been carried out in order to test whether there is a long term relationship between economic growth and gender rates among different education levels. The results are presented at Table 2 below.

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[160] PP approach allows forthe presence of unknown forms of autocorrelation with a structural break in the time series and conditional heteroscedasticity in the error term.

Table 2: Engle-Granger Cointegration Test Results

Dependent Variable:	Engle-Granger Test Statistic	Prob[*]
LGRT	-2.835054	0.5273

Note: (*) MacKinnon (1996) p-values.

As can be seen from Table 2, results of the Engle-Granger test show that there is no long term relationship between the variables. The main reason why we feel that there is no relationship between the variables is that structural breaking is not allowed in this test. (Test statistics -2.8350 in 10% level is smaller than Mackinnon critical value 3.73).

In the next phase, Gragory Hansen cointegration test which allows a structural breaking in long term relationship has been used. As the result test statistics -6.1536 is greater than table value -6.00 in terms of absolute value, we consider thatrelationship between the variables. Lumsdaine ve Papell (1997) find out that more than one breaking would be possible when examining long term series and that the analyses which take only one structural breaking into account would cause incorrect results. Therefore, in this study, Hatemi-j cointegration test which allows two structural breaking is also used.

Table 3: Gregory Hansen and Hatemi-J Cointegration Test Results

| | | Cointegration Test Results | | | |
| | | Test Statistic | First Break Point 1 | First Break Point 2 | Lag Length |
		ADF	TB1	TB2	k
Engle Granger	Number of break=0	-2.835	-	-	2
Gregory Hansen	Number of break =1	-6.1536**	1979	-	0
Hatemi-J	Number of break =2	-7.1937**	1989	1991	0

Note: Engle-Granger critical value at %10: 3.73; Gregory Hansen critical value at %5: -6.00; Hatemi J critical value at %10: -7.118. As the results of this tests the gained test statistics -7.1937 in 10% level is greater than critical level of -7.118 in terms of absolute value, we can conclude that there is a long term relationship between variables in structural breakings which occurred in 1989 and 1991.

Table 4: Correlation Matrix between gender in education and economic growth

	LGRT	PRM	UNV	HGH
LGRT	1.0000			
PRM	0.6170	1.0000		
UNV	0.9308	0.6202	1.0000	
HGH	0.8869	0.7294	0.9205	1.0000

The indicator which has the greatest impact upon the level of growth is gender rate among university graduates. In deed, university graduates enter into business life sooner than people in other categories. Another interesting result is that increase in women rate among university graduates is much higher than other series.

CONCLUSION

Women's low level of education generates negative results on growth, due to its environmental impact. There are plenty of findings about environmental impacts' decisiveness on children's achievements. Not being able to obtain gender inequality in education effects intellectual environment, competences of children and students' quality negatively and leads negative effect on qualification of labor, productivity and thereby on growth. The second path that has occured on growth by gender inequality, by means of households' lifetime learning level, low labor qualification decreases marginal product of capital, and it leads less investment and growth. Besides, gender inequality in recruitment also causes negative effects on growth by means of qualification of labor

Ensuring gender equality in education brings with it, increasing women's education level. Yet, except limited number of countries, especially in developing countries, education inequality is against women. The most significant demographical effect of women's high educational level is, to reduce the children population by decrasing fertility rate. Reduction in the number of children causes less spending towards children and thus increases savings and investments. Another effect of reduction in the number of children is, realized as increasing the relative size of working-age population. Reduction in the number of dependent children decreases the dependent population decreases. Decline in the dependent population incresing the marginal efficiency of capital through investments, but also directly increases national income per capita.

According to the results of the econometric analysis, a long-term relationship is seen between the sex ratio of higher education, elementary and high school graduates and GDP (Gross Domestic Product) in Turkey. However, this relationship contains fractures especially in the periods before and after the 1980 military intervention. These periods that have breaks, were the times both have economical, social and legal significant impacts. So that, military rule which was effective in this period, sees a large segment of society as objectionable and guilty and, needed to intervene in every area of life. Military goverment's interventions to the right of education, both with constitutional regulation and the regulations within the framework of the trade union and the Higher Education Act, have been effective in the formation of these breaks. On the one hand with the prohibition of headscarves caused a further increase gender inequality in education, on the other hand large number of educators removed from the profession because of their proximity to the left ideologies. The indicator that has the highest influence on the rate of growth is sex ratio of higher education graduates. According to other levels of graduates, higher education graduates to participate in working life in a shorter time reinforce this findings' accuracy. At the same time the increase in sex ratio of graduates of higher education is much higher than other series.

Whether male or female, enhancing the number and the quality of highly educated employees will reduce the income and technology difference between the new technology producing countries and the countries that implement them. Increasing the level of women's education, both micro-and macro-economic point of view provides more benefits than men. Closing the gender gap in education, will allow more efficient use of resources in developing countries and their difference from developing countries will close more easily. A well-educated population is one of the most important sources of economic growth, but also a

key element to ensure the efficient use of other resources. As a result, education is the flower, as well as the seed, of economic development (Krueger, 2000: 44).

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The Integration of Authentic Learning Principles and Facebook in Service Learning

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Abstract

To date, lots of research was carried out solely on the effectiveness of Authentic Learning principles in service learning. The results showed positive relationships between theories and practices because students had become relatively analytical thinkers, problem-solvers and collaborators. The uses of Authentic Learning and Facebook in service learning, however, are under research. Hence, this paper tends to investigate the effectiveness of Authentic Learning Principles and Facebook in promoting active learning among students in their service learning curriculum. These students are from Albukhary International University (AiU) whereby service-learning curriculum also known as Community Engagement Project (CEP) has been introduced to all undergraduate students across their 3-year curriculum. Purposive samplings were employed to find out the students' preferences in using Authentic Learning Principles together with Facebook as a social media tool in their service learning projects. Surveys which consisted of Likert-scale questions were administered to ninety-six (99) students from 20 different countries. Fifty-one percent (51%) of the students were males and the other forty-nine (49%) were females. The results have shown that Authentic Learning Principles and Facebook as a tool of communication have effectively enhanced students' learning experience in service learning.

Keywords: Authentic Learning Principles, Facebook, Service Learning / Community Engagement Project

1. INTRODUCTION

Albukhary International University (AiU) is established under the concept of "Waqf" – a charitable university which offers full-fledged scholarships to the underprivileged students during the duration of their studies. The ultimate goal of the concept aims at providing equal education opportunities to academically qualified students from disadvantaged, underprivileged and marginalized backgrounds. In line with the ultimate goal, the students are expected to possess good characters in terms of valuing discipline, being caring and generating contributions to the society upon their graduations. It is also a model university to the world characterized by high quality and relevant education and universal humanitarian values. In order to produce students who have good characters and experience in social activities, they are requested to participate in planned service learning projects during their course of studies. The service learning projects provide an authentic learning phenomenon in which they have to employ real-world and discovery-based problem solving skills to resolve the problems. They are expected to learn the passion to serve and the meaning of contribution for the betterment of the society. Previous research on the integration of authentic learning in service learning projects showed positive outcomes because they had become relatively analytical thinkers, problem-solvers and collaborators (Brown, 2002; Lombardi, 2007; Tan, Teo & Chy, 2009). Technological-based authentic learning also presents its significant role in creating and applying new knowledge by using higher thinking cognitive processes (Churchill, 2005). Hence, this paper tends to investigate the effectiveness of authentic learning and the use of Facebook as a social media tool in the process of students' active involvements in the service learning projects.

2. LITERATURE REVIEW

2.1 Authentic Learning in Service Learning Environment

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Authentic learning (Herrington & Kervin, 2007), also known as experiential learning, has created a new paradigm shift for students because it dismisses rote learning. The principles of authentic learning promote learning knowledge and skills useful in real life (Collins, 1988), link the classroom theories with real world practices (Bennett, Agostinho & Lockyer, 2002; Borthwick, Bennett, Lefoe & Huber, 2007), develop problem solving skills and construct knowledge (Hui & Koplin, 2011) during the authentic activity learning process. Research has also shown the fact that students who have engaged in authentic learning activities tend to have the flexible competency such as "the judgment to distinguish reliable from unreliable information, the patience to follow longer arguments, the synthetic ability to recognize relevant patterns in unfamiliar contexts and the flexibility to work across discipline and cultural boundaries to generate innovative solutions" (Chang, Lee, Wang & Chen, 2010, p.1572). Lombardi (2007) further commented that authentic learning activities can go beyond the content of curriculum where students are exposed to different disciplines and cultures. Consequently, students can face and manage their problems easier because the higher order of thinking skills they possess give them strength to make the right decision in their future working atmosphere (Herrington & Kervin, 2007; Lombardi, 2007).

Service learning has become the curriculum in higher education institutions which aims to improve the quality of live especially to underprivileged and maginalised people on a voluntary basis. It gives authentic contexts to students to apply their knowledge and skills. Therefore, students are encouraged to be involved in service learning which provides authentic activities. Students can learn new experience by real experience and they can remember the content for a long time (Ammon, Furco, Chi, & Middaugh, 2002). Apart from this, the students learn about social responsibilities such as being empathic, ethical and helpful to needy people in their surroundings (Berham, 2006; Ikeda, 2005; Wigginton, 1985). Such learning experience also certainly enriches the life of learners in schools. Erlich (1996) and Furco (1996) had clearly stated that students best learned not by the printed materials but experiences. Jacoby (1999) further explained that service learning is the authentic activity which accommodates "human and community needs" besides being a popular activity and contextual relevant to culture and experiential learning (Settle & Smith, 2008). In addition, service learning requires participants to give up their time, comfort and finance (Perold & Omar, 1997) for the benefits of others. In this process, students have to be self-sacrificed to handle and solve the complicated problems externally and internally. Learners are given opportunities to strengthen their skills of thinking process as they freely explore, discuss, reflect, construct concepts from the project they are involved (Mims, 2003). Positive characters such as team-spirit, leadership, conflict resolution, communication, organization, and time management (Tucker, McCarthy, Hoxmeier, & Lenk, 1998) are inculcated when they are committed to service learning. A previous research (Campus Compact 2005) showed that 95 percent of interviewees recognized and accept the outcomes of positive character building through service learning. With the positive outcomes, the students are able to make use of their existing good characters, knowledge and skills in their real-life. They are the practicalities of authentic learning activities in service learning.

2.2 Authentic Learning in Facebook (Social Networking)

Because of the popularity and usefulness of social networking, teaching and learning from the traditional setting has now moved to the virtual world setting. Previous research in Malaysia mainly focused on interface design and interactive multimedia elements (Sivapalan & Wan Fatimah, 2010) which did not offer authentic learning contexts and activities for students to interact. The focus on authentic learning in social networking particularly in the use of Facebook is under research.

The invention of Facebook, a popular communication tool, has offered the virtual communities for students to communicate. Facebook has broken its records of active users from 350 million in 2010 (Facebook, 2010) to 526 million in 2012 (Facebook, 2012). The drastic increase of users has signified its existence not only as a communication tool but also an avenue for the people to share their leisure and lives. It is also a tool to befriend and simultaneously joins the connections and interactions from a physical setting into a virtual world (Wang, Chun, Yu & Wu, 2013). Shih (2013) has proven that the virtual world in Facebook is enticing because users are given the opportunities to "exchange, interact, collaborate and socialize" (p.52) with other people. Before its invention, multimedia technologies which lacked of interactive components were regarded as inhumane and the community felt bored to use them (Zaidieh, 2012). However, the introduction of Facebook with interactive advertisements, chatting tools, colourful pages, pictures and games has gained its fame among students and teachers. It encourages students to communicate with their teachers after school hours for their projects and most importantly, Facebook promotes learning through authentic contexts and activities. Students are given leverage to express their thoughts,

opinions and suggestions on Facebook. Simultaneously, they will receive comments, feedback and support from their teachers and peers. In this case, strong relationships in the culture of learning for both teachers and students are strengthened (Zaidieh, 2012).

Teachers and students gain the advantages of using Facebook as a tool to allow students to come together to discuss, co-ordinate, collaborate and resolve subject-related problems in the virtual platform (Salaway, Caruso, Nelson & Ellison, 2008). Besides, students using Facebook as an educational tool are encouraged to spend more efforts to work in teams for their academic activities (Kennedy, 2000). With the convenient features in Facebook, students and teachers can experience authentic learning environment when they share the resources, make the announcements, discuss the details of the projects and exchange ideas in groups. As a result, merging Facebook with teaching and learning breaks the four walls of classrooms and provides students more room to interact with the aim at enhancing effective learning. Students are now more able to improvise their thinking and communication skills which are beneficial to their work in the future. The skills go hand in hand with "engaging students in disciplinary practices of professional practitioners" (Land, Hannafin & Oliver, 2012, p. 11).

3. METHODOLOGY

AiU has tailored the Community Engagement Projects (CEP) as compulsory curriculum to all the undergraduate students during their 3-year studies. They are from 50 different countries and are expected to be the agents of change to their respective communities after their studies. CEP focuses on empowering underprivileged and disadvantaged students by transferring social entrepreneurship qualities, moving towards a non-conventional paradigm - social business mind set and ability to plan, implement, monitor, identify, scale up and evaluate a "holistic" development programme by taking into consideration social, economic and environmental dimensions.

Indeed, CEP promotes "learning from each other and taking action together" (Chamberlain, 1993, p. 31) in which learning has moved into real social contexts. He further observed that "it is not only what's being done that is impressive, but how – against the odds; and why – the motivation and the spirit that produces such a determination to succeed' in community development (Chamberlain, 1993, p. 32). Ideally, it is linked together with a common goal of combining activities and working together so as to build good relationships and sharing available resources in the communities or villages. It also goes further to encourage the AiU students with community members and other interest groups to be involved in learning by identifying the potential development, making the proposals and action plans based from the demographic findings and monitoring the progress of the development programme at the specified community areas.

A total of 232 undergraduate students had registered themselves in CEP. They were divided into 21 groups. Each group comprised 9 to 13 students. The names of the groups consisted of Enactus 1, Enactus 2, Heptanations, Global SLA and 7-Heaven. Students were able to choose their own group of 3 from different countries. Besides, each student had a Facebook account. AiU had made use of Facebook to make announcements on community service activities and academic matters. Students liked the flexibility of Facebook because it could update the communication in the community fast and also the ability to share multimedia contents. Hence, Dwyer, Hiltz and Passerini (2007) has advocated in the research that Facebook is an easier mean of communication with staff leaders and group members since most undergraduate students are online with Facebook daily.

As part of the preparation process in CEP, Facebook is used as the social media tool for communication. Facebook has become their source of interaction among the project leaders, student group leaders as well as among the group members. They needed to develop their own digital identities in order to become the community of professionals utilizing educational technology to the community. The Year 1 group leader would create a Facebook group at the beginning of the first semester. All group members were required to join the Facebook group. It was not public viewing Facebook groups. Only group members could access and view the groups' announcements, shared documents and online discussions. Figure 1 is an example of a Facebook group created by one of the groups. There were 13 members who came from various countries namely Somaliland, Myanmar, Bangladesh, Sri Lanka, Indonesia, Uzbekistan and Bhutan.

Figure 1: An Example of a Facebook Group

Facebook functioned as a social media tool does support the authentic learning via service-learning. It has also provided information and resources that help students in CEP. By engaging students in Facebook, they were able to flexibly communicate with each other and it was a cost-effective way of communication. Most importantly, Facebook also gave the opportunities to many university students to explore and manage their daily communication in a safe and ethical mode (Ahmedani, 2011).

Purposive samplings also known as random or probability samplings were used in this study. Purposive samplings are a "strategy in which precise settings, persons or events are selected purposely in order to gather important information that can't be obtained from other choices" (Pickard, Child and McLeod, 2007, p. 64). We chose selected CEP groups and they were required to complete 30 items in the Likert-scale survey form. In the survey form, the students were asked about the average time spent on Facebook and whether or not they liked the idea of using Facebook in their CEP.

4. RESULTS ANALYSIS

Out of 232 students, there were only 99 students involved in the survey. They consisted of 51 males and 48 females. Out of 99 students, 83 students used Facebook Group as a communication tool in the CEP. Using Facebook Group triggered the critical discussions and shared field trips experience among the group members. They could also upload and update the common group report to meet the objectives of respective tasks. It goes in line with the objective of this paper which tends to investigate the effectiveness of Authentic Learning Principles and Facebook in promoting active learning among students in their service learning curriculum.
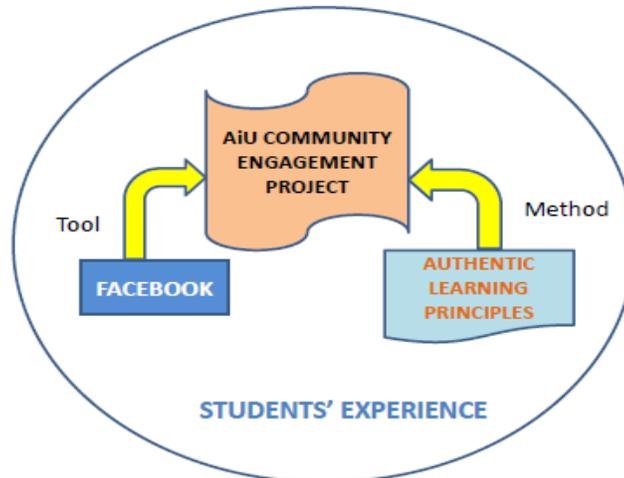
Figure2: Conceptual framework of CEP in AiU

In this study, we integrated the ten authentic learning principles into the community engagement project activities as indicated in Figure 2. The students went on field trips to study the socio-economic environment of the rural local community. The activities included addressing means of living, strengthening the ability to cope and recovering from stress and shocks, incorporating relevant aspects of people's lives and livelihoods into development planning, implementation and evaluation, and the ability to be responsive to changes and people's needs and ensuring sustainable resources for today and tomorrow's generation.

The outcome of the finding is reflected in the Table 1. Students felt that using Facebook had helped them in achieving a successful outcome in their CEP. The students also agreed that the Facebook group provided a useful medium for them to share and display information and resources. Facebook was as if a noticeboard for any updates of their CEP activities. From this survey, 83% of the respondents had accessed to Facebook all the time and frequently visited the site every day. Only 12% of the respondents were not frequent Facebook users.

Besides, about 90% respondents agreed that Facebook had allowed them to communicate effectively and conveniently between group members and staff group leaders. They could communicate freely in texts for any discussions related to CEP. Facebook had also provided them an easy, cost-effective, safe and friendly environment to voice out their views and opinions.

Almost all the students (93%) agreed that Facebook had promoted authentic learning contexts and activities in CEP by learning the roles, delegating tasks among group members. This was done through Facebook groups and events. Facebook had allowed the students to articulate their views and opinions, discuss issues and process activities via status updates and comments. By uploading the related Youtube, videos and visual elements to Facebook, the experts of performance were able to identify how service learning was conducted as well as to explore more topics through external links.

Two thirds of respondents (66%) agreed that coaching and scaffolding were done through Facebook discussions and it had given the opportunity to instructors to observe the activities and comments made by the students. When students had made a comment or asked for a question, feedback could be given by the project leader or the group leader. Somehow, only 70% of the students agreed that the feedback had helped the students to reflect on what they had learnt during the CEP activities. The overall result of this study had implied that Facebook was a social media tool that could be used as platform to implement authentic learning principles in AiU CEP activities.

Table 1: The Students' Perceptions on Facebook and Authentic Learning Principles

Authentic Learning Principles	N	Mean	Std Dev
Principle 1: Authentic Context a. Facebook allows you to bring the real life learning experience into community engagement activities. b. Facebook provides you a place to display pictures, YouTube or visual elements about community engagement activities. c. Facebook is a tool to motivate you to learn more about the community engagement activities during the process.	99	2.4693 3.0202 2.4141	0.7587 0.7518 0.8042
Principle 2: Authentic Activities a. Facebook provides you a place to determine the roles of each team members in the community engagement activities. b. Facebook provides you a place to delegate the tasks of community engagement activities among the team members. c. Facebook provides you a place to connect with team members regardless of their locations about the community engagement activities easily.	99	2.616 2.889 3.071	0.7876 0.7899 0.7726
Principle 3: Expert Performance a. Facebook provides a place to project leaders to demonstrate the steps to begin and manage community engagement activities systematically. b. Facebook provides you a place to observe the communication skills of the project leaders to other students. c. Facebook allows easy and cost-effective communications among team members and project leaders.	99	2.745 2.633 3.072	0.7601 0.8130 0.7766
Principle 4: Multiple Roles and Perspectives a. Facebook provides you a place for different comments and opinions about community engagement activities. b. Facebook provides you a place to investigate the reliability of information about community engagement activities. c. Facebook provides you a place to update your group members about any news and discussions on community engagement activities.	99	2.990 2.663 3.265	0.7491 0.8800 0.6784
Principle 5: Reflection a. Facebook provides you a place to write reflections about your strengths and weaknesses in community engagement activities. b. Facebook provides you a place to record the incidents take place throughout the community engagement activities. c. Facebook is a place to express your feelings freely without being judged.	99	2.459 2.633 2.691	0.8227 0.8498 0.9235
Principle 6: Collaboration a. Facebook provides you to collaborate among members of the community engagement group. b. Facebook provides you as a medium to collaborate their work and ideas about community engagement activities. c. Facebook allows you to share the group reports about community engagement activities.	99	2.857 2.888 3.010	0.6999 0.6528 0.6308
Principle 7: Articulation a. Facebook provides you to discuss issues or processes of community engagement activities. b. Facebook provides you the opportunity to debate about the views on community engagement activities. c. Facebook is a tool to adopt a new learning method in community engagement activities.	99	2.816 2.724 2.546	0.7333 0.8053 0.8618
Principle 8: Coaching and Scaffolding a. Facebook provides project leaders to observe students, offering resources and providing feedback about community engagement activities. b. Facebook provides the opportunity to you on the skills and knowledge transfer from project leaders about community engagement activities. c. Facebook provides you an effective channel for the project leader's feedback and areas of improvements about community engagement activities.	99	2.691 2.670 2.753	0.7231 0.7828 0.6740
Principle 9: Integrated Authentic Assessment a. Facebook can capture rich information about student performance in community engagement activities. b. Facebook allows you to upload reports about community engagement activities for project leader's assessment. c. Facebook has the mechanism for you to continuously revise your reports based on project leaders' feedback about community engagement activities.	99	2.408 2.867 2.732	0.8186 0.7645 0.7253
Principle 10: Professional Learning a. Facebook allows students to keep informed about new technology developments in teaching and learning techniques related to community engagement activities. b. Facebook allows student to update information relevant to their future professional development. c. Facebook is a social media tool to learn about community engagement project in innovative, challenging and creative ways.	99	2.816 2.847 2.714	0.6903 0.7050 0.8081

5. CONCLUSION

There were some limitations in this study. Firstly, four groups had not adopted Facebook as a social network media tool in the CEP. The students felt that Facebook was merely for their social lives and it was not for academic activities. Some students found that the staff leaders did not extend their co-operation in assisting them to complete their activities and tasks related to CEP. It had affected the results for the principle in coaching and scaffolding.

Secondly, Facebook had a constraint of only accepting a certain type or format of document to be uploaded. Thus, it restricted the students and project leaders to share the resources among the group members.

Finally, students appreciated very much the flexibility of Facebook in terms of communication and sharing information and resources. Facebook has already been an integral part of undergraduate students' daily lives. Students could improve better through their CEP with the integration of Facebook as a social media tool and ten authentic learning principles. Hence, the study has shown that students favourably responded well to this framework.

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The potential of Youtube for teaching and learning in the performing arts

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Abstract

Youtube, as a Web 2.0 tool, can be utilized for knowledge generation through observation and social interactions. However studies related to the use of Youtube in education have focused mainly on academic achievement, with very few studies are conducted in the instruction of the performing arts. In addition, there are very few studies done in the performing arts related to future studies. The objective of this study was to get consensus on the benefits of the use of Youtube as a tool for teaching and learning in the performing arts, and for maintaining students' interest and achievement in learning, as well as to determine the suitability of using Youtube as a tool for teaching the performing arts in future. In this study, the Fuzzy Delphi technique was used to get consensus among 20 experts who were instructors and lecturers in seven areas of specialization: music, creative writing, theater, television film, dance, animation and fine arts from the Academy of Arts, Culture and National Heritage (ASWARA). The findings show that Youtube the potential to be used as an instructional tool in the performing arts in line with current trends of collaboration and social networking in education

Keywords: Youtube; teaching; learning; performing arts

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Introduction

Videos as social media

Learners remember and understand better when they see, hear and do. The level of a students' understanding of a subject when they see, hear and produce materials during instruction is higher (75%) compared to students who only see during instruction (20%), and see and hear only (40%) (Lindstorm, 1994). Learning with multimedia elements, such as videos, has been shown to be effective for learning activities (Krauskopf, Zahn & Hesse, 2012; Zahn, Pea, Hesse, & Rosen, 2010). Learners are able to see, hear and produce the required behaviors.

There is a variety of online media, including videos which enable these elements to be available. YouTube, TeacherTube and Vimeo are online video repositories in which videos are made available (Norlidah Alias, DeWitt, Saedah Siraj, 2013). Users are able to download, view and share video clips on an extensive variety of content which includes film clips, television shows, music and instructional videos, vlogs or videoblogs, as well as amateur video. The YouTube becomes social media when the videos are shared and comments and other forms of interaction occur on the site.

Social media has been shown to be effective for learning. Learners are able to develop higher level thinking skills such as decision making and problem solving, as well as communicate and collaborate using social media (Bunus, 2010; Greenhow and Robelia 2009). In addition, connections can be made to what they learnt in their classrooms (Greenhow and Robelia 2009) and learning becomes more engaging (Bunus, 2010). Hence, there is a potential for YouTube, as both a video with audio and visual elements, as well as a social media to be used for instruction.

The Performing Arts

The performing arts is sometimes considered unrelated to education and morality as glamorous lifestyles of some professional artists may indicate. However, there are many elements of values involved in performing arts. character-building, self-discipline, collective discipline and creativity.

Performing arts educates the public on the culture of the community: the values, beliefs, interaction and lifestyle (Schecner, 1988). These would include ways of obtaining their daily sustenance, hunting for food, worshiping and daily living (Torrez, 2010). Performing arts can address the formal, non-formal and informal aspect of education. Drawing on the Performance theory of Richard Schecner (1988) the function of performing arts in the educational context should be strengthened and "refreshed" in line with the current technology. Conventional teaching and learning methods need to be reviewed to keep pace with the rapid development of technology in the 21st century. The role of the teacher is important to make sure the teaching strategies and resources have a maximum impact on student learning. Learning is observed through changes in terms of skills, knowledge and attitudes of students after instruction (Noraini Idris, 2009).

ASWARA, or the Academy of Arts, Culture and National Heritage, is an institute of higher learning for the performing arts. ASWARA aims to produce highly skilled and competent artists and employees for the continuity of the national art heritage. Learning emphasizes practical work to ensure that students are skilled. ASWARA graduates are expected to fulfill the human capital requirement in the field of performing arts and music by producing songwriters, singers, actors, script writers, dancers, painters, directors and experts in other careers related to the creative arts industry. Specialized areas of study which include video film, dance, music, theater, creative writing, fine arts and animation makes ASWARA the premier higher education institution which functions as a parent for other institutions of education for culture, arts and heritage.

Videos for performing arts

Studies have shown that the use of multimedia, including videos are effective for learning. The use of multimedia in teaching and learning has been found to be effective for enhancing knowledge (Mohd Arif Ismail, Zamri Mahamood and Norizan Abdul Razak, 2000). In addition, videos in particular have been used for courses in Java computing, and have been shown to be effective for learning while minimizing time spent on lectures (Carlisle, 2010). Videos help in the cognitive and social development of students in problem solving tasks (Zahn, Pea, Hesse, & Rosen, 2010). When videos are shown at the appropriate phases in the teaching process, it aids the effectiveness of teaching (Hsu, 2013).

There have not been many studies in the use of Youtube in education. Studies have been done using YouTube for instruction in the academic fields such as medicine (Koya, 2012) and architecture (Ham and Schnabel, 2011). In Salman Khan's Flipped Classroom, videos are used for instruction out of the classroom in academic subjects, while face-to-face training with the instructor is done in the classroom (Webley (2012).

A Delphi study on the use of YouTube for instruction did show that experts concur that further research is required on the use of social media tool in 5 areas (Snelson, Rice & Wyzard, 2012). The social content was ranked first, followed by the teaching and learning category, social and political impact, video creativity and production and finally legal and ethical aspects. The potential for the use of YouTube in transforming education in the classroom was listed as an important area of research (Snelson, Rice & Wyzard, 2012).

However, the role of the teacher is still important in monitoring the access to social media sites (Troy & Kristen, 2011; Yong Zulina, Asma Ahmad and Mohd Sapiyan, 2000. In addition, the selection of videos on education on video repositories is limited, as more popular video is uploaded (Torres, Finamore, Kim, Mellia, Munafor and Rao, 2011).

The studies related to the use of Youtube have focused mainly on academic achievement (Koya, 2012, Ham and Schnabel, 2011) with very few studies conducted in the performing arts. Hence, there is a need for more studies on YouTube (Snelson, Rice & Wyzard, 2012) to determine if this form of social media can be taken advantage of and used for instruction in the performing arts.

The findings from this study will help the academics at ASWARA in developing new curriculum is important to determine the learning experiences that lecturers may need to attract students to learning the performing arts in future. In addition, schools and other institutes of higher learning can also benefit from this study as it will determine if innovative and creative ways for achieving academic performance can be implemented while the objectives of the performing arts is attained.

Research Objective

The objective of this study was to get consensus among experts on the use of Youtube in teaching and learning the performing arts at the Academy of Arts, Culture and Heritage (ASWARA). The research questions are as follows:

1. What are the benefits of the use of YouTube as a tool for teaching and learning in the performing arts?
2. Can students' interest and achievement be maintained in learning the performing arts using YouTube?
3. Is the YouTube suitable as a tool for teaching the performing arts in future?

Design of the Study

The design of the study employs the Fuzzy Delphi technique, which uses a combination of interview and survey to collect data among experts. The Delphi technique, a method for obtaining consensus among experts, was first introduced by Kaufman & Gupta (1988). It consists of several rounds of data collection and verification, making it reliable.

Interviews were conducted in the first phase. Interviews are invaluable in capturing the perception and understanding the meaning constructed by the respondent. In the semi-structured interview process, the questions were formulated in advance, but the sequence and modification of the questions were made based on the participants' reactions (Noraini Idris, 2010).

The data from the interviews would be used to develop a questionnaire which would be use for the Fuzzy Delphi technique for data collection among the experts.

Sample

The sample comprises of 20 lecturers and trainers from an institution specializing in performing arts. There were three lecturers each in the following specialist areas: theater, dance, music, fine arts, animation, and creative writing and an additional two from TV-movie production. The experts were chosen based on their credibility and experience in the field of performing arts. The choice of experts was justified based on their academic qualifications, and expertise in the field of performing arts with a minimum of five years teaching experience.

Instrument

The instruments in the study consist of the interview protocol, a list of structured interview questions; and a questionnaire, Potential Use of You Tube in Teaching and Learning Performing Arts, developed using the Fuzzy Delphi technique.

The questionnaire is divided into 2 parts. Firstly, data on the profile of the respondent (gender, age, academic qualification, experience and position in ASWARA) was collected; and secondly, the opinions and views of the experts on the use of Youtube for instruction.

The second part of the questionnaire was developed from the analysis of the transcripts of interview with the experts. The areas in which the opinions and views of the experts were collected are on the prospects of performing arts learning Malaysia, efficient teaching methods that can be used by lecturers in practical classes in the performing arts, the problems detected by these lecturers in teaching and learning the performing arts, the contribution of Youtube to teaching and learning, and student interest and achievement: whether the visual elements displayed in Youtube attracts the attention and interest of students.

Data collection and analysis procedure

Firstly, six experts with differing areas of expertise were interviewed to determine their views on the potential of using Youtube in the instruction of the performing arts. The interview was audio-recorded and observations on non-verbal features were noted during the interview. The transcripts of the interview were analyzed to facilitate the construction of the Potential Use of You Tube in Teaching and Learning Performing Arts questionnaire.

The questionnaire consists of 52 survey questions on the potential use of Youtube for instruction. A 5-point Likert scale was used as follows: 1- Strongly agree; 2- agree; 3 – unsure; 4 – disagree; 5 – strongly disagree.

The analysis of data was done using negative Triangular Fuzzy Number to produce a negative scale (similar to a Likert scale). In this study, the scale used to translate negative linguistic variables to fuzzy number.

	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
Likert scale	1	2	3	4	5
Triangular Fuzzy Number	0.60, 0.80, 1.00	0.40, 0.60, 0.80	0.20, 0.40, 0.60	0.10, 0.20, 0.40	0.00, 0.10, 0.20

Two key points in the fuzzy rules are triangular fuzzy number and deffuzification process. For the triangular fuzzy number is used to produce a scale (similar to a Likert scale). This scale is used to translate the variables to the fuzzy number. For this study we use a scale of 5 for strongly agree (0.60, 0.80, 1.00), 4 for agree (0:40, 0.60, 0.80), 3 for unsure (0.2, 0.4, 0.6); 2 for disagree (0.1, 0.2, 0.4), and 1 strongly disagree (0.0, 0.1 and 0.2).

The deffuzification method for determining the position of each of the variables and sub variables is done using the formula $A_{max} = 1/3 * (a_1 + a_2 + a_m)$.

Findings and Discussion

23.1. Benefits of the use of Youtube as an educational tool in the performing arts.

The results show 8 themes emerged when the analysis of experts' opinions using Fuzzy Delphi was done (Table 3). The analysis shows that the experts agreed and ranked as being the most important: instructional messages for teaching and learning the performing arts can be effectively channelled through Youtube (Delphi deffuzication of 14.16 points). The experts also agree that Youtube is beneficial for providing information (13.16 points), as well as

for teaching and learning in the performing arts (13.1 points). In conclusion, the experts seem to agree that Youtube can contribute to the teaching and learning of performing arts.

Table 3: Contribution of Youtube in teaching and learning

Position	Question	Deffuzification Marks
1.	Instructional messages in performing arts can be channelled effectively through the Youtube application	14.16
	Youtube is not the main learning tool but a support tool for providing information on issues in performing arts.	13.16
	Youtube is beneficial to teaching and learning in the performing arts.	13.1
	Teachers play an important role as advisor in the process of teaching and learning in using Youtube	12.86
	The use of video in teaching and learning sessions are more effective compared to Youtube	11.4
	The use of Youtube in the performing arts does not develop an internal sense of producing works of fine art	10.1
	Youtube is suitable for the use of the introduction part of instruction in performing arts	9.13
	Youtube is not suitable to be used as an instructional aid	6.36

3. 2 Student interest and achievement using Youtube for instruction in the performing art

Novel methods and teaching resources can motivate students to continue learning to improve their performance. However, using Youtube is not a preferred method of teaching among specialists in this area of study as the experts agree that face-to-face instruction is more relevant than using Youtube (deffuzification score of 13.8) (Table 4).

Conventional methods were perceived to have more impact on the teaching and learning process as through the face-to-face training, problems can be identified and corrected immediately, thus improving the quality of instruction. However, experts agree that Youtube is motivating and can increase student achievement in the performing arts (ranked 9 position with a deffuzification score of 9.2).

Table 4: Student interest and achievement using Youtube for teaching and learning

Position	Question	Deffuzification Marks
2.	Face-to-face teaching methods is more relevant compared to using YouTube for instruction	13.8
	Youtube can be used as a platform for the promotion of performing arts among students.	12.9
	Visual elements are displayed through Youtube to attract the attention and interest of students	12.5
	Teaching and learning the performing arts is more efficient if coupled with Youtube applications	11.75
	Effectiveness in terms of student achievement cannot be measured using Youtube applications	11.5
	The use of Youtube in the teaching and learning of the performing arts can create two-way communication between lecturers and students	11.1
	Negative issues such as copyright of the work of performing arts will affect teaching and learning using Youtube	9.7
	Learning through the use of Youtube is less effective in terms of student motivation and achievement	9.2

3.3   Implications on using YouTube in performing arts education in the future

The experts agree that in the future, learners of the performing arts need to improve their information technology skills as this is related to globalization (Table 5). The experts realize that the use of YouTube in instruction cannot be used to acquire detailed techniques and skills in the performing arts. Furthermore, the experts also agree that learning the performing arts through YouTube requires complete supervision by lecturers. Nevertheless, the experts agree that YouTube does not negatively affect the learners.

Table 5: Implications on using YouTube in performing arts education in the future

Position	Question	Deffuzification Marks
3.	Lecturers in the Performing arts need to enhance skills related to information technology and be sensitive to globalization issues in the IT world	14:03
	Detailed accuracy of subject matter of performing arts cannot be acquired in detail in the presentation through the use of YouTube	13.06
	The lecturer needs to be control when using Youtube for teaching and learning in the performing arts lecturer	12.36
	You tube can be used for documenting results of work in the performing arts for future reference	12.33
	Creative and innovative approaches, appropriate to the subject of the performing arts should be applied in using Youtube for teaching	11.73
	Knowledge of the cultural identity of a society can be explored through the use YouTube	11.06
	Language is a key constraint in learning the performing arts using YouTube presentations	9.66
	The exclusiveness of learning the performing arts is eliminated using Youtube	8.93
	The openness of YouTube has a negative impact on students' acceptance and perception of issues in the performing arts.	8.76

4.   Conclusions and Recommendations

The findings of this study indicate the integration of information technology in learning and teaching the performing arts can be done using YouTube. In the context of teaching and learning, YouTube is used as a video repository to assist both lecturers and students. At the same, innovation and creativity among lecturers and students can be triggered.

The study found that the importance of using technology other than YouTube is also required and that lecturers needed to pay attention to this new shift in the performing arts education. Based on the experts' opinion, the performing arts can become a commodity for Malaysia to market.

Efficient teaching methods should be practiced to specifically deal with practice in the performing arts. Thus, lecturers must keep pace with the needs of the present generation of students but at the same time maintain the artistic value and originality. YouTube can be used to enhance the knowledge base in performing arts.

Policy planners and implementers of the performing arts curriculum should consider the integration of the subject with information technology and develop the information technology skills among lecturers and learners.

The limitation of this study is that the experts were from the same institution, ASWARA. It would be interesting to determine if experts in the performing arts in other institutions had the same opinions. In addition, it would also be useful to determine if there was a correlation in the age of the experts and their perception towards the use of technology for the performing arts. The implementation of this tool in instruction in the various specialized areas of performing arts can be also studies.

This study can be replicated to determine if the use of YouTube can be extended to other subject matter areas. In addition the effectiveness of YouTube can be studied to determine its strengths and weakeness in the priority areas in education (Snelson, Rice, and Wyzard, 2012).

In this day and age of information and digital technologies, more effective methods are being used to encourage innovation and creativity. Hence, it is even more necessary to encourage this elements in the performing arts to instil the appreciation of the arts and performance in the general while convincing society of the importance of the performing arts.

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The Problem of Using Educational Technology in the Faculty of Technology

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Abstract

Faculty of Technologies, which is incorporated to Turkish Educational System by modifying Faculty of Technical Education, carries the purpose of producing the needs of tecnolog defined as production engineer. During the recent years when the Turkish industury improves, it becomes very significant of Faculty of Technology to train technologs who have this vision. Training needed and well-qualified techno-technologs for our era depends on using educational technoloy during training besides, many variables. However, having crucial problems in this subject is a reality.

The purpose of this study is to identify the problem of using educational Technologies according to opinion of lectures and students. The data which is going to be collected by using Likert scale is going to be analysed according to arithmetic mean, Standard deviation, The results of analysis can be expected to identify the problems which come across while using technology in the Faculty of Technology and to make some suggestions.

Keyword: Teknoloji Fakülteleri, Eğitim teknolojisi, Teknolog, Üretim mühendisliği

1. Login

At the beginning of the establishment of the Republic, which is very important given the services of Technical Education Schools (Alkan et al, 2001; Işıksoluğu, 1998), and later experienced serious difficulties due to various reasons. In time, many steps have been taken towards overcoming these problems. The first of these affiliated teaching continued for many years TEF, issued on 20 July 1982, by legislative decree No. 41 "Technical Education" (TEF) was restructured under the name transferred to the universities, the program was redesigned in terms of structure and management. After the transfer of the universities, it is a form of organization of schools and programs, significant changes have taken place. The differentiation of technical teacher training institutions and employers, employment, and planning has led to problems (Mahiroğlu, 1996). Exchange programs, more practical courses realized in the form of reduction and increase engineering courses. Need to reduce the practical courses, as well as a form of organization, the quality of graduates, and therefore, their negative impact on employment (Ulusoy, 2003; Sezgin, 1992). TEF graduates employment problems in time grow and has become chronic. TEF model have been raised as a result of this restructuring needs (Ozer, 2003), and finally in 2010 to change once again exposed TEF, published in the Official Gazette No. 27405 dated 13.11.2009 2009/15546 by the Council of Ministers No. (www.tmmob . org.tr) "Technology Schools" what transformed. This transformation, the graduates of the Faculty of Technology "engineer" has achieved the title that this is an important achievement. Because the students who graduated from a higher education institution with the name of the title, finding a job, the promotion of business success and an important factor that determines the degree of satisfaction (Karasar, 1981). Today in our country due to various colleges of education operates in 21 Faculty of Technology.

Faculty of Engineering and management of project engineers, having produced mainly different, the main aim of the Faculty of Technology, application oriented engineers (in a sense, production engineers) to train. This goal has long been directed to vocational and technical education "is mainly theoretical, not giving enough weight to the application that" criticism (Savaşır, 1999) becomes even more important considering. That this is the name of

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the faculties of technology, science, manufacturing, service, transportation and so on. areas of application problems. Educational technology in the teaching-learning process design, implementation, evaluation and improvement of the job (Alkan, 2009).

This mission, in accordance with the Faculties of Technology is expected that application oriented teaching process. The application of a weighted in the educational process, of course, require the use of educational technology intensive. At this point, two issues stand out. The first is about the lack of educational technology in the Faculty of Technology TEF'den convertions configured. Second, the use of educational technology competence of the instructors at these faculties are unknown.

These two problems are closely related to the original purpose of the Faculty of Technology, the employment of graduates in the medium term is the potential risk. Mainly because the application of efficient and effective education, and their effective use, but requires the presence of a sufficient amount of educational technology. These issues, the problems, the predictable negative effect on the quality of graduates. Who had been through the historical process, and many have been forced to prove his mettle repeatedly recruited TEF'den Faculty of Technology, can not tolerate a similar failure. Therefore, Faculty of Technology, to be available in the future, almost doomed to be successful in all respects. This conviction of the Faculty of Technology, in the teaching process requires extensive use of educational technology. The aim of the problems of educational technology Faculties of Technology, based on feedback from students, this study was to determine expected to contribute to the relevant literature.

2. Method
This study is a descriptive survey model is of quality. Screening model, the current state of the universe by sampling a model based on the description and explanation. **. (Arseven, 1994; Balcı, 1995; Karasar, 2005).**

2.1. Population and Sample
The universe of this study, Firat University, 2012-2013 academic year studying at the Faculty of Technology I. and II. Teaching students. In the sample, it can be the universe (who accepted the survey) created a total of 214 students.

2.2. Data Collection and Analysis
In this study, data were collected through a questionnaire. Questionnaire prepared by the researchers, in addition to the personal information, education, technology is about using the eight items on five-point Likert type. Likert-type items, 1 I strongly disagree (1.00-1.80), 2 Less agree (1.81-2.60), 3 moderately agree (2.61-3.40), 4 Very agree (3:41 to 4:20), and 5 Many agree (4:21 to 5:00), including in the form of five-point Likert rated. Faculty and students of faculty of technology in the preparation of the survey interviews created an item pool. These materials will be reviewed in accordance with the opinions of the teaching staff, the survey was finalized. In the study, the data obtained were analyzed by mean and standard deviation.

3. Results and Comments

3.1. The Evaluation of Educational Technology Faculty of Technology
Faculty of Technology students participated in the study, faculty views on the current state of technology in education is seen in table 1.

Table 1 Students of the Faculty of Technology, views on the current state of educational technology:

Mad.no	Student Feedback	$\overline{X}$	S
1	Please see section Learning educational technology.	2.89	1.27
2	Educational technology education section we have seen is not enough.	4.41	.64
3	Please see section features educational laboratories.	3.66	1.21
4	Please see section features educational technology education classrooms.	2.88	1.40
5	Education saw the episode, writing about the course in terms of resources and sufficient documentation.	2.50	1.26

6	Education saw the episode, in terms of information resources related to the course is sufficient.	3.34	1.06
7	Please see Education section features internet.	2.79	1.28
8	Education saw the episode, in terms of number of faculty members is sufficient.	3.60	1.28
9	Education saw the episode, workshop and laboratory expediting sufficient for use.	2.00	1.04

Table 1 is examined, Faculty of Technology students receive education educational technology section moderately passable ($\overline{X}$= 2.89), they understood. According to the students participating in the study, they study very adequate laboratory section ($\overline{X}$= 3.66), a high degree of educational technology classes ($\overline{X}$= 2.88) is sufficient. Students of the Faculty of Technology, sections of the written sources and documents related to the course ($\overline{X}$= 2.50) with the expediting ($\overline{X}$= 2.00) less; computing resources ($\overline{X}$= 3:34) and internet hardware 'intermediate' ($\overline{X}$= 2.79) were adequate, it is understood that the same table.
Of Human Resources, Faculty of Technology students, faculty members and the number of sections is very adequate ($\overline{X}$= 2.79) found.

These findings are evaluated collectively, Faculty of Technology, is moderately adequate in educational technology, while in the written sources and documents expediting not be said enough. Mission on behalf of the Faculty of Technology and are not suitable for this situation can lead to application-oriented engineers in raising the difficulty. Some of these problems any relevant financial and administrative problems, though, being a part of any relevant step of the restructuring of these faculties can not. Faculty of Technology to serve the purpose of effective and efficient service to continue their education, as well as classes and workshops and laboratories need to be equipped with educational technology.

3. Evaluation in terms of using education technology of Technology faculties

Opinions of Technology Faculty students participated in research related using of education technology is shown at table 2.

Table 2: Opinions of Technology Faculty students related using of education technology

İtem number	Student Opinions	$\overline{X}$	S
10	Instructors usually teach lectures by education technology support	2.59	1.29
11	Instructors teach lectures by conventional presentation strategy	3.72	1.11
12	Instructors make use of visual education technologies at lectures.	3.41	1.12
13	Instructors make use of auditory education technologies at lectures.	2.12	1.06
14	Instructors make use of visual-auditory education technologies at lectures.	3.54	1.03
15	Instructors generally make use of written source and documents at lectures.	3.70	1.16
16	Instructors generally make use of the real objects at lectures.	4.01	.83
17	Instructors make use of humanistic resources at lectures.	2.53	1.28
18	Instructors make use of internet resources at lectures.	3.34	1.07

According to table 2, included student opinions related using of education technology at Technology Faculties, students put forward that instructors teach lectures by conventional presentation($\overline{X}$=3.72) rather than education technology support($\overline{X}$=2.59).

This is an important inadequacy. Because, teaching materials motivate student and encourage them to study by providing accession to information and evaluation facility(Akkoyunlu, 2002). Furthermore, teaching materials, is an important element in increasing quality of education. (Şahin and Yıldırım (1999)) specified that some teaching materials prepared effectively can be substituded all activities(drawing attention, representing information, clue, participation, application and repetition, feedback, correction and evaluation) represented by instructor at teaching environment(Akt:Gündüz and Odabaşı, 2004). According to students, instructors generally make use of real objects($\overline{X}$=4.01), written sources($\overline{X}$=3.70),visual-auditory($\overline{X}$=3.54), ,visual($\overline{X}$=3.41),internet sources($\overline{X}$=3.34), auditory($\overline{X}$=2.12) technolgies respectively as education technology. This findings demonstrate that real objects generally used as education technology at lectures at Technology Faculties and conventional written sources followed this. At Technology faculties, given an application-oriented vocational and technical education, generally being used of real objects at lectures is an expected condition. But, being followed written sources this is engrossing, so that can be interpreted as that instructors still have pursued teaching process by using conventional methods. At Technology faculties, generally teaching lectures by visual-audio educational technology support can be evaluated as promising. At this subject, to be informed and convinced of instructors at using subject of education technology can be increased using ratio of education technology at Technology Faculties.

Results and Proposals

At this project, the objective is specified of student opinions regarding using of education technology at Technology faculties, reached results and advanced proposals based on this results are reported below:

● The main objective of Technology faculties configurated by reusing from TEF(Technical Educational Faculty), constituting a critical ring of vocational and technical education in Turkish education system is to train application-oriented engineers, need for industry. The subject of having education technolgy and using this effectively has critical importance for reaching this objective of Technology faculties. Accordingly, This subject should be considered when established Technology faculties.

●Education technology facilities, owned by Technology faculties are inadequate. This inadequacy can compromise in the medium term to the mission of this faculties. In this regard, existing capacity regarding education technology of workshop and laboratories at Technology faculties should be supported and if that has shortcomings, they should be fulfilled.

● Although Technology faculties have application-oriented education, theoretical lectures have great importance to reach objective of this faculties. In this regard, classes at this faculties mentioned, should be equipped in terms of education technology. Thus, effectiveness of teaching and consequently qualification of graduate students can be increased.

● Technology faculties should be supported in terms of internet substructure in accordance with the age , at the present time referred to the informartion age. Because, at the present time ,internet has a critical importance in terms of being informed regarding vocational improvements besides being the main means of transportation to information.

● However Science and Technology developed, instructors are still the most critical constituent within teaching process of Technology faculties as each level in. Thus, to be specified quality of an educational institution, qualification of instructors owned by this institution is accepted as an important factor . To be made use efficiently of instructors owned by Technology faculties, these instructors should be supported in terms of information and skills related using of education technology. For this reason, education activities should be organized and instructors should be persuaded in the matter of increasing their efficiency and productivity by education technology.

● To support information and skills related using of education technology of instructors at Technology faculties, should be provided them to see appilications at different universities in the country, abroad through various exchange programs.

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The Quality Of Service Of The Distance Education

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Abstract

The purpose of this paper is to measure the quality of service of the distance education that received from the educational institutions which are among the leading service enterprises, to find out students' expectations, to what extend students expectations are met and whether or not the acquired findings vary by demographical information of the students. In this paper, the data obtained from the questionnaire with 463 students is evaluated. The examination of partial SERVQUAL scores indicate that expectations are not met for all five dimensions effecting service quality in the universities providing e-MBA education.

Keywords: distance education, service quality, servqual;

Introduction

Our century seems to be an age to witness a lot of political, social and technological changes. Similar changes has been also undergone by previous centuries. But globalization appears to push these changes to expand and continue with an increasing efficiency. These developments and changes have significant impacts on life's, demands and needs of people, while affecting styles and approach of meeting those needs. Therefore these changes in this century have required a new way of understanding in education service.

Since, it intends to train those who are willing to join in professional life in the future, education service is one of the most critical service fields in the service sector. In this respect, increasing the quality of higher education in universities serves for the purpose of training people individually so that they provide society with maximum benefit in their own professional field. On the other hand, educational service quality is also a factor effecting university preferences of the youth. It is seen that students, applying for university entrance exam, place the name of the universities known for their qualified educational services on the top of the lists on the preference forms.

In the 21th century, it is obvious that all the societies has become in more need of education owing to an information explosion. In turn it has led to the development of new educational technologies and methods to have caused change in education by degree. Traditional educational institutions fall behind the increasing education demand. Resulting education deficit has been gradually growing day by day. This situation has urged people to search for alternative education to traditional one and the concept of "Distance Education" is an output of this search. The main driving force behind these developments is the effort of meeting educational demands of people as a result of rise in numbers of student, education demand of different student populations, former students, rise in jobs and working bringing with it a lifelong learning.

Education is a concept on which much stress is placed in the world. It is clear that those societies with high level of education feature fast development course and have caught competitive advantage in various areas. This potential could not be achieved by a common educational system. Here the importance of educational quality reveals. Education leading to development means quality education.

Quality is a relativistic concept which varies depending on personal needs. Also, goods quality and service quality are two separate concepts, because of their peculiar characteristics. Yet, it is possible to determine the expectations and perceptions of service receivers. Literature review shows that SERVQUAL is one of the common models for measuring service quality. This model is used to measure the service quality perceived based upon the

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gap between perceived and expected services. And in this study SERVQUAL model is used in order to measure quality of service of distance education.

1.1. Quality, Service and Service Quality

Turkish Language Society (Türkçe Sözlük, 2005, p.896) defines the "Service" as standing someone in good stead or performing work good for somebody. According to Mucuk (2004, p.299) service is the benefit bought by consumers, which has nothing to do with ownership; Kotler (2003, p.444) says that "A service is any act or performance that one party can offer to another that is essentially intangible and does not result in ownership of anything. Its production may or may not be tied to a physical product". Today, we live in a service economy in which relationships are much more important than physical products. Howsoever high the share of technology in a service offered may be, main component is human being. Hence, service, provided either by machine or human, is a whole of intangible activities oriented to meet demands of people. As for service organizations, they lie across a broad spectrum ranging from education, health and communication to banking, insurance business and tourism.

Concept of quality, according to Deming (1998, p.137), is "Judgement of consumer on product or service produced by a business firm" and is "Conformity degree of a product to requirements" for Crosby (1979), Turkish Standards Institute (TSE) defines quality as "Whole of the features of a product or a service, based on its capability to meet the given or possible needs".

According to American Society for Quality (ASQC) "Quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs."

Generally, all the quality definitions concern product quality, falling behind explaining service quality. Whereas the concept of service quality is defined by Parasuraman, Zeithaml & Berry (1988 p.45) as the direction and degree of the gap between expectations and perceived performance based on comparison made by customers between their expectations before receiving service and their real service experience.

In its broadest sense, service quality implies rendering great or perfect service to meet customers' expectations. According to Odabası (2004, p.93) it is an ability of a business firm to meet or go beyond expectations of customers as is seen, both definitions attach more importance to customer expectation than other quality determinants. So, the quality here is the one which is perceived by customer.

In terms of expectations and perceptions of customer, service quality can be defined by Parasuraman, Zeithaml and Berry (1985, p.42), as comparison between those expectations and perceptions. Perceiving many factors, customers interpret quality in his/her way and compare service rendered with service he/she perceived. What is important here is that customers should perceive high level of service. If a comparison gives a negative difference between expected and perceived qualities, it is obvious that customer interpreted negatively the service quality. If the result is a positive difference then it may be said that customer made a positive interpretation.

Thus, service quality can be described by Sekerkaya (1997, p.14) as "A measure of realization level of service by customer's expectations". Howsoever difficult to define service quality, business managements should know these two things: At first, quality is defined by customer not by producer. Second, service quality which has failed to satisfy customers' expectations is condemned not only to lose existing customers but also to fail to gain new customers in (Stanton, Etzel and Walker, 1997, p.524). Again the point is that quality determinant is the customer and so firms should give weight to demands of their customers.

2. Measuring Service Quality

Although many methods and equipment have been developed for measuring service quality by this time, questionnaire survey method has been combined with SERVQUAL as an assessment method while conducting the research project designed for measuring service quality of education service rendered with e-MBA programs in distance education.

2.1. Conceptual Model of Service Quality-Gap Analysis

This model developed by Parasuraman, Zeithaml and Berry (1985, pp. 48-49) prefer "Perceived service quality" instead of service quality. Perceived service is a result of comparison between customer's expectations before receiving service (i.e. expected service) and actual service experience of that customer. Expectations include demands and desires of customers related to given service. Relationships between expected and perceived services as follows:

If expected service is > perceived service, then perceived quality is far from satisfactory and implies an unacceptable quality level.

If expected service is = perceived service, then perceived quality will be satisfactory.

If expected service is < perceived service, then perceived quality will be quite over satisfactory level and reach the ideal quality level.

This model includes approach and implementations of the service firms along with gaps between expected and perceived service and source of these gaps. In this context five types of gap is shown in figure 1 (Parasuraman, Zeithaml & Berry, 1994, p.4).
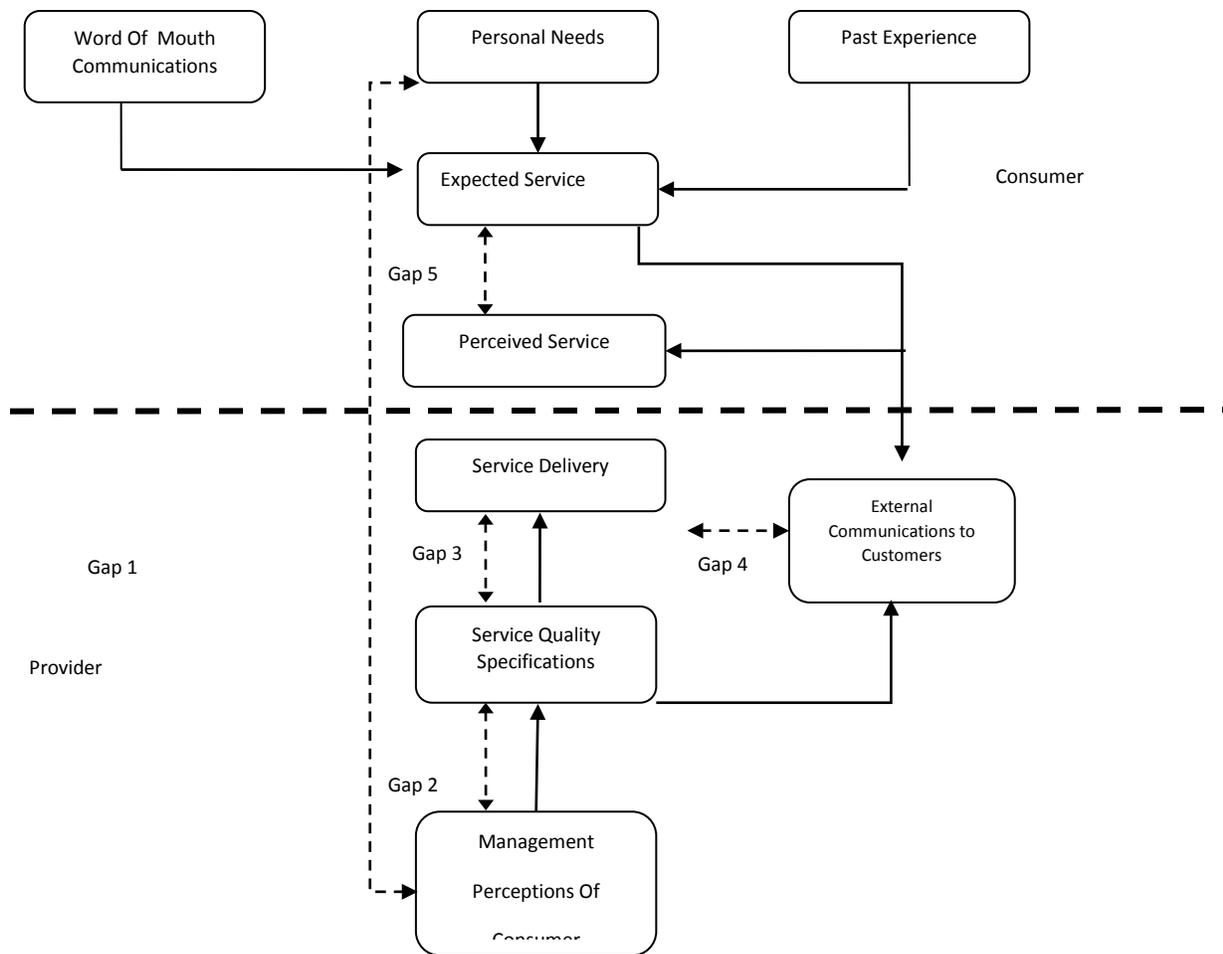
Fig. 1. Conceptual Model of Service Quality

Zeithaml, Berry and Parasuraman (1990) revealed that 10 criteria used by consumers in evaluating service quality. These (dimensions) are reliability, responsiveness, competence, access, courtesy, communication,

credibility, security, empathy and tangibles. Having assessed surveys with factor analysis and reduced 10 dimensions determining service quality for 5 dimensions. Those five dimensions determining service quality as explained below:

- Tangibles: Physical facilities, equipment and appearance of personnel and communication instruments.
- Reliability: Performing the service based on principle of accuracy and honesty. In other words, organizations should fulfill their promise to customers.
- Responsiveness: Employees being ready and willing to perform service.
- Assurance (Contains competence, courtesy, credibility and security): Knowledge and kindness of employees and their ability to inspire trust and confidence.
- Empathy (Contains access, communication and understanding the customer): Making effort to know customer and learn his/her needs.

3. An Application Of The Quality Of Service Of The Distance Education

3.1. Purpose

The purpose of this paper is to measure the quality of service of distance education that received from the educational institutions which are among the leading service enterprises. It intends to evaluate what students expect from education service they receive, to what extend their expectations are met and whether or not the acquired findings vary by demographical information of students. Moreover, it is tried to determine whether or not there are any differences among similar higher education institutions implementing distant learning program in terms of their educational service quality. It is aimed at helping increase the quality of existing higher education services by evaluations based on the results of this comparative study.

3.2. Method

The survey which was conducted in this study was composed of four pages plus a briefing note addressing respondents. First two pages of the form includes 22 likert type questions, while last two pages includes questions related to demographical variables.

In the study it is to be determined at which level perceptions meet expectations by measuring expectations and perceptions of students as customers according to SERVQUAL methodology. SERVQUAL model suggests that perceived service quality is based on discrepancy/gap between customers' expectations from a service and the performance of the service firm rendering that service. Therefore, Zeithaml, Parasuraman and Berry's (1996, p. 23) model is composed of two main parts: Expectations which include 22 variables representing five dimensions (Reliability, responsiveness, assurance, empathy and tangibles), help understand customers' general expectations related to the service. These 22 variables were found out by investigating possible inherent features in a quality service in accordance with SERVQUAL criteria, i.e. the customer's value judgement (Degermen, 2006, p. 38).

Second part of the model, developed by Zeithaml, Berry and Parasuraman (1996, p.23), consists of perceptions. In this part all the 22 variables, which are to be used for measuring customers' judgements about a service firm, are compared. As a result, if a received service meets or is over expectations, service will be decided as a quality one. But received service is less than expected, dissatisfaction will occur. Thus, SERVQUAL is also called as "Gap analysis".

First part aims at measuring the students' expectations and the second part includes measurement of students' perceptions. However, in this study the respondents were subjected to a 5-point likert type scale (1=Strongly disagree, 5=Strongly agree) which is converted from the original 7 point type. This conversion was because of common usage, relatively easy assessment and answering of the 5 point type.

In Turkey, universities implement distance education including associate degree, undergraduate degree, degree completion, non-thesis master degree and master degree programs. In recent years, there has been a significant increase in the number of students taking distance education. Since they have seen this potential, many universities started to give weight to establish distance education programs. Today, there are 156 universities (54 of them are foundation universities) in Turkey (www.yok.gov.tr). Among those implementing distance education programs there are 21 universities with e-MBA program, including newly opened ones with no student yet. These include; Anadolu University, Ankara University, Ataturk University, Bahcesehir University, Beykent University, Cukurova University, Ege University, Fatih University, Gazi University, Gaziantep University, Isık University, Istanbul Aydın

University, Istanbul Bilgi University, Karabuk University, Karadeniz Technical University, Maltepe University, Mersin University, Ondokuz Mayis University, Sakarya University, Suleyman Demirel University and Zirve University.

Population is composed of students receiving education in the universities having e-MBA programs. Having identified those 21 universities with distant learning e-MBA programs in Turkey and considering difficulty of access to all and time limitation, the survey form prepared for this study was applied to only five universities selected by means of random sampling. Survey sample group is composed of all students of those five selected universities. Simple random sampling is a method by which samples from the population are chosen in such a way that every sample has an equal chance to be chosen. According to Gegez (2010, p.211); it is intended to make the units of the population equally likely to be selected. All the students taking distant learning e-MBA programs at those five selected universities are incorporated to the sampling. At the beginning students were informed about the study and asked to participate online. Each student with his/her assigned username and password was given right to participate online in the survey. In total, 463 students participated in the study.

3.3. Data Analysis and Methods

Data obtained in this survey were computerized in Microsoft Excel and SPSS 18.0 programs. Specific calculations and statistical analysis used in SERVQUAL model were made by SPSS system.

Generally, a survey is prepared having 22 questions related with five dimensions - reliability, responsiveness, credibility, empathy and tangibles- on SERVQUAL scale. According to the model, consumer have expectations about those five variables before receiving service and then compare these expectations with the service given. If service they receive meet their expectations it is concluded that the service is of quality. In other words, service quality is equals to discrepancy/gap between expected and perceived service.

In this study, 22 statements were put into each survey form with a view to determine expectations and perceptions in accordance with five dimensions standard SERVQUAL scale developed by Parasuraman, Zeithaml and Berry. Students were asked to state to what extent they agree with 22 statements at a scale of 1 to 5 at first for an ideal university having e-MBA program and next, their current universities. Agreement degrees were designed as 1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree. Next comes the scoring part for each dimension assessment on the scale of 100 to calculate importance weights of each quality dimension.

The other part includes questions directed to obtain students' demographic information, their satisfaction level with the e-MBA programs that they chosen, whether or not they faced with any problem during education and whether or not they find the solutions offered adequate, how they think about recommending the program they attended. 22 questions prepared for expectation and perception levels on the scale are distributed as follows and the statements composing dimensions are shown in Table 1.

Table 1. Statements Composing Service Quality Dimensions

Statement	PHYSICAL/TANGIBLE FEATURE
1	Distance Education Portal should always be accessible/usable
2	Sufficient number of most recent sources (Book, Journal, Article, Electronic Databases, etc...) in library should be accessible
3	Web page should have striking, clear, understandable and good view.
4	Safe environment should be ensured in the Distance Education Portal.
	RELIABILITY
5	Courses, in large part, should be practice-oriented (e.g. case study)
6	Students should be prompted to group works in practice oriented parts of courses
7	Students should be allowed to contend for prize such as degree, incentive etc...
8	Students should be in interaction with faculty members and other students
9	Program should offer elective courses to meet personal needs for career
	INTEREST-RESPONSIVENESS OF FACULTY MEMBERS AND ADMINISTRATIVE STAFF

10	Faculty members should help students in every matter for which they need counselling immediately.
11	Faculty members should be available at extracurricular times
12	Administrative staff should deal with each student one by one (registration procedures, course selection, etc...)
13	Library staff should meet demands and needs of students immediately
	CREDIBILITY
14	Lectures should be given by the faculty members who are expert in their fields
15	Course contents should be prepared in accordance with course schedule
16	Course content should be prepared conspicuously and given by faculty members
17	Faculty members should be fair in grading
18	Faculty members should be experienced
19	Coursed should be largely given by faculty members with Prof. title
	EMPATHY
20	Faculty members should help students and give advices on their career planning
21	Advisers should help students complete the program smoothly
22	Students should be provided with advisory service about employment opportunities offered by the diploma they are to get by this program

Service quality determinant is the gap/discrepancy between performance of and expectations for a given service as to its receiver. For the analysis, gap score calculation is made by subtracting the expectation score from the perception score for each item that e-MBA students give. This operation is open to two types of SERVQUAL scoring: Unweighted SERVQUAL Score and the Weighted SERVQUAL Score. First step is calculated without taking into account the importance weight rated for each quality dimension by students while the later takes accounts of the importance weight given by students.

Next step is the calculation of average SERVQUAL Score involving service quality dimensions. Two stages are followed for each dimension:

• Sum up the SERVQUAL scores for each of the statements (Perception-Expectation) and divide the sum by the number of the statements making up the dimension.
• Sum up the scores obtained per students in the first stage and divide the sum by the number of students.
• Resulting SERVQUAL Scores are averaged, that is, SERVQUAL score found out for each dimension are summed up and divided into five (number of dimensions) and so obtained value gives the Unweighted SERVQUAL Score.
• The Weighted SERVQUAL Score is calculates at four stages as follows:
• Average SERVQUAL Score is calculated for each student for each of five dimensions.
• Obtained score per each dimension for each student at the first stage is multiplied by the importance weight given to that dimension by each student. (Importance weight is obtained by dividing scores rated by customer to given dimension into 100)
• Resulting Weighted SERVQUAL Scores per student for five dimensions in the second stage are added up and thus a overall Weighted SERVQUAL Score is obtained.
• Calculated scores for overall customers of which number is represented by "N" at the third stage is summed up and divided into overall "N".

4. Research Findings and Comments

SERVQUAL scale applied here was analysed in terms of its reliability and its alpha coefficients are established in a view to determining its internal coexistency.

In these analyses, definitive statistics including frequency tables, crosstabulation tables and averages were used as well as t-test and anova in comparing service quality scores by participants' demographic aspects and universities. Anova analyses conducted in comparing service quality levels by demographic features and universities are accompanied by Levene test for homogeneity between groups and Tukey post hoc test for determining between

which groups discrepancies occur. But when Levene test results in inhomogeneity between groups Welch test is put into use not Anova. It is shown on statistic tables that which analysis was used. Survey findings were assessed by distinctive calculation method of SERVQUAL system and analysed by some statistical techniques.

4.1. Findings of Reliability Analysis

Reliability is a concept related with research findings. Gegez (2010, p.184) explained that basically reliability indicates whether or not the same results would be obtained when a research is repeated and whether respondents would give same answers in case of no change of their state. For reliability analysis of research Cronbach's alpha model was used. Cronbach's alpha model is the one used for measuring internal consistency, in the words of George and Mallery (2001, p. 209), it is an indicator of to what extent all the items in a scale can successfully measure any dimension.

Table 2. Reliability Coefficient

	Expectation	Perception
	Cronbach α	
Total scale	0,947	0,959
Tangibles	0,887	0,812
Reliability	0,791	0,873
Responsiveness	0,841	0,886
Credibility	0,857	0,873
Empathy	0,843	0,907

Reliability analysis comes to the front to gauge inter-closeness degree of questions when calculation is made by summating the values of answers to certain numbers of questions. This is also called as internal consistency. Most preferred method for reliability analysis is Cronbach Alpha model. This model calculates the coefficient alpha. Coefficient is obtained by comparing overall variations of question to general variation in a scale. Alpha is a standard change mean and varies between 0 and 1. In social researches, alpha value of 0,70 is accepted as adequate for reliability (Nakip,2006, p.146). For in this study reliability values of scales and sub-dimensions are at acceptable levels, t-tests, variation and SERVQUAL analyses were proceeded for testing research hypotheses.

4.2. Demographic Features

34,1% of total participants was female and 65,9% were male, while 50,5% participants were married and 40,5% single. Initially students from age group between 21-30 with 60,7% and then age group between 31-40 with 33,7% were enlisted. These two age groups (between 21-40) make up 94,4% of whole participation.

Table 3. Demographic Distribution

Gender Distribution			Age Distribution		
	Number	%		Number	%
Female	158	34,1	Under 20	1	0,2
Male	305	65,9	21-30	281	60,7
Total	463	100,0	31-40	156	33,7
			41-50	23	5,0
Distribution by Marital Status			51-60	1	0,2

	Number	%			
			61 and Over	1	0,2
Married	234	50,5	Total	463	100,0
Single	229	49,5			
Total	463	100,0			

Distribution of the professional sectors that e-MBA service quality measurement study participants work, is like this: 14,3% is in Banking , 8,4% in Health, 8% in Service, 7,3% in Informatics, 6,9% in Education, 5,6% in Construction while of them 27,6% serves as engineer, 16,4% as manager, 12,7% as banker, 6,3% as accountant.

Table 4. Professional Experience

Occupational Distribution			Distribution by Professional Field		
	Number	%		Number	%
Engineer	128	27,6	Other	169	36,5
Other	111	24,0	Banking	66	14,3
Manager	76	16,4	Health	39	8,4
Banker	59	12,7	Service	37	8,0
Accountant	29	6,3	Informatics	34	7,3
Teacher	20	4,3	Education	32	6,9
Self Employment	10	2,2	Construction	26	5,6
Economist	9	1,9	Food	18	3,9
Academician	7	1,5	Communication	18	3,9
Security officer	6	1,3	Logistics	11	2,4
Medical Doctor	5	1,1	Security	7	1,5
Architect	3	,6	Economy	6	1,3
Total	463	100,0	Total	463	100,0

Almost all of the participatory e-MBA students (96,8%) resides in Turkey. In this distribution striking point is that participation from Afghanistan with 1,3% was the highest one among the participation ratios from abroad. When participation by city is examined, it is seen that the most participation was from Istanbul with 50,5%, and then comes Bursa with 7,3%, Ankara with 6,3%, Kocaeli with 5,2%, Izmir with 4,3%, Sakarya with 3,7% and Balikesir with 1,7%.

Table 5. Distribution by Country of Residence

	NUMBER	%
AFGHANISTAN	6	1,3
GERMANY	3	,6
IRAQ	1	,2
SPAIN	1	,2
UZBEKISTAN	1	,2
RUSSIA	1	,2
TURKEY	448	96,8
UKRAIN	2	,4
TOTAL	463	100,0

SERVQUAL Scores Comparisons by Demographic Features

In order to determine whether or not the expectations of e-MBA students were met in terms of their demographic features, t-tests were used for comparison by gender and marital status and variance analyses for comparison by age and income status.

Table 6. Comparison Test for Service Quality Dimensions by Gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean	t	p(sig.)
Tangibles	Female	158	-,172848	,2554850	,0203253	-2,298	,022*
	Male	305	-,121369	,1644927	,0094188		
Reliability	Female	158	-,178658	,2489990	,0198093	-,378	,706
	Male	305	-,168774	,2755989	,0157807		
Responsiveness	Female	158	-,186092	,2197352	,0174812	-,611	,542
	Male	305	-,171451	,2563722	,0146798		
Credibility	Female	158	-,167954	,2550665	,0202920	-2,108	,036
	Male	305	-,119978	,2193538	,0125602		
Empathy	Female	158	-,174072	,1881578	,0149690	-1,654	,099
	Male	305	-,142295	,1999835	,0114510		
SERVQUAL SCORE	Female	158	-,175925	,1658452	,0131939	-1,928	,055
	Male	305	-,144773	,1643642	,0094115		

Overall SERVQUAL scores do not differ by gender for e-MBA students. But, service quality score differs at sub-dimension of tangibles. Satisfaction level of female students from tangibles are less male students'. In other words, males are satisfied with their universities in terms of tangibles in comparison with females.

Table 7. Comparison Test for Service Quality Dimensions by Marital Status

	Marital Status	N	Mean	Std. Deviation	Std. Error Mean	t	p(sig.)
Tangibles	Married	234	-,136325	,1786907	,0116814	,282	0,778
	Single	229	-,141605	,2226850	,0147154		
Reliability	Married	234	-,188333	,2920399	,0190912	-1,322	0,187
	Single	229	-,155607	,2372965	,0156810		
Responsiveness	Married	234	-,164306	,2262274	,0147889	1,081	0,280
	Single	229	-,188854	,2614847	,0172794		
Credibility	Married	234	-,136467	,2345957	,0153360	-,011	0,991
	Single	229	-,136230	,2318680	,0153223		
Empathy	Married	234	-,142863	,1892568	,0123721	1,138	0,256
	Single	229	-,163639	,2033258	,0134361		
SERVQUAL SCORE	Married	234	-,153659	,1635900	,0106942	,229	0,819
	Single	229	-,157187	,1674767	,0110672		

Overall and sub-dimensional perceptions of service quality about universities having e-MBA programs differs by marital status of students. As for service quality scores comparison by age variance analyses were used.

Table 8.Payoff Table of Homogeneity Tests for Age Groups Variations

Levene Statistic	df1	df2	Sig.

Tangibles	,379	2	457	,685
Reliability	1,072	2	457	,343
Responsiveness	,126	2	457	,882
Credibility	2,581	2	457	,077
Empathy	,536	2	457	,586
Servqual	,573	2	457	,564

*Welch test is to be made

**One-way-Anova is to be made

According to the variance analysis hypotheses variances of groups to compare should be equal (Homogeneity). Homogeneity of age groups SERVQUAL scores variances were subjected to Levene tests. By means of one-way variance analysis it was found that total SERVQUAL scores and service quality score variances between age groups for each sub-dimension are homogeneous.

Table 9. Comparison Tests for Service Quality Scores by Age Groups

		Sum of Squares	df	Mean Square	F	Sig.
Tangibles	Between Groups	,071	5	,014	,350	,882
	Within Groups	18,678	457	,041		
	Total	18,749	462			
Reliability	Between Groups	,190	5	,038	,533	,751
	Within Groups	32,644	457	,071		
	Total	32,834	462			
Responsiveness	Between Groups	,090	5	,018	,301	,912
	Within Groups	27,493	457	,060		
	Total	27,584	462			
Credibility	Between Groups	,199	5	,040	,731	,601
	Within Groups	24,882	457	,054		
	Total	25,081	462			
Empathy	Between Groups	,082	5	,016	,422	,833
	Within Groups	17,739	457	,039		
	Total	17,821	462			
Servqual	Between Groups	,066	5	,013	,477	,793
	Within Groups	12,566	457	,027		
	Total	12,632	462			

*Significant at p=0,01 level

As a result of variance analyses, service quality perception from universities with e-MBA learning programs differs by age groups of students attending those universities. Variance analyses were also used in comparing service quality scores by income groups.

Table 10. Payoff Table of Homogeneity Tests for Income Groups Variations

	Levene Statistic	df 1	df2	Sig.
Tangibles	6,785	5	457	,000*

Reliability	1,305	5	457	,261**
Responsiveness	1,332	5	457	,249**
Credibility	1,079	5	457	,371**
Empathy	1,063	5	457	,380**
Servqual	1,307	5	457	,260**

*Welch test to be made
**One-way-anova to be made

According to the variance analysis hypotheses, group variances to compare should be equal to each other. Levene tests were conducted for testing homogeneity of SERVQUAL score variances by income groups. Having used one-way variance analyses, test results show that service quality score variances between age groups are homogeneous for sub-dimensions, except for total SERVQUAL scores and tangibles. Welch test was used in variance analysis for sub- dimension of tangibles because homogeneity hypothesis was not corresponded there.

Table 11. Investigation of Service Quality Scores Between Income Groups by Welch Test

Welch Test	Statistic[a]	df1	df2	Sig.
Tangibles	1,339	5	141,289	,251

Table 12. Comparison Tests for Service Quality Scores by Income Groups (One-way Variance Analysis)

		Sum of Squares	df	Mean Square	F	Sig.
Reliability	Between Groups	,557	5	,111	1,578	,165
	Within Groups	32,277	457	,071		
	Total	32,834	462			
Responsiveness	Between Groups	,233	5	,047	,779	,566
	Within Groups	27,351	457	,060		
	Total	27,584	462			
Credibility	Between Groups	,371	5	,074	1,372	,233
	Within Groups	24,710	457	,054		
	Total	25,081	462			
Empathy	Between Groups	,151	5	,030	,779	,566
	Within Groups	17,671	457	,039		
	Total	17,821	462			
Servqual	Between Groups	,169	5	,034	1,242	,288
	Within Groups	12,463	457	,027		
	Total	12,632	462			

*Significant at p=0,01 level

As a result of variance analyses it was understood that service quality perception from the universities having e-MBA learning programs do not differ by income status of students.

4.3. General SERVQUAL Scores and Its Assessment

Values which were obtained as a result of calculations made for realizing SERVQUAL analysis are shown in Table 13.
Without taking into account colleges at which students have education, it is seen that service quality score (SERVQUAL score=0,80456) of institutions rendering e-MBA service is subtractive.

Table 13. Expectation And Perception Averages Of All Participants And Expectation-Perception Gap Scores

| Dimension | Statement | Number | Perception | | Expectation | | Discrepancies of Averages | Sum of Factor Gap | Factor Gap Averages |
			Average	Standard Deviation	Average	Standard Deviation	Expectation-Perception		Total Gap./k
Tangibles	1	463	4,1512	1,0355	4,7603	,7092	-,6091		
	2	463	3,4233	1,1798	4,6091	,8168	-1,1857	-3,1037	-,7759
	3	463	3,7775	1,0651	4,5680	,7917	-,7905		
	4	463	4,0778	,9178	4,5961	,7722	-,5184		
Reliability	5	463	3,3499	1,1727	4,2527	,9574	-,9028		
	6	463	2,8877	1,2691	3,6307	1,1878	-,7430		
	7	463	2,8251	1,3050	3,5875	1,2381	-,7624	-4,0043	-,8009
	8	463	3,7797	1,0985	4,2981	,9008	-,5184		
	9	463	3,4795	1,2445	4,5572	,8247	-1,0778		
Responsiveness	10	463	3,4946	1,1046	4,4039	,8622	-,9093		
	11	463	3,4428	1,1864	4,3197	,8982	-,8769	-3,5594	-,8898
	12	463	3,4600	1,2388	4,3672	,8992	-,9071		
	13	463	3,3585	1,0756	4,2246	,9148	-,8661		
Credibility	14	463	3,8186	,9723	4,3758	,8908	-,5572		
	15	463	3,9503	,9303	4,5443	,7824	-,5940		
	16	463	3,7343	1,0489	4,5659	,7613	-,8315	-3,2246	-,5374
	17	463	3,8596	1,0339	4,6328	,7917	-,7732		
	18	463	4,0238	,9078	4,4492	,8611	-,4255		
	19	463	3,4255	1,1312	3,4687	1,1800	-,0432		
Empathy	20	463	3,3737	1,1644	4,3434	,8905	-,9698		
	21	463	3,6350	1,0904	4,5767	,7401	-,9417	-3,0562	-1,0187
	22	463	3,1814	1,2731	4,3261	,9302	-1,1447		
						SUM			-4,0228
						SUM/5=SERVQUAL SCORE			-0,80456

* k:Number of statements composing dimension

This state indicates that students are not satisfied with service quality of colleges from which they receive e-MBA education. Moreover, it is an evidence that SERVQUAL scores estimated for service quality dimensions, -tangibles, reliability, responsiveness, credibility and empathy- are also subtractive and expectations for none of them were met. SERVQUAL scores calculated in the Table above are the values estimated without considering importance weight given by students to service quality dimensions. Service quality SERVQUAL score including importance weights given by students to dimensions is calculated as follows:

SERVQUAL SCORE= (Reliability*importance of reliability + Empathy*importance of empathy +credibility*importance of credibility + tangibles*importance of tangibles + responsiveness*importance of responsiveness) / Number of dimension.

In this calculation importance weight is expressed as percentage of importance that student give to a dimension.

Table 14. Weighted SERVQUAL Scores Table

	N	Weightless Average Gaps	Weighted Average Gaps	T	p (Sig.)
Tangibles	463	-,7759	-,138936	-14,840	,000
Reliability	463	-,8009	-,172147	-13,895	,000
Responsiveness	463	-,8898	-,176447	-15,538	,000
Credibility	463	-,5374	-,136350	-12,592	,000
Empathy	463	-1,0187	-,153139	-16,777	,000
TOTAL GAPS		-4,0228	-0,77702		
SERVQUAL SCORE		-0,80456	-0,1554		

Before assessing dimension SERVQUAL scores it was examined that whether or not the discrepancy between perceived and desired service for each dimension is significant, that is, whether or not the discrepancies are statistically valid. For this examination hypothesis "H0: Gaps equal to "0" was tested throught the instrument of single sample t-test. As a result of t-tests it was found that gaps for all dimension were significant at level of p(sig.)= 0,000, that is discrepancies were non zero.

It was found that service quality scores estimated without regarding importance weights are = -0,80456, while servqual scores including importance weights are = =-0,1554. Here the striking point is that results of both estimation are subtractive, meaning that expected service was not met. Next assessments were realized on the basis of weighted SERVQUAL scores.

Absolute value of SERVQUAL score approximation to zero implies an increased service quality. When partial SERVQUAL scores are examined, although service expectations were not met for five dimensions effecting service quality in the universities rendering e-MBA education, most dissatisfied dimension was responsiveness, followed in order by reliability, empathy, tangibles and credibility.

5. Conclusion And Suggestions

Today education system is faced with many problems, including falling behind developments and technology, lacking equipment, personnel and resource, scarcity of scientific researches, personnel having no skill and quality demanded by the system, education programs under efficiency standards. It is important to have educational organizations restructured and operated according to contemporary understanding of quality in order to find solutions to these problems and make education organizations efficient.

Today, in a globalized world where competition has increased and quality has gained importance over other factors such as price for national development it is crucial to reorganize education system conforming the quality standards so as to train people in accordance with demands of competition environment. For ensuring development and advancement in a country education system should be carefully protected and improved by following the developing and changing conditions.

Information technologies leading a reorganization of all institutional procedures have become one of the integral parts of education sector over time. Today computers and communication technologies are the factors which provide training education services unlike in 90's when they were used as supportive devices in education service.

One of these education services is an Internet based distant learning model. This model basically is applied for two goals: First, to provide support service for traditional education programs and secondly, servicing education programs over the web. In this framework Internet based distance education is considered among the most efficient and the best instruments to meet today's educational needs.

Distance education enables people to receive various certificates as well as associate, bachelor's, postgraduate and doctoral diplomas from foreign universities whilst staying at their country.

In service quality measurement literature it is the SERVQUAL method emerged as marketing research instrument that is the most common, most valid in its dimension structure and most reliable in terms of its internal consistence. Thanks to the SERVQUAL method it can be calculated to what extend each dimension and general service quality to have been affected by structural innovations and changes in services realized by enterprises rendering service. And in the light of this calculations it can be decided on vital and costly issues such as whether or not full-scale innovation or change is feasible.

If results show a low grade in quality, it must be looked for which dimension is the crux of the problem and to what extent and then improvement should be initiated starting with statement of minimum quality level in that related dimension. To be able to make improvements based on that statement, a customer-oriented service approach should be adopted and the best effort should be made. So, rise in the perception statements scores would lead to a rise in perceived service quality.

Service quality of distance education applications in education sector was examined including five quality determinants, tangibles, reliability, responsiveness, credibility and empathy. For five dimensions determining service quality and total service quality, discrepancies between expectation and perceptions of students were analysed regardless universities that render distance education. Discrepancies among scores that students rated for perceived and expected service for each were found statistically significant for each dimension.

When partial SERVQUAL scores are examined, although service expectations were not met for every five dimension effecting service quality in the universities rendering e-MBA education, most dissatisfied dimension was responsiveness, followed in order by reliability, empathy, tangibles and credibility. It can be said that students' perceptions of services are under their expectations. As survey results show, averages of overall expectations are higher than perceptions. It was found that expectations of survey participants were not met, leading to a dissatisfaction. And it is remarkable that dissatisfaction become more glaring especially as for the variables of responsiveness. Therefore, it is obvious that general perception is under general expectation, resulting in a dissatisfaction.

When the customer oriented approach, which is important in terms of modern marketing, is adapted to education service marketing, focal point appears to be is educational expectations of students, parents and society. Education institutions marketing educational services should specify the marketing mix strategies.

Service quality measurement is an opportunity for enterprises to accurately define their goals and correctly perceive needs of their customers accordingly to reshape their services. Moreover, measuring service quality allow for productive usage of operating assets.

Enterprises operating in education sector should work on increasing service quality. Therefore, it is necessary to employ and to train quality faculty members as the backbone of education system. It is also significant to empathize with students in order to understand their educational problems and to ensure that courses made just in time in accordance with the curriculum by well-made organization. Besides, employees should have enough knowledge and experience to meet the expectations students. Universities, especially at the stage of planning and executing the services, should form administrative and academic cadres in pursuant of defined quality targets. As a result, these adjustments increase educational service quality and student satisfaction.

In the light of these results, general perspective is under general expectation and there comes a dissatisfaction. In this case to enhance service quality and thus increase student satisfaction, it is obvious that sensitivity should be shown primarily to responsiveness. In this sense responsiveness is followed in order by reliability, empathy, tangibles and credibility. So students' expectations can be met by making necessary regulations starting with statements under responsiveness dimension. Faculty members should be available for students and provide every kind of consultancy about university and education program. Administrative staff should deal with students one by one. Library staff should have competence to address the needs and demands of students. And then comes statements of reliability dimension to be treated. Courses should be heavily practice-oriented. A competitive environment should be provided for students. Students could find an educational climate with interactive relationships among themselves and with faculty members as well. Furthermore, elective courses should be included in programs. In order of importance statements of third dimension, empathy, should be examined to be used in career orientation by faculty members. Advisers should help students pursue education programs smoothly and inform them about job opportunities that program diploma/certificate would create. Tangibles, as fourth dimension, are a point on the basis of which distance education portal can be designed. Accordingly, distance education web pages should be attention-grabbing, clear and understandable and kept updated. Also, universities are to be responsible for safety of that distance education portal. Last dimension in order of importance is credibility. Examining statements under credibility dimension, necessary regulation should be made to meet students' expectations.

Demands and needs of students have critical place in designing and improvement of education systems. It would be one of the most important factors which higher education institutions would pay attention to in developing quality management system to determine students' expectations from higher education and measure the service quality by empathising with students. Related units of universities should examine thoroughly reasons and results of assessments made by students and accordingly produce solutions addressing negative assessments. These works

should be made regularly and it should be monitored to what extent solution proposals could be realized. If regularly and continuously applied this and such like studies could be used by universities as   important instruments in enhancing educational quality.

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The Relationship Among Tertiary Level EFL Students' Personality, Online Learning Motivation And Online Learning Satisfaction

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Abstract

The paper investigated the relationship among 153 tertiary level EFL students' Big Five personality traits, online learning motivation and online learning satisfaction in a digital English learning environment. Participants completed questionnaires regarding the Big Five personality traits, online learning motivation and satisfaction. Results revealed that personality traits were correlated with online satisfaction, and that extraversion and conscientiousness were the two important traits among the Big Five in predicting motivation and satisfaction. Also, motivation was a strong predictor of satisfaction. Five constructs of motivation, including escape, social contact, desire to learn, self-development and academic progress, were significantly related to satisfaction.

Keywords: Personality; online learning motivation; online learning satisfaction

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1. INTRODUCTION

Application of online learning technology not only enhances teaching effectiveness but also makes up for the inadequacies of traditional education. In other words, online learning provides a facilitative environment where students could engage in learning. It allows students' repeated exposure to the learning activities at their own pace and learning sites are not limited to physical classrooms. Students can engage in their individual learning and their learning styles are changed from the passive acceptance to more active self-oriented learning. In colleges and universities across many countries, online courses continue to enhance their presence in the schedules of undergraduate and graduate students, and many studies have been conducted to evaluate students' online learning programs and satisfaction. While some of the online learning studies focused on the development of technology acceptance model (Jung, Loria, Mostaghel, & Saha, 2008; Masrom, 2007), others focused on online learning satisfaction, a key factor that determines the success or failure of online programs in this competitive global environment (Dziuban, Moskal, Brophy-Ellison, & Shea, 2007).

2. LITERATURE

2.1. Factors related to learners' online learning satisfaction

Studies have been conducted to investigate factors related to learners' online satisfaction. Based on 1,056 participants' responses, Muilenburg and Berge (2005) identified factors that explained student difficulties to online learning. It included barriers related to administrators and instructors control, obstacles to online learning caused by a lack of interaction, obstacles to online learning caused by a lack of academic skills, obstacles to online learning caused by a lack of technical skills, factors related to learner motivation, factors related to time and support for studies, factors related to cost and access to the Internet, obstacles caused by technical problems (Mulienburg & Berge 2005). Similarly, Sun, Tsai, Finger, Chen, and Yeh (2008) identified seven factors that influenced online learners' satisfaction based on 295 responses from students enrolled in 16 different online learning courses. They were computer anxiety, instructor attitude, course flexibility, course quality, perceived usefulness, perceived ease of use, and diversity of assessment.

Other scholars also have found that learners' on-line learning satisfaction was affected by factors like learners' technology acceptance behaviors, learners' experience in online learning, quality of institutional support, academic environment, and instructional interaction (Biner, Dean, Mellinger, 1994; Changchit, 2007; Chute, Thompson, & Hancock, 1999；Conrad, 2002; Fulford & Zhang, 1993; Palloff & Pratt, 2005; Song, Singleton, Hill, & Koh, 2004; Swan, 2003). For instance, learners who had more experiences in online learning were more likely to be satisfied with learning online, and were less likely to feel anxious about online learning (Arbaugh & Duray, 2002; Conrad, 2002). In addition, the issues of academic environment and instructional interaction also contributed to students' online learning acceptance and satisfaction in higher education online programs (Artino, 2009; Driver, 2002; Osman & Herring, 2007). However, these perspectives do not account sufficiently for the influence of individual differences in online satisfaction since motivation, a predictor of achievement in academic settings (Chute et al., 1999), and personality, the description of an individual's pattern of personality interaction with the environment to satisfy needs, both help in understanding why individuals process and respond to the same online learning situations differently. There have been fewer studies of online learning that account for the impact of personality and motivation differences on online learning satisfaction.

2.2 Personality traits

One person's values and preferences were often reflected in their personality traits. They could explain the occurrences of certain individual behaviors and were regarded as an individual's disposition to particular patterns, or as enduring dispositions that caused characteristic patterns of interaction with one's environment (Goldberg, 1993; Olver & Mooradian, 2003). Previous studies had different development and categorization of personality traits (Buss, 1991; Digman, 1990; Funder & Sneed, 1993; Goldberg, 1992; Hogan, 1996; McCrae & Costa, 1997; Sneed, 2002；Sneed, McCrae, & Funder, 1997). Among them, NEO-FFI, developed by Costa and McCrae (1992), consists of 60 items, 12 for the factors of Conscientiousness, Neuroticism, Extraversion, Agreeableness and Openness to

Experience. It was the most widely used measure of personality traits and has demonstrated good internal and external validity (Costa & McCrae ,1992).

2.3. The relationship among personality, satisfaction and motivation

In previous studies, most scholars investigated the relationship between personality and work satisfaction (Judge, Higgins, Thoresen, & Barrick, 1999; Organ & Lingl, 1995; Tsai, 2001) and they found individuals with high agreeableness were easy to get along and cooperated with others; when individuals with high agreeableness, they were satisfied with their work. It seemed to support that high agreeableness could predict work satisfaction. Among the few that studied the relationship among personality and learning satisfaction, Morahan-Martin and Schumacher (2003) found lonely people were more likely to be satisfied with their online interactions than were nonlonely people. Similarly, Chou (2002) reported that learners' learning satisfaction was affected by their personality; specifically Neutricism, Agreeableness, and Extraversion had significant influence on learning satisfaction. Personality influences learners' learning satisfaction.

In terms of the relationship between personality and motivation, many studies have been conducted to uncover the relationship among the big five and learners' motivation (Komarraju & Karau, 2005; Meera, Steven, & Karau, 2005; Meera, Steven, Karau, Ronald, & Schmeck, 2009). Personality had a significant influence on their learning motivation; learning motivation in turn had a significant effect on learning satisfaction (Chuang, 2008). For instance, Heaven (1989) reported that achievement motivation was positively correlated with extraversion, and negatively correlated with impulsiveness and psychoticism among high school students. Also, Busato, Prins, Elshout, and Hamaker (1999) reported that conscientious and extraverted students were more achievement oriented and preferred meaning, reproduction, and application directed learning styles. Individuals high in conscientiousness, extraversion, and openness showed the strongest learning goal orientation (Payne, Youngcourt, & Beaubien, 2007), whereas high neuroticism and low extraversion students were most likely to experience a fear of failure and pursued avoidance performance goals. Similarly, Chuang (2008) found undergraduates' personality had a significant influence on their learning motivation; learning motivation in turn had a significant effect on learning satisfaction.

For the relationship between motivation and online learning satisfaction, it is reported that motivation is an essential prerequisite for learners' learning in web-based environments (Hoskins & van Hooff, 2005; Song, Singleton, Hill, & Koh, 2004), and the relationship between learning motivation and on-line satisfaction were positively interrelated (Biner, Dean, Mellinger, & Tallman, 1994; Chute, Thompson, & Hancock, 1999; Lim, 2004). A review of these studies showed that there was conflicting findings related to the role of personality and learners' online satisfaction (Chou, 2002). For instance, Summers, Anderson, Hines, Gelder, and Dean (1996) reported no significant relationship between satisfaction and learners' personality. On the other hand, Biner, Bink, Huffman, and Dean (1995) investigated 16 personality variables in a web-based instruction and discovered strong relationship between satisfaction and participants' personality. In addition to the conflicting evidence in previous research, earlier studies focused on the technology dimension of a learning system while ignoring the influence of learners' affective factors (Jones & Issroff, 2005; Kreijns, Kirschner, & Jochems, 2003; Miltiadou & Savenye, 2003). In order to fill in the gap, the research investigated whether personality and motivation of tertiary level EFL college students were related to online satisfaction in a digital learning environment. The research questions were as follows: 1. What is the relationship among learners' Big Five personality traits and their on-line learning motivation? Among the Big five, which factors can predict their online learning motivation? 2. What is the relationship among learners' Big Five personality traits and their online learning satisfaction? Among the Big five, which factors can predict their online learning satisfaction? 3. What is the relationship between learners' motivation and their online learning satisfaction? Among the factors of motivation, which factors can predict their online learning satisfaction?

3. METHODOLOGY

3.1.Participants

To ensure the homogeneity of learners' background, all 153 (116 male and 37 female) tertiary level university freshmen recruited from three classes, participated in this study. College students are appropriate samples for

Internet study because they have Internet experience and access to the Internet on and off campus (e.g., Bonebrake, 2002). These students majored in engineering, aged from 18 to 19, and have learned English as a required subject for 10 years at school. Based on their performance of the Mock TOEIC test administered to the participants at the beginning of a semester, the participants scored around 412 on average. The data was collected during the years of 2009 to 2010.

3.2. Instruments

The instruments employed in this study included NEO-FFI personality questionnaire developed by Costa and McCrae (1992), the on-line learning motivation questionnaire by Huang (1985), and online learning satisfaction questionnaire developed by Wu (2003) and Yu (2004). The personality traits were measured by NEO-FFI, developed by Costa and McCrae (1992). NEO-FFI is the most widely used measure of personality traits. This inventory has been proved to reliably assess the Big five personality variables and has demonstrated good internal and external validity (Costa & McCrae, 1992). Participants indicated their degree of agreement with each statement using a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). In terms of the reliability of the test, the Cronbach's α value of the questionnaire was 0.88.

Based on Huang (1985), the 27-item on-line learning motivation questionnaire was developed to evaluate participants' online motivation in the factors of escape or stimulation, social contact, desire to learn, self-growth, and academic progress. Participants indicated their degree of agreement with each statement using a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). With regard to the reliability of the test, the Cronbach's α values of the five constructs were 0.91, 0.88, 0.85, 0.84, and 0.94 respectively. This confirms that the questionnaire had high reliability.

Adopting the online satisfaction inventory of Wu (2003) and Yu (2005), we measured participants' online satisfaction in four dimensions: course content, learning outcomes, learning environment and relationship. Participants indicated their levels of agreement with 25 statements on a 6-point Likert scale (1 = strongly disagree, 6= strongly agree). The reliability of each factor in the questionnaire of online learning satisfaction was 0.86, 0.85, 0.82 and 0.92 respectively.

3.3. Data analysis

To address the research questions, the collected data were analyzed by applying a few statistical measures run by the Statistical Package for Social Sciences (SPSS) 15.0. First, the Pearson product-moment correlation analyses were performed to see the relationship among the three variables –big five personality traits, online learning motivation and online learning satisfaction. As a rule of thumb, correlations were less than 0.3 were deemed low or weak. Those in the range of 0.4 to 0.6 were moderate, and those were greater than 0.7 as being strong or high (Bryman & Cramer, 2004). Next, the data were subjected to regression analyses to determine the predictive power of each variable.

4. RESULTS AND DISCUSSION

4.1. Personality and learning motivation

Research question 1: What is the relationship among learners' Big Five personality traits and their on-line learning motivation? Among the Big five, which factors can predict their online learning motivation?

Pearson's product-moment correlation analyses showed that the personality and motivation had low but significant relationships(r= .206, p<.05). Linear regression was conducted to explore the contribution of big five in predicting online learning motivation. The amount of contribution of big five personality traits can account for 12.7% of the variance in motivation (R^2 =.155, adjusted R^2 change= 0.086, $p < .01$).

R^2 change indicates the amount of the contribution of each of the variables to the percentage of the explained variance. Specifically, as shown in Table 1, extraversion (R^2 change= 0.086, p<.01) contributed most variance to

motivation. This was followed by conscientiousness (R^2 change= 0.006, p < .01), which accounted for an additional 0.6 percent of the variable. On the other hand, Openness to Experience (R^2 change=.003, p > .01), Agreeableness (R^2 change=.001, p > .01), and Neuroticism (R^2 change=.0001, p > .01) did not have any significant contribution to motivation. Therefore, compared with other big five personality traits, extraversion and conscientiousness seemed to better predict students' motivation.

Table 1. Multiple regression of motivation by big five personality

Variable	R^2 change	p value
Extraversion	.086	.000***
Openness to Experience	.003	.470
Neuroticism	.000	.840
Conscientiousness	.006	.043*
Agreeableness	.001	.775

Note:*** p<.001

The results showed that extraversion and conscientiousness affected positively on learners' online learning motivation. People who were in extraversion were more active and willing to receive new learning style; so they had higher online learning motivation. Similarity, people who were classified into conscientiousness were achievement oriented and were willing to receive different learning ways to strengthen their professional ability; so online learning can activate their learning motivation. The results were in agreement with previous studies (Busato, Prins, Elshout, & Hamaker, 1999) which reported that conscientious and extraverted students were more achievement oriented, and individuals high in extraversion and conscientiousness had the strongest learning goal orientation (Payne, Youngcourt, & Beaubien, 2007).

4.2. Personality and learning satisfaction

Research Question 2: What is the relationship among learners' Big Five personality traits and their online learning satisfaction? Among the Big five, which factors can predict their online learning satisfaction?

To explore the relationship between learners' Big Five personality traits and their online learning satisfaction, Pearson product-moment correlation analyses were conducted. Although Big Five personality traits significantly correlated with online learning satisfaction, the strength of association was weak(r = .205, p < .01). Linear regression was conducted to explore the contribution of big five in predicting online learning satisfaction. The amount of contribution of Big Five personality traits can account for 12.2% of the variance in online satisfaction (R^2 =.151, adjusted R^2 change= .122, estimated standard error p < .001). Specifically, as shown in Table 2, Extraversion (R^2 change= .093, p < .01) significantly contributed most variance to motivation (9 per cent). This was followed by Conscientiousness (R^2 change=.072, p < .01), which accounted for an additional 7 per cent of the variable. However, the amount of contribution for Neuroticism (R^2 change=.008, p > .01), Openness to Experience (R^2 change=.001, p > .01), and Agreeableness (R^2 change=.0001, p > .01) were low and insignificant. It seemed to imply that Extraversion and Conscientiousness were the two more important traits among the Big Five in predicting online learning motivation. The results corresponded to the studies of Chou (2002) and Tsai (2001) in which they reported that Extraversion and Conscientiousness were positively correlated with satisfaction.

Variable	R^2 change	p value
Extraversion	.093	.000***
Openness to Experience	.001	.718

regression of satisfaction by big	Neuroticism	.008	.276
	Conscientiousness	.072	.001**
	Agreeableness	.000	.923

Table 2. Multiple online learning five personality

Note:*** *p*<.001

4.3. Online motivation and learning satisfaction

Research question 3: What is the relationship between learners' motivation and their online learning satisfaction? Among the factors of motivation, which factors can predict their online learning satisfaction?

Results showed that motivation had significantly high relationship with online learning satisfaction(r=.747, p<.01). Also, all of the five constructs of motivation, including escape, social contact, desire to learn, self-development and academic progress, were significantly highly related to four constructs of online learning satisfaction. The results were in agreement with Chuang (2008), who found learning motivation had a significant effect on learning satisfaction.

A follow up linear regression was conducted to explore each factor's contribution to online learning satisfaction. The amount of overall contribution of motivation can account for 57.4% of the variance in online satisfaction(R=767, R^2 =.588; adjusted R^2 = .574; Standard Error=10.65953; R^2 change=.588; F change=41.897, p < .001). Specifically, as shown in Table 3, self-development (R^2 change=.498, p < .001) significantly contributed most variance to online learning satisfaction. This was followed by social contact (R^2 change=.482, p < .001), desire to learn (R^2 change=.381, p < .001), academic progress (R^2 change=.334, p < .001) and escape or stimulation (R^2 change=.287, p < .001) which accounted for an additional 28.7 per cent of the variable. It proved that self-development and social contact were the two more important constructs among motivation in predicting online learning satisfaction. The findings correspond with the study of Blumenfeld, Kempler, & Krajcik(2006), who indicated that students' motivation was a crucial factor for their academic performance and learning satisfaction.

Table 3. Multiple regression of online learning satisfaction by motivation

Variable	R^2 change	p value
Academic progress	.334	.000***
Escape or stimulation	.287	.000***
Social contact	.482	.000***
Desire to learn	.381	.000***
Self-development	.498	.000***

Note:*** *p*<.001

5. CONCLUSION AND SUGGESTIONS

The findings of this study extend our knowledge of the influence of learners' big five personality traits and online learning motivation on leaning satisfaction. It also provides valuable information about the amount of contribution of these variables in online satisfaction. For this study, we know that extraversion and conscientiousness were the two important traits among the Big Five in predicting motivation and satisfaction. Compared with personality, motivation seemed to be a stronger predictor of satisfaction. Therefore, in order to increase EFL learners' online learning satisfaction, instructors and online program designers should design more interactive courses based on learners' personality traits and provide more interesting activities to motivate their learners in online learning.

Although the present study has yielded findings that have pedagogical implications, it has some limitations. First, there were only 153 participants in this study and the number of males and females involved in this study was not equal. For future studies, it would be beneficial to include more female students, and replicate this study on larger

and different populations. Furthermore, this research focused on the variables of personality traits, motivation on learners' online learning satisfaction. Investigating other potential variables across different learning systems is needed for future studies.

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The Role of Educators in Introduce Technology In Early Childhood Through Science Activities

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Abstract

Advances in technology closely related to science, with the development of science, the technology will also be growing rapidly. Therefore science is a great way to introduce technology to children. Technology is the application of scientific concepts. With the various concepts of science, man can create a useful technology to facilitate people in solving everyday problems. Indirectly when parents and teachers (educators) introduced the concept of science, is to introduce technology to children. Early childhood had a curiosity that is very high on the phenomena that occur in the environment. especially on the technology that is around children. But the child's curiosity about this technology is sometimes not appropriately stimulated both parents and teachers. During these educators had erred in introducing the technology on children. They tend to introduce sophisticated electronic equipment such as computers, laptops, tablets, gadsget, smartphones, and other. By way of introducing the technology through electronic device, can stimulate children to become users. Indirectly inhibit the children to think creatively in finding a technology. Should be able to make a child happy in finding a technology, not just users only. The process of finding a child in technology can be stimulated through simple science activities. This positive impact on aspects of child development and scientific attitude. Expected in the future, these kids are going to make a big change in the world through technology invented.

Keywords: Activity Science, Technology, early childhood

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Background

During this time parents and teachers with the technology to introduce advanced electronic devices such as laptops, tablets, smart phones, gadgets, and more. Indeed, these children look very modern and follow the times. Moreover, the sophisticated electronic devices have own prestige for owners and users. Behind the fame of existing electronic devices, stored real negative thing when children use them constantly. This makes children and kids addicted to using it more as a user are not alone.

Though parents and teachers should be introduced to the concept of technology is not the technology results in the form of an electronic device. With children recognize the concept of technology children will be motivated to create a technology. When someone creates a technology professional, of course, when childhood, he must know in advance the technology and enjoys. In order for a child enjoys the concept of technology, parents and teachers should introduce the concept of technology in a fun activity, namely through science activities.   .

Greatly affect the progress of science technology, with the development of science, the technology will also be growing rapidly. Therefore science is a great way to introduce technology to children. Technology is the application of scientific concepts. With the concept of science, can create a useful technology to facilitate people in solving everyday problems. So is the case with the children. When children do science activities, as well as children are finding a technology, though simple.

Science activities will have a positive impact on the children, not just on the introduction of technology, it can stimulate children to think creatively in finding a technology, it does not directly stimulate adult child later became a scientist. Direct positive impact on aspects of child development and scientific attitude. Later in the future, these kids are going to make a big change in the world through technology he created.

Based on the above explanation, that parents and teachers play an important role in introducing the technology in early childhood. The introduction of technology on children to the concept of technology, compared to the results of the technology. The introduction of technology can be provided with a fun activity that is through science activities.

B. Theory of the Study

1. Role of Parents and Teachers in Introduce Technology

Parents and teachers play an important role in introducing the technology on children. Not only as modeling for children, parents and teachers are a main gate that determines the child's first impression of the technology. Because with a good first impression, make children motivated to megenal more deeply about the technology.

The term technology cited by Badarudin (2006:122) mentions that the technology means the study (the Greek: logos, which means conversation, speech, word) systematic about skill (techne, meaning art, craft, or skill). Three centuries later, the notion of widespread technology, in addition to the mean machine, the definition also includes the way technology, processes, and ideas. In the twentieth century, technology is broadly defined as "ways or activities that allow humans alter or tamper with the environment (natural, human, and all creation)". By that definition, he has covered everything possible be done to improve human life. Parents and teachers how to introduce technology to children is to introduce

the benefits of the technology. That technology is a means used by humans to solve everyday problems that it faces.   .

This is supported by the National Science Teacher Association in Martin (2001:12) "Children should construct understanding of science concepts and processes, see aplications of science and technology to everyday life". This means that children must construct their own understanding of the concepts and processes of science and technology, to observe the application of science and technology on everyday life. In other words, in addition to its benefits, parents and teachers also have to introduce the concept and process technology that is very close to the child's environment, for the child will more easily find a way to solve simple problems in daily life through science concepts.

Engineering Technology". Reinforced by Kumar (2000:10-12) which states that "Basic Science Abstract Applied Science Based on this, it is clear that a technology created by the foundation of science. For the science very big influence on a technology. By teaching science to children as well as teach children to learn the concept and the process of finding a technology. So the role of parents and teachers in introducing technology in early childhood is to introduce the benefits, concepts, and processes simply from a technology through science activities.

2. Science Activity

Science is a systematic knowledge about the various things that are around us that can be verified. Science activities at school, very rarely involve children actively. Schools are more likely to give evidence in theoretical. Whereas in science learning children are expected to be actively involved in the process of finding the problem, determine the provisional hypothesis or conjecture, to what is the most appropriate way to handle it. The rights of children to actively participate during this constrained because the parents and teachers who do not understand what essence contained in a child's active involvement in the activities of science.   .

The National Science Teacher Association (NSTA) is extremely active in the reform of science education at all levels in Martin (2001:12) argues, the NSTA says that elementary science should emphasize learning science concepts and process through the use of activities that children involve; manipulating materials and thinking about the activity curricula should be organized around conceptual themes and should provide opportunities for children to study real-life, personal, and social problems related to science and technology.

Means NSTA is a very active association in the reform of science education at all levels. NSTA said that science should emphasize learning basic science concepts and processes through the use of activities that engage children in manipulating materials and thinking about activities in the curriculum should be organized on the theme of conceptual and should provide opportunities for children to learn about real life, personal, and social issues related to science and technology. NSTA based on active involvement of children in science activities is highly recommended. Both in the manipulation of material to think that eventually the child will have many opportunities to learn to surrounding environment.

Surely there are many positive benefits when children are active in science activities. In line with that expressed Lawson (2008:1) that,

Students develop scientific literacy trough active inquiry, problem solving, and decision making. With each activity program, student are encouraged to explore, investigate, and ask questions as a means of heightening their own curiosity about the world around them. Students solve problems through firsthand experiences, and by observing and examining objects within their environment. In order for young students to develop scientific literacy, concrete experience is of utmost importance-in fact, it is a essential.

This means that in developing the scientific literacy of a child can be done through the activity of an active investigation, problem solving, and decision making. With each program of activities, children are encouraged to explore, investigate, and ask questions as a means of enhancing their own curiosity about the world around them. Children solve problems through direct experience, and by observing and examining objects in their environment. So that preschoolers can develop science literacy, the real experience is very important and in fact, it is the most important. In other words that there are many positive effects and benefits when children are actively involved in running the activity of science. Where the real experience is the cornerstone of this activity.

Furthermore, Martin (2001:32) reveals "The six basic processes of science. They are as follows: "the basic processes in the implementation of science activities will provide many opportunities for children to engage actively and positively impact the child's ability to recognize and resolve simple concept that is simple problem around the environment in everyday life.   .
1. Observing, observing the child's activity in the objects, all the events, even the phenomena through the five senses.   .
2. Classifying, children in group activities, classify objects, events, and phenomena that children encounter in everyday life environments of children.   .
3. Communicating, child's activity in communicating a variety of objects, events, and phenomena encountered in the child's daily life with the child's own language. Obviously with simple language, both verbal and nonverbal.   .
4. Measuring, measuring the activity of the child in the extent to which objects, events, and phenomena observed child. Children were able to observe changes in the physical and concrete through the senses.
5. Predicting, in predicting a child's activity or making hypotheses or conjectures will be changes to objects, events, and phenomena that children observe through the five senses.
6. Inferring, concluding activity of the child in the child the facts observed through the proofs by using a simple experimental process. As well as comparing the predictions with the fact that going from a simple proof.

(McCormack & Yager, 1989; Padilla, nd) in Martin (2001:33) states "these 6 processes, Referred to as the" basic ". Process are fundamental to all scientific investigation. Each process you are asked to develop an activity of your own dealing with the process you can use in early childhood science classroom. "In other words, the above six processes, a fundamental process in all science activities. Any process can be developed on science activities for early childhood level, of course, with a much simpler process.

Science activities for young children is a simple science activities. Where children were introduced the concept and were actively involved in the process. This was disclosed by Tim Doctorrabit (2005:3) argues that science is the basis of various knowledge. Appropriate science learning will provide

the ability to think conceptually and develop students' logic. Thus, it is important to instill understanding to children from an early age that learning science is fun and very beneficial to their lives.

Science learning activities are divided into the paper, experiments, and games 1. Activities with paper, to teach children to understand the concept of science with various activities including: cutting, folding, and pasting paper, connect, classify, sort, and coloring. 2. Experiments, intended to make children familiar with the concept of science is not only a theory but as children thought to express the question of what, why, and how so that children get their own answers through experimentation activities they do.

3. Game intended to facilitate the understanding of concepts through a variety of fun games. to impact science learning will positively to the development of scientific attitude and child. Surely the five aspects of the development include: moral-religious, physical, cognitive, language, and socio emotion. Scientific attitude of a child involves, as expressed by Salandanan (2002:17-20) that,

Scientific attitudes is a way of thinking and reacting in an orderly, systematic and Methodical Manner. Commonly exhibited is an Analytic approach and a conscious effort to find clues or Evidences that may serve as instant guides in choosing a course of actions. Simple inquisitiveness can easily be Considered scientific as opposed to habitual, unaffected, easy acceptance of strange Happenings. An objective way of interpreting occurrences rather than a wiki way likewise reveals a scientific mind. The attributes of a scientific mind (critical-mindedness, persistence, creativity, responsibility, open-mindedness, curiosity, Objectivity, humility)   .

Means scientific attitude is a way of thinking and reacting in an orderly, systematic and methodical. Commonly exhibited an analytical approach and have a high curiosity to find clues or evidence that can serve as an instant guide in choosing a program of action or actions. Simple curiosity can be considered scientific as opposed to habit, is not affected, receptive and open to the strange happenings. How to interpret objective events rather than subjective manner and also revealed to the scientific mind; critical-thinking, perseverance, creativity, responsibility, open-mindedness, curiosity, objectivity, humility. By providing a stimulating science, will give children the opportunity to develop a scientific attitude.

So based on the above opinion, the science activities are activities of children in observing, classifying, communicating, measuring, predicting up to conclude the facts, objects events and phenomena in the environment through the five senses as a form of introduction to the concepts and the active involvement of children in activities that will positively affect aspects of child development and scientific attitude.

3. Linkages between Technology and Science

Science is the basis of a technology. Impact on the advancement of science an technology advancement. Such opinions expressed Kumar (2000:11) that the conventional wisdom about the relationship between science and technology is represented as a tree. If the roots are watered, the science, the fruit, in the form of technology that will automatically grow. In this case the technology is the result of the application of science. Which is when the science is well developed, it will be manifested on the

technological advances that good anyway.   .

Lowson further argues (2008:1) in view of the relationship between program hands-on science and technology (1) To relate science and technology to society and the environment, (2) To develop the skills, strategies, and habits of mind required for scientific inquiry and technological problem solving, (3) To understand the basic concepts of science and technology. This means that program hand-on science and technology that aims to link science and technology to society and the environment, (2) To develop the skills, strategies, and habits of mind required for scientific inquiry and problem solving in technology, (3) To understand the basic concepts of science and technology.

Gonzales (2005:10) He has 5 different models proposed for considerations, roommates take into account the views that have been more Influential in the relations between science and technology. In this he proposes 5 different models for consideration, in view of the relationship between science and technology.

1. Technology is reducible to science (ie, ontologically technology depends on science), roommates means that either it is applied science or is an application of science
.
2. Science is reducible to technology (ie, science depends on technology ontologically) 'roommates can be seen as an instrumentalist position insofar as science Appears as an instrument to dominate nature trough technology (a view held by some Philosophies focused on praxis, such as different version of pragmatism, Marxism ... or even nihilism)   .
3. There is an identify of science and technology. This thesis is a way of understanding "techno science", but is so strong that even its supporters-mainly contructivitist -try to emphasize the identity in methodological terms-as a common process-rather than in ontological terms (as being the same entity)
4. Science and technology are both ontologically and causally independent. It is a parallelist view: they move According to the same rhythm but without interaction   .
5. There is an ontological independence between science and technology, but they are in a causal interaction.

This means that (1) can be reduced to a science technology (ie, depending on the ontological technology of science), which means that the technology is applied science or a science applications, (2) Science is relegated to technology (ie science depends on technology ontological) 'which can be seen as an instrumentalist position as far as the instrument of science appear to dominate nature through technology (a view held by some philosophy focused on the practical, such as different versions of pragmatism, Marxism ... or even nihilism), (3) There identifying science and technology. This thesis is a way to understand the "techno science", but so powerful that even the supporters-especially contructivitist-try to emphasize the methodological identity in general terms-as a process-rather than in terms of ontological (as the same entity), (4) Science and technology independent both ontologically and causally or causation. This is the view parallelist: they move with the same rhythm but without interaction, (5) There is an ontological independence between science and technology, but they are in a causal interactions. 5 models of the relationship between science and technology to prove that they have a relationship and influence between each other.

Powered by Kilmer & Hofman opinion Brewer argues in "Science as the more speci" knowledge about specific phenomena, the processes used to collect and evaluated information ... and as a recently added aspect, (technology when defined as) the application of science to problems of human adaptation to the environment. Science means specifically as "knowledge about a particular phenomenon, a process used to gather and evaluate information and a new aspect was added, (defined as current technology) the application of science to problems of human adaptation to the environment". In this case again touted the technology as the application of science. And science is the basis for the development of a technology.

So the relationship between science and technology have clearly illustrated the various opinions of various experts from the above, science and technology have a relation to one another. Science a positive impact on technology, nor is the container application science technology. With children too young to know the science means to know technology   .

4. Early Childhood

Early Childhood is the young man who created God with all unique personalities, behavior, and appearance. Division called the age range of early childhood is children aged 0 to 8 years old. This statement is in line with Bredekamp: NAEYC in Deiner (2010:574) states "Developmentally Appropriate practice in early childhood programs serving children from birth through age 8". This means the DAP in early childhood programs serving children from birth through age 8 years. "In other words, children who are under 8 years of covering baby, toddler, toddlers, preschoolers and early school children referred to as early childhood   .

But the Indonesian government split into baby's early childhood up to 6 years. It is listed in the Ministerial Regulation No.58 (2009:1) that "In the process, the public has shown concern for the problems of education, parenting, and early childhood protection for 0 to 6 years with various types of services in accordance with the conditions and capabilities of existing , both formal and non-formal. "In other words, the Indonesian government established that the said younger children in Indonesia are children aged 0 to 6 years include: infant, toddler, toddlers, and preschoolers. Supported by the opinion of the reviewing Sheridan range of early childhood through the stages of play. Sheridan (2002:2) states that "It provides a detailed description of children's play from birth to 6 years, Including an outline of elements of spontaneous play in roommates most engage children during the early years of their lives." Opinions above means that provide a detailed description of play that carried the children from birth to 6 years. Broadly speaking, the elements of spontaneity play, performed most of the children involved during the early years of their lives. That is Sheridan believes that the process of spontaneous play is felt only on infants to preschool children. For the early childhood learning for the right done playing. Same play activities provide a fun activity for children is one of them with science activities.

Associated with providing science activities for young children. According to Tim Doctorrabit (2005:3) states that science is the basis of various knowledge. Appropriate science learning will provide the ability to think conceptually and develop students' logic. Thus, it is important to instill understanding to children from an early age that learning science is fun and very beneficial to their lives. In other words, science is given to early childhood, is a fun activity for the benefit of those in the future.

Based on the above theory, it can be concluded that early childhood conceptual thinking skills and develop logic through stimulation in the form of a fun science activities.

C. Conclusion

Parents and teachers have an important role in introducing the technology in early childhood. Stimulated the introduction of this technology through science activities. science activities are activities children in observing, classifying, communicating, measuring, predicting up to conclude the facts, objects events and phenomena in the environment through the five senses to solve everyday problems. This is done as a form of introduction to the concepts and the active involvement of children in science activities that will positively affect aspects of child development and scientific attitude. Indirectly to make children happy and motivated in finding a technology, not only to the user only. Later in the future, these kids are going to make a big change in the world through technology he created.

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The State of Technology and the Arts - Interactive Multimedia in Enhancing Culturally Responsive Pedagogy

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Abstract

The awareness in the diversity of using arts as a medium to infuse culturally responsive arts education classroom is on the rise. Despite gaining interests globally, it has yet to be introduced in Malaysian schools. This paper will use interactive multimedia as teaching tools and materials in enhancing culturally responsive pedagogical module. Using developmental research design, the study takes up samples consisting of sixty secondary school students of cross ethnicity and two arts education teachers. Findings from this study show that by 're-purposing' the technology and by including teachers as co-designers in the development of modules and teaching materials assist in creating cultural awareness and increases the knowledge regarding cultural diversity. Subsequently, the findings demonstrate that teachers are more culturally tolerant and students become more engaged in the learning process. There is yet to be any research performed in this area in the Malaysia setting.

Keywords: culturally responsive pedagogy; traditional craft

1.0 Introduction

The aim of this research is to develop a Culturally Responsive Pedagogical Module for Visual Art Education at the secondary school level. A culturally responsive pedagogy is a teaching and learning approach developed based on the knowledge of culture, and extant experiences that student from multi-ethnic backgrounds possess, built upon references and the performance styles of these multiracial students so as to make the learning process more relevant and effective to them. Rasool and Curtis (2000) as well as Gollnick and Chinn (2009) conclude and assert that a culturally responsive pedagogical approach is an important fundamental component for a multicultural education. At the international level, research in the field of a culturally responsive pedagogical approach is not new. Although researches and critical writings on the approach of a culturally responsive pedagogy are many, they are more oriented toward theoretical analyses and researches in the field of language literacy and special education.

Research into a culturally responsive pedagogical approach in arts education is still lacking and is in need of more in depth studies. Consequently, the lack of research references in the approach of a culturally responsive pedagogy in arts education at the global level as well as the lack of research at the local level has paved the way for the need to conduct a more comprehensive study in the field. Hence, these researchers feel that it is most appropriate for a study on the development of a culturally responsive Visual Art Education module at the secondary level be conducted in order to aid teachers to integrate and to implement a multicultural education in the teaching and learning practices at schools with the aim of enhancing students' knowledge and awareness regarding the elements of art and culture inherited by each race that makes up the multiracial society in Malaysia. It is also hoped that with the existence of this culturally responsive pedagogical module for the Education of Visual Art at secondary level, there will be an improvement in students' interest and academic achievements and that they will become more responsive towards their own culture and those of others.

1.1 The Development of Interactive Multimedia Teaching Material

According to Norasiah Abdullah, Nor Risah Mat Zain and Rosnah Ahmad Zain (2009), education technology fulfils the role as a teaching aid material which constitutes an important component to teachers. Classroom activities require interesting and creative teaching materials in order to inspire students to learn. In developing the teaching aid materials for this culturally responsive pedagogical module for traditional craft in Visual

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Art Education for secondary schools, these researchers have chosen to develop an interactive multimedia teaching material in the form of a *Microsoft Power Point'* slide presentation so as to make the process of teaching to be more effective.

These researchers used the *'Microsoft Power Point 2010'* software as the main authoring tool for the interactive multimedia teaching material. This software was chosen due to its advantage as being universal software that is easily accessible to all computer users. This software also has the capability to operate at multiple levels of usage consisting of multimedia authoring software, graphics software and animations as well as object-oriented programming that are uncomplicated and effective.

The choice of Microsoft Power Point 2010 software as the main authoring tool was also based on the suggestion of Koehler and Mishra (2005) in their research that encourages us to make use of existing technology or to *'re-purpose the technology'*. Bearing in mind this suggestion of Koehler and Mishra (2005), these researchers feel the usage of Microsoft Power Point 2010 software to develop the interactive multimedia teaching material for a culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools will enable teachers to be directly involved as co-designers in the improvement process whereby teachers may gain access to the interactive multimedia teaching material that has been developed and to allow them to add new information from time to time. This suggestion corresponds with the proposals presented by Brown and Duguid (2000) and Fischer and Giaccardi (2006).

2.0 Background of the Research

Multicultural education has long been an issue at the global level. Researches and critical writings in the field of multicultural education were first mooted after the break of the Second World War Banks (2010) elucidated that the outbreak of the Civil Rights Movement was responsible for the introduction of the Multicultural Education in the United States in the 1960s. Among the better known researchers who are still actively pursuing the study and critical writing of multicultural education until today are Banks (1989), Nieto (1992), Banks and Banks (1993), and Grant and Sleeter (1993). To date, the research of multicultural education that broaches into the field of specific curriculum such as language and arts education is gaining momentum throughout the world that it produces new researchers such as Jacobs (2002), Hatton (2003), Glazier and Seo (2005), Anita Malhotra (2006), Bastos (2006), Gina Martin (2006), Graham (2009) and a host of others.

In Malaysia, the study of multicultural education is also receiving more attention from academicians. However, a majority of the researches conducted are set towards theoretical analyses and general perspective either at the school level or at the level of institution of higher learning. These local researches include those conducted by Najeemah (2005:2008), Raihanah (2009a:2009b), Malakolunthu, Saedah and Rengasamy (2010), Malakolunthu (2011) as well as Abdul Razaq, Norhasni, Zalizan and Anisa (2011). In his research, Samsudin (2010) used comics as a teaching aid material in Malay language subject which saw the integration of a multicultural education element. Likewise with the research performed by Ahmad Ali, Zahara and Abdul Razaq (2010) pertaining to the effectiveness of a multicultural approach in the national integration of history subject. Badrul Isa (2006) had included to consider the issue of multicultural education within the the context of Visual Art education in Malaysia but once again, the consideration that he put forth was limited to theoretical analysis and general perspective only. These researchers feel that the time is ripe to venture into the need to focus and establish a research in the application of theory in P&P practices in schools.

As such, the research in the development of a Culturally Responsive Pedagogical Module for Visual Art Education for secondary school is not only important but meets current requirements. This pedagogical module will provide the opportunity for a diversity of cultures to be exposed to students by improving and purifying the Visual Art Education curriculum. Through this culturally responsive teaching, teachers are able to teach Visual Art Education while incorporating elements of culture or art from the Indian or Chinese communities in a Malay handicraft lesson, for example. This way, students indirectly learn art in a comprehensive manner as it encompasses every race from the context of history, medium or motive employed by certain races. This classroom process may be able to inculcate sensitivity and tolerance among students of different backgrounds and cultures.

3.0 Research Problem

UNESCO (2010) advocates a school curriculum that is based on the principle of equality and to ensure that student's combat discrimination and stereotyping involved in the development of multicultural education in a learning environment. Current researches in the field of multicultural education show that multicultural curriculum strategy that emphasizes a holistic approach encourages students to achieve better (Bank & Bank,2004; Pang, 2003). The research conducted by Najeemah (2005) showed that the practice of multicultural education among teachers in Malaysia is below the desirable level. The teachers involved in the research adduced four reasons for their lack in

practising multicultural education in schools. Firstly, teachers do not know or do not understand as to what constitutes a multicultural education. Secondly, teachers lack the knowledge in applying the pedagogical approach relating to an effective multicultural education. Thirdly, teachers do not receive any encouragement to learn about a pedagogical approach that leads to multicultural education. Fourthly, teachers lack the awareness of their full responsibility as educators to prompt them to utilize a pedagogical approach relating to an effective multicultural education. The research carried out by Abdul Razaq, Norhasni, Zalizan and Anisa (2011) also suggested that the Ministry of Education Malaysia (PKM) seeks a mechanism to improve on the degree of acceptance toward the issue of diversity in schools among teachers in order to ensure that the quality of education is one that is free from any form of prejudice toward any race in Malaysia. Malakolunthu (2011) is of the opinion that to successfully implement and achieve the aim of an effective multicultural education, emphasis should be placed on several critical actions which include the aspect of developing the professional teacher, the development of the curriculum framework, the pedagogy strategy, teaching materials and textbooks as well as the evaluation process.

It is evident here that we need to introduce a multicultural responsive pedagogical approach system that provides more room to the element of knowledge and awareness of the diversity of culture to assist teachers in the matter. In addition, this module will create the opportunity for the sharing of knowledge to students for them to become more sensitive to the practice of culture of the society around them. This is in tandem with what was proposed by Mitchell (2009) who suggested that specific exercises will help teachers to generate understanding regarding the diversity of culture in the minds of students. Subsequently, students need to be exposed not only to the recognition of various cultures, but also to look for similarities that exist in their respective diverse cultures. This will prevent them from being culture-illiterate or turning into an ethno-centric group. One of the aspects that need to be given attention to is the art that the multiracial society in Malaysia possesses and which is shaped through the practice of their culture. Gina Martin (2006) stressed that art plays a major role in a multicultural education as it inherently exists in the context of any culture. Hence, it is imperative for the young generation to have an awareness of the cultures of Malaysian society with a high degree of aesthetic value, as well as to possess imaginative, critical, innovative and creative minds. Art can be one of the ways or tools to build and strengthen a harmonious and integrated society that is culturally responsive.

There are constraints from the aspect of reference materials such as books and articles that touch on the culture of Malaysian society particularly on other than the Malay society like the Chinese, Indian and Indigenous groups as well as the various tribes from Sabah and Sarawak with regard to their culture and heritage arts have resulted in the lack of knowledge and awareness of their customs. This makes learning and understanding the essence of these groups' customs and community arts difficult for every strata of society. It is possible that these materials are written in that particular society's languages like the Chinese or Indian language and that these materials are not published for public reference. It is of utmost importance for all of us to own these reference materials on the subject matter of customs and community arts for the sake of teaching and learning especially for the young generation in order to empower them with knowledge about their own community and others so that they will not be counted as a generation that is ignorant of their own culture as stated by Moncrief (2007) whereby this condition may give rise to certain segment of society to be 'blind' to the effects of culture when there exists a dominant culture in a society as what happened to the dominant Euro-Americans.

4.0 Research Objective

The aim of this research is to explore the experiences of teachers during the conduct of a culturally responsive pedagogical module for Visual Art Education for secondary schools and to apply the multimedia interactive teaching aid material that has been developed.

5.0 Methodology

This research applies the Design and Development of Research approach (Richey & Klein, 2007) that focuses on the processes of developing a Culturally Responsive Pedagogical Module through the subject of Visual Art Education at secondary schools. In line with the research aim, this research has three phases that contain specific procedures following the sequences outlined in the ADDIE Model. Phase 1: (Analysis), Phase 2 (Design and Development Process) and phase 3 (Implementation and Evaluation Process). Every procedure differs according to its specific phase in the development of the module. For the purpose of this presentation, these researches will discuss the research findings for Phase 3: (Implementation and Evaluation).

5.1 Interview

To identify the benefits and effectiveness as well as the weaknesses of the module, in addition to understanding the experience of the teachers conducting the teaching and learning process by using the Culturally Responsive Pedagogical Module for Traditional Craft in Visual Art Education for secondary schools and the interactive multimedia teaching material that has been developed for improvement purposes, these researchers have elected to use interview as the approach for the research. For the purpose of accumulating data, researchers will carry out an in-depth interview on teachers who use the pedagogical module that thus has been developed. The rationale behind the choice of interview as the approach for the research by taking into account several aspects and characteristics of qualitative research as stated by McMillan (2008) and Creswell (2009).

5.2 Research Participants

Research participants for Phase 3: Implementation and Evaluation will be selected using the Purposive Sampling approach in view of the fact that the research participants are teachers and students who are undergoing the process of teaching and learning applying the culturally responsive pedagogical module for Visual Art Education in secondary schools and the interactive multimedia teaching material. In this research, the participants chosen were two experienced teachers of Visual Art Education subject in a national secondary school. The selection of research participants were also motivated by several factors which include:

  i.   Background of the subject taught
 ii.   Teachers' experience in teaching PSV subject
iii.   Teachers' experience in using a culturally responsive pedagogical module for Visual Art Education in Secondary schools.

5.3 Data Analysis

For Phase 3: Implementation and Evaluation, narrative analysis was be used for data obtained from interview sessions conducted on two teachers who taught using the module and the interactive multimedia teaching material.

6.0 Findings

Views and experience of teachers toward the culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools and the presentation of the interactive multimedia teaching material.

The research findings discussed in this section was based on the analysis of the interview transcription conducted on both the Visual Art Education teachers chosen through the purposive sampling approach whereby these Visual Art Education teachers were involved in the teaching of the culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools developed by researchers. For a more in-depth discussion regarding the teachers' perception on the culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools that has been developed, researchers will make the analysis based on the following themes:

- New experience and knowledge
- High potential for module to be integrated in the current curriculum
- New pedagogical approach that is responsive to the current multicultural education Visual Art Education

a.   New experience and knowledge

Overall, both teachers gave highly positive responses regarding their experience in handling a culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools and the presentation of the interactive multimedia teaching material. This is evident from what was stated by one of the teachers:

Cikgu Adi stated that:

As for me puan …so enjoyable lah …..my experience aaa….. teaching the module is a new experience because the subject aaaa…….I have never taught this subject before except *tekat*. Aaaa I mean those Chinese and Indian craft activities that I myself had not learned before this ….. If like ah…… observe what is Indian embroidery …..aaaa…… and that lantern, never before whether at school during practicum a long

time ago or in the art and art design programs at the Education Faculty before .... as for me …..aaaaa……..
(L31-37:Respondent 1:22 Oct 2012)

He added:
even as a teacher I myself was excited…..when teaching this module I myself had fun learning how to make a lantern with Indian embroidery .... further ... I learned many new facts like its history ....to me, when there is a module like this teachers will automatically become more responsive and aware of the cultures among students ……*(L171-175:Respondent 1:22 Oct 2012)*

Further, Cikgu Raiha said:
even for me myself ...... more homework on Chinese and Indian cultures before teaching this module ... afraid that students will not understand ... so I myself must be fully familiar with the craft to be taught ..... then I realized ..... actually there are much that we do not know about the customs of other people or races ... so, as teachers ... we should learn more about crafts ... other races' culture ... because we are ignorant of all these ....I think we can become closer with our students ..... that sounds fun ..... when we can share with our students ... I noticed when I talked about the crafts of other races .... students become more comfortable to interact with me .... as if they are not shy or intimidated by us ... it gives them the impression that we are more sensitive and concerned about their culture .. not just the culture of the Malays only ….*(L176-187:Respondentt 2:22 Oct 2012)*

b.   *High potential of module to be integrated into the current curriculum*
Both teachers asserted that this culturally responsive pedagogical module for traditonal craft in Visual Art Education for secondary schools that has been developed is extremely suitable to be integrated into the Visual Art Education curriculum since the existing curriculum only emphasizes on the crafts of the Malays only. Below are the statements from both teachers:

Cikgu Adi stated that:
it is a good approach because it exposes urm what do you call it ... the diversity of culture of the Malaysian Malay, Chinese and Indian and also the Bumiputra to be learned together in the context of the given module lah ... aaaa….further ….. actually students also don't know about the crafts of other races….lah *(L37-42:Respondentt 1:22 Oct 2012)*

Further, Cikgu Raiha stated:
my opinion ah…… like this ah……..this Culturally Responsive Craft module is actually very suitable for schools because we know even in schools there are a diversity of Malay Chinese Indian cultures so..aaaaa……. mostly if we look at the art education syllabus um……. much is emphasized on the Malay traditional craft all like us um…… like this module there is *tekat* um……. and then handicrafts ah…… Chines Indian so from there we ah….. indirectly learn ah….. very ah……. interesting ah…….. the activities are very interesting lah. I think puan ... it is time ... our psv .aaa…..has ….new things like this module …..then only students become more interested to learn *(L44-53:Respondent 2:22 Oct 2012)*

She added:
This module is very suitable for PSV curriculum ….. in my opinion we and Malaysia have diverse cultures ... they will learn the cultural crafts of every ethnicity la …...*(L390-392:Respondent 2:22 Oct 2012)*

c.   *New pedagogical approach that is responsive to multicultural education*
Both teachers opined that this culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools that has been developed is a novel teaching approach that can assist teachers in the integration of the elements of multicultural education over the existing curriculum in tandem with the aspiration of 1Malaysia. According to them:

Cikgu Raiha stated:
this module is timely .... aren't we now embracing the concept of 1Malaysia….. by right all these students have already learned or we must expose about the traditional craft of all races ….. *(L145-148:Respondent 2:22 Oct 2012)*

Cikgu Adi explained:

> As a teacher I myself was excited..... when teaching this module I myself had fun learning how to make a lantern using Indian embroidery ... furthermore .... I learn many new facts, for example its history.... to me when there is a module like this teachers will automatically be more responsive and sensitive to the cultures that exist among the students ….*(L171-175:Respondent 1:22 Oct 2012)*

Cikgu Adi added:

> The learning outcome from this module is effective on the students because.... now there is the 1Malaysia concept it's like we are strengthening that concept of 1Malaysia lah. Meaning the education transformation happens indirectly ….., based on culture….. I totally agree if this module can be integrated into the existing PSV curriculum today .... Really ….this culturally responsive modue is ......one……product-based teaching and learning process that is considered ... this is really a culture ….*(L354-360:Respondent 1:22 Oct 2012)*

The strengths and advantages of a culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools and the presentation of the interactive multimedia teaching material.

To discuss the research findings in this section obtained from the analysis of the interview transcriptions conducted on both the Visual Art Education teachers who were involved as the teaching staff in the culturally responsive pedagogical module for traditional craft in Visual Art Education for secondary schools that the researchers developed, the researchers will make a thorough analysis based on three themes which are; improves two-way communication, effective tools and teaching aid materials enhance IT skills, module has high potential to be integrated into current curriculum.

a.   Improves two-way communication.

Both the Visual Art Education teachers who conducted the teaching and learning process based on the module developed by the researchers agreed that a culturally responsive pedagogical module of traditional craft in Visual Art Education for secondary schools have the features for an effective communication and two-way interaction.

Explained Cikgu Raiha:

> …..interactions do exist ... and to me indirectly when teachers are supplied with a module complete with an interactive multimedia teaching aid material like this …..*(L124-126:Respondent 2:22 Oct 2012)*

Cikgu Adi added:

> In terms of two-way communication and interactions between teachers and students, it is obvious that they exist …..because the students gave such positive responses during P&P….many asked all kinds of questions ... when I gave the students chance to give more comments ... they would comment .... some commented about motives, …aaaa….colour … all kinds lah …..*(L130-133:Respondent 1:22 Oct 2012)*

b.   Effective tools and teaching aid material enhance IT skills

Based on the analysis of the interview with both Visual Art Education teachers who used the module developed by the researchers, on a very positive note they stated that the tools and teaching aid material provided together with the module are highly effective and their IT skills improved after using the culturally responsive pedagogical module for traditonal craft in Visual Art Education for secondary schools.

Cikgu Adi stressed that:

> one thing that I think is good when using this module …ar….Because the approach is by way of multimedia and it is student-centered and teacher-centered means students can give their attention from the attraction of its audio, music, videa and visual and as the likes. So students could get attracted ……could get attracted by what was presented by the multimedia. From another angle, maybe ..... maybe ah ... to the teacher handling the module will find it easy to use the multimedia. Just click it ……. information comes out…..I really like a multimedia presentation that only used power point because it is easy to use as I think everybody already has the basic …..to me, it is easy to add any new information ….no need for teachers to take the trouble to learn a new software …not like there is a courseware that is not user friendly …like using a director ....aaaaa.... or flash….because not all computers have those and …sometimes it is too

heavy….cannot even support it …. in the end, teachers are reluctant to use it …......*(L100-113:Respondent 1:22 Oct 2012)*

Cikgu Raiha stated:

that is true …. when there are tools and teaching aid material as complete as this module then I think it is no longer difficult to teach ….Because we know nowadays technology ah…..is widely used in schools but not all schools ……. so from the aspect of multimedia technology it attracts students to learn because if we are used to anything, chalk and board so it is rather effective for students to learn from whiteboards. So multimedia is even more attractive to students …..*(L114-119:Respondent 2:22 Oct 2012)*

She added:

Teachers can also enhance their ICT skills ….because of the interactive multimedia teaching aid material…. this can be improved by teachers …in case they have new materials ….…..*(L127-129:Respondent 2:22 Oct 2012)*

Cikgu Adi also commented on the tools and teaching aid material found in the module:

The use of all those teaching materials was very helpful lah ….haaa…..(laugh)…. plenty of object-based learning material there …… to make P&P more interesting and effective …aaaa… because students can touch can see …aaaaa…….. can feel. *(L330-333:Respondent 1:22 Oct 2012)*

He added:

Actually ABM – teaching aid tool like …this OBL…… only one but it can be used in many classes. Meaning it's not burdensome and they can make a collection for teaching. *(L331-338:Respondent 1:22 Oct 2012)*

Cikgu Raiha's reaction :

Furthermore……. that powerpoint is already in the module set ….. teachers only need to add information if necessary……the OBL …. by right the school needs allocation ….. as teaching material and tool …..let it be a collection in the art room….all art teachers can share them ……like what Adi said….*(L334-338:Respondent 2:22 Oct 2012)*

Cikgu Adi added more:

So, when there is a module like this it facilitates teachers to …..what's that, teaching material lah …..so …..we need to guide properly lah….because all information is already in the module we only need to deliver the lesson ….*(L369-371:Respondent 1:22 Oct 2012)*

7.0 Conclusion

Results in this study prove that teaching tools and materials used in the Culturally Responsive Traditional Crafts Pedagogical Module for Visual Art Education at the secondary school level is very effective and succeeds in increasing the teachers' IT knowledge and skills. Additionally, the findings corroborate with the findings by Kampouropoulou, Fokiali, Athanasjadis and Stefos (2011) that multimedia technology is very supportive in the production of an art piece among school students. Moreover, the results give light that the Culturally Responsive Traditional Crafts Pedagogical Module for Visual Art Education improves teachers' level of dedication and responsiveness. Subsequently, the module used in this study is timely and corresponds to the claims highlighted by teachers in Najeemah (2005) and Malakolunthu et. al. (2010) on matters such as teachers must be equipped with relevant sources, trainings, and exposures to culturally responsive teaching.

The Malaysia Ministry of Education is able to provide teachers with the knowledge, preparation and exposures needed for art teachers in the form of training in service (LADAP) to empower teachers who are culturally responsive. Therefore, findings from this research also prove that in developing the application of interactive multimedia the Department of Education Technology needs to raise the awareness for teachers to utilize 'repurposing the technology' technique as suggested by Koehler and Mishra (2005) based on knowledge, skills and aptitude of the teachers without overloading them with the current teaching loads.

The results also prove that the Culturally Responsive Traditional Crafts Pedagogical Module for Visual Art Education improves teachers IT skills and accelerates teaching and learning. It is also encouraged that teachers to be given encouragement and be permitted to be co-designers in developing and reconstructing the module and designing teaching materials. Teachers may contribute in designing the presentation of interactive multimedia in which they will have access to information and upgrade the materials which they co-designed aligned

With the findings and suggestions listed above, it proves that teachers are more dedicated in performing their duties and are more culturally responsive through co-designing. Subsequently, they improve in developing their Technological Pedagogical Content Knowledge (TPCK) as proposed by Koehler and Mishra (2005). Based on the study, experiences through workshops and courses are not effective in instilling and developing in depth understanding to assist teachers to use new technology in performing their jobs.

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The Underlying Reasons of Students' Success or Failure in Accounting Lessons, A Suggested Model: The Case of KMU - ASU

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Abstract

There is great importance of accounting lessons on the professional careers of students that studied economics at universities. Most of the lessons includes theme of accounting, finance, tax, and law. In this context, the success or failure of students in accounting lessons affect both the students' professional careers and undergraduate education period.

The success and the failure of the students at accounting lessons depend on several factors. As an example of these factors, educator factor: the ability of imparting the theoretic information to the practical, physical feasibility: the laboratories besides classes, etude, working, and counseling services etc.

This study, at the first part, has a sample of two similar universities. Accordingly, this study aims to assert a comparison of the students which studies at similar cities, universities, and departments, failure or success of accounting lessons.

At the second part of the study, a model have been suggested which has prevented the factors that causes the failure of accounting lessons. On the other hand, the model also have been mentioned that success should be an organizational culture which has based on the life-long education.

Keywords: Accounting Education, Entrepreneurs, Accounting Information System

1. Introduction

Knowledge, which is one of the most important capital factor in today's competitive environment, should be exact, proper for need, understandable, significant, reliable, objective, right, comparable and presented in time during the decision process for current and future.

Accounting, which is assistant function of business, provides financial and non-financial information that management needs to take routine and strategic decision (AAA[169], 2013). It also helps current and potential investors to or not to invest with financial data (AICPA[170], 2013). To advance accounting effectively and efficiently while it stands those important functions in the business, accounting education that combines theory and practice is needed.

Uçma and Beycan (2009) define accounting education as "inform students about determining, gathering, measuring, processing, saving, checking validity of information that is useful for business decisions, summarizing as reports in an easily understand way, using the result of examination of information and develop skills to use that information." According to AICPA (2013), the objective of accounting education is to give high-level of accounting education for preparing students to the business and make them graduate. While concept and objective is examined

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in this respect, it is understood that the harmony of theory and practice is significant for effective and efficient accounting education. Korukoğlu (1998) organize the objectives of accounting education as follows;

- To constitute business record system in accordance with generally accepted accounting principles,
- To reach business goals rapidly and effectively by educate people toward basic concepts of accounting,
- To create and develop accounting standards,
- To teach accounting applications and reporting techniques, to transfer right and reliable information to the management,
- To enhance knowledge and skill of accounting, to raise the quality of personnel,
- To follow current developments and changes related to accounting applications,
- To represent technological developments into the accounting applications,
- To inform personnel about legal regulations by following changes and developments,
- To follow developments on managerial accounting section,
- To minimize errors and raise productivity,
- To educate beginners, to provide an understanding at working personnel about what the company's structure and conditions of accounting system,
- To provide communication and coordination among branches by informing other executives (technical staff etc.) about accounting
- To provide teaching professional ethics codes oriented at application.

The objective and significance of this study arise at this point. Faculty of Economics and Administrative Science students' qualified accounting education is an important factor for students' both university and professional life's success or failure. Hence, a model is going to be constituted.

2. Literature Review

In this section, results gained from academic studies about accounting education will be reviewed and presented.

Sayın, Yeğinboy and Tektüfekçi (2005) make a research about evaluation and measurement of effectiveness of accounting and finance education for students from Faculties of Economics and Administrative Science. It is revealed from the study that students should be informed about qualities, opportunities and process of accounting profession, training opportunities should be created for students during their university education because of the fact that accounting education comprise of both theoretical knowledge and implementation and, financial means should be enhanced in order to prevent the negative effect of crowded classroom.

Nouri and Shaid (2008) examine students' learning and attitudes to Powerpoint presentations' effect, while Green, Reinstein and Mc Williams (2000) research the performance differences between students have education with conventional teaching methods and students have education with computer supported education methods. It is founded that information technologies supported learning methods different from conventional increase the learning efficiency at accounting education. Usage of information technologies also provides combining theory and practice by using more visual image and having effective time management.

Özcan, Ünal and Helhel (2009) state that female students are more satisfied about accounting program rather than male students and female students think that accounting program enables students to find better jobs at the study with title of "The Relationship Between The Gender and Formation of Accounting Program Students and Their Attitudes Towards Accounting Careers."

Harwood (1999) investigate classroom assessment techniques (CAT) in accounting education in his study. Differences occurred on student's learning feature while teacher uses one CAT or more than one CATs is observed in the study. In consequence of this study, it is reached that evaluation of student's success or failure with single criteria creates scarce and wrong results, hence it should be evaluated with multiple criteria.

Çelenk, Atmaca and Horasan (2010) who make a research about assessment of students' perspective toward accounting profession examine the impact of teacher factor on students' tendency to accounting profession. It is found that teacher factor is effective on choosing accounting profession. Study also states that high rate of job placement in accounting profession is an important factor for students to choose accounting profession and students who follow developments at accounting profession are being more satisfied with accounting profession.

Kealey, Holland and Watson (2005) examined that whether critical perspective to accounting principles have impact on students' performance. As a result of the study, it is reached that basic accounting principles need to have critical thinking feature.

Demir and Çam (2006) reached that insufficient use of accounting application during accounting education and ignorance of student's satisfaction are the reason of failure at the study where they examine negative factors that affect accounting department students during accounting education. The other findings of their study are as follows;

- Students want to work accounting related departments,
- While students are pleased to study at accounting department, their tendency to choose accounting department again is low,
- Lack of interest of students to the profession and again lack of future goals are important factors that affect success.

Chiang (2008) investigate the impact of teachers' use of case studies on student performance which are performed from real accounting professionals at managerial accounting courses. Collecting, saving and reporting of financial transactions' documents are not only routine operations, but also acquired information is historical fact. Managerial accounting is in use to make future oriented decisions. In this respect, it is reached that in addition to historical facts, transferring and analyzing real cases to managerial accounting to minimize risks and uncertainties raise students develop a lifelong learning philosophy and have a mission.

Gençtürk (2007) aimed to measure vocational school students' success at accounting-finance lectures in comparison with their high school graduation and education style. He stated that students who took accounting and finance lesson at high school level are more successful at general accounting lectures.

Baker and Logan (2006) investigate in-class activities at learning methods. The study revealed that besides conventional learning, in-class activities where students participate actively increase students' learning efficiency and adopted as a professional role. It is reached that these cases provide students' exploration of his/her own skills, increasing and adoption of his/her interest about accounting profession.

Bekçi, Titiz and Ömürbek (2006) stated that students consider that they can use software programs which they learn during the accounting lectures in different areas. Another significant finding is the fact that while the computer laboratory is open for student use after lectures increase the students' success. In this research, they suggest making computerized accounting course compulsory lessons in faculties and vocational schools as computerized accounting courses provide implementation of accounting knowledge and gain to use this knowledge after school.

When studies about teaching methods investigated, it is seen that Bashir (2000) study open learning, Bremser and White (2000) deal with learning by trying, Nikolai (2006) research active learning and Norman et al. (2004) explain learning with collaboration.

Otlu, Durmuş and Solak (2012) mention vocational schools' mission of educating intermediate staff. They stated that bringing new responsibilities to accounting executives in parallel with new developments that new Turkish Trade Act brings. Another highlighted point is with these new responsibilities, there will inevitable work load. With this respect, the study suggests to close accounting and tax departments of vocational schools and constitute faculty departments.

3. Research

- *3.1. Extent and Method*

The extent of the study is students from Aksaray University (ASU) ile Karamanoğlu Mehmetbey University's (KMU) faculty of economics and administrative sciences. There are Business Administration, Economics and Public Administration departments at related faculties.

Constraints of the study are as follows;

- Since there is not sufficient accounting education in Public Administration departments, students from this department exempt from the research.
- Due to the fact that there are no third and fourth year students at ASU Economics department, students from this department exempt from the research. Same restriction is made for KMU Economics department to be able to make comparative analysis.
- Research conducted on Business Administration department third and fourth year students since it is considered that they had sufficient accounting education.

The data of the research is collected from ASU and KMU Business Administration students. Total 3rd and 4th year students of ASU, Faculty of Economics and Administrative Sciences, Business Administration department is 465 and 147 of them respond the survey. Likewise, Total 3rd and 4th year students of KMU, Faculty of Economics and Administrative Sciences, Business Administration department is 600 and 197 of them respond the survey. Total 3rd

and 4th year students of both universities are 1.065 and 344 of them participate the study. 5-point Likert scale was used during the developing statements and data is analyzed with SPSS 20 software program. In the beginning, it is thought that comparative analysis would be meaningful between two university students. However, there were no significant result found after conducting comparative analysis, that is why analysis is made after colliding two datasets from two different universities. Reliability analysis has been made by Cronbach Alpha method and the coefficient is seen on the table below.

Table-1 Reliability Coefficient

Number of Survey	344	*Number of Statement*	38	*Alpha Coefficient*	0.736

When all statements added to analysis, reliability coefficient is found 0.736. The value of coefficient shows that reliability of the survey is at desired level.

- *3.2. Objective*

The objective of the research is to create a model by presenting the factors influencing ASU and KMU students' success or failure on accounting education

- *3.3. Findings and Analysis*

Total number of respondents is 344 and 147 of them are male students and 197 of them are female students. Demographic data of respondents is given at Table 2.

Table-2 Demographic Findings of the Respondents

	Frequency	Percentage (%)
Gender		
Male	147	42.7
Female	197	57.3
Age		
17-20	8	2.3
21-24	303	88.1
25-30	28	8.1
31 and more	5	1.5
Type of Graduated High School		
Trade Vocational High School	56	16.2
Vocational High School	48	14
Science High School	26	7.6
High Schools gives Social Sciences Education	214	62.2
The Reason of Choosing The Faculty		
Professional Career	96	27.9
Legal Obligation	41	11.9
Family Related Choices	30	8.7
Personal Choices	177	51.5
Intended Area of Profession		
Banking and Finance	104	31
Public Accountant	27	8.1
Self-Employment	14	4.2
Public Sector	138	41.2
Marketing	18	5.4
Entrepreneurship	28	8.4
Others	15	4.3

The most salient demographic finding according to Table 2 is 62,2% of respondents (n=214) are graduated from High Schools gives Social Sciences Education, 16,2% of them(n=56) from Trade Vocational High School, 14% of them (n=48) from vocational high school and 7,6% of them (n=26) from Science High School.

Table-3 Frequency, Percentage, Mean and Standard Deviation Values of the Impact of Accounting Lectures on Career and Personality

The Impact Of Accounting Lectures On Career And Personality	Certainly Important-Important		Neutral		Certainly Unimportant-Unimportant		n:344	
	f	%	f	%	f	%	$\overline{x}$	s
It revealed my leading skill.	159	46.2	89	25.9	96	28	2.85	1.131
I had the skill of analyzing professional theory and practice together.	210	61.1	68	19.8	66	19.2	2.51	1.559
It provided that I have social responsibility.	216	62.8	58	16.9	70	20.3	2.41	1.152
It improved my analytic thinking skill.	229	66.5	66	19.2	49	14.2	2.29	1.084
I had perpetual learning understanding.	190	55.2	97	28.2	57	16.6	2.48	1.093

When Table-3 is examined, it is seen that accounting lectures improve students' analytic thinking skills, as a result of that they can have a critical perspective; it provides students to have social responsibility; it gives perpetual learning skill and students are able to use this in their daily lives; finally it also provides the skill of analyzing professional theory and practice together.

Table-4 Frequency, Percentage, Mean and Standard Deviation Values of Productivity Level of Accounting Lessons

Productivity Level Of Accounting Lessons	Certainly Important-Important		Neutral		Certainly Unimportant-Unimportant		n:344	
	f	%	f	%	f	%	$\overline{x}$	s
General Accounting I-II	234	68	20	5.8	70	26.2	2.44	1.232
Inventory Balance Sheet	204	59.3	31	9	109	31.7	2.66	1.220
Corporate Accounting	270	78.4	26	7.6	48	13.9	2.05	1.121
Cost Accounting I-II	232	67.4	44	12.8	68	19.8	2.22	1.261
Computerized Accounting	85	24.7	173	50.3	86	25	3.03	1,098
Managerial Accounting	86	25	195	56.7	63	18.3	2.97	0.979
Accounting Audition	70	20.3	213	61.9	61	17.7	3	0.905
Financial Statement Analysis	112	32.5	179	52	53	15.4	2.76	1.044

According to Table-4, students consider Corporate Accounting, General Accounting, Cost Accounting and Inventory Balance Sheet lessons are efficient. It could be said that since students take general accounting lesson efficiently and effectively, they have a solid background of accounting and that is why they will not struggle so much on other accounting lessons.

Table-5 Frequency, Percentage, Mean and Standard Deviation Values of Factors that Effective on Accounting Lessons' Productivity

Factors That Effective On Accounting Lessons' Productivity	Certainly Important-Important		Neutral		Certainly Unimportant-Unimportant		n:344	
	f	%	f	%	f	%	$\overline{x}$	s
My personal knowledge, interest and skill	249	72.3	48	141	47	13.6	2.17	1.030
High rate of general success level of the class	132	38.4	84	24.4	106	37.2	3.02	1.097
Lecturer's effective and productive teaching	273	79.3	36	10.5	35	10.2	1.90	1.998
Physical facilities of school (Library, internet connection, etc.)	123	35.7	65	18.9	156	45.4	3.15	1.288
Supporting theoretical education with practice	186	54	60	17.4	98	28.4	2.61	1.389

According to Table-5, the main reason of lesson productivity is lecturer's effective and productive teaching and second reason is students' personal knowledge, interest and skill. It is seen from the table that another important factor that is effective on accounting lessons' productivity is supporting theoretical education with practice. With this respect, it is hard to say physical facilities of school have impact on accounting lessons' productivity.

Table-6 Frequency, Percentage, Mean and Standard Deviation Values of Students' Learning Techniques of Accounting Lessons

Students' Learning Techniques Of Accounting Lessons	Certainly Important-Important		Neutral		Certainly Unimportant-Unimportant		n:344	
	f	%	f	%	f	%	$\overline{x}$	s
I learn the lesson while lecturer is giving.	281	81.6	37	10.8	26	7.5	1.82	1.064
I learn when I study by myself.	304	88.4	25	7.3	15	4.4	1.80	0.811
I learn when a friend of mine tells me.	217	63	56	16.3	71	20.6	2.48	1.153
I learn when I study with a group of my friends.	180	52.4	57	16.6	107	21.1	2.76	1.302

When Table-6 is examined, it is seen that students learn when they study by themselves and while lecturer is giving. Thus, it might the stated that students less adopt collaborative and interactive learning techniques.

Table-7 Frequency, Percentage, Mean and Standard Deviation Values of Students' Reasons of Failure

Students' Reasons Of Failure	Certainly Important-Important		Neutral		Certainly Unimportant-Unimportant		n:344	
	f	%	f	%	f	%	$\bar{x}$	s
It is because I don't like the lecturer.	124	36	62	18	158	46	3.14	1.370
It is because lecturer can't have my attention to the lesson.	170	49.4	47	13.7	127	36.9	2.80	1.314
It is because I don't like issues of lesson.	144	41.8	75	21.8	127	50.3	2.91	1.250
I struggle to understand the content of the course.	180	52.4	56	16.3	108	31.4	2.78	1.580
It is because of lack of my previous learning.	204	59.3	57	16.6	83	24.2	2.49	1.289
It is because the content is numerical	106	31.1	62	18	179	50.9	3.28	1.329
It is because examination system and difficulty of questions	196	57	58	16.9	90	26.2	2.55	1.304
I don't make an effort to succeed.	128	37.2	55	16	161	46.8	3.15	1.380
It is because I don't have enough support from my family.	53	15.4	34	9.9	257	74.7	3.95	1.223
It is because of inappropriate teaching methods.	163	49.4	73	21.2	108	31.3	2.82	1.463
Lack of course material which make me understand the lesson	147	42.7	68	19.8	129	47.5	3.17	4.608
It is because I don't want to work in this profession in the future.	127	46.9	79	23	138	40.1	3.03	1.327
Lack of support from lecturer both in and out of class	146	42.4	75	21.8	123	35.8	2.92	1.272
It is because I don't think I am talented at accounting lessons.	119	34.5	73	21.2	152	44.2	3.17	1.283
It is because I am not informed enough about what I gain from accounting lessons.	160	46.6	72	20.9	112	32.5	2.81	1.270
It is because of insufficiency of success measurement tools used in lessons.	157	45.6	56	16.3	131	38.1	2.90	1.292

When Table-7 is examined, it is seen that respondents mostly choose "neutral" and "unimportant" answers for reasons of failure statements. Thus, it might be stated that students influenced from all the reasons but they are indecisive about which factor affect them most. As is seen from Table-7, first five reason of failures according to students are; "It is because of lack of my previous learning", "It is because examination system and difficulty of questions", "I struggle to understand the content of the course", "It is because lecturer can't have my attention to the lesson" and "It is because of inappropriate teaching methods".

It has been asked to respondents that if their expectations for education have been met or not. Group means were compared in order to check if respondents' answers have an impact on students' career and personality. Hypothesis according to these factors are as follows;

H_0= *There is no significant difference between students that their expectations have been met and those haven't been met.*

H_1= *There is significant difference between students that their expectations have been met and those haven't been met.*

Hypothesis are analyzed with Independent samples t Test.

Table-8 t Test Result in Terms of Level of Meeting Expectations ($p^* < 0.05$)

Meeting Expectations	n	Mean	Standart Deviation	t	df	p^*
Yes	139	2.3065	0.67343	-4.610	298	0.000
No	161	2.7503	0.94685			

According to Table-8 values, the mean of students that their expectations have been met is 2.3065 and the mean of students that their expectations haven't been met is 2.7503. The mean of students that their expectations haven't been met is higher. The difference between the groups seems to be meaningful.

To measure perception levels of students' reasons of failure, 3 (neutral) value is accepted as reference. This value is also midpoint of 5-point Liker scale. The reason to use the reference values as 3 (neutral) is to measure whether students have idea about their success and failure reason. Hypothesis according to these factors are as follows;

H_2= *The average of perception levels of students' reasons of failure is 3 (neutral).*

H_3= *The average of perception levels of students' reasons of failure is not 3 (neutral).*

The results of one sample t Test is as follows.

Table-9 t Test Results in Terms of Perception Levels of Students' Reasons of Failure

Test Value=3	t	df	Sig.(2-tailed)
The average reasons of failure statements	-0.159	343	0.874

When Table-9 is examined, due to the fact that Sig. (2 tailed) value is $P < 0.05$ H_3 is declined and H_2 is accepted. According to this result, it is seen that students do not have any idea why they have failure on accounting lessons.

4. Result and Recommendations

To determine success and failure reasons of Business Administration department students in accounting lessons, 344 survey forms were collected and following results are stated.

- 16.2% of students state that they are graduated from trade vocational high school. The fact that rest of the students did not take accounting education during their high school can be counted as one of the reasons of failure in accounting lessons. High mean and rate of "It is because of lack of my previous learning" statement in reasons of failure part of support this finding, also.
- Another high rated statements in reasons of failure part are; "It is because lecturer can't have my attention to the lesson" and "It is because of inappropriate teaching methods". This shows the importance of "teacher" factor. Teacher's utilization of class assessment techniques and use of learning techniques (active learning, open learning, etc.) effectively will cause positive influences on student's learning action. In this respect, supporting lecturers with pedagogical education will cause an increase on students learning.
- Another factor of students' failure in accounting lessons is students do not understand the content of lessons. It is seen that when students do not understand the content, they cannot see the whole picture of course. Students diverge from their objectives and targets and this circumstance cause that they become suspicious on the benefit of course. Lecturer should make students to comprehend the content, objective and target of the course and teach how students can use the beneficial knowledge gained from lessons in educational and professional times of their lives.
- When students' learning techniques for accounting lessons are examined, it is seen that they do not adopt interactive and collaborative learning methods and understand the lesson when lecturer tells or when they study by themselves. Thus, efficient and productive use of educatory learning methods should be used to influence students' learning, positively.
- It is seen that students whose expectations have been met in terms of education in Faculty of Economics and Administrative Sciences are better career and personality scores. Hence, it might be stated that students gain critical perspective by having analytic thinking skill.

Conventional accounting education methods are generally occurs as giving lecture and solving problems. Lecturers who use this method determine the content of the course, course material and measurement techniques and generally lesson are performed by lecturer tells the issues and chapters. However, lecturers who choose modern education techniques in accounting education should pay attention the factor below (Bonwell and Eison, 1991);

- Delivering course content via course material that consist visual communication,
- Use of strategies that encourage students to write during giving lecture,
- Giving computer-supported education,
- Use of case studies,
- Accustoming students to group studies with collaborative learning methods.

As a conclusion, non-realization or struggle of realization of course content and subjects in accounting education is important in terms of accounting education. The solution of the problem is use of modern accounting techniques by lecturer. Group studies, combining theory and practical education, computer-supported education use of visual tools are factors that lecturers should gravitate to more. It could be said that students' accounting learning will increase by doing this.

5. Model Proposal

When the result of survey conducted on ASU and KMU Faculty of Economics and Administrative Science, Business Administration students, a model that raise the quality of education should have steps mentioned below.

First Step: Students who deserve to enroll Faculty of Economics and Administrative Science, Business Administration department should participate "Basic Skill Survey" which tries to determine students' professional skills. .

Second step: Giving basic business administration courses to students.

Third step: According to results of basic business administration courses and basic skill survey, students will be able to take lessons for specialization in the 2nd and 3rd year. With this step, due the fact that an education is provided which is appropriate for students' wants and able to present their skills a factor that increase students motivation will be created.

Fourth step: In this step, students will take lesson (in 4th year) in which they can transfer theory to practice. These lessons will be practical, able to help students to plan their career and, make them gain experience.

During the actualization of these steps, there are some important factors that needed to consider. These factors are as follows;

- To provide students not having so much course load, taking the basic courses and bend to specialization,
- To make accounting education an active learning where lecturers are guiding,
- To develop software programs to transfer accounting education theory to practice, to establish professional laboratories and to make case studies,
- To provide an understanding of lifelong learning philosophy both for students and lecturers as an organizational culture,
- To constitute interactive education surface that makes out-of-class learning effective
- To provide physical infrastructure that is needed for student success, to organize social and cultural activities.

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The Use of Current Mobile Learning Applications in EFL

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Abstract

Technological developments in ubiquitous computing and wireless communication together with the adoption of mobile multimedia devices and applications have translated into huge opportunities for English as a foreign language (EFL). Operating systems like Google's open source Android, Apple's iOS, and Microsoft's Windows 7 are getting more sophisticated and now have the potential to dramatically change this field. These handheld devices support individual and collaborative learning and offer the opportunity to develop technology that will assist students to learn anytime and anywhere and a large amount of applications for mobile phones, tablets and i-pod players has already been widely employed in EFL.

Mobile learning (m-learning) refers to the use of mobile technologies for educational purposes. These devices can offer learning opportunities that are: spontaneous, informal, contextual, portable, ubiquitous, pervasive, and personal (Kukulska-Hulme *et al*, 2011). Thus, as Pilling-Cormick and Garrison (2007) explained, learners take primary responsibility and control of their learning process, including setting goals and evaluating outcomes. They are no longer the passive recipients of education, but consumers making choices in the learning market.

However, although the stimuli from multi-channels (sound, image, interaction, etc.) may be very advantageous for the learner, mobile technologies also require the thoughtful integration of EFL pedagogy. In this paper, we intend to examine both the qualities and limitations of some mobile applications available by assessing their features from a pedagogic and technical point of view with the aid of a quality rubric. The results here presented are the starting point for the development of MALL (Mobile Assisted Language Learning) applications for EFL teaching/learning as part of the work carried out by linguists and IT engineers within the context of the SO-CALL-ME project in Spain.

Keywords: MALL; EFL; m-learning

Introduction

MALL is a teaching and learning methodology that uses mobile phones or other handheld devices with some form of wireless connectivity, such as phones, PDAs and tablets, among others. O'Malley *et al.* (2003: 6) defined it as ''any sort of learning that happens when the learner is not in a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies". It is considered a booming future trend, thanks to its ubiquity, which facilitates education anywhere and anytime, and the ever-increasing interest among the growing number of users of smart-phones and portable devices.

The world is changing at high speed, we are moving from an industrial economy to one that is media-driven and based on information. As the world that surrounds us is becoming smaller and communication and media are becoming more global and diffuse, the nature of society, and of ourselves as human beings, is being defined quickly on the basis of our ability to be consumers but also producers of knowledge. The nature of knowledge - how and who creates it-, as well as the spaces where it is possible to find it are evolving rapidly (Kress, 2003). In the 21st century, the need for inserting the principles of *lifelong learning* in education and in broader development policies seems to be more urgent than ever before. These principles, if implemented systematically, will contribute to the establishment of more just and equitable societies. *Lifelong learning* comprises learning at all ages and forms:

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formal, non-formal and informal. Two UNESCO reports, which constitute real milestones in learning throughout life (Faure *et al.*, 1972; Delors report, 1996), articulated its fundamental principles (UNESCO, 2013).

   MALL is without any doubt the next step in the evolution of educational technology, reflecting the digital convergence of mobile technology and e-learning in response to a more dynamic society that seeks a personalized, lifelong and universal education (Romero *et al.*, 2010). It is, therefore, the educational technology of the new century, as it can provide frequent and comprehensive access to systems and applications that support formal and informal learning. It gives the learner the opportunity to control and to take advantage of the free time that most people have during a typical day: while travelling to and from work, having a lunch break, or waiting to see somebody. Learning spaces have departed from the traditional classroom and have expanded their horizons: it is now possible to learn at home connected to a virtual space, or even walking down the street with a virtual application that provides information added to the place that you are visiting, or to an object that you are looking at in real time. MALL also presents a number of very attractive features that prove very useful for universities and educational institutions and rewarding for the students, such as: ubiquity of access to information, resources, materials and educational content; flexibility which promotes independent and collaborative learning; interactivity, usability and efficiency which enhance the learning environment, develop professional skills and encourage learning.

   MALL took off in the 1980s, when Xerox Palo Alto Research Center (PARC) developed the *Dynabook*, a device very similar to what it is now known as a tablet. In the 90s, it continued to develop in universities in Europe and Asia, where the possibilities of m-learning were evaluated. Since the year 2000, the European Commission has financed large domestic companies in the creation of contents development projects. Thus, there have been several projects of the European Union related to MALL in the last decade:

4. *MOBIlearn*, a research and development of technologies project for mobile learning which included several universities from Australia, America and Europe between 2002 and 2005.
5. Mobile learning took its first steps in the *M-Learning program* for the Learning Skills Development Agency (LSDA) designing educational products. In 2001, it started with the M-Learning project that presented different portable devices programmed with games and educational materials. 250 young people from Sweden, Great Britain and Italy aged between 16 and 24 had to interact with them. At the end of this study, 80% of the participants considered that these applications could help them improve their reading and spelling skills.
6. The *eMapps* project (Motivating Active Participation of Primary Schoolchildren) which focused on demonstrating how games and mobile technologies could be combined to provide motivating experiences on schoolchildren from 9 to 12 years of age. Its main objectives were to support creativity in the classroom and to contribute to practice for developing new teaching methodologies based on learning games, such as problem solving, memory and physical activity exercises.
7. There has also been a rising number of references to MALL at well-known international conferences. *IADIS International Conference* and *Online Educa Berlin*, the largest global conference on technology, provide forums for the presentation and discussion of m-learning research which sketches the developments in the field.

   In this light, the ATLAS research group (*Artificial Intelligent Techniques for Linguistic ApplicationS),* (reference no. 87H31), started its latest project, SO-CALL-ME (*Social Ontology-based Cognitively Augmented Language Learning Mobile Environment),* (reference no. FFI2011-29829), in Spain with funding from the Spanish Ministry of Science and Innovation. The project's aim is twofold: firstly, to design and develop a theoretical framework for a new model of EFL computer-assisted learning carried out from mobile devices with permanent access to the Internet to enhance a very flexible, adaptive, interactive and dynamic form of learning. Secondly, to design and develop a linguistic ontology of audiovisual learning objects that allows the enhancement of EFL avoiding the inherent problems in the standard teaching materials, which are largely static and de-contextualized from daily socio-cultural contexts.

   In order to develop our own apps and seeing the large number of those already available on the market, it was considered very important to review some of the existing ones. This study was carried out in several phases: a first one focusing not on technical details but on the educational objectives of such applications; and a second one – the object of this paper – which analysed the technical and pedagogical values of some of those apps.

First phase of the evaluation of EFL apps

The potential of audiovisual materials is already well known as they present a combination of sound, image and creative elements that allow the learners to interact with them (Squire, 2002). This type of stimuli is ideal for learning, as Glasser (2000) remarked that humans retain 10% of what they read, 20% of what they hear, 30% of what they see and 50% of what they see and hear. Nevertheless, there are over 28,000 apps for educational purposes available on the market at present[172], and it would be difficult to conclude that all of them are designed with a sound theoretical approach to teaching or the necessary cognitive scaffolding mechanisms to be of real value for the learners. Scaffolding is based on Vygotsky's (1978) concept of the zone of proximal development (ZPD), which he defined as the distance between the "actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86).

In a first evaluation phase for our project (Arús, Rodríguez-Arancón and Calle, in press), the aim was to analyze some of these apps in order to gain knowledge and insights into the features that are effective and suitable for learners using MALL. This original assessment phase did not focus on the technical specifications of the apps, but rather on their pedagogic goals, in a most general sense. No in-depth methodological analysis of any particular app was therefore intended at that stage. In order to carry out this evaluation process, two templates were created, and shared through Google Drive: the first was a table with two columns and an extendible number of rows where each of the three evaluators could indicate the app assessed and their URL to avoid any possible repetitions. The second template consisted of a rubric created by the authors of this paper for this purpose, with three criteria and a scale from one to five. The intention was to keep the rubric simple and in line with our project's specific needs. The purpose was to assess as many apps as possible within a relatively short space of time and guarantee the homogeneity of the process. The three criteria considered were: 1) the apps cognitive value; 2) similarity of the app with the pedagogic aims of the SO-CALL-ME project; and 3) the app´s complementarity with the project. Each rubric was also accompanied by a brief description of the app and a final evaluative remark.

This process concluded with 67 assessed EFL apps through a combination of the study of the information available on websites that described them and, whenever possible, the testing of how they work on a mobile device. Each evaluator assessed different apps, which has the advantage of providing information about a larger number of them but also the potential disadvantage of less reliable assessments. However, the comparison of the rubrics in the only two cases in which two evaluators accidentally assessed the same app proved to show rather similar criteria of analysis.

There were interesting conclusions at the end of this first phase, as the study had put forward several aspects to take into consideration for the following stages. There was a high number of apps that presented technical problems at the time of downloading or when starting them. In fact, more than one third of the apps downloaded by the evaluators proved not to work properly or not to work at all. Concerning software, the vast majority of apps assessed were available for Apple devices –*iPhone*, *iPad* and, sometimes, *iPod Touch* – and around one in four were also available for *Android*; very few were *only* available for the latter. Other operating systems such as *BlackBerry OS*, *Bada* or *Ovi* do not seem to be targeted by app developers to the same extent. A few of them could also be directly run from the Internet on a conventional computer.

Another interesting observation regarded prices, as three marketing approaches were defined: expensive apps, which are in fact mobile versions of traditional dictionaries, textbooks, vocabulary or grammar tests, etc. have prices as high as 30 euros. A second group are downloadable for a small amount (1 to 3 euros) such as Cambridge's *English Monstruo*, or have an initial free sample and the possibility to download further packs as, for instance, the British Council's *LearnEnglish Grammar*. A third group is represented by English courses such as *Busuu* or EF's *EnglishTown*, in which the price depends on the needs of the user and/or seasonal offers.

The apps were also categorised in several groups according to their contents: a) Games, very often aimed at children, e.g. the apps available from Cambridge English Online; b) app versions of dictionaries, handbooks and textbooks, e.g. Cambridge's EFL methods, dictionaries, etc.; c) apps providing vocabulary, grammar and/or pronunciation practice, such as *My Word Book, Johnny Grammar's Quiz Master, 60 Second Word Challenge* or *Sounds Right*; d) the adaptation of online courses such as *Busuu* and EF's *EnglishTown* to mobile devices; e) most closely related to the interests and goals of the SO-CALL-ME project are those apps exploiting the use of language

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[172] http://www.eduapps.es

in context and presented in a variety of ways, such as podcasts –e.g. *Learn English, Talking Business English*– videos –e.g. *Learn English Audio & Video, Conversation English*– films –e.g. *English Attack*– and cartoons –e.g. *Big City Small World*.

A last conclusion resulting from the assessment and which will be very relevant for the future development of our own apps concerns those features found which differentiated some apps from the rest and provided and added value. Features such as "drag-and-drop" available in *Learn English Grammar*; the possibility to draw with your finger, as in *Premier Skills*; connectivity with social networks, as offered by *Language City, Learn English, 60 Second Word Challenge* and *Tongue Mystery English*; or the inclusion of an Avatar, as in Cambridge's *Quiz up* which could be particularly appealing from a pedagogical point of view.

A quality guide and rubric for the evaluation of educational apps

In the second evaluation phase here described, a guide was created containing the quality criteria for the evaluation and creation of educational apps. This guide, based on the one created by Fernández-Pampillón *et al.* (2012) for the creation of Learning Objects, has the purpose of guiding app assessors and creators when carrying out their tasks, specifying those aspects, or criteria, that should be taken into account to identify or create quality apps and spelling out the specific points to be considered within each criterion so as to try to reduce subjectivity to a minimum.

The app quality guide takes the ten criteria used by Fernández-Pampillón *et al.* and adapts them to the characteristics and goals of educational apps. Table 1 shows the ten original quality criteria for Learning Objects and our adaptation for educational apps. An important aspect of this guide is that it combines pedagogical criteria (1-5) with technical ones (6-10). This avoids the risk of evaluating apps only from a technical point of view, which, as stated by Balance (2013) "is to discuss little more than mobile-enabled CALL" (2013: 44) but also reflects the fact that apps are very much dependant on technology and should therefore not be evaluated from an exclusively pedagogical perspective.

Table 1. Quality criteria. From Learning Objects to educational applications.

Quality criteria in Fernández-Pampillón *et al.* (2012)	Adaptation to Educational Applications
1. Goals and pedagogic coherence	1. Cognitive value and pedagogic coherence
2. Content quality	2. Content quality
3. Capacity to generate reflection, critical thinking and innovation	3. Capacity to generate learning
4. Interactivity and adaptability	4. Interactivity and adaptability
5. Motivation	5. Motivation
6. Format and layout	6. Format and layout
7. Usability	7. Usability
8. Accessibility	8. Accessibility
9. Reusability	9. Visibility
10. Interoperability	10. Compatibility

As we can see in table 1, changes concern criteria 1, 3, 9 and 10. The change in criterion 1 can be simply considered a nomenclature one, seeking to widen the assessment's scope, as under 'cognitive value' we can include not only the application's goals but also the specification of its target users and skills to be developed (see table 2, below). Conversely, the change in criterion 3, also chiefly terminological, tries to simplify matters, as the allusion to 'reflection' and 'critical thinking' as found in the original Learning Objects guide does not seem to go hand in hand with something as transient as an app (see Stockwell 2012 about apps and transience). In addition, 'capacity to generate learning' allows a neat contrast with the 'cognitive value' in the first criterion, which refers to the potential, whereas criterion 3 has to do with the actual achievement of the promised goals. 'Reusability' in the original criterion 9 is a key feature in Learning Objects, as their modular nature precisely seeks to make different parts of them reusable. When dealing with mobile applications, however, the reusability of their different parts is not something essential to the quality of the app, even if it is always convenient for app designers to be able to reuse

already created materials. When speaking of mobile apps, a key concept is 'visibility', and that is why this has substituted for 'reusability' in our guide. Finally, 'Interoperability' in 10 has been replaced with 'Compatibility' as the former may sound too much of a buzzword for those outside the specialized IT jargon, where it is usually employed to refer to the capacity of two products or systems to work with each other. Since this reciprocity involves looking at both ends, i.e. the app and the mobile device, and we are here focusing on the former, we found that the more widely known 'compatibility' served our purposes better.

Space constraints bar us from showing the whole guide here, yet, to give an idea of what the quality guide looks like, we show the complete specification of criterion 1 in table 2. It must be noted that the sub-criteria within each criterion have also been adapted to meet the needs of educational applications. For instance, one of the points within this first criterion for the evaluation of Learning Objects refers to the existence of a metadata file specifying goals, skills, etc. Since this kind of files are specific to Learning Objects but irrelevant to apps, the mention of metadata files has disappeared from our quality guide.

Table 2. Criterion 1 and its sub-criteria in the quality guide for the evaluation and creation of educational applications.

1. Cognitive value and pedagogic coherence This criterion assesses if the teaching aim(s), the target users and the skills to be developed are clearly set from the beginning. In particular, it must be assessed whether: a. The app's download page, or the app itself, includes a description or a demo clearly specifying and/or showing the pedagogic aims, the skills to be developed and the users' type/level/needs. b. There is coherence between the aims, the skills, and the target users. c. There is coherence between the aims/users/skills and the app's contents, resulting in a potential high cognitive value.

Based on this guide, a new rubric was designed to facilitate the app evaluation process. As seen in table 3, which illustrates the first row in the rubric, the information in the cells is based on the specifications made in the quality guide. The way in which we proceeded was to first fill in the cell corresponding to the maximum punctuation, i.e. 5, with the fulfillment of all the sub-criteria and gradually slacken such fulfillment as we move down the scale until the minimum punctuation, i.e. 1, is reached, where none of the sub-criteria is fulfilled.

Table 3. Criterion 1 in the educational app evaluation rubric.

	1	2	3	4	5
1. Cognitive value and pedagogic coherence	Not very clear learning goals and/or target users; contents are hard to justify	There is coherence between skills and target users but the learning goals are unclear	Clear learning goals but lack of coherence between these goals and skills and target users; contents are not well-suited to the goals, skills and target users	Clear learning goals but lack of coherence between these goals and skills and target users OR contents are not well-suited to the goals, skills and target users	Clear learning goals; coherence between these goals and skills and target users; contents are well-suited to the goals, skills and target users

This is by no means the first rubric for the evaluation of educational apps in the field of MALL. For instance, Toni Vincent's rubric (Vincent online), drawing in turn on Walker 2010, spotlights the following five criteria: relevance, customization, feedback, thinking skills, engagement and sharing. While this rubric is highly practical by virtue of its simplicity, we find that, by the same token, its scope is somewhat limited. For instance, the fact that, as said above, our rubric –the same as the original quality guide in Fernández-Pampillón *et al*.– includes a number of technical criteria, makes it more complete, with these technical aspects complementing the pedagogical ones. Additionally, the accompanying quality guide provides an important back up to the use of the rubric.

8. Results and discussion

In this paper we have reported on the work carried out in order to develop the necessary tools to evaluate and create educational apps within the context of the SO-CALL-ME research project. A quality guide and a rubric were the results of such work, as seen in the previous section. Before tackling the quantitative evaluation of educational apps with the use of our rubric, as well as using it as a guide in the creation of apps within our project, a first step was taken to test the reliability of the rubric. To that end, two of the authors of this paper undertook the evaluation of four EFL apps so as to get their impressions on the use of the rubric and to check whether the rubric allowed a rather objective evaluation (in addition, of course, to obtaining information about the evaluated apps). In the next few paragraphs, we show and discuss the preliminary results obtained.

Out of the 63 EFL apps previously evaluated with a simpler rubric, as reported in Arús, Rodríguez-Arancón and Calle (in press), four of those obtaining the highest punctuation, i.e. with the highest potential to serve as sources of inspiration for the apps to be developed, were chosen for this preliminary evaluation. The four apps were: *Englishfeed, SpeakingPal English Tutor, Clear Speech* and *Learn English Audio and Video*. Table 4 summarizes the results of the evaluations and compares the punctuations given by both evaluators.

Table 4. Evaluation results (Ev.1= evaluator 1; Ev.2= evaluator 2).

	Evaluation							
	Englishfeed		SpeakingPal		Clear Speech		Audio&Video	
	Ev.1	Ev.2	Ev.1	Ev.2	Ev.1	Ev.2	Ev.1	Ev.2
1. Cognitive value and pedagogic coherence	5	3	4	5	5	5	4	4
2. Content quality	5	3	5	5	3	3	5	5
3. Capacity to generate learning	4	4	5	5	3	3	4	3
4. Interactivity and adaptability	4	2	4	4	2	3	3	4
5. Motivation	5	4	5	5	3	2	4	3
6. Format and layout	5	3	5	5	2	2	5	5
7. Usability	5	4	5	5	3	3	5	5
8. Accessibility	5	5	4	5	4	4	4	4
9. Visibility	3	5	4	4	4	4	4	4
10. Compatibility	4	4	4	3	3	3	4	4

Although the number of apps so far evaluated is still too small to statistically measure the evaluators' agreement, the results shown in table 4 do seem to show consistency between the two evaluators and therefore allow us to be optimistic as to the usability of the rubric. An interesting point that stands out is that criterion 4 –Interactivity and adaptability– seems to be the weakest one in the apps evaluated. If a wider-scale evaluation confirms this, it will mean this is the aspect on which special emphasis must be made when developing new educational apps. In fact, it comes as no surprise that this should be the weakest point in educational apps. A look at table 5, which shows the specification for this criterion in our quality guide, reveals that these are the essential requisites for successful Foreign Language teaching, and precisely the ones with which teaching methods in general have traditionally found it the hardest to comply.

Table 5. *Interactivity and adaptability* in our quality guide.

The *interactivity* criterion is related to the fact that the presentation of the content is not static but that it depends on the use by the learner. It must be taken into account if:
a. The content presented to the users is related to the questions, answers or actions that they have previously carried out.
b. The content presented depends on the previous knowledge of the learners or on their needs.
c. Users feel that they really control and manage their learning process.
d. Conditioned content presentation is automatic, through programming, or manual, through the apps' instructions for use.
The *adaptability* criterion is related to the ease with which the app adapts to the different types of users. It must be taken into account if:
e. The app proposes different contents/activities for different competence levels.
f. The app can be used independently of specific teaching or learning methods.

The discussion in this section has highlighted the educational affordances of the rubric here presented, with the back-up provided by our quality guide, both for the evaluation of educational apps and for the design of new ones. Pending tasks are the extension of the evaluation to a higher number of apps and, most important for the goals of the SO-CALL-ME research project, the actual implementation of the quality criteria for the development of EFL mobile applications that successfully combine technical prowess (criteria 6-10) and a sound pedagogy (criteria 1-5).

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13th International Educational Technology Conference

The Use of ICT Among Administrative Staff in an Open University: The University of the Philippines Open University Experience

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Abstract

Nowadays, the information and communications technology (ICT) plays a vital role in every university most specially those universities who are offering distance education. The University of the Philippines Open University (UPOU), being the Philippine's pioneer in online teaching is no exception to this. The UPOU personnel, including its administrative staff are making use of all available ICTs to be able to accomplish their functions well.

This paper presents the importance of ICT among the administrative staff of UPOU. Specifically, this study will enumerate all the ICTs used in UPOU and rank all these according to use and importance.

Keywords: ICT; distance education

In this day and age, the information and communications technology (ICT) plays a vital role in every university most specially those universities who are offering distance education.

The University of the Philippines Open University (UPOU) being one of those universities that offers distance education makes use of ICT. A pioneer in online teaching and learning, the UPOU was established on February 23, 1995. It continues to lead the practice of open learning and distance education in the Philippines.

Being the nation's most comprehensive education institution, the UPOU offers two undergraduate programs, nine post-baccalaureate certificate and diploma programs, eleven master's programs, two doctoral programs and nine non-formal degrees.

UPOU Staff Profile (by Class). Based on the records of the Human Resources and Development Office (as of April 2013), the UPOU has a total of one hundred eleven (111) staff, classified into four categories, namely: administrative, research and extension professional staff (REPS), faculty and temporary second appointment. As shown in the table below, majority (56.76%) of the staff are the administrative staff while there are twenty-eight (25.23%) faculty, eighteen (16.22%) REPS and two (1.80%) Temporary Second Appointment. Table 1 and Figure 1 present the UPOU staff Profile by class.

Class	Count	Percentage
Administrative	63	56.76
REPS	18	16.22
Faculty	28	25.23
Temporary Second Appointment	2	1.80
TOTAL	**111**	**100.00**

Table 1. UPOU Staff Profile by Class

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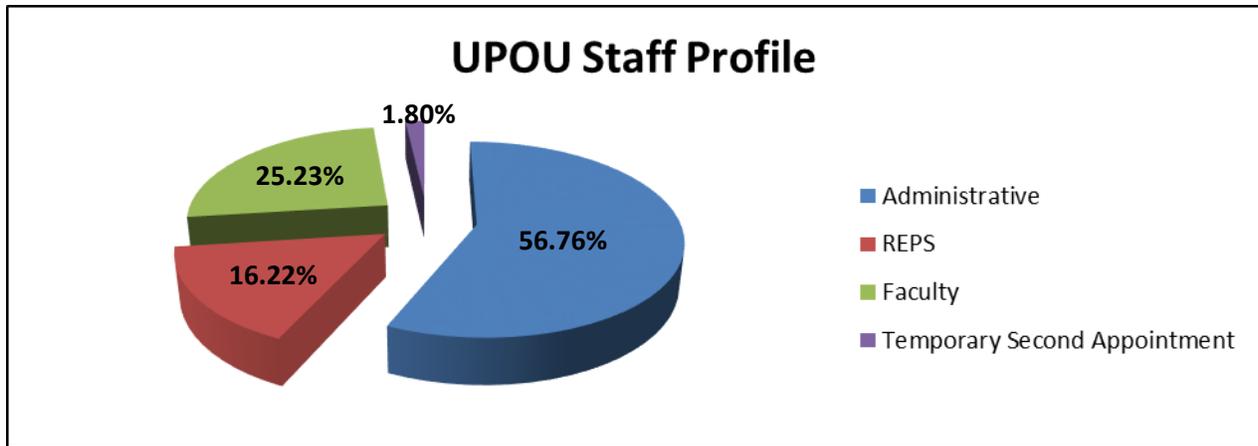
Figure 1. UPOU Staff Profile by Class

Composed of various offices, each office at UPOU is assigned administrative staff to provide essential support and ensure the smooth operations of each office. Delegated with a wide range of duties and responsibilities, the administrative staff serves as support to the UPOU system. Figure 2 shows the Organizational Chart of UPOU.
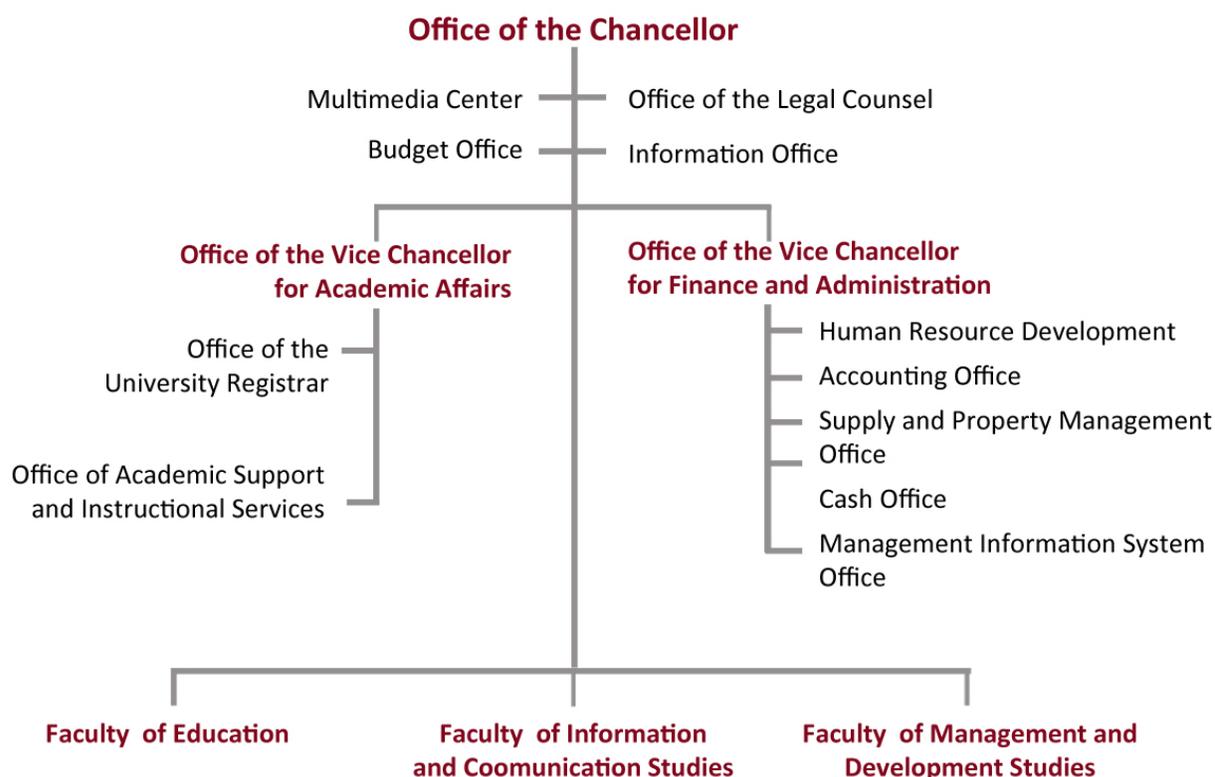
Figure 2. The Organizational Chart of UPOU

Having the most number of staff, this study considered the administrative staff as the respondents. With the aim to present the importance of ICT among the administrative staff of UPOU, this study enumerates all the ICTs used in UPOU and rank all these according to use and importance. A survey was used to gather data and the following were the results of the study.

Personnel/Group that Administrative Staff communicate with. Results showed that all the administrative staff communicate with their supervisors and other administrative staff. Some of them communicate with the officials, REPS, faculty and affiliate faculty. Table 2 and Figure 3 present the personnel/group with whom the UPOU administrative staff usually communicate with.

Personnel/ Group	Yes	No
Supervisor	16	0
Officials	11	5
Faculty	9	6
REPS	11	5
Administrative Staff	16	0
Affiliate Faculty	3	13
Students	3	13
Other Government Agencies	1	15

Table 2. Personnel/ Group that Admin Staff communicate with
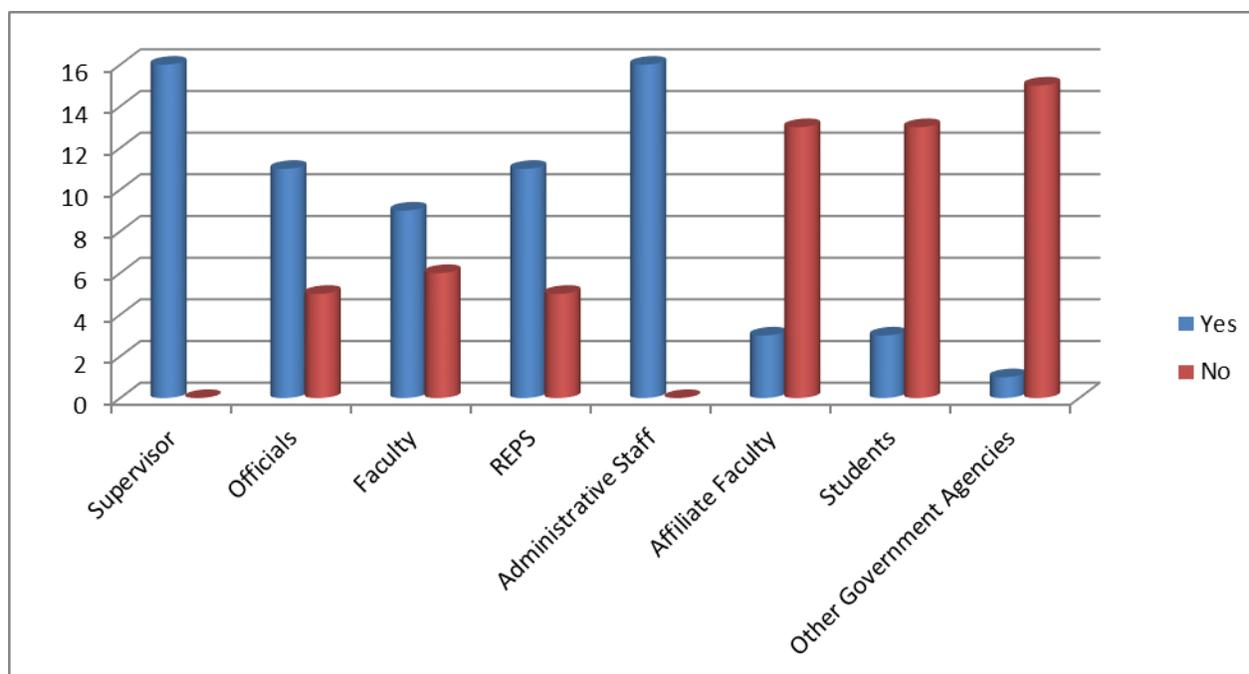
Figure 3. Personnel/ Group that Admin Staff communicate with

For this study, the following are considered as the Information and Communication Technology (ICT): telephone, cellular phone and internet. Specifically, call and text messaging were individually considered under the cellular phone while e-mail, yahoo messenger and skype were counted under the internet.

Rank of ICTs According to Use. The respondents were asked to rank the ICTs according to use. The results indicate that six (37.5%) of the respondents ranked telephone as first while five (31.25%) of the respondents ranked internet using e-mail as first. Sixteen or 100% of the respondents ranked internet using skype as last. Table 3 and Figure 4 detailed the ranking of ICTs according to use.

ICTs	1st	2nd	3rd	4th	5th	6th
Telephone	6	6	2	2	0	0
Cell Phone (Call)	1	0	0	4	11	0
Cell Phone (Text Messaging)	3	1	6	5	1	0
Internet (e-mail)	5	2	1	5	3	0
Internet (yahoo messenger)	1	7	7	0	1	0
Internet (skype)	0	0	0	0	0	16

Table 3. Rank of ICTs According to Use
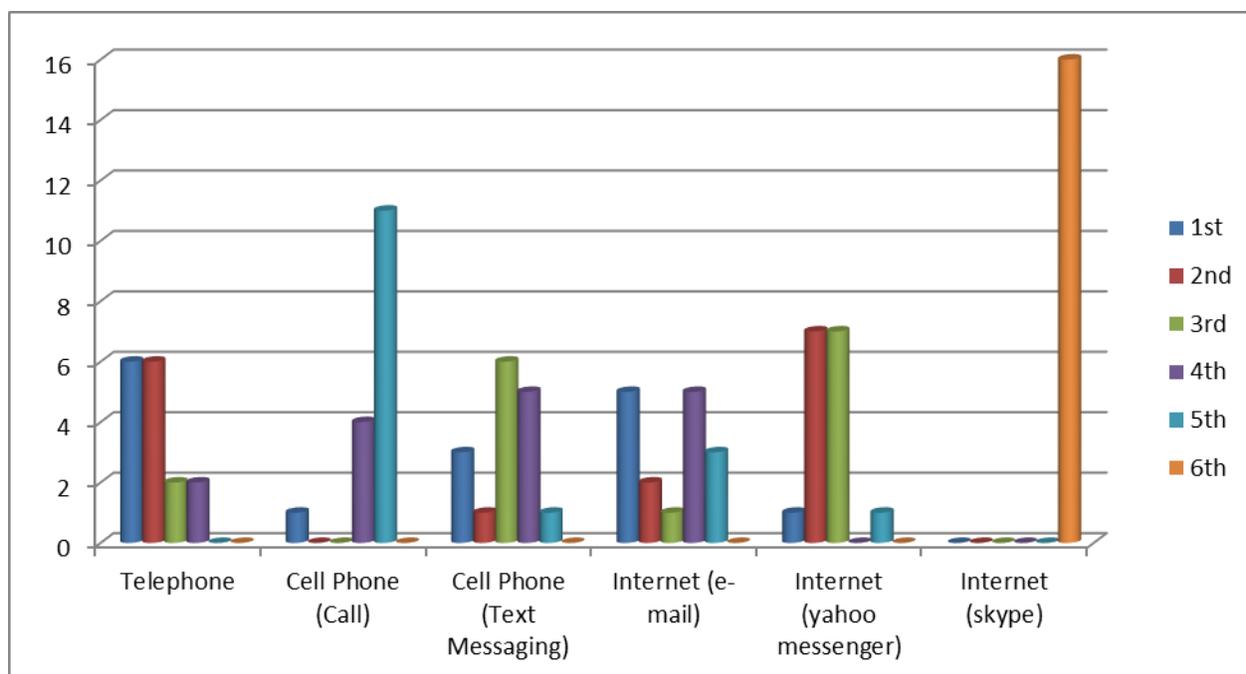
Figure 4. Ranking of ICTs According to Use

Considerations in Using ICT. When asked what their considerations are in using ICT, all the respondents pointed out the need for immediate feedback. While ten (62.5%) answered the cost as their considerations in using ICT. Thirteen (81.25%) confirmed that they consider the availability of ICT. Table 4 and Figure 5 detailed the respondents' considerations in using the ICT.

Reasons	Yes	No
Need for Immediate Feedback	16	0
Cost	10	6
Availability	13	3

Table 4. Considerations in Using ICT
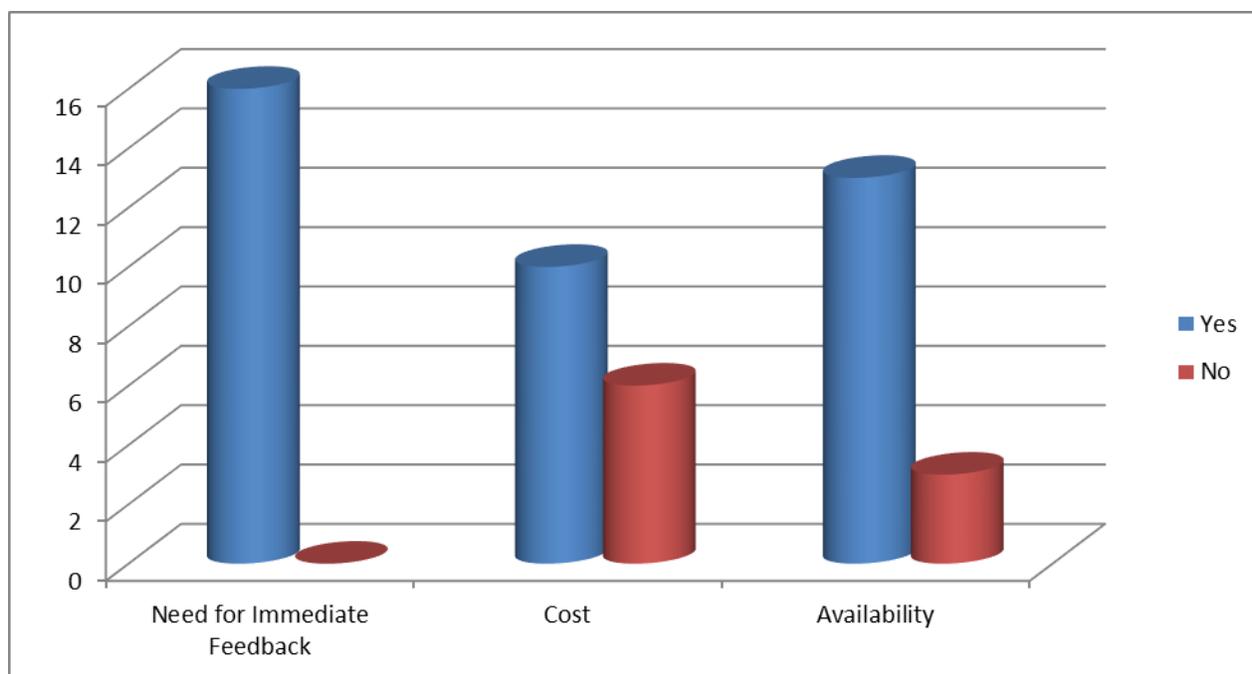
Figure 5. Considerations in Using ICT

Importance of Using ICTs. The respondents considered the telephone (81.25%) and the internet using yahoo messenger (75%) as very important. While 37.5% of the respondents considered the internet using skype as not important. Table 5 and Figure 6 present the level of importance of using the different ICTs.

ICTs	Very Important	Important	Not So Important	Not Important
Telephone	13	3	0	0
Cell Phone (Call)	4	8	4	0
Cell Phone (Text Messaging)	10	4	1	1
Internet (e-mail)	10	5	1	0
Internet (yahoo messenger)	12	4	0	0
Internet (skype)	2	3	5	6

Table 5. Importance of Using ICTs
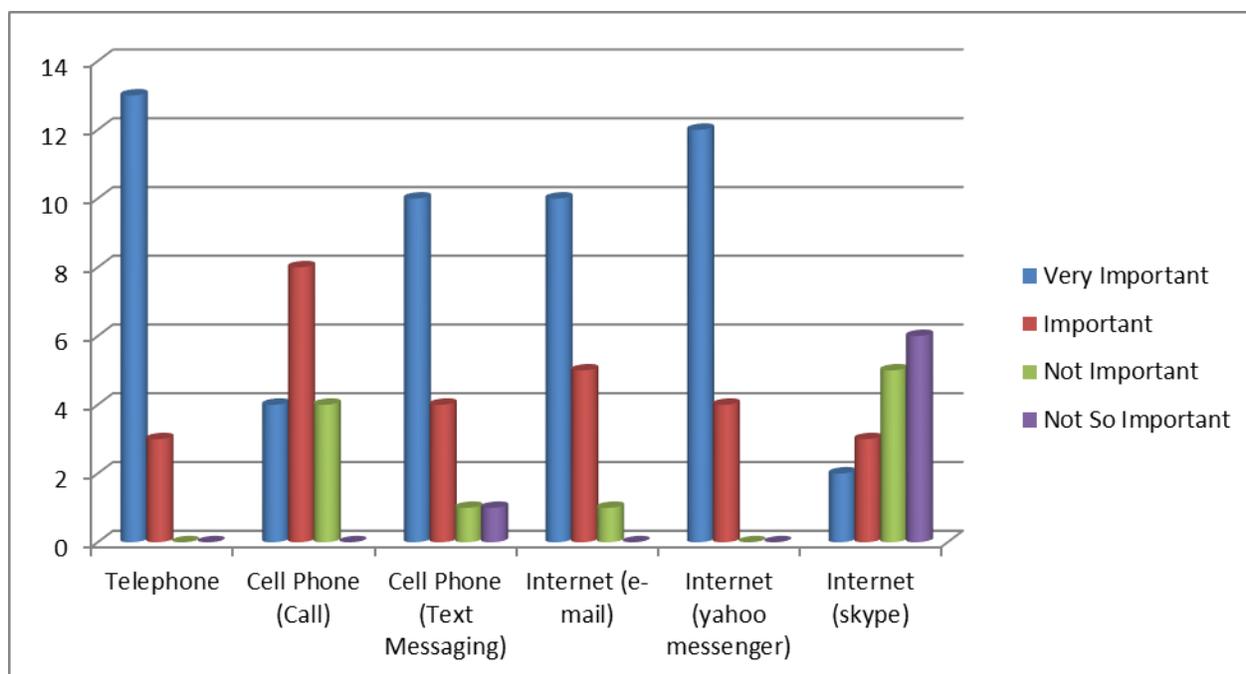
Figure 6. Importance of Using ICTs

Purpose for Using ICT. The purpose of using ICT among the UPOU administrative staff includes: setting a meeting; coordination of activities; communicating with scholars, faculty, staff, officials, REPS and affiliate faculty; verification of information, payroll concerns and online remittance; submission of reports, and information dissemination.

Problems in Using ICT. Among the UPOU Administrative staff, the problems encountered in using ICT are: unstable or intermittent internet connection, hacking of account, failure of communication devices, power interruption, weak signal for cellular phones, and accidental distribution of confidential information.

Looking at the results, the majority of the UPOU Administrative staff ranked the telephone either as first or second in the list and consider it as either very important or important. While all the respondents ranked the internet using skype as the last. This is due to the reason that the respondents consider the importance of immediate feedback. The use of skype is not being practiced by the UPOU administrative staff at the moment as this technology has not yet been introduced to them. Within the university, skype is currently being used for meetings that involve two or more locations: UPOU Headquarters, Diliman and Manila.

If the university administration would like to consider cutting the cost on its communication and travel expense, using of skype should be introduced to everybody specially those who have constant contacts with other staff based on another locations.

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The use of social media technologies among Malaysian youth

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Abstract

This exploratory study report findings on the profile of Malaysian young adults age 20 to 24, also known as the Generation Y and/or the Millennial generation, with special regard to their use of Internet and social media technologies. Data were collected from 379 youth from a public Malaysian university across six schools of studies in a Malaysian public research-based university: the Academy of Islamic Studies, School of Economics and Administration, School of Engineering, School of Education, School of Business and Accountancy, and School of Arts and Social Sciences. Findings indicate that the most preferred activities are online communication and socialization, followed on researching on specific information for the purpose of completing assignments, "how-to" and "do-it-yourself" information. The least preferred activity is buying things such as books and clothing online. Additionally the Academy of Islamic Studies students are more active in discussing political issues online compared to their peers from other schools. Data from this study will allow social researchers to utilize Internet and social media technologies for the teaching and learning activities.

Keywords: social media; youth; technology

INTRODUCTION

Mobile technologies, Internet and social media have become social phenomenon especially among young adults age 18 to 29 or also known as the Millennial generation (Lenhart, Purcell, Smith, & Zickuhr, 2010). Among others, their findings indicated that the use of social networking sites American teenagers and young adults has risen significantly since 2006. They are found to be more engaged in many social relation activities such as sending daily messages to friends, sending bulletins, group messages and private messages on these sites.

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This paper intends to investigate the Malaysian youth online activities within the various social networking sites (SNS). This study is designed to answer three main questions:

- what are the general characteristics of Malaysian young adults with reference to their access to telecommunication technologies and Internet across these six schools?
- what are the online activities Malaysian young adults are engaged in across these six schools?
- what are the social media activities Malaysian young adults are engaged in across these six schools?

Social networking and online activities

Social networking is a technology that allows two-way communication and interaction between specific individuals and/or organizations in an online environment. Many of these social networking sites (SNS) such as Facebook and Twitter are built with microblogging technology that supports blogging activity with smaller size of word posts (Chin & Yusop, 2011).

The user-friendly feature of SNS invites its wide usage among youth and adults. The Pew Internet and American Life Project (2010) has identified several activities carried out by these two groups of people using SNS. The activities include:

- sharing content like photos, videos and stories with others
- remixing online content such as music and videos together to make "artistic creations" (p.23)
- blogging and commenting on others' blogs
- building websites
- posting comments to news group, website, blog or photo sites
- information searching on topics like health, news and political news, and
- online purchasing.

Except for blogging, all of these activities are reported to be either steadily maintained or increased since 2006.

Methodology

A survey on online social media activities are distributed to a sample of 379 young adults in the age of 20 to 24 years old (referred to as young adults throughout this paper) across six (6) main faculties in a Malaysian public research-based university. These schools are Academy of Islamic Studies, School of Economics and Administration, School of Engineering, School of Education, School of Business and Accountancy, and School of Arts and Social Sciences.

73% of the respondents are female, thus, the ratio female to male is 2.7. For ethnicity, 53% of the respondents are Malay and 37% are Chinese which is aligned with Malaysia's population in 2010 (Department of Statistics Malaysia, 2010). The number of respondents surveyed is representative of the Malaysian population, and the gender and ethnic distribution in Malaysian higher education institutions. Table 1 presents the background of the respondents based on their schools, gender and ethnicity.

9. Table 1. Background information on survey respondents: schools, gender and ethnicity.

Background information	Frequency (n)	Percentage (%)
Schools		
Academy of Islamic Studies	49	13%
School of Economics & Administration	60	16%
School of Engineering	73	19%
School of Education	99	26%
School of Business and Accountancy	57	15%
School of Arts and Social Sciences	41	11%
Totals	**379**	**100%**
Gender		
Male	103	27%

Female	276	73%
Totals	**379**	**100%**
Ethnicity		
Malay	201	53%
Chinese	140	37%
India	14	4%
Others	24	6%
Totals	**379**	**100%**

Findings

Data from this study reveal several interesting findings on students' access to technologies and their activities both online and on social media. Findings are presented by the three main research questions of this study.

Malaysian young adults access to telecommunication technologies and Internet

Table 2 indicates that more than 90% of the respondents own various types of handheld telecommunication devices such as cell phones and smart phones, and close to 100% of the students own computers. All of them have access to the Internet and most utilize the Internet to check, send and receive emails. This finding confirms the initial assumption that the surveyed groups are technology-savvy and do utilize their technological devices for communication purposes.

10. Table 2. Access to telecommunication devices, computers and Internet to send and receive emails.

Schools	Have telecommunication devices (%)	Use computer (%)	Use Internet (%)	Send and receive emails (%)
Academy of Islamic Studies	98%	96%	98%	98%
School of Economics & Administration	98%	98%	100%	100%
School of Engineering	93%	95%	100%	99%
School of Education	91%	97%	100%	98%
School of Business and Accountancy	95%	100%	100%	100%
School of Arts and Social Sciences	95%	98%	100%	100%
Totals	**94%**	**97%**	**100%**	**99%**

However, as displayed in Table 3, it is interesting to note that majority (90%) of the respondents access the Internet on campus compared to from home (73%). This finding suggests that majority of their times are spent on the university's campus for academic purposes such as attending lectures, having group discussions and completing assignments. It also suggests that the students rely heavily on the free Internet access provided by the university due to high costs of subscribing to commercial telecommunication providers.

11. Table 3. Access to Internet based on locations.

Schools	From home (%)	From campus (%)	From other places (%)
Academy of Islamic Studies	51%	94%	45%
School of Economics & Administration	77%	90%	53%
School of Engineering	82%	89%	56%
School of Education	70%	92%	52%

School of Business and Accountancy	89%	88%	56%
School of Arts and Social Sciences	61%	83%	34%
Totals	**73%**	**90%**	**51%**

Online activities Malaysian young adults are engaged in

To understand the online activities Malaysian young adults are engaged in, a crosstab analysis on the online activities across five activities was conducted. The activities are:

- *reading* personal, political and social issues online and on blogs;
- *share* comments, photos and videos related to political and social issues in social media, blogs and websites;
- *searching for information* online including information to complete assignments, do-it-yourself (DIY) and self-improvement information;
- *online shopping* such as buying flight tickets, reserve for hotel rooms and/or services; and
- *socializing* and sharing latest updates using various social media sites such as MySpace, Facebook, LinkedIn.

Results, shown in Table 4, indicate that, on daily basis, socializing via various social media sites is the most popular online activities among majority of the students across schools (88%). This result is similar to of other reports that young adults socialize and interact with one another via social media very frequently compared to adults beyond 25 year old (Lenhart, Purcell, Smith, & Zickuhr, 2010). This activity is followed by information searching activities (65%), reading (28%) and sharing information (23%). The least popular online activity across schools is online shopping (12%).

12. Table 4. Online activities across schools.

Schools	Reading (%)	Sharing (%)	Information Searching (%)	Online Shopping (%)	Socializing (%)
Academy of Islamic Studies	41%	25%	71%	14%	90%
School of Economics & Administration	26%	24%	68%	20%	92%
School of Engineering	23%	23%	60%	10%	88%
School of Education	31%	24%	64%	9%	88%
School of Business and Accountancy	16%	22%	67%	19%	89%
School of Arts and Social Sciences	29%	18%	66%	2%	80%
Total	**28%**	**23%**	**65%**	**12%**	**88%**

Social media activities Malaysian young adults are engaged in

Zooming into Malaysian young adults' social media activities, we categorized respondents' activities into 4 categories. They are:

- discussions on political issues;
- social sharing;
- click "Like" to show preferences and supports towards comments and/or organizations; and
- sharing both positive and negative comments.

As shown in Table 5, it is found that preference of "Like" clicks has the highest weights (67%). Among schools, both students of the Engineering, and Business and Accountancy schools have relatively low percentage (59% and 54%) of being involved in this activity. It may due to the fact that they are much more burdened with academic life

and thus spend less time on social behavior of clicking "Like". Additionally the Academy of Islamic Studies students (56%) are more likely to involve in online political discussions compared to students of other schools. This finding aligns with the current situation in the country where students of Islamic Studies are among the most active group of young adults interested and engaged in both on-campus elections and national political discussions.

13. Table 5. Social media activities across schools.

Faculty	Political Purpose	Social Sharing	Click "Like"	Opinions Sharing
Academy of Islamic Studies	56%	63%	74%	35%
School of Economics & Administration	49%	70%	68%	37%
School of Engineering	43%	58%	59%	26%
School of Education	42%	59%	70%	24%
School of Business and Accountancy	42%	56%	54%	26%
School of Arts and Social Sciences	43%	66%	78%	27%
Total	**45%**	**61%**	**67%**	**28%**

Conclusion

14. In conclusion, we noted that there are different behavior patterns between students from each school who participated in this study although they are all in the categorized as Generation Y (Gen Y). It is mainly due to other factors such as their backgrounds, the courses they are pursuing, peers' influences, and access to technologies. However, this group of young adults does share some characteristics. They are actively engaged in the social media sites both for sharing information and for educational purposes. This shows they are comfortable in using technology for teaching and learning process, and are aware of and interested in political and social issues around them. From academic point of view, findings from this study reveal that academics of higher educational institutions should utilize the technologies in communicating with this young generation of students and design their teaching and learning tasks to encourage them in social activism tasks relevant to their academic programs.

Acknowledgements

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The web as a channel to connect the current and traditional cultural consumptions

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Abstract

The presence in the new media and internet of the Second Generation of immigrants in Italy enriches the cultural offering of the web. Many young immigrants started websites of sharing, training and dialogue in order to maintain their culture of origin. The paper reports some results of a research conducted with in-depth interviews to thirty young immigrants Chinese, Arabs, Romanians, Albanians. Research shows that the offering and consumption of cultural arguments through the web is a way to encourage young migrants in the development of an attitude of double belonging in order to positively overcome the task of constructing identity.

Keywords: Web, cultural consumptions, training, identity, Second Generations immigrants

1. New media and second generation immigrants in Italy

The use of internet has increased the possibility of exchanging remote informations on a global scale: the cultural consumption through the web involves people distant united by interests curiosity and similar problems. It is a way to establish links which exceed the virtual field, affects on the change of habits of the subjects, their communicative languages on interpersonal relationships. Teachers and educators should try to get closer to the cultural consumption of the second generations, so they should try to approach what young immigrants themselves process and make it accessible to everyone with the ways at their disposal.

The web for young people is a powerful medium of offering and cultural consumption, stimulates the curiosity of the users and can be an alternative to the rigidity of the cultural offer provided by the schools. Thanks to its autopoietic nature (because active processes of creation) and deconstructed, the web stimulates the action of individual actors, makes users responsible for their own learning process. The young natives and migrants make a wide use of new technologies in the educational process of offering and cultural consumption. From the interviews conducted for a qualitative research in the north of Italy in 2011, the references to the use of the internet were quite frequent. The strengths seem to be at least two: a) the web is used to transmit traditional contents of different cultures; b) the web is used a lot for keeping in contact with the ethnic community and for references to current events.

The research (conducted through semi-structured interviews) showed that more and more users experiment and share new codes of communication on the web (Giusti, 2011). This is especially true for young second-generation Chinese immigrants in Italy: they are grown up watching Italian and Chinese television, they attended all grades of the Italian school, they absorbed habits and customs Western/Italian but, at the same time, they not want to lose the characteristics of the community they come from, where they lived and to which they feel they belong. They listen to the stories from adult people of the community of traditions and fragmentary details of their roots.

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The swing of identity, from one community to another, means that these girls and boys are not seen as entirely Italian in the eyes of the natives and are not seen as completely Chinese in the eyes of their families. Use the channels of the web means have innumerable possibilities to confront on subjects shared, on feelings that, if experienced firsthand, can be understood. The web becomes communication, information, comfort and support.

From several interviews collected during the research we encountered several references to some online portals where the second generation of Chinese immigrants, Albanians, Romanians are the protagonists. An example is in the testimony of a girl, Sun Wang, in Italy from fourteen years from China:

...We use internet very much ... me and also all my friends ... the people I know ... For a population very busy with little free time, internet is a major form of entertainment. A separate discussion is about the Chinese in Italy: the web and instant messaging programs provide users an incredible capacity , that is the possibility to find and meet other Chinese in Italy, an important form of communication, socialization, often in the labyrinth of servers we found countrymen or even former neighbors in China ... The main function of the web for young Chinese is socialization (Sun Wang, 23, from China)

The second generation of Chinese people in Italy are the protagonists in several portals: www.secondegenerazioni.it, www.qqinternational.it, www.associna.it are instruments of life and culture that also italian teachers in the schools should know, schoud use in teaching perspective.

2. Collect culture and transmit culture: the case of the site www.associna.it

Associna is an association that operates on the Italian territory with a number of initiatives in major cities where there are people of Chinese origin: Milan, Prato, Rome, Padua, Genoa, Turin, Bologna, Florence. Associna has the merit of opening and spreading the debate on the second generation of Chinese origin between the institutions, the Italian organizations and the Chinese associations. Associna represents a point of reference not only for the Italian-Chinese second generation, but for all those who want to know more about Chinese culture and multiculturalism of guys who grew up in Italy looking east. The portal www.associna.it has been created by the sons of Chinese immigrants and dedicated to themselves. Almost all of the site's members possess an account of QQ, the most popular instant messaging program in China, with a graphical interface with many functions. These young people have created with their imagination a virtual and real community, a diasporic public sphere, a shared memory, the result of memories and reworkings of those who take part: there are articles written by users, chat, forums, discussions, meetings . Through a participatory and cultural use of the internet, the everyday reality emerges and affects young members of the community.

The second-generation immigrants develop and recreate a new form of cultural consumption and put it in circulation through the web. It has created a sort of updated tradition: the site collects tales, stories, anecdotes heard from parents and grandparents; reconstructs events and symbols that are not experienced first hand. We understand the desire to forge a third identity, not Chinese and not Italian but Italian and Chinese. It is a path from the past to the present, from a tradition rebuilt and reworked a current condition they are in doubt about the identity light questions on problems relating to the inclusion in the Italian community, about being Chinese and Italian. The real find in the virtual space and vice versa, in a sort of circularity that moves constantly thinking between reality and fiction.

2.1 The purpose of Associna.it

The portal Associna was founded in 2005 by a meeting on the internet of a group of boys and girls of the second generations born and raised in Italy. The purpose of Associna is to create a bridge (virtual and not only) among the Chinese community and the Italian one, between the past (which usually it has been lived in China in the first person by the parents, not by the kids), the present and the future. The portal tends to perform certain functions:

* Support a project of opening of the Chinese community towards the host society and greater cohesion within the Italian society;

* Give voice to the second generations by providing informations, views, insights on various topics (news, politics, events) that can complement those transmitted by the media;

* Build a virtual meeting place, where people can communicate, discuss issues of tradition and current.

The site is organized in **different sections**: some reserved for registered users (chat and forum), other free. The topics **covered** are many, they are presented in the form of articles written by members of the community. We find biographies, culture, curiosity, economy, parties, events, opinions, politics, stories. Any registered user of the site can contribute to the presentation of the issues by providing comments, suggestions, fueling debates connected with it.

The popularity of the internet, among young Chinese makes this media very powerful , capable of spreading cultural consumption and to disseminate like wildfire thoughts and ideas. In fact, the site gives examples of how you can pass on notions related symbolic codes, traditional cultural elements, known in the first person by the guys that run the site, which are the children of immigrants born or raised in Italy. For example, several post in the forum can be found on the symbols meanings in Chinese décor. The epistemology of intercultural education aims attention to the symbols as they create points of contact between distant universes of reference. Symbols allow you to get closer to another culture, they have features that are transmitted with knowledge and education.

The symbols allow young Chinese, born and lived outside of China, to find in their lives some traces of an identity distant but present. Similarly Italians are in contact with symbolic Chinese decorations or of Chinese origin more than we can think, many of them have come in the course of history also as a part of the decorative universe that is considered Italian. In particular, teachers often do not know the meaning of the symbols used in the decorations and know it can be a value the intangible items (historical and cultural) that belong to the family estate of the students. For example, in a post on Associna can be found complex explanations of the symbols of the Horse, Dragon, Lion how to provide elements of cultural education, information, details, explanations for Italians possibly intrigued by the Chinese symbolism and for the Chinese who may have heard of these symbolic elements in the stories of their parents, but without having **knowledge**. The text seems to use various contaminations, **indirect restorations**, **historical**, **economic**, **cultural traits not** related to a particular culture, but to a third reality: cultural, historical, informative at the same time. A sort of symbolic handbook that can be used by anyone who wants or has curiosity.

2.2 Some subjects, some topics

The site deals with many subjects: events, stories from adult people and presentations. The users are in contact with particular visions of history, tradition, modernity; arguments that the imagination and the curiosity of young Chinese brings to light. Associna is a real reservoir of cultural references, presented by those who, like the Italians, they have not lived in the first person, but that may have them absorbed in part by the tales and the stories of family and friends. The cultural offer of Associna includes episodes and characters extracts of the decorative universe history, culture or literary of China. For example, are presented and summarized some of the pillars of Chinese literature, one of which is *The Dream of the Red Chamber* (*Hong Lou Meng*) with a trace of the plot, the context, the extent of the value of the novel.

These are cultural basic indications for those who do not already possess them (in fact it is probable that the Chinese who live far from China, do not know this literary work). This is one of the tasks that the virtual community Associna has given itself: to create a bridge between the present and a past that needs to be rebuilt, not with regard to the individual sphere, but as regards the traditional culture, which for young immigrants can not follow the usual route transmission of knowledge (from parents and institutions to children) but takes many forms and accomplishes different paths.

Another important figure of the Chinese cultural world, of which the second-generation youth may have heard the stories by parents, is Wu Chengen, became famous all over the world thanks to numerous television series and the cartoon *Dragonball*. The figure of the little monkey is the protagonist of the novel *Xiyou Ji* or *The journey to the West*, inspired by an ancient cycle of folk tales, one of the most popular in China and abroad. The novel, composed

by Wu Chengen probably between 1570 and 1580, is allegorical: the monk Xuanzang can be construed as a man in search of enlightenment; the horse that carries him as his will; the pig as the symbol of physical strength and inclinations; the monkey as a symbol of the heart and mind.

The user Quifeng begins his long post on Associna about the myth of Sun Wukong:

«*If you were to ask a child or teenager who is Son Goku, entered in the Western imagination through comics Hakira Toriyama Dragonball, would answer but maybe not everyone knows that Goku is inspired by a Chinese legendary monkey....*».

The words with which the user introduces readers to the mythological story can be compared to those of a parent who describes his son a myth of his childhood, a character who a guy could hear without knowing it and without knowing what role did the figure in the memories of adults and countrymen. These actions on the site are meant to tell what is usually taught in Chinese schools. The stories posted on the site by the young of Associna serve as the glue between one community and another, between the present and a past not lived in full (or at least not seen as peers in China).

Another figure that is part of the Chinese legendary and must be included in the cultural background of those who are from China is Mulan. The user Kai Asuma writes in his post abouto Hua Mulan, the legend of an intrepid orchidea: «The first praises to Mulan are in an anonymous epic poem of the period the Northern Dynasties (386/581). Later storytellers and playwrights have given her a name (Hua) and have enriched her adventures with many details...».

In other post are described China's traditional celebrations, events of Chinese culture that the Chinese can not miss. Immigrants in Italy, especially on festive occasions, they can feel even more the weight of the distance from home and believe that it is essential to transmit the knowledge of these occurrences to their children in order to safeguard the tradition: the Lantern Festival, the festival of five May, the feast of the moon...

It 's a kind of guide to traditional Chinese festivals for those who have not had the chance to experience them directly. The precision and the attention to details that characterizes the descriptions of events in the portal www.assoocina.it is felt to be necessary because those descriptions will become part of the cultural background of young immigrants or born in Italy. It is understandable that those who write about Associna you need to rebuild and imagine what happens in the streets and homes in China on feast days, even to understand the strong attachment that their countrymen may feel toward those customs. Probably by even a superficial knowledge of these cultural traditions of second-generation immigrants may diminish the generational and cultural gap that separates them from their parents and try to savor, even with the story and the images, the atmosphere and the habits to which fathers and mothers exhibit melancholy. The authors who have put these interventions on the site have accompanied the texts with images that bring very effective real places or fanciful elements with which the young second-generation immigrants have never had to do either directly or, if not, whose contact is happened a long time before turning into distant memory, more and more nebulous. Internet helps to fill a void and to share words and stories, images and visual elements suitable to rebuild something that you are not able to experience it firsthand. The measures collected in the portal www.associna.it not only affect the reconstruction of everything that is considered traditional but also cultural events and anniversaries that can touch up close and daily Chinese youth in Italy, for example: the celebrations in various cities of Italy on the occasion of Chinese New Year of 2011. In a post signed with two initials, a user describes the Chinese New Year along an ideal trip to China to discover the customs and practices that the children of immigrants have never lived in the first person, but they definitely some notions thanks to the reports of family members. It emerges that a party or an typical event Chinese traits can take new and original in the land of welcome and that the same situation is experienced differently by parents and children.

The topics in the portal are not unique to the field of history and culture, but also the contemporary. In the post below (almost a chronicle/story) a user woman who signed Shaoyan highlights what traits of change can take Chinese traditions, such as marriage, in the context of the host society:

«*No gifts but money. And the bride toasts with everyone. Voices, music, dragees, fireworks. We are in Via Giannone in Milan, in front of a Chinese restaurant in Chinatown. In a Sunday covered with clouds a couple of young Chinese decided to pray to the heavens and the earth. Which, in the Chinese tradition, it means marry*».

From the distant past, focusing on the symbolism, of literary and mythological figures and legends, handed down the path of identity of young immigrants led to the discovery of the traditional Chinese holidays and customs to changes that may be in the contexts of migration. If the glimpses of the past and of ancient Chinese cultural elements typically may appear frosty unknown to the boys, everything about the contemporary experience of migration appears to be very close and heard. The children of Chinese immigrants in Italy can speak in the first person begin to feel like your memory and identity, not just the result of a meticulous reconstruction and imagination. The stories that young second-generation Chinese publish on the portal are also experiences in the first person by those who have taken the path of migration, in which many children of immigrants can identify with. For example, Shaoyan writes:

«The dream of the Chinese is to become Lao Ban. Lao Ban means "to be masters." It 's important owning a business, even if small. I tell you three stories from the triangle Brescia-Bergamo-Milan. It 's the dream of all Chinese people to be called Lao Ban (masters). Owners of restaurants, shops, hawker stalls of clothing and various chinoiserie. And the Lao Ban in Italy increased, moving from side to side to increase the turnover and win an indispensable economic stability».

The glimpse of this is offered in the site also touches issues that affect the daily lives of Chinese young people, often in contact with uncomfortable questions or situations of confrontation between the original and the indigenous community. For example, there are debates about the importance of the attribution of a name in China (in order to give an analytical tool to those which are asked the meaning of his name in the host society); discussions and exchanges of views on articles published on the major Italian newspapers, such as occurs on the doubts related to the burial of corpses in Chinese culture or the fact that Chinese young people in Italy are spies for the Chinese government. Are ways to give answers to prejudices and stereotypes that often characterize the relationship between the Chinese community and the Italian and immigrant youth may hear directly weigh on their shoulders in the contexts of daily socialization.

The comparison between the two worlds may also include simple comparisons between different light on issues habits of life of the society of origin and the host. The discussion can also be imprinted on the ways in which the media (web, television, newspapers, advertising, radio) talk about the Chinese world. Often the messages conveyed can be captured in different ways according to the interlocutors and what the eyes of an Italian can arouse curiosity or irony, can be perceived as offensive or stereotyped by an immigrant. In addition to the session that contains articles published by users, the portal provides young people with different opportunities for discussion and venting, as well as a valuable tool for mutual aid. Those registered to Associna can communicate via chat and participate in forums that touch on various themes: Italian news, sports events, issues related to integration in the host society, international politics, issues of study, work, relationships. The relationship between the users of the portal can cross the boundaries between virtual and real communities, thanks to numerous opportunities to meet the association gives life. There have been two meetings in Prato, are organized football tournaments, meetings dedicated to the cinema, mixed groups of conversation, during which events to exchange views about the political world and the issues that are common to the second-generation immigrants. And 'interesting is the ability for users to converse in Chinese section of the portal "Chatting in Chinese!", "Let's talk in Chinese! ". Not to lose confidence with the language of origin, which, over time, is likely to be stifled by the gradual familiarity that children acquire the Italian.

Shared memory and built by the children of Chinese immigrants appears to be a new reality, not due to any alleged criterion of objectivity of interpretation, nor purely cultural canons in Chinese or Italian. The site analysis has allowed us to bring out the desire of the boys to share culture and experience, re-weave, thanks to the contribution of so many people feel similar to his own experiences, the plot of a past that migration is not allowed to know directly. The tradition handed down to second-generation Chinese immigrants, it becomes a tradition developed, not received, the positive counterpart of this lack is that, in search of the roots, the role of young people is more active, you can implement with non-traditional means such as the Internet and virtual communities.

The role that the web has to creating the identity handed down does not replace that of the people of flesh and blood (parents, grandparents, aunts, uncles), real possible transmitters of knowledge and experiences. The portal is a cultural offer that is at the same time, searching for the roots and the design of the future for young second-generation immigrants. With the web, you create an imagined community and diasporic, a bridge between past and

present, between Chinese and Italian companies, including the world of adults and one of the youngest. The identity handed down is not something static, absorbed in a passive way: it is a continuous process of research and selection of cultural consumption, construction and interpretation

The migration process has strong repercussions on the balance and stability of the society of emigration and the host community, especially the family and the individual. The breakup of the landmarks of cultural and social turns out to be even more pronounced in the case of a teenager who immigrated as a child or who are foreign born. In the new context of the family emigrated to life seems to no longer be able to provide its members with a valid support in coping with the difficult integration into host communities. Each original shall develop a strategy to overcome these shortcomings, with results that vary from subject to subject, difficult to define.

In the contemporary world the impact of the means of mass communication, especially the web, has a strong effect on how young people create (and change process) to the tradition and identity. Looking at the site yields a conception of identity absolutely no statuary, no fixed or sent by osmosis. The reality that surrounds each individual is subject to forces that change, it is not possible to give a universal definition of identity, nor think that will be built in the same way in different situations. We must recognize the power of change that characterizes the phenomenon of identity. In the face of today's dynamic, it makes no sense to talk about definitions of ethnicity, nation, culture or community. You must bring the original elaborations that individuals develop in different contexts depending on the variety of situations, thanks to the action of the imagination. In the example that is shown emerges one of many possibilities through which second-generation immigrants, through a medium of mass communication (internet) try to create a tradition that is not only passed, but created by them stess, and an identity that takes on the traits of a real active process. This, however, is not a substitute cultural ties, social and relational, which are woven into the daily reality: it is a significant part.

3.Websites born multi-ethnic and managed by the second generations

In the collected interviews the witnesses contacted for research have referred many examples of websites that are born multi-ethnic and that are managed by the second generations of boys and girls or children of immigrant families. In Italy, the experience very significant (now closed for lack of funds) is that of Crossing Tv (www.crossingtv.it) a web tv designed by a team composed of intercultural boys aged between sixteen and twenty five years. The experience started in February 2008 in Bologna (with funding from the Ministry of Social Solidarity of the Italian Gouvernement) and ended in 2012. The communicative intent of Crossing Tv was to give visibility and voice to teenagers and young people who are not represented by the mainstream media, trying to undermine the prejudices and counteract the stereotypes that young people see themselves and suffer daily.

Through this medium communication, the boys try to act to build new images of young children of immigrants to understand and comply with all the differences in each person, a sort of *Yalla Italia* the web. Then, Internet is a tool used by the second generations, in that it gives the possibility to obtain (in addition to providing) information in a more democratic thanks to its characteristics of an interactive medium. Several young people can have their own blogs and use social networks with the intent to express themselves freely and seek alternative opportunities to exchange ideas. They also represent an instrument of solidarity and sharing since, as said Stella, a young second-generation: «networks do not make you feel lonely, I'll just say that there are people that have the same trouble, that's when you feel more optimistic and see things from another point of view, often for the better. Through dialogue, the exchange of ideas, everything becomes a little lighter.»

3.1 About Muslim word

Over the last few years, were born several internet sites with the intention of giving space to questions about various issues concerning the Muslim world; an example can be given by www.islamonline.it that caters to Muslims and Muslim Italian Italian speakers living in Italy or have Italy as an important reference and is a tool of information, analysis utilities. It is a online magazine through which we discuss marriage, sex, use of the beauty products halal (permitted) haram (forbidden), they share recipes religious songs. It is "sites that help to present Islam in a more

clear and concrete, away from the deformation produced by the media or fanatical interpretations, which are far away from the essence of faith .. Internet is seen as an area in which every citizen is well received, is perceived as a space that transcends national borders by being «above the parties and becoming accessible to all. By islam-online other sites You can express their views freely, feeding processes of criticism and self-criticism: «The communication of self is not real but it is mostly virtual and my peers Moroccans have well understood and have started their silent revolution precisely this way. So it is true, no one is a prophet in his homeland, but we are all prophets on the internet».

Internet makes it possible to bring together the various Islamic communities scattered throughout the West, so they were born Palestian initiatives such as the Youth Network www.palyouth.org, a site designed to allow communication between of Palestinian origin, aged between 18 and 35 years old, living in different parts of the world. The aim is to build a town that is not in order to keep alive the stories that the G2 have heard the voices of their grandparents and increase awareness of themselves trying to stay together regardless of language, culture, religion residence. It is 'necessary for us, and not second-generation youth, go on the pitch we strive to create an alternative system to that of barriers and boundaries. We begin to feel ourselves members a people without a land, a land of many peoples. It is at that point, we will be able to fly on every border.

Other interesting experiences born thanks to the use of internet you can find on the site and the network Altmuslim www.altmuslim.com Cedar www.altmuslim.com. Through the first trying to "influence, producing information, three areas of interest the traditional media and the government the mainstream Islamic organizations. This website arises intent of politically motivated showing sensitivity towards the issues of contemporary forms of the Cedar network has social objectives: to propose the development of "European Muslims model" sustaining promoting their visibility, wants to be a network of interchange intellectual and professional .

Another interesting initiative proposed by the Cedar is the Emwi www.cedaremwi.com (European Muslim Women of Influence), time to honor and reward European Muslim women, giving them a positive image for their capacity to play "a vital role in a wide range that includes the spheres cultural, economic, professional and social.

3.2. Toward the cultures of Eastern Europe

Equally interesting in terms of training and cultural exchange sites are centered themes go cultures of the countries of Eastern Europe, aimed at users undifferentiated. The landscape is vast. They are sites monographs on individual artists in the country of origin: an example is the site designed and maintained by Sabrina Arpini about the artistic life of Gheorghe Iancu, star of the ballet, as a tribute to the great artist. The site is setup properly cultural/encyclopedic (http://www.gheorghe-iancu.com) contains all the information in a detailed and comprehensive career past and present G. Iancu.

There are also sites with a broader offering current topics, debates and opportunities. In this second category belongs the site of the 'Observatory Balkans and the Caucasus (OBC), a project of the Foundation Peace Bell in the middle between an electronic medium, a study center a service center that explores the social and political transformations in the south-east Europe, Turkey and the Caucasus. The Observatory website Balkans the Caucasus, http://www.balcanicaucaso.org, exploits the potential of multimedia, using open source technology and is present on the main social networks.

It includes a very wide range social and cultural issues: environment, gangs, human rights, economy, European Union, media, migration, politics, civil society, governance, customs, tourism and travel, peace, conflict, justice, art and culture, news, religions. Through the interaction between a working group with headquarters in Rovereto (Trento province) and a network of correspondents and collaborators over forty local produces and provides information and analysis that are posted on the web. The portal Observatory weaves information, research and stimulation of international cooperation, is visited by over a hundred thousand readers per month teachers and researchers journalists, students diplomats and officials of local authorities, regional and national policy makers and volunteers and professionals international solidarity and economic operators; citizens of diasporas in South-east Europe and the Caucasus tourist, travelers and visitors.

Another significant site as an example of supply and consumption of cultural products was carried out by the Centro Culturale Italo-Romanian Dacia by the Association of Milan and Livorno, a bilingual portal, which seeks to raise awareness of the cultural values of Romanians in Italy, highlighting also, as much as possible, cultural relations existed between Italy and Romania through time. The portal, http://www.culturaromena.it, was the brainchild a group of young students, researchers, professors, men and women of culture, Italian and Romanian, engaged in cultural and artistic research and some Romanian journalists that for several years living in Italy to be a medium of intercultural communication between the Romanian community living in Italy and the Italian, through literature, art, theater, music, etc. ..

The curators www.culturaromena.it in an attempt to bring the portal as a small mirror of Romanian culture in Italy as a diffuser its values in the world, following the meetings of major cultural Romanian and activate dialogue with the most important personalities who have for many years held a rich activity in this area in Italy. The portal supports and promotes in its pages groups, associations, institutions that operate in the 'sphere of culture. It is 'a project open and evolving with these subject areas History (to know the elements of Romanian history and cultural relations Romania through time) Publications (to present the books written by Romanian authors, or relate to Romania , written by Italian authors)

Events (to present cultural events, conferences, debates, organizing exhibitions, book presentations etc.). Spirituality (to acquaint readers with some spiritual values of the Romanian Orthodox Church) Articles and studies (to present the studies and articles that dealing with items of common interest, cultural interference Romanian) personality (to raise awareness of important personalities of Romanian culture history) Community (to present the personality Romanian living in Italy know even more, their artistic activity) photo and video galleries covering various cultural events.

There is another important site that is worth mentioning for knowledge of Romanian culture http://firiweb.wordpress.com, the site of the Forum of Romanian intellectuals of Italy (FIRI) who was born at the beginning of November 2007. The main purpose of FIRI is to conduct and promote activities to foster intercultural dialogue, understanding, mutual respect and friendship between individuals, communities and peoples.

The supply and consumption of cultural products through the web seems to be a way to promote encourage the young people who live migration the development of an attitude of dual membership, which can enable them to overcome the positive task of constructing one's own identity. Thanks also to the possibility of cultural training these guys could be introduced into the host society while remaining true to themselves, keeping that part of himself that refers to another culture. Even cultural consumption through the web should facilitate the integration, understanding it as the outcome of the choice of keeping their origins along with an opening towards the new construction.

Analyze the cultural offerings found on websites used as a benchmark allows you to guess the young Italian immigrants in the development of a sort of dual ethnicity, through which those who habitually frequents these sites feel they belong both worlds reference: the company host community and the society of origin. This small window of opportunity that opened on cultural consumption conveyed through the web should be useful to teachers and educators to fortify the point of view of intercultural pedagogy, that is able to harmonize the values and recognize the positives and negatives of both the other's sphere of influence, while maintaining the overall balance of the alternating biculturalism that allows you to move freely from one culture to another, from time to time responding to requests from different stakeholders and different situations.

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Time perception in children with developmental dyscalculia

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Abstract

The present work evaluates time perception in children with dyscalculia (DD) to verify whether DD can interfere with timing tasks. Sample includes: 12 DD subjects (M=9.5 years) and 12 healthy subjects (M=9.2 years). Two studies are carried out: a time comparison task (to judge whether an interval was longer or shorter than a reference interval) and a time reproduction task. The ANOVA shows the effect of factor GROUP on temporal relationship and errors on temporal comparison. In sub-second duration timing task, DD children are less accurate than healthy children; boys seem to have a lower level of performance than girls.

Keywords: Learning disability; Dyscalculia; Temporal comparison; Temporal reproduction

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1. INTRODUCTION

The quality and quantity of learning in school age requires optimum efficiency of cognitive functions: perception, memory, information processing abilities, and associative capacity, and functions requiring multiple data processing, as for example reading with the comprehension of a text. So, during school period, the cognitive disorder (underestimated or not relevant disorders) can became Learning Specific Disability.

The learning specific disabilities are classified in three subtypes: reading learning (RLD), written learning (WLD) and mathematic learning disability (MLD).

Developmental Dyscalculia (DD) is a congenital and specific learning difficulty of the calculation; it is a primary cognitive disorder of childhood affecting the disability of an otherwise intelligence and healthy child to learn arithmetic (the understanding of numerical concepts and arithmetical information).

A classification of developmental dyscalculia divides this disorder to (Badian, 1983): a) Alexia and agraphia for number; b) Spatial dyscalculia; c) Anarithmetia; d) Attentional sequential dyscalculia; e) Myxed type.

Although poor teaching, environmental deprivation, and lack of intelligence are involved in the etiology of developmental dyscalculia, current data indicate that this learning disability is a brain-based disorder with a familiar-genetic predisposition. Developmental dyscalculia is a common cognitive handicap; its prevalence in the school population is 5-6%, a frequency similar to developmental dyslexia and attention deficit hyperactivity disorder (Barberesi, Katusic, Colligan, Weaver, & Jacobsen, 2005).

Developmental dyscalculia is the most frequently encountered in neurologic disorders (fragile X carriers, epilepsy and Turner's syndrome) and developmental disorders of childhood such as attention deficit hyperactivity disorder and developmental language disorder (Jordan, Hanich, & Kaplan, 2003; Pellerone, Schimmenti, & Collura, 2012; Shalev & Gross-Tsur, 2001). Whereas isolated learning disabilities other than developmental dyscalculia are more common in boys, developmental dyscalculia is more prevalent in girls with epilepsy and in female carriers of fragile X (with a combination of low arithmetic, digit span and block design subtest scores).

Recent literature shows the presence of some measures as indicators of potential Mathematical Disorder in kindergartners, that is (Gersten, Beckmann, Clarke, Foegen, Marsh, Star, & Witzel, 2009): a) magnitude comparison (i.e., knowing which digit in a pair is larger); b) sophistication of counting strategies; c) fluent identification of numbers; d) working memory (as evidenced by reverse digit span).

Among the possible errors in comprehension and production systems there are: a) lexical errors, or errors concerning the production or comprehension of single figures; b) syntactic errors, since child is able to encode the single digits but he cannot establish the relationship between them in a correct syntactical structure.

The development of mathematical competence originates from the activation of the frontal and parietal areas of the brain. The execution of timing tasks for shorter periods than a second shows a cluster of activation in the right inferior parietal lobe (IPL). Many recent imaging studies have revealed the involvement of the frontal cortex, particularly the dorsolateral prefrontal cortex, in the processing of brief (< 1 sec) intervals (Tregellas, Davalos, & Rojas, 2006), and in the right hemispheric prefrontal cortex with sub and supra-second intervals (Koch, Oliveri, Carlesimo, & Caltagirone, 2002). This evidence confirms what electrophysiological investigations have already indicated regarding the role of the frontal lobe in the coding of temporal information.

Recent evidences (Frassinetti, Magnani, & Oliveri, 2009; Vicario, Caltagirone & Oliveri, 2007; Vicario & Martino, 2010) documents the disposition to spatial coding from left to right of the intervals timing respectively from shorter to longer ones in healthy children; from these results we could deduce that a trend toward the left (along the mental number line) is supposed to be responsible for the underestimation of time in children with dyscalculia.

Time, space and numbers are closely linked in the world of the psyche, however, the effects exerted by the space and other variables on the time estimation processes remain poorly investigated.

A recent study (Vicario , Caltagirone, Turriziani, Koch, & Oliveri, 2008) shows that the feedback of the duration of visual stimuli can be influenced by their location (left vs. right) along the space, as well as from information related to the number's magnitude. Several groups of healthy subjects have executed tasks of temporal evaluations about various types of visual stimuli. In the first two experiments, the visual stimuli consisted of decimal numbers, presented at the center of the screen or on the right and left of the space. In a third experiment, visual stimuli were constituted by circles blacks. The duration of the reference stimuli was set at 300 msec: the subjects had to indicate the relative duration of the test stimulus compared with the reference one. The main results showed that the duration of the stimuli presented in the left hemisphere is underestimated, and the duration of the stimuli presented in the right hemisphere is overestimated. On the other hand, in the median position, the feedback of the duration is affected by the number's magnitude of the stimulus presented, with a time underestimation of the test whether its dimension is smaller than the reference stimulus and vice versa an overestimation of the test if the number's magnitude is higher than the reference stimulus.

A further investigation (Oliveri, Caltagirone, Turriziani, *et al.*, 2008) shows a similar trend of results: in a first experiment, a group of healthy subjects was subjected to a time estimate task, requiring to assess whether the duration of the test stimulus was longer or shorter than a previous reference stimulus. The main results show that the perception of time was influenced by the digit's magnitude: for the lower numbers (for example: 1) the underestimation prevails whilst as regards higher decimal numbers (for example, 9) dominates the overestimation of duration. These findings confirm a functional interaction between time and numbers in the cognitive system.

1.2 METHOD

1.2.1 Objectives and research hypothesis

The present work aims to measure the perception of time in children with dyscalculia. The aim of the study has been to examine whether a deficit in calculation ability could influence with a time comparison task and a time reproduction task in sub-second and supra-second intervals.

In accordance with the literature (Vicario *et al.*, 2008) it is assumed that there is no gender difference in sub- and supra second timing tasks.

The group dimension is also assumed (healthy subjects and subjects with dyscalculia) to have an influence on the factor of temporal relationship and on percentage error in time comparison in sub- and supra second intervals, according to the literature (Oliveri, Vicario, Salerno, Koch, Turriziani, Mangano, Chillemi, & Caltagirone, 2008; Vicario, 2011).

1.2.2 Participants

The sample is formed by 24 students of primary school in Sicily: the first group is composed of 12 subjects (a experimental group), including 7 males and 5 females ($M = 9.5$ years; SD = 0.57), with pure dyscalculia (that is a form of dyscalculia in which is excluded any other form of co-morbidities); the second group of 12 healthy subjects (control group), including 7 males and 5 females ($M = 9.2$ years, SD = 0.50).

1.2.3 Procedure: Study one (Time comparison task)

The task was earlier described to participants; afterward they have been requested to perform a series of practical tests to verify whether participants had understood the progress of the test. The subjects were placed in front of monitor of a laptop.

The purpose of the experiment was to determine whether a test stimulus (a black circle) was presented for a time interval longer or shorter than the duration of a standard stimulus (a red circle).

For each session, there were two separate and consecutive blocks, the first one including sub-second intervals and the second one the supra-second intervals.

In the block of sub-second intervals, the duration of the standard stimuli was 400 milliseconds in each test. This block consisted of 18 trials including subjects, estimating 6 sub-second intervals (300, 440, 500 ms), each of which was submitted for 6 times in random order, but immediately after the stimuli reference. The standard stimuli were presented immediately before the test stimuli in each of the 18 tests.

In the block of supra-second intervals, the duration of stimuli reference was of 1400 milliseconds in every test. This block consisted of 18 trials, including subjects estimated 3 supra-second intervals (1200, 1440, 1520 ms), presented in random order for 6 times. The standard stimulus was presented immediately before the test stimulus in each of the 18 trials.

In both blocks, thus, 9 trials contained stimuli tests major than standard stimulus, and 9 trials contained test stimuli lower than standard stimulus. Each interval between the trials was 2000 msec. The order of presentation of the sub-second blocks and supra-second blocks was counterbalanced between subjects in each group.

The performance of each subject was analyzed by calculating the average percentage of wrong answers (errors) on 9 sub-second trials and 9 supra-second trials.

1.2.4 Procedure: Study two(Time Reproduction task)

The subjects were positioned in front of the monitor to a laptop. Each of them completed two tasks in a random order for the production of time intervals: in the first task, the way of production was independent (Self Time Production - STP), in the second task the way of production was given by the computer (Computer Time Production - CTP), according to indications Van Der Meer, Marzocchi and DeMeo (2005), who had applied this methodology in subjects with ADHD.

The two tasks were presented in a counterbalanced way. The execution of the task was preceded by a training phase in which (through the use of a stopwatch) the experimenter showed the real length of each interval. The data were collected in the form of response time expressed in milliseconds.

In the first task, the way of production was independent; it is consisted of a block of 18 trials in which subjects estimated 3 independent intervals presented in random order, each of which was submitted for 6 times; alia block consisted of 50 trials in which subjects estimated 3 sub-second intervals (300, 400, 500 ms), presented in random order for 6 reps too.

1.2.5 Measures

Instruments used are: *AC-MT* Test for evaluation of calculus disorders (Cornoldi, Lucangeli & Bellina, 2002) and Weschler III for QI evaluation (Wechsler, 1991).
● The test AC-MT was born as a response to the need to have an instrument to assess the numerical and calculation skills, in children from 6 to 11 years.

The tool serves to determine the detail of calculation (baseline assessment) and the difficulties of calculation (diagnosis of the first level), through six specific indices: the first two indices refer to the "accuracy" variable, the third index refers to the speed of calculation, provides an individual administration; the fourth index regard the presence of basic elements, related to the ability to lexical comprehend and produce, syntactic and semantic number; the other two indexes refer to written operations and solving mathematic problems.
● The WISC-III (Wechsler Intelligence Scale for Children; Wechsler, 1991) is a clinical tool for the diagnosis and evaluation of intellectual abilities of children aged from 6 to 16 years and 11 months; it is constituted by it 13 subtests divided into two groups: verbal subtest and subtest performance. Verbal subtests are oral questions without time limits except for Arithmetic; performance subtests are nonverbal problems, all of which are timed and some of which allow bonus points for extra fast work. The subtest select different mental abilities which will together contribute to the overall intellectual ability (IQ).

The verbal subtests measure: Information, Similarities, Arithmetic (Numerical Reasoning), Vocabulary, Comprehension, Digit Span. The Performance subtests are: Picture Completion, Coding, Picture Arrangement, Block Design, Object Assembly, Symbol Search, Mazes.

The ability of the child is synthesized through three different scores: Verbal IQ, Performance IQ, and Total IQ, (a combination of subtest scores for verbal and performance).

1.3 DATA ANALYSIS

The Univariate Analysis of Variance tree way (ANOVA) is used to measure the percentage of errors in temporal comparison task; in particular the Anova between subjects is used in the experimental group (child with dyscalculia) and in the control group (healthy child); The Anova within subjects is used to measure the dimension of BLOCK (sub and supra-second intervals) and the dimension of TEMPORAL REPORT between the test and standard stimulus (test stimulus longer than the reference test, against shorter than the reference stimulus).

Student's t test for independent samples was used for the inter-group and intra-group comparison.

1.4 RESULTS: PRELIMINARY ANALYSIS

A preliminary analysis is made in order to measure the level of IQ in both groups (subjects with dyscalculia and healthy subjects). The WISC III test shows that all participants have an IQ in the standard.

Another preliminary analysis is done to confirm the absence of symptoms of dyscalculia in the group of healthy children. The test AC MT- indicates that the 12 healthy child reported a normative score.

The Univariate Analysis of Variance to verify the influence of gender variable on performance tests emphasises the following:
● the significant effect of gender on time comparison task in sub-second block ($F_{(1,11)} = 5.16$, $p < .05$) and supra-second block ($F_{(1,11)} = 13.78$, $p < .01$): specifically boys obtain higher average score than girls in sub and supra-second intervals than girls;
● the effect of the variable of gender on temporal relationship in supra-second intervals ($F_{(1,11)} = 9.76$, $p < .05$): boys show a highest average score than girls in time relationship task with supra-second intervals.

1.4.1 Temporal Comparison

The three-way ANOVA for repeated measures shows the influence of the factor GROUP on temporal relationship ($F (1,11) = 7.34$, $p < .05$), and on the percentage of error in temporal comparison ($F (1, 11) = 5.42$, $p > .05$), but also a significant effect of the within-subjects factor BLOCK ($F (1,11) = 6.92$, $p < .05$).

The factor REPORT TIME has a main effect ($F (1,11) = 5.48$, $p < .05$) on the percentage of errors in the work of the temporal comparison.

Comparing the average scores, data show that: there is no difference between the two groups in the percentage of errors for the block supra-second intervals; while in sub-second test, children with dyscalculia are significantly less accurate than healthy children.

In children with DD, the temporal relationship is broader compared with healthy children but only in tasks of sub-second timing.

The interaction GROUP * BLOCK * REPORT TIME proves statistically significant ($p < .05$).

1.4.2 Temporal Reproduction
Student's T for independent samples shows a significant difference between experimental and control group in sub-second intervals ($F = 5.31$; $p < .05$).

The two-way ANOVA for repeated measures shows a main effect of factor BLOCK ($F (1,11) = 64.2$, $p < .01$), while there was found no main effect of the factor GROUP ($F (1, 11) = 1.35$, $p = .275$).

1.5 DISCUSSION

The present study is designed to assess the ability of children with DD to compare and reproduce time intervals. Compared to the tasks of temporal comparison, the research has shown that there are differences due to gender variables: in particular in the group of children with dyscalculia, boys seem to have a lower level of performance than girls. This result confirms some studies that show an increased incidence of disorder on girls than boys, because dyscalculia is associated to dysfunction in both hemispheres brain with a significant contribution of right hemisphere. As the girls are probably more dependent on verbal cognitive processes are higher than boys in this cognitive function they may be more phone to learning disabilities that depend of right hemisphere (Badian, 1983).

Disconfirming the initial hypothesis, there isn't difference between children with dyscalculia and healthy children as regards to the percentage of errors demonstrated in the resolution of the task.

Furthermore, confirming the research hypothesis, the factor Temporal Relation has a major effect on the percentage of errors: in detail, the interaction Block * Temporal Relation is also found to be significant as the Group * Block.

In reference to this interaction, the difference between the two groups concerns only the sub-second intervals, that is to say children with dyscalculia were significantly less accurate than the control group in the timing test of sub-second durations, because they manifest more errors in over timing comparison task, giving a judgment of underestimation compared to the standard stimulus.

Moreover, the post hoc analysis showed that the dyscalculia group significantly underestimates the duration of visual stimuli compared to the control group, whereas it was reported no difference between the subjects for the supra-second block.

In the task of reproduction time, the only significant value concerns the temporal factor BLOCK in the sub-second intervals: in fact children with DD give a judgment of underestimation compared to the standard stimulus, that is to say children with dyscalculia reproduce the test stimulus for a shorter duration than the standard stimulus.

The research shows that participants with dyscalculia did not differ from control group in comparison of supra-second intervals, but only in sub-second intervals. This temporal abnormality of child with DD is confirmed by the literature, that shows the presence of parietal and frontal activation during performance of works similar to ours.

The execution of timing tasks for sub second periods shows a cluster of activation in the right inferior parietal lobe (IPL) for perceptual and motion timing works.

1.6 CONCLUSION

The examination of neuroimaging studies (TMS - Transcranial Magnetic Stimulation) allows us to explain the temporal abnormalities in our group with dyscalculia, but it remains to explain why children with DD underestimate the time.

According to some recent evidence documenting a spatial encoding from left to right of the time intervals respectively from shorter to longer ones (Frassinetti *et al.*, 2009; Vicario *et al.*, 2008) one might assume that a trend toward the left along the mental number line may be responsible for the underestimation of time.

The results of a recent work document the presence of a pseudo-neglect (ie an attentional bias to the left) higher in the DD group compared with the control group, when they are asked to perform a task bisection of mental number

line (Ashkenazi & Henik, 2010). In particular, these authors showed that the group whit dyscalculia tends to identify the center of a segment leftmost of the control group. This study is the first to highlight the difficulty of spatial attention in children with DD (Corbetta & Shulman, 2002).

Knops and colleagues (Knops, Thirion, Hubbard, Michel & Dehaene, 2009), has further highlights the presence of a pattern of involuntary eye movements to left or to right, during the execution of arithmetic operations (subtraction vs. Addition, respectively) in association with activation of posterior parietal cortex.

On the basis of this evidence, it is assumed that an attentional bias to the left like the one recently reported by Ashkenazi and Henik (2010), may reflect the phenomenon of underestimation highlighted in children with DD, as predicted by the Time line model (Vicario et *al*., 2007) which proposes a similar orientation from left to right also for time intervals as well as for the numbers (Dehaene, Bossini & Giraux, 1993).

It was recently proposed a possible association between poor math skills and visual deficits in the temporal processing, considering the performance of DD in exploration tasks of sensitivity to visual motion (Sigmundsson, Anholt & Talcott, 2010). This study provides the first direct evidence on changes in the processing capacity of the explicit time in children with DD in absence of comorbidities. These deficts seem to be selective for sub second intervals.

The results of this study corroborate the hypothesis of a recent Mental Time Line (Vicario, Caltagirone, Pecoraro, et *al*., 2008;. Oliveri et *al.*, 2008) in which the representation of the inferior duration is positioned in the left side of a mental space, while the representation of a longer duration is positioned in the right side of the same mental space.

1.7 IMPLICATIONS FOR PRACTICE

Research in literature should be conducted in order to test the impact of arithmetic training sessions, which have been recognized to be able to improve the dyscalculia deficiency, changing the activation of both parietal and frontal circuits (see Ansari, 2008, for a comprehensive review), the ability to perform time estimate tasks.

There are four type of treatment to increase the math abilities:
● early intervention with children with difficulties in reading and writing;
● global training on the difficulties of numerical processing and calculation;
● training on transcoding numbers;
● training on specific components of numbers and calculation with the use of compensatory instruments.

In the first arithmetic tasks (such as sets, perceptual and manipulative activities), these children haven't particular difficulties because these activities do not provide abilities that are really difficult for them.

The first treatment is focused about the recovery of lexical labels (to read and write numbers, to count backwards, for multiplication tables), the working memory (to read and write numbers, to count); the ability to automate procedures (for calculating written and counting). Skills that would be favored with this type of intervention are: a) Increased efficiency in the number line, with exercises ascending and descending count, games such as the identification of the following or preceding number; b) The identification of the semantic aspects of numbers, such us their arrangement and placement on the number line, the mental calculation, the addition and subtraction.

The second model of treatment promotes: a good control of the processes of transcoding number; good executive skills and control measures relating to the calculation in children who started the second cycle of elementary school. Among the most frequent difficulties, together with those in arithmetic facts, there are the tasks of numerical transcoding and serial backward counting. A good ability in the use of the number line helps in the performance of any activity with numbers and calculations.

The training of numerical transcoding is intensive and of short duration; this is made during the last years of primary and secondary schools; it rests mainly on exercise of transcoding numbers, but also draws from some activities related to the number line. This treatment promotes a more efficient reading and writing of numbers in terms of speed and accuracy.

At the last, training on specific components of numbers influences: the specific components of numerical and calculation abilities; the promote awareness and the use of compensatory measures (using timing and mode of intervention shorter). During this treatment, you can teach, depending on requirements, to: a) use the calculator and the multiplication table; b) monitor the written calculation; c) to learn strategies to simplify mental calculations.

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Truants' and Teachers' Behaviors in the Classroom

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Abstract

Teacher's behavior has a significant role in influencing the truanting behaviors among the students. The objective of this study is to identify the characteristics of teachers' behavior which impact on truancy among secondary school students. The sample consisted of 472 truants who have routinely skipped school from 10 to more than 40 days per year. Information about the samples' truancy was provided by the school administration. The findings indicated that there were 15 types of teachers' behaviors which affect truant behaviors of students. The characteristics of 'teacher serious in teaching' has the highest mean and 'teachers are biased toward male students' has the lowest mean. Further analysis showed that there were significant differences in mean in the construct of teacher's behavior based on gender and type of school.

*Keyword*s: Teacher's behaviors; truancy; gender; type of school

1. Introduction

School is a significant setting in the process of development for every individual in the country when public education is made compulsory. School is considered as the extended home for individuals as a lot of time is spent in school. Thus, the members in the school setting especially the teachers have a vital role to play in many aspects of students' attitude and motivation. Truancy is a type of behavior displayed by students that has drawn the concerns of parents, educators, society and the Ministry of Education. Truancy is defined as habitual engagement in unexcused absence from school (Zhang et al., 2010).

According to the Ministry of Education records, in 2010, out of 111, 484 discipline problem cases, 19, 545 cases involved truancy. In 2011, from the 108, 650 discipline problem cases, 18, 550 involved truanting behavior. Truancy is the beginning point to many lifelong problems (Garry, 1996). Literature review has reported that truanting behavior among the students is an early sign to many social problems. Truancy is related to dropout from schools (Baker et al., 2001, Balfanz et al., 2008; Furgusson et al. 1995; Hibbett et al. 1990), low academic performance (Chang & Romero, 2008; Nauer et al., 2008; Seeley, 2008a; Wilson et al., 2008), problems in academic (Balfanz et al., 2008; Heilbrunn, 2007), delinquency (Wang et al., 2005), and substance abuse (Heilbrunn, 2007; Herny & Thornberry, 2010; McAra, 2004; Seeley, 2008a).

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The Ministry of Education has introduced the system of warning letters in deterring truancy. The school administration is given the authority to assign three types of warning letter to students who play truant. Warning letter type one will be given to students who are absent from school unexcused for more than ten days. Students who skip school unexcused for more than twenty days will receive warning letter type two. Warning letter type three will be issued to students deemed truant for more than forty days. Students will be expelled from school if they continue to truant. However, parents and guardians can appeal for the students to be re-registered into the school system.

Burley and Harding (1998) reported that school policies, rules, curriculum and teachers' characteristics can result in significant impacts on students' attitudes and attendance in school. Research has shown that teachers as the closest social agent to students in school have contributed to truanting behavior among students. Teachers' characteristics and attitudes can contribute to truancy (Baker et al. 2001; National Centre for School Engagement, 2005). Teachers who show lack of respect for students and disregard the different needs among the students can make students attempt to truant (National Centre for School Engagement, 2005).

Bartholomew (2009) stated that truants like to use "dislike teachers' teaching methods" as the most common excuse for playing truant. Truants favor interaction with teachers and students besides being granted autonomy in the learning process (Bartholomew, 2009). Bartholomew (2009) further asserted that positive teacher-student interaction can encourage students' attendance in class. Teachers' characteristics such as rude, sarcastic, unfair, insult and embarrass students can influence truanting behavior though the impact is rather small (Bartholomew, 2009). Aligned with Bartholomew (2009), Britten (2002) reported that teachers' unpleasantness and hatred toward certain students can contribute to students' truanting behavior. Besides that, students are also inclined to skip school when they feel that teachers and schools do not care for them (Van Breda, 2006) or teachers apply authoritarian teaching methods (Wiles, 2000).

In the Malaysian context, Azizi Yahaya et al. (2007) revealed that the aspect of teachers has the highest mean among all the predictors for truancy. Pursuing this further, Azizi Yahaya et al. (2007) point out that teachers who like to assign a lot of homework to students, are always late to class and fail to perform effective teaching will discourage students from staying in school. Findings of Mohamed Sharif and Hazni (2010) and Johari and Nik Selma (2011) support the role of teachers in influencing students to become truant. Muhammed Sharif and Suria (2012) reported that teacher's attitude can cause students' unexcused absence from schools. In their findings, 59.4% of the truants feel that their discipline teacher is unfair in punishing students, thus keeping students away from school. Furthermore teachers who are very strict, serious and mean can make students skip school. Bartholomew (2009) stressed that high expectations of teachers on students' performance outside and inside the classroom produce positive impacts on students' truanting behavior.

The major objective of this study is to determine the role of teachers in the problem of truancy among secondary school students. It is aimed at identifying the types of teachers' behaviors that will influence secondary school students to involve themselves in truancy. Besides that, this study also intends to identify the mean differences of teachers' behaviors based on gender and type of school.

2. Methodology

Respondents for this study were 472 students consisting of 322 males and 150 females from public schools which have been identified as schools with a high rate of truancy by the Ministry of Education in Malaysia. The respondents are 346 Malay, 64 Chinese and 62 Indian students aged between 13 to 16 years. Some 236 of the sample have been given warning letter one, 183 have been given warning letter two and 53 have been given warning letter three by the school administration.

Samples were obtained using purposive and random sampling procedures. We randomly selected 15 schools of high rate in truancy from the list given by the Ministry of Education of Malaysia. Selected schools have to prepare a name list of all the students who have been given warning letters of three types. All the students in the name lists are classified as sample. Data were obtained via survey using a self-administrated questionnaire. Samples were gathered and given 30 minutes to answer the questionnaire. The questionnaire has been developed by the researchers based on educational theory and literature review. The questionnaire consists of two parts, part A elicits the respondents' demographic data whereas part B is about teachers' characteristics. There are twenty-five items in the questionnaire. The instrument has undergone pilot study for validation.

3. Results of Research

The reliability of the instrument was assessed using estimates of internal consistency (Cronbach alpha). The cut-off value for Cronbach alpha is .70 and above (Hinton et al., 2004). Data of the study were analyzed based on SPSS (Statistical Package for the Social Sciences) to generate the descriptive and inferential statistics of the respondents and to achieve the objectives of this study. The Cronbach alpha value for the instrument is .79 which means the instrument has reached acceptable reliability (Hinton et al., 2004).

Table 1 reveals the mean and standard deviation of items on teacher's behavior. The means of all items were within the range of 2.34 and 3.49. Item 'teachers are serious in their teaching' has the highest mean ($M = 3.49$, $SD = 1.06$) whereas item 'teachers are gender biased, favor male students' has the lowest mean ($M = 2.34$, $SD = 1.08$). Items with mean within the range of 3.40 and 3.17 are 'teachers are serious in their interaction with students' ($M = 3.40$, $SD = 1.06$), 'teachers are biased, attention is given to students with high academic achievement' ($M = 3.32$, $SD = 1.24$), 'teachers emphasize on academic only' ($M = 3.31$, $SD = 1.12$), 'teachers are fierce' ($M = 3.29$, $SD = 1.21$), 'teachers like to scold and nag at students' ($M = 3.27$, $SD = 1.33$), 'teachers are biased, attention is given to students who contribute to school such as prefects, librarians' ($M = 3.17$, $SD = 1.29$) and 'teachers are not concerned about my problem' ($M = 3.17$, $SD = 1.23$). Items with mean within the range of 2.72 and 2. 2.34 are 'teachers rarely enter

class to teach' ($M = 2.72$, $SD = 1.23$), 'teachers are not pretty/ handsome' ($M = 2.70$, $SD = 1.33$), 'teachers have no initiative to teach' ($M = 2.65$, $SD = 1.19$), 'teachers understand my feeling', ($M = 2.58$, $SD = 1.24$), 'teachers are gender biased, favor female students' ($M = 2.54$, $SD =1.17$), 'teachers never check/ mark my homework' ($M = 2.53$, $SD = 1.19$) and 'teachers are gender biased, favor male students' ($M = 2.34$, $SD =1.08$).

The report further illustrates that 77.1% of the respondents do not agree that their teachers understand their feeling, 53.6% of the respondents agree that their teachers are too serious in the teaching and learning process, 47.7% of the respondents feel that their teachers are serious when interacting with students. 44.3% of the respondents find that their teachers are biased as they give more attention to good academic achievers because 43.2% of the respondents find that their teachers are very academic orientated. Besides that, the findings also show that 41.7% of the respondents agree that their teachers are fierce, 43.9% feel that their teachers like to nag and scold students and 42.2% of the respondents find teachers are biased as they give more appreciation to students who can contribute to schools such as prefects and librarians.

Table 1: Mean and standard deviation of items on teacher's behavior

	Item	SD (%)	D (%)	SA (%)	A (%)	SA (%)	Mean	Standard deviation
E1.	Teachers are fierce	9.5	14	34.7	21.4	20.3	3.29	1.21
E2.	Teachers are biased, attention is given to students with high academic achievement	7.8	19.7	28.2	21.6	22.7	3.32	1.24
E3.	Teachers are gender biased, favor male students	25.4	31.4	32.2	5.7	5.3	2.34	1,08
E4.	Teachers are gender biased, favor female students	22.0	27.8	32.8	8.9	8.5	2.54	1.17
E5.	Teachers are biased, attention is given to students who contribute to school such as prefects, librarians	10.8	23.7	23.1	22.9	19.5	3.17	1.29
E6.	Teachers are serious in their teaching	5.3	11.0	30.1	36.9	16.7	3.49	1.06
E7.	Teachers are serious in their interaction with students	5.5	12.1	34.7	32.4	15.3	3.40	1.06
E8.	Teachers emphasize on academic only	7.0	14.8	35.0	26.9	16.3	3.31	1.12
E9.	Teachers rarely enter class to teach	18.6	26.7	29.0	14.8	10.8	2.72	1.23
E10.	Teachers understand my feeling	25.8	21.0	30.3	15.3	7.6	2.58	1.24
E11.	Teachers are not pretty/ handsome	22.9	24.2	28.8	8.3	15.9	2.70	1.33
E12.	Teachers have no initiative to teach	18.0	30.7	29.0	12.5	9.7	2.65	1.19
E13.	Teachers are not concern about my problem	11.4	17.6	30.3	24.2	16.5	3.17	1.23
E14.	Teachers like to scold and nag at the students	11.9	18.9	23.3	22.0	23.9	3.27	1.33
E15.	Teachers never check/ mark my homework	21.6	31.6	27.8	10.6	8.5	2.53	1.19

Keys

SD   =   strongly disagree   A   =   agree

D   =   disagree   SA   =   strongly agree
SA   =   slightly agree

Table 2 shows the comparison of mean for teachers' behavior based on gender. Independent-sample *t*-test is used to determine if the mean differences is significant at the .05 level. As indicated in Table 2, the analysis yield a *t*-value of 3.67 which is significant at the specified level ($p = .000$). This implies teachers' behavior can produce difference effect on male and female students' truanting behavior. Further analysis displayed that the mean of teachers' behavior for male is higher than female students. Teachers' behavior results greater impact on influencing male students than female students to commit themselves in truancy.

Table 2: Comparison of teachers' behavior between male and female students

Construct	Mean	Standard deviation	*t*- value	*p*
Gender				
Male	45.00	8.76	3.67*	.000
Female	42.26	9.31		

Table 3 displays the comparison for mean of teachers' behavior based on types of school namely urban, rural, Felda and island. One-way ANOVA is used to determine if the mean differences are significant at the .05 level. As reported in Table 3, the analysis yielded a significant result with *F*-ratio of 6.54 which is significant at the specified level ($p = .000$). This denotes that teachers' behavior can produce difference impacts on truancy among students from urban, rural, Felda and island schools. The mean of students from Felda schools is the highest whereas the mean of students from rural schools is the lowest.

Post hoc test was conducted using Scheffe correction for multiple comparisons as shown in Table 4. The mean differences of teacher's behavior on truancy between urban schools and rural schools and between rural and Felda schools are 3.329 and 6.649 respectively and they are both significant at .05 with the value of *p* being .028 and .000 respectively. However the mean differences of teachers' behavior on truancy between urban and the Felda and the island schools are 3.162 and 1.079 respectively and they are not significant at the .05 level. Moreover, the mean differences between island and rural and Felda schools are 2.249 and 4.241 correspondingly are also not significant at the 0.05 level.

Table 3: Comparison of teachers' behavior One-way ANOVA based on types of schools

	Mean	Standard deviation	*F*- value	*p*
Types of school				
Urban	44.71	9.13	6.545***	.000
Rural	41.38	7.50		
Felda	47.87	9.58		
Island	43.63	8.72		

Table 4: Teachers' behavior on truancy differences among the schools

	Mean differences	P
Types of school		
Urban and rural	3.329*	.028
Urban and Felda	-3.162	.920
Urban and island	1.079	.947
Rural and Felda	-6.649*	.000
Rural and island	-2.249	.728
Felda and island	4.241	.235

4. Discussion

The findings of the study reveal that teachers' behavior plays a vital role in effecting the truanting behavior among the secondary school student as supported by Burley and Harding (1998), National Center for School Engagement (2005), Bartholomew (2009), Baker et al. (2001) and Azizi Yahaya et al. (2007). One of the most noteworthy findings of this study is more than two-third of the truants feel that their teachers do not understand their feeling and this input need to be considered seriously by the Ministry of Education particularly the teachers themselves. Most of the truants in this study feel that their teachers are too serious when they deliver their teaching in class therefore make learning process very boring. This is agreed by Bartholomew (2009) as the findings reported that truants always used 'dislike teacher's teaching method' as the reason for skipping class. According to Bartholomew (2009), truants prefer lessons where students are given a lot of opportunities to interact with the teacher and other students besides liking to attend classes where they have the autonomy to channel their opinions of things happening in class. Applying authoritarian teaching pedagogy will influence truancy among students. Teachers who like to use lecturing in class and assign many tasks for students to work on their own will discourage students from attending class. This is supported by the findings of Azizi Yahaya et al. (2007).

Teachers who like to practice seriousness when interacting with students affect truancy as truants state that they will skip class if they are discouraged from interacting with the teachers as reported by Bartholomew (2009). Teachers who treat students unfairly will stimulate students' truanting behavior. Teachers have to provide equal attention to all students though truants usually cannot perform well in academic and others aspects in school. Lack of attention from the teachers will increase the tendency of students to commit in truanting behavior. Furthermore, teachers should not focus on the academic aspect only in educating students as each student has different potential that can be developed as stated in Gardner's multiple intelligence theory. Learning settings that are academic oriented will demotivate students who cannot excel in academic aspect and lead them to truancy.

Teachers who are fierce, rude, sarcastic and unfair are not favored, thus they will discourage students from attending class (Bartholomew, 2009; Britten, 2002; Muhammed Sharif Mustaffa & Suria Abdul Jamil, 2012). According to Van Breda (2000), students will be tempted to involve in truancy if they cannot feel cared for by the school and teachers especially. At the same time, the findings of this study also confirmed that students who like to truant express that their teachers are not concerned and do not care about their problem. This will make students face loneliness and helplessness in solving their problems; consequently they will turn to peers where the feeling of

togetherness can be fulfilled. Teachers who like to scold and nag have proven to be one of the factors that influence truanting behavior among the students. Teachers' scolding and nagging has demotivated students from attending classes because they feel that learning is an unpleasant process injurious to their self-esteem.

Further analysis demonstrates that teachers' behavior can result in different impacts on the truanting behavior among the male and female students. Male students are more likely to play truant as a result of teachers' behavior. This may because most of the teachers are female. Additionally, the findings also reveal the teachers' behavior can influence the students of urban, rural, Felda and island schools to commit truancy differently. Students of Felda School most probably will skip school because of teachers' behavior followed by students from urban and island schools. In contrast, students from rural schools are least affected by teachers' behavior to become truants.

The findings of this study have revealed that teachers play a very crucial role in resolving the problem of truancy. Teachers themselves should have the awareness that they can contribute a lot of effort in helping truants to stay in school. It is essential that teachers have the initiative and capability to create a conducive and enjoyable learning process for the students to motivate them to keep coming to school. Learning activities should be student- centered and hand-on activities which focus on students' involvement should be emphasized. Besides that, teachers should prepare learning activities and create a learning environment that fulfills students' multiple intelligences. Developing a sense of belonging among students in the school system will attract them into continued attendance.

As for the psychological aspect, teachers have to foster good and close interaction with students whereby students' opinions and suggestions on the teaching and learning process and the school setting can be shared. Two-way communication ought to be practiced between the teacher and students to facilitate good relationship thus encouraging students to stay in school. Teachers with friendly and caring personality can prompt students to attend school as all students like to be taught by teachers who are very approachable and concerned about their students. It is of upmost importance for teachers to convey the message that they do care and understand how students feel. Teachers need to be aware that their characters can produce different influences on truancy based on the students gender and the school type.

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Turnover intentions: The influence of perceived organizational support and organizational commitment

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Abstract

Today's managers are facing the problem of turnover intentions due to lack of skilled workers. Most of the organizations are using rewards, recognition to retain them but, how POS and organizational commitment helps them to retain key employees still need to explore. A total of 412 respondents participated in questionnaire based survey conducted in Malaysian banks. Results of the study revealed that POS positively affect on AC and NC while negatively on turnover intentions. Furthermore, AC and NC perform the role of mediator between POS and turnover intentions. Limitations and implications are also discussed.

Keywords: Perceived organizational support (POS), Affective commitment, Normative commitment, Turnover intentions;

Introduction

Leaders are of the view that committed and skilled employees are the only source of competitive advantage for organizations. In addition to this, skilled employees are of much importance for the organization's effectiveness, therefore it has become essential for employees to retain such employees (Mayfield and Mayfield, 2008). This issue has realized the importance of commitment to employers because committed employees are more adaptable to change, learn efficiently, work efficiently and less likely to leave the organization (Mowday, 1998). As a result HR managers are paying more attention in recruitment and retention of skilled employees. Management's policies which support their employees also play a vital role in enhancing their commitment and retention (Perryer et al., 2010).

Retention of employees with positive attitudes and skills has become difficult in the Malaysian context because of skills shortage. The breadth of the skill shortage was of major national concern in manufacturing, engineering, health service, IT and banking. This issue has created huge problem for the HR managers regarding high cost of employee's retention. Organizations are trying to retain its employees through promotions, rewards and incentives (Perryer et al., 2010), while some are providing them learning environment (Islam et al., 2013; Islam et al., 2012). One of the positive organizational aspects is perceived organizational support (Mowday, 1998). This aspect has strong impact on employee's organizational commitment and turnover intentions.

POS can be defined as "the overall extent to which employees believe that their organization values their contribution and cares about their well-being" (Eisenberger et al., 1986). Organizational support theory proposed by Eisenberger and colleagues was the base behind the concept of POS. researchers in the field of management and organizational behavior has identified POS as antecedent of employees organizational commitment and turnover intentions (Kim & Chang, 2012; Su, Baird and Blair, 2009; Yi & Lee, 2012). Organizational commitment can be defined generally as the relative strength of an individual's identification with, and involvement in, an organization (Mowday, Steers & Porter, 1979). Organizational commitment is an important factor of organizational outcomes and performance. Committed employees are more likely to engage in productive behaviors and less likely to leave the organization (Meyer, Allen & Smith, 1993). Organizational commitment is considered as multidimensional

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construct i.e. affective, normative and continuance commitment (Allen and Meyer, 1990). *Affective commitment* is the employees emotional attachment with the organization, *Normative commitment* is the obligation to remain with the organization while *Normative commitment* is related to the cost associated with leaving the organization (Allen and Meyer, 1990). Researchers in the past have identified that employees who are emotionally attached, or thing obligation to be with the organization are less likely to leave organizations (Hsu, 2009, Meyer et al., 2002).

The current study is aimed to investigate the mediating effect of affective and normative organizational commitment between POS and employees turnover intentions among the employees of Malaysian banking sector to explore the social exchange relations in a new way. In addition to the direct relations the present study is also aimed to see how affective and normative commitment performs the role of mediator between POS and turnover intentions. Because Recently Galletta et. al., (2011) while exploring the relationship between POS and TI proposed to investigate the mediating role of organizational commitment between POS and turnover intentions.
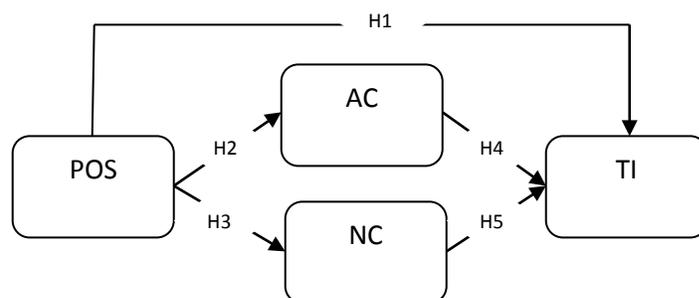
Figure 1: Hypothesized model

Methodology

Sample and procedure

A questionnaire based research was employed using 412 employees working in Malaysian Banking sector, chosen on the basis of simple random sampling technique. A total of 600 questionnaires were distributed after getting permission from the branch managers with the response rate of 68%. Respondents were asked to be realistic regarding questionnaire and were assured that their information would be used only for research purpose. Out of total 78% of the respondents were female, 69% were having master's degree and 54% of them were having more than 5 years working experience with the same institutions.

Instrumentation

All the respondents were judged on the basis of five points Likert scale ranging from 1 = strongly agree to 5 = strongly disagree. To measure employee's turnover intentions 3 items scale was used from the study of Lichtenstein et al. (2004) who reported its reliability 0.83. Meyer and Allen (1990) introduced 16 items scale for affective and normative commitment. In a recent study Gellatly, Meyer, and Luchak, (2006) reduced this scale up to 6 items and reported that it is better than original scale. The same 6 items scale was used in the present study containing 3 items for each dimension. Researchers have continusly reduced Eisenberger's 36 items scale regarding POS. Recently Paillé, Bourdeau, and Isabelle, (2010) used 3 items scale and reported 0.89, 0.88 and 0.89 as factor loading with 0.92 reliability. The same three items scale was used in the present study.

Data Analysis

Table 1 shows the mean, standard deviation, reliabilities and correlation among all the variables. Mean score of the variables (POS, AC, NC and TI) are near to neutral (M= 3.61, 3.57, 3.68 and 3.29 respectively). POS was found to be positively associated with affective and normative commitment (i.e. $r = 0.65$ and 0.47 respectively) but negatively related to employees intentions to leave the organization ($r = -0.54$). On the other hand affective and normative organizational commitment were also found to be negatively related with employee's turnover intentions ($r = -0.53$ and -0.46 respectively). All measures demonstrated adequate levels of reliability (0.79–0.88).

Table 1. Descriptive, Statistics and Reliabilities

Variables	Mean	S.D	1	2	3	4
1.POS	3.61	0.39	(0.88)			
2.AC	3.57	0.58	0.65**	(0.79)		
3.NC	3.68	0.71	0.47**	0.68**	(0.81)	
4.TI	3.29	0.65	-0.54**	- 0.53**	- 0.46**	(0.83)

Note: Mean, Standard Deviation, Pearson correlations and Reliability. **$p < 0.01$; $n = 412$.

3.1   Structure equation model assessment:

Diamantopoulos and Siguaw (2000) demonstrated that the main objective behind SMA is to determine whether data support the conceptual explanation or not. Figure 2 shows the strength of the relationship with path coefficients and model fit. The hypothesized model indicated a good fit in all indices i.e. $p < 0.01$, nonnormed fit index (NNFI) =. 94, root mean square of approximation (RMSEA) = 0.063, standardized root mean square residual (SRMR) = 0.052 and comparative fit index (CFI) = 0.96, All the hypothesis were significant.

In addition to this another alternative model was tested. This model turned two paths i.e. POS to turnover intentions and NC to turnover intentions as non-significant. This model exhibit almost identical fit to the model except CFI. The results from alternative model were $p < 0.01$, CFI = 0.95, NNFI = 0.94, RMSEA = 0.063, SRMR = 0.052.
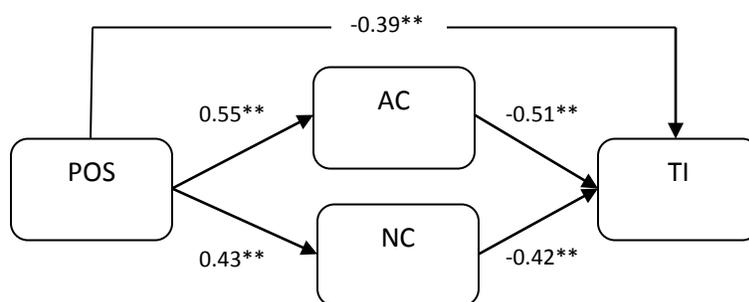
Figure 2: Hypothesized Model with Path coefficients

Both model fit almost gave the same results the difference was found in alternative model which showed two insignificant paths. In addition hypothesized model is good in parsimony. So, hypothesized model was accepted and the alternative model was rejected. Thus Affective and Normative commitment mediate the relationship between POS and employee's turnover intentions.

Discussion and Implications

The present study was aimed to find how employee's perceptions of organizational support help them in enhancing their commitment level with the organization and change their intentions to leave the organization. Firstly, POS was found to influence affective and normative commitment positively and turnover intentions negatively. This shows that when employees feel support from organizations they reciprocate it by showing more commitment and changing their intentions to leave the organization. These results are in accordance with the basic motive behind Eisenberger's (1986) theory of organizational support. Following the same theory some other researchers have also found the same results (e.g. Hsu, 2009; Kim & Chang, 2012; Su, Baird and Blair, 2009; Yi & Lee, 2012). Secondly, both AC and NC were found to be negatively related with employee's turnover intentions. These results are in accordance with Meyer et al., (2002) that highly committed employees are less likely to leave the organizations. Thirdly, SEM was applied to find the mediating role of AC and NC between POS and turnover intentions considering the call of Galletta et. al., (2011). Results revealed that AC and NC perform the role of mediator between both constructs. This means that, to reduce turnover intentions both POS and commitment are necessary.

The present study also has lots of implications for managers. As it was said earlier that now managers are facing problem in retaining their key employees so, they should implement those policies in organization which support employees this will not only enhance employee's organizational commitment but also reduce employee's intentions to leave the organization. on the other hand while making decisions they should consider the opinion of their

employees this will not only encourage them but also enhance their working capacity which ultimately affect on organizational effectiveness.

Limitation and future direction:

The present study was not free from limitations. Firstly, the study was conducted at one point in time future researchers should conduct longitudinal studies. Secondly, respondents of the present study were well educated this might turn the results in the favor of researchers, in future data should be conducted from different educationalists. Thirdly, most of the respondents in the present study were female which might raise a question on gender biasness. As this was the first study to determine the mediation role of AC and NC between POS and turnover intentions future researchers should explore the same in different geographical areas to make the results more generalize. Furthermore, future researchers should also focus on CC as mediator although this is related to the cost associated with leaving the organization but practically may employees are there who leave the organizations due to lack of support.

Conclusion:

The current study was aimed to resolve the issue of employee's turnover intentions among the employees working in Malaysian banking sector. For this, two aspects i.e. POS and organizational commitment were chosen. Results of the study revealed that POS helps employees to enhance their affective and normative commitment which ultimately reduces their intentions to leave the organization. SEM has confirmed that affective and normative commitment performs the role of mediator between POS and turnover intentions.

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13ᵗʰ International Educational Technology Conference

Twitter Sosyal Ağ Sitesinin Eğitim-Öğretim Sürecinde Kullanılmasının Etkileri

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Özet

Twitter, kullanıcılarına "tweet" adı verilen 140 karakterlik metinler yazma imkanı veren bir sosyal ağ sitesidir. Twitter kullanıcıları, ilgilendikleri kişilerin, grup veya toplulukların en güncel hikayelerini, düşüncelerini, haberlerini, fikirlerini anlık olarak öğrenebilmektedirler. Twitter, çoklu ortam paylaşımına ve bu paylaşımlara yorum yapılmasına olanak tanımaktadır. Ayrıca fikirlerin, bilgilerin, son dakika haberlerinin, kişisel deneyimlerin, çalışma yaşamının, toplumsal olayların paylaşılabileceği samimi bir sosyal ortam ve çok iyi bir zihin okuma ve zihni açma aracı olan bir Web 2.0 teknolojisidir (O'Reilly & Milstein, 2011). Henüz 6-7 yıllık bir geçmişe sahip olmasına rağmen dünya genelinde 600 milyon civarında Twitter kullanıcısı bulunmaktadır. Bu özellikleri ile Twitter kısa sürede eğitim-öğretim sürecinde kullanılmaya başlanmıştır. Bu araştırmada, konu ile ilgili yapılan literatür taraması ışığında, dünya genelinde yaygın olarak kullanılan Twitter sosyal ağ sitesinin eğitim-öğretim sürecinde kullanılmasının etkileri tartışılmıştır.

Anahtar Kelimeler: twitter, web 2.0, eğitim, tweet, sosyal ağ.

Abstract

Twitter a social networking site that allowing the users to write 140-character text. This text is called "tweet". Twitter users interested people, groups or communities can learn instantly most recent stories, thoughts, news, and ideas. Twitter allows sharing multimedia and commenting these shares. Furthermore ideas, information, individuals experiences, working life, social events can be shared in a friendly social environment and a very good mind reading and illumination are a Web 2.0 technology tools (O'Reilly & Milstein, 2011). Twitter has approximately 600 million users worldwide, just in spite of having a history of 6-7 years. With these features, Twitter has been used in the process of education and training. İn this research, within the framework of the review of the literature, widely used around the world use twitter social networking site effects are discussed in the process of education and training.

Keywords: twitter, web 2.0, education, tweet, social network.

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Giriş

Bilgisayar ve internet teknolojileri giderek gelişmekte, yaygınlaşmakta ve hemen hemen her alanda bu teknolojiler kullanılmaktadır. Türkiye İstatistik Kurumu Başkanlığı'nın 2012 yılı Nisan ayında gerçekleştirdiği "Hanehalkı Bilişim Teknolojileri Kullanım Araştırması" sonuçlarına göre, 16-74 yaş arasındaki bireylerde bilgisayar kullanım oranı %48,7; İnternet kullanım oranı ise %47,4 olarak verilmiştir. Bu oranlar 2011 yılında sırasıyla %46,4 ve %45 olarak bulunmuştur. Ayrıca, Türkiye genelinde evden İnternete erişim imkânına sahip olan kişilerin oranı 2011 yılında %42,9 iken, bu oran 2012 yılında %47,2'ye yükselmiştir (Türkiye İstatistik Kurumu Başkanlığı, 2012). Bilgisayar ve internet kullanım oranları göz önüne alındığında kişisel bilgisayarlar ve internetin okul, ev ve iş ortamlarında günlük yaşamın bir parçası haline geldiği görülmektedir. Bilgisayar teknolojisinin gelişmesiyle birlikte birçok yeni araç ve ürün ortaya çıkarken; internet teknolojisinin gelişmesiyle bireylerin artan ihtiyaçlarına daha etkili bir şekilde yanıt veren teknolojiler ortaya çıkmıştır. Başlangıçta var olan, yalnızca statik metinlerden oluşan ve kullanıcılar tarafından içeriğe herhangi bir müdahalede bulunulamayan sitelerden oluşan internet teknolojileri gelişerek yerini kullanıcıların internet sitelerini daha etkileşimli bir şekilde kullanmalarına imkan veren, kişiselleştirilebilen internet teknolojilerine yani Web 2.0 teknolojilerine bırakmıştır.

Web 2.0, kullanıcı katılımı sağlandığı bir ortam oluşturmaya yarayan sistemler ve içerisinde birçok uygulamayı gerçekleştirmeyi sağlayan araçlar bulunduran teknolojilerdir (Horzum, 2010). Web 2.0 uygulamalarının temel amacı, kullanıcıların rahatlıkla paylaşımlarda bulunmalarını ve internetin sağladığı sosyal etkileşim olanaklarından yararlanmalarını sağlamaktır (Ata, 2011). Web 2.0, teknolojileri günümüzde yaygın olarak kullandığımız internet teknolojilerinden biridir. (Çekinmez, 2009). Twitter sosyal ağ sitesi de Web 2.0 teknolojileri ile geliştirilmiş ve günümüzde yaygın olarak kullanılan internet teknolojilerinden biridir.

Twitter

Twitter, gerçek zamanlı bir bilgi ağıdır (Twitter, 2012). Kullanıcılarına tweet adı verilen 140 karakterlik metinler yazma imkânı veren Twitter, 2006 yılında geliştirilen ve çeşitli araçlarla daha etkin kullanılabilen bir yeni nesil iletişim aracıdır (Webrazzi, 2012). Twitter kullanıcıları ilgilendikleri kişilerin, grup veya toplulukların en güncel hikayelerini, düşüncelerini, haberlerini, fikirlerini öğrenebilmektedirler. Bunun için ilgili Twitter hesabını bulup takip etmeleri (Follow) yeterli olmaktadır. www.twitter.com adresi üzerinden erişilebilen Twitter'a aynı zamanda mobil araçlarla veya Twitter'a erişebilme özelliği olan cep telefonu servis sağlayıcılarının sunduğu kısa mesaj hizmeti ile de erişilebilmektedir.

Çeşitli özellikleri sayesinde Twitter kullanıcılarına birçok iletişim olanağı sağlamaktadır. Bağlan (@kullanıcıadları-@mentioned) özelliği, kullanıcıların istedikleri kullanıcılar ile doğrudan iletişim kurmasını sağlamaktadır ve kendi aralarında sohbet devam ettirilebilmektedir. Ayrıca, Keşfet (# etiketleri) özelliği ile # işaretinden sonra yazılan (örneğin; #ders) ifade ile özel olarak düzenlenmiş kullanışlı ve eğlenceli bir bilgi akışı sağlanabilmektedir. Bu şekilde yapılan paylaşımlar bir arada toplanıp bir bütün halinde gösterilebilmektedir. Böylece ortak bir konu hakkındaki tüm paylaşımlar bir arada görüntülenebilmektedir.

Henüz 2006 yılında kurulmasına rağmen Twitter, gün geçtikçe yaygınlaşarak günümüzde çok fazla kullanıcı kitlesine ulaşmakta ve hala da kullanıcı sayısı artmaktadır. Yapılan araştırmaya göre 2012 Ocak ayında 383 milyon Twitter kullanıcı hesabı; 2012 Temmuz ayı itibariyle ise dünya genelinde 517 milyon Twitter kullanıcı hesabı bulunmaktadır (Geolocation analysis of Twitter accounts by Semiocast, 2012). Bu kullanıcıların büyük bir çoğunluğunu (%73,7) 15-25 yaş arasındaki bireyler oluşturmaktadır. Türkiye her iki araştırma sonucuna göre de dünyada 11. Sırada yer almaktadır. Yine aynı araştırmaya göre, Twitter'da 2012 Ocak ayında yaklaşık 6 milyon Türkiye kullanıcısı bulunurken; 2012 Temmuz ayında yaklaşık 9 milyon Türkiye kullanıcısına ulaşılmıştır. Yapılan başka bir araştırmaya göre de 2012 Mart ayında 7.2 milyon Türkçe içerik üreten Twitter kullanıcısı olduğu sonucuna ulaşılmıştır (Türkiye'nin Twitter Profili, 2012). Twitter kullanıcılarının sayısının çok olması sebebiyle Twitter üzerinden birçok konuyla ilgili olarak paylaşımlar/tartışmalar yapılmaktadır. Teknoloji, sanat, eğlence, aile ve eğitim dünya genelinde en çok paylaşım yapılan konular arasında bulunmaktadır (An Exhaustive Study of Twitter Users Across The World, 2012). Özellikle eğitim alanındaki paylaşımların yüksek oranda (dünya genelinde 5. Sırada) olması, Twitter'ın eğitim-öğretim sürecinde kullanılabilir bir sosyal ağ sitesi olması hususunda önem arz etmektedir. Bu bağlamda araştırmada konu ile ilgili yapılan literatür taraması ışığında, dünya genelinde yaygın olarak kullanılan Twitter sosyal ağ sitesinin eğitim-öğretim sürecinde kullanılmasının etkileri tartışılmıştır.

Eğitim-Öğretim Sürecinde Twitter Kullanımı

Web 2.0 teknolojileri birçok konuda bilgi paylaşmak, ilişkiler kurmak ve keşfetmek amacıyla oluşturulmuş; anlamlı ve değerli arkadaşlıkları, ilgiyi ve aktiviteleri temel alarak kullanılmakta olan internet siteleridir (Kwon & Wen, 2010). Samimi bir ortam olması, multimedya paylaşımına ve bu paylaşımlara yorum yapılmasına olanak tanıması, fikirlerin, bilgilerin, son dakika haberlerinin, kişisel deneyimlerin, çalışma yaşamının ve toplumsal olayların paylaşılabilmesi ve çok iyi bir zihin okuma ve zihni açma aracı olması açısından Twitter mükemmel bir Web 2.0 teknolojisidir (O'Reilly & Milstein, 2011). Bu özellikleri ile Twitter da eğitim-öğretim sürecine dahil olduğu söylenebilir. Literatürde Twitter üzerinden gerçekleşen birçok eğitim-öğretim aktivitesi bulunmaktadır (Liu, Li, ve Guo, 2012; McPherson, Huotari, Humphrey, Cheshire, Cheng, ve Brooks, 2012; Chang, 2011; Cheng, 2012; Lalonde, 2011; Maxwell, 2012; Orman, 2010; Kanter ve Fine, 2010; Kassens-Noor, 2012; Veletsianos, 2011; Wright, 2010).

Twitter kullanılarak gerçekleştirilecek eğitim-öğretim aktivitelerinde Twitter'ın öğrencilere sunduğu paylaşım özellikleri ve paylaşımlara istedikleri zaman ulaşabilme olanakları olması sayesinde, öğrenciler rahat bir bilgi paylaşım ortamına sahip olmaktadır. Ayrıca, Twitter ile okul dışı etkinlikler düzenlenerek sınıf öğrenmeleri desteklenebilmektedir (Maddin, 2012). Örneğin, Twitter üzerinde kullanıcıların paylaşımlarıyla hikaye yazma etkinlikleri düzenlenebilmektedir. Bu etkinliklerden biri 2008 yılında Twitter üzerinden bir öğretmen küresel düzeyde bir işbirlikli çalışma sonucunda ilköğretim ve lise öğrencileriyle gerçekleştirmişlerdir (@manyvoices, 2008). @manyvoices olarak adlandırılan bu çalışma ile altı farklı bölgedeki 140 öğrenci ile gerçekleştirilen aktivitede tüm öğrenciler aynı Twitter hesabına bir kez giriş yapıp hikayeyi oluşturacak bir tweet göndermişlerdir. Böylece, 140. öğrenci giriş yapıp paylaşımını yaptıktan sonra hikaye tamamlanmıştır.

Dünya genelinde birçok eğitim-öğretim kurumu, grup, kulüp ve bireysel çalışmalar için açılmış hesaplar (e-topluluklar) bulunmaktadır. Bu hesaplar, ilkokul düzeyinden itibaren yükseköğretim seviyesine kadar olmakla birlikte uzaktan eğitim ve özel eğitim amaçlı da olabilmektedir. TheHomeSchoolMom (MaryAnnKelley), ABCTeach (Abcteach), Classroom 2.0 (classroom20), Education World (education_world), Science Blog (ScienceBlogTwit), Extreme Biology (extremebiology), YourDictionary.com Foreign Language Dictionaries (YourDictionary), Dictionary.com (dictionarycom) ve GlobalScholar (GlobalScholar) bu hesaplardan bazılarıdır (Riley, 2011). Bu ve benzeri hesaplar ile hemen hemen her alanda ve hemen hemen her kesme hitap eden paylaşımlar yapılmakta, bu paylaşımlar üzerinden yapılan yorumlar, tartışmalar ile de ilgili konu ile ilgili daha derinlemesine bilgiler edinilebilmektedir.

Tartışma

Web 2.0 teknolojilerinin eğitim-öğretim sürecinde kullanılması ile yükseköğretim düzeyindeki sınıf içi öğretme ve öğrenme faaliyetleri, zenginleşmesi ve desteklenmesi bağlamında çok büyük bir potansiyele sahip olduğu görülmektedir (Ajjan & Hartshorne, 2008). Bu bağlamda Web 2.0 teknolojileri kullanılarak sınıf içi öğrenmeleri destekleyici/tamamlayıcı etkinlikler düzenlenebilir. Ayrıca, Web 2.0 teknolojileri okulların gelişimine ve kaynakların paylaşılmasına katkılar sağlamaktadır (Muijs, West, & Ainscow, 2010).

Literatürde Web 2.0 teknolojilerinin eğitim-öğretim sürecinde kullanılması ile ilgili olarak yapılmış birçok çalışmaya rastlanılmaktadır (Baran, Çukurbaşı, Çolak, ve Doğusoy, 2012; Ata, 2011; Çekinmez, 2009; Durusoy, 2011; McLoughlin ve Lee, 2007; Horzum, 2010; Bezir, Çukurbaşı ve Baran, 2011; Keskin, 2011; Atıcı ve Yıldırım, 2010; Harris ve Rea, 2009; Karal ve Kokoç, 2010). Bu çalışmalarda genel olarak Web 2.0 teknolojilerinin lehine sonuçlar alınmış ve yapılan eğitim-öğretim aktiviteleri kapsamında öğrencilerin gelişimlerine katkılar sağladığı görülmüştür. Bu araştırmalardan McLoughlin ve Lee (2007) tarafından yapılan araştırmada Web 2.0 teknolojilerinin eğitim-öğretim sürecindeki sağlayacağı muhtemel yararları şöyle sıralamıştır:

- Bağlanılabilirlik ve sosyal uyum sağlaması
- İşbirlikçi bir şekilde bilgiyi keşfetme ve paylaşma olanağı
- Var olan içeriğe bağlı olmak yerine yeni içerik oluşturulması
- Bilgi, haber toplama ve içerik güncelleme fırsatı

Web 2.0 teknolojilerinden biri olan Twitter, öğrenciler arasında bir arka kanal, teşvik edici, sohbet aracı ve hayal etmek için bir yer olarak kullanılabilir (Ferriter, 2011). Öğrenciler, çalışma sırasında fikirlerini paylaşmak ve diğer kişilerin görüşlerini almak için Twitter üzerinden paylaşımlar yapmaktan hoşlanabilir. Twitter gibi sosyal ağ siteleri ile belirli konular arasında gruplaşan; iletişimi açık ve sürekli bir yansıtma süreci sayesinde temelini oluşturduğu akran ve bireysel öğrenmenin özelliklerine benzeyen e-topluluklar oluşturulabilmektedir (Özmen, Aküzüm, Sünkür, & Baysal, 2012). Twitter kullanımı ile öğrencilerin yaratıcılıklarını artırmakta, eğlenmelerini ve sınıf ortamının

içinde ve dışında anlamlı öğrenme aktiviteleriyle meşgul olmaları sağlanabilmektedir (Bull & Adams, 2012). Böylece Twitter'ı kullanan ve Twitter ortamında paylaşımlar yapıp, yapılan paylaşımları takip etmekten hoşlanan yani bir bakıma Twitter sosyal sitesini benimseyen öğrenciler için Twitter aracılığıyla gerçekleştirilecek olan eğitim-öğretim faaliyetlerinin verimli geçecektir. Öğrenci zaten ortamda vakit geçirdiğinden dolayı eğitim-öğretim faaliyetleri için ekstra bir zaman ayırmasına gerek kalmayacak ya da öğrencinin boş vakitlerinin verimli geçmesi sağlanmış olacaktır. Böylece öğrenci hem istediği sosyal ortamda vakit geçirecek hem de ilgili eğitim-öğretim faaliyetini gerçekleştirmiş olacaktır. Üstelik bu etkinlikler genellikle dersi destekleyici özellikte etkinlikler olarak tasarlandığından, dersin hedef ve davranışlarına ulaşılması hususunda da Twitter vasıtasıyla önemli katkılar sağlanacağına inanılmaktadır.

Twitter sosyal ağ sitesini daha önce kullanmamış öğrenciler için Twitter ortamı hakkında bilgilendirme yapılıp, ortamı kullanmalarının kendilerine sağlayacağı yararları, olası zararları belirtilip, siteyi nasıl kullanacaklarına dair bir anlatım yapılarak öğrenciler Twitter ortamını kullanmaya teşvik edilebilir. Böylece öğrencilerin Twitter ortamını benimsemeleri sağlanabilir ve bu ortamda gerçekleştirilecek olan eğitim-öğretim faaliyetlerine katılmaları sağlanabilir. Bu hususta Rogers tarafından geliştirilen Yeniliklerin Yayılması Kuramının (Diffusion of Innovation) eğiticilere yardımcı olacağı düşünülmektedir.

Twitter kullanıcılarına diğer kullanıcılarla daha iyi etkileşime girebilmeleri için birçok seçenek sunmaktadır. Kullanıcıların yaptıkları paylaşımlar (Tweet), tüm Twitter kullanıcıları tarafından görülebilmektedir. Ancak isteğe bağlı olarak sadece kendisini takip eden kullanıcıların görebileceği şekilde sınırlandırma getirilebilmektedir. Ayrıca kullanıcılar, takip ettikleri ve kendilerini takip eden kullanıcıları; bu kullanıcıların takip ettikleri ve takip edildikleri kullanıcıları görebilmektedirler. Ayrıca, Keşfet (# etiketleri) özelliği ile # işaretinden sonra yazılan (örneğin; #ders) ifade ile özel olarak düzenlenmiş kullanışlı ve eğlenceli bir bilgi akışı sağlanabilmektedir. Bu şekilde yapılan paylaşımlar bir arada toplanıp bir bütün halinde gösterilebilmektedir. Böylece ortak bir konu hakkındaki tüm paylaşımlar bir arada görüntülenebilmektedir. Twitter ortamı üzerindeki etkileşim özelliklerini fazla olması, bu ortamda bir çok öğretim yöntem ve tekniklerinin kullanılabilmesine olanak sağlamaktadır. Altı şapkalı düşünme tekniği, rol oynama tekniği, beyin fırtınası ve benzeri teknikler Twitter üzerinden uygulanabilir.

Twitter ortamında eğitim ile ilgili yapılan paylaşımların büyük oranda olması, bu ortamın eğitim-öğretim ortamlarına adapte edilebilen bir internet teknolojisi olduğu sonucuna ulaştırabilir. Bu bağlamda yapılacak doğru bir öğretim tasarımı ile Twitter aracılığıyla verimli ve etkili bir öğrenme aktivitesi gerçekleştirilebilecektir. Ayrıca çok geniş kullanıcı kitlesine sahip olması ve hemen hemen her alanla ilgili paylaşımlar yapılması Twitter'da tasarlanacak öğretim aktivitelerinin etkililiğini arttıracağına inanılmaktadır.

Türkiye'de özellikle Milli Eğitim Bakanlığı (MEB) tarafından geliştirilen FATİH (Fırsatları Artırma Teknolojiyi İyileştirme Hareketi) Projesi doğrultusunda Twitter ortamında faydalanılarak öğrenme aktiviteleri yapılabilir. Proje kapsamında her öğretmene ve her öğrenciye Tablet bilgisayar verilmesi; her ilkokul ve ortaokul sınıfına da etkileşimli tahta bağlanması ve internet erişim olanağı verilmesi planlanmaktadır. Proje kapsamında verilen ve Twitter ortamını kullanabilmeleri için uygun cihazlardan biri olan Tablet Bilgisayar her öğretmen ve her öğrencide sürekli olarak kalacaktır. Yani her zaman her yerde istedikleri zaman kullanabileceklerdir. FATİH Projesi'nin sağladığı bu imkanlar doğrultusunda öğretmenler Twitter gibi Web 2.0 teknolojilerini derslerine entegre ederek kullanabilme olanağına sahip olacaklardır. Hemen hemen her ders için dersi destekleyici öğretim aktiviteleri Tablet Bilgisayarlar ve Twitter aracılığıyla gerçekleştirilebilecektir. Bu şekilde gerçekleştirilen bir öğretim aktivitesinden sonra öğretmen derste etkileşimli tahtayı kullanarak Twitter ortamında gerçekleşen aktiviteyi gösterebilir ve derste ek çalışmalar yapabilir. Bu noktada önemli olan öğretmenin Twitter üzerinden gerçekleştireceği aktivitelere yönelik öğretim tasarımını doğru bir şekilde yapmasıdır. Ayrıca yapılacak öğretim tasarımına ek olarak öğrencilerin Twitter ortamını benimsemelerini ve bu ortamda öğretim aktiviteleri gerçekleştirmeye yönelik güdülenmelerinin sağlanması gerekmektedir. Bunlara ek olarak öğretmenin Tablet Bilgisayar ve Twitter kullanımı konusunda yeterli bilgiye sahip olması ve öğrencilere etkili rehberlik etmesi de önemli bir diğer noktadır.

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These and the Reference headings are in bold but have no numbers. Text below continues as normal.

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Understanding the two sides of online counseling and their ethical and legal ramifications

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Abstract

The rise of the Internet has drastically changed the means by which people obtain information and communicate in the Malaysian society. The Internet has become possibly the most popular medium to connect with others particularly through social networking tools, like Facebook, Twitter and other. For the field of counseling, the Internet offers a new way to reach, facilitate and communicate with individuals who need help from all over the world. Little is known, however, about the implications of interacting with clients online. The purpose of this writing, therefore, is to address the possible advantages and disadvantages of online counseling, as well as ethical and legal considerations in the use of online counseling by summarizing the past research. Additionally, suggestions for better practice are also discussed so that counselors and therapists are able to have a better preparation before practicing online counseling. Overall, this writing has several important implications for counseling practitioners in Malaysia and beyond. It contributes to a better understanding of the role of the Internet in counseling practice in an increasingly electronic world.

Keywords: Digital mind maps; paper mind maps; science; achievement

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Introduction

As the number of Internet users across the globe continues to rise, more and more resources are becoming accessible online. The possibilities of services that can be offered on the Internet are endless. Today, anybody can receive professional mental health services such as counseling online rather than through a traditional face-to-face counseling service. To date, numbers of professional individuals as well as organizations have commenced offering online counseling services to various populations of clients. This development marks the integration of technology use in the provision of mental health services. Therefore, this paper aims at discussing the possibilities and limitations of using online counseling as a modality to help needy individuals in the Malaysian context.

Online counseling by asynchronous e-mail is a primary focus, given that it is the most frequently used method of online counseling provided by counselors and therapists (Chester & Glass, 2006). There are other methods of online communication, such as private chat, text messaging and video conferencing, are famous as well as its have been used simultaneously with asynchronous e-mail. However, online counseling is a relatively new service. Hence, the long-term implications of such an experience are little known.

There are many concerned with the ethical dilemmas associated with online counseling. It is essential to identify the probable advantages and disadvantages of online counseling. Hence, this paper summarizes the existing research with respect to online counseling. Then, it outlines suggestions for conducting online counseling in a manner that maximizes its benefits and minimizes its risks. The goal is to provide information for helping professions concerning the benefaction of online counseling to clients of all ages and populations, where available.

Online Counseling

Online counseling is the transmission of therapeutic interventions in World Wide Web in which the computer-mediated communication technologies is facilitated as a medium of communication between a trained professional counselor and client. There are several terms used for online counseling including online or Internet therapy, e-counseling, e-therapy, cyber therapy, e-mail therapy, web counseling , Internet counseling, cyber counseling, synchronous single-session counseling, and therapy-e-mail.

Above all, synchronous (chat and video conferencing) and more popularly asynchronous (e-mail) communication have been used by clients. Additionally, online counseling has been provided as a stand-alone service and as an adjunct to other services. Virtual reality environments have also been used to conduct counseling whereby it's allowing both synchronous and asynchronous communication (Bambling, King, Reid, & Wegner, 2008).

Defining the term online counseling often invites controversies and sometimes becomes a continued source of debate. There are numerous definitions of online counseling which have been proposed in literature. These definitions suggest that online counseling can take many forms. For instance, Bloom (1998) describes online counseling as "the practice of professional counseling that occurs when client and counselor are in separate or remote locations and utilize electronic means to communicate with each other

Next, Mallen and Vogel (2005) provides a comprehensive definition of online counseling, "any delivery of mental and behavioral health services, including but not limited to therapy, consultation, and psych education, by a licensed practitioner to a client in a non-face-to-face setting through distance communication technologies such as the telephone, asynchronous e-mail, synchronous chat, and videoconferencing".

It has been argued that online counseling is an inversion of face-to-face counseling online, with technologies facilitating the therapeutic communication and impacting the process with their related advantages and limitations (Castelnuovo, Gaggioli, Mantovani & Riva, 2003). From this perspective, online counseling is not seeming as anew and discrete way of likable therapeutically with clients. Therefore, it is not seen as obliging a different theoretical framework from face-to-face counseling.

On the contrary, it is argued that online counseling should be considered a new type of therapeutic intervention which characterized by basically unique features (Fenichel et al., 2002). This perspective views online counseling as an adaptable and flexible resource with the potential to complement and support other types of interventions and definitely not a substitute to face-to-face interventions.

Advantages and Disadvantages of Online Counseling

No doubt, online counseling has both probable advantages and disadvantages. One of the primary advantages of online counseling is its potential for increased accessibility mental health services. This means online counseling may become the solution for potential clients with constraints to access mental health services such as those who are residing in in geographically remote areas (Sussman, 2004), and also those who are having difficulties to leave their home due to certain illness, physical limitations, transportation difficulties or family commitments (Maples & Han, 2008).

In particular, online counseling may also be a constructive and therapeutic modality for those clients who have socially phobic. This include persons who are fearful to seek for a face-to-face counseling therapy due to anxiety or stigmatization (Lange, Van de Ven & Schrieken, 2003), or who are hesitant and cautious about the in-person counseling process (Barnett, 2005). Moreover, family therapists may be able to engage absent family members in family therapy with the use of computer-mediated communication (King, Engi & Poulos, 1998). Economically, online counseling services are more affordable by clients because private therapists usually offer online-services at lesser cost than the regular cost of a face-to-face counseling session (Griffiths, 2001).

On the other hand, online counseling is also a convenient service whereby it can be provided at any time of the day and clients can send messages whenever they feel most in need of or interested in therapy (Bailey, Yager, & Jensen, 2002). Essentially, online counseling is accessible from any corner of the world as long as there is Internet access (Maples & Han, 2008).

Subsequently, it also lets individuals to access therapists comfortably from their home or even office (Manhal-Baugus, 2001). Therefore, therapists have more flexibility in their work schedules as the hassles and difficulties in having to schedule a specific appointment time is lessened as the therapist and client may not have to be sitting at their respective computers at the same time (Suler, 2000). Thus, it increases a therapist's accessibility, especially for those clients with inconsistent as well as demanding personal schedules (Peterson & Beck, 2003).

Although time delay is regarded as a disadvantage of e-mail counseling as it is integral in asynchronous communications, it can also being seen as advantages. Time delay allows both counselor and client to have sufficient time to compose a thought or question that precisely reflects their concern and issue – both presenting and real issues (Tate & Zabinski, 2004). Hence, the client can reply when he or she is ready to reply in detail as there are no pressures to think hastily (Suler, 2000).

Online counseling is also able to provide a lasting and concrete record of counseling sessions whereby it can provides many benefits to both clients and therapists as a reminder of things they had expressed previously (Barak, 1999). For instance, clients are able to re-read e-mails to evaluate the methods they have used in previous issues as well as to review positive and encouraging comments that their therapist has made about them (Murphy & Mitchell, 1998). Furthermore, both the client and the therapist can fully reflect on issues discussed in previous sessions or communications (Manhal-Baugus, 2001) as well as to explore the client's progress at various stages in the course of treatment (Oravec, 2000).

Finfgeld (1999) emphasized the higher standards of accountability that can hold clients and therapists by the recordkeeping provided by online counseling. Later, a permanent record also has the potential of as a tool for both supervision and consultation (Murphy and Mitchell, 1998).

Walker (2007) underlined that the act of writing itself can be therapeutic. Writing has been viewed as a facilitative method of self-disclosure, externalization of problems and conflicts, ventilation, and essentially it can promote self-awareness (Barak, 1999). Besides that, writing may also lessen the emotional burden on individuals by allowing them to say of any kind they want to say (Yager, 2001). It was suggested that some individuals are more honest and more expressive in writing compares to face-to-face counseling sessions.

The anonymity of online counseling may also be beneficial because being an "invisible" client can help individuals to reduce or eliminate the stigma related in seeking mental health services (Suler, 2000). This is especially important for clients with issues of shame and also for individuals who are scared of being judged. When certain social markers such as age, gender and ethnicity are removed, it may be easier for individuals to disclose information about themselves (Tate & Zabinski, 2004). Thus, clients may become more honest and sincere when they cannot see the therapist as they feel less defensive and vulnerable (Maples & Han, 2008), and feel more ease on the plausibly embarrassing and stigmatizing disclosure of behaviors and thoughts (Manhal-Baugus, 2001).

Online counseling can potentially enhance individuals' autonomy in the therapeutic relationship as clients are able to say whatever they want to say and to initiate contact. Therefore, it can reduce the power discrepancy between client and therapist (Yager, 2001). For instance, e-mail therapy may empower clients to convey their unique ideas without interruption by the therapist's premature phenomenology and it is particularly beneficial for clients who have been frustrated by therapists' lack of sensitivity to their uniqueness (Finfgeld, 1999).

Some of the study revealed that online therapy can be viewed as a way to enhance traditional treatments whereby it can be used as an extended support of the clinical process such as follow up and an expansion of face-to-face counseling sessions during the central and final parts of therapeutic sessions (Castelnuovo, Gaggioli, Mantovani, & Riva, 2003).

On the other hand, chat and instant messaging can assist more direct and immediate communication in which like e-mail therapy, they also provide for constant and instant feedback in two ways. Rees and Stone (2005) emphasized that the use of

videoconferencing can increase the access of mental health services to isolated and demoted populations including rural populations, disadvantaged populations, as well as individuals with disabilities.

To summarize, there are many advantages of online counseling and these include more accessibility, lesser cost, and wider clientele market. However, there are always two sides of a coin. This means that using online counseling is also subjected to several disadvantages. The following paragraphs discuss some of these disadvantages.

Initially, computers simply do not offer the human interaction that is crucial in the counselor's office (Maples & Han, 2008). Hence, the lack of physical presence within human communication may decrease the sense of intimacy, trust, and commitment in the therapeutic relationship. Consequently, it may weaken the development of a therapeutic foundation between the counselor and the client. The absence of visual and vocal cues, such as facial expressions, body language and voice tone can result in a greater potential for miscommunication.

Peterson and Beck (2003) asserted that some crucial emotions such as sighs, frustrated emotions, terseness, irritation, to name a few, may be lost in the process of the e-mail transaction. Without sufficient presence of visual and vocal cues, therapists and clients may face difficulty, or even inability to establish a strong therapeutic relationship foundation. It would be difficult for clinicians and therapists to correctly assess and diagnose disorders without enough access to non-verbal behavior. In most face-to-face counseling, therapists heavily rely on non-verbal cues in order to explore what clients feeling or thinking (Maples & Han, 2008).

Text-based communication is also seeming to be stark and cold. It is because typed text may feel or look more formal with lacking of supportive and empathic tone (Suler, 2000). Consequently, some words may perceived and come across as sounding harsher than anticipated. On the other hand, greater potential for misinterpretation will happen as different individuals can also have difference understanding of text messages as compared to verbal exchanges (Ybarra & Eaton, 2005). In addition, misinterpret aspects of e-mail communications might happen on hypersensitive individuals who are prone to alteration of facts and events (Yager, 2003).

During face-to-face session, counselors and clients communicate mostly with facial expressions, posture, eye contact and so forth. Needless to say, reading nonverbal is an essential element of counseling. If one is being counseled online, these nonverbal signs are unobservable and their absence can be disadvantageous to the counseling process. For instance, nonverbal signs which cannot be observed during an online session are nervous behaviors, whether eye contact is maintained or not, angle and distance of body in relationship to the counselor, to name a few.

Also, a client may be typing content which appears to be enriching, but at the same time he or she may be crying. Conversely, a client may be typing distraught messages but may be laughing while doing so. These inconsistencies in feeling, thinking and behavior are significant cues and can be a good indicator of possible mental diagnoses.

Internet access was previously noted as an advantage of online counseling, yet it can also be viewed as a limitation. It said that in online counseling, it is only available to clients who have access to a computer and the Internet. Hence, therapists who have the utmost desire to serve particularly those in traditionally underserved populations may have the least access to the desirable technologies (Barnett, 2005).

In order to fully utilize the Internet and the chosen method for example by e-mail or chat efficiently in online counseling, clients and counselors are required to have necessary skills and must be fairly good readers and writers (Abbott, Klein & Ciechomski, 2008).

In asynchronous communication, time delay is a seeming natural result. However, it is also caused from technological failure. Time delay can become an advantage in online counseling but it can also change the flow of the counseling process (Rochlen, Zack, & Speyer, 2004). Nonetheless, time delay can lead to uncertainty that may result in self-questioning or self-doubt and also frustration of the client (Maples & Han, 2008). As for time delay caused by technological failure, it may delay and interfere d the services. Subsequently, feelings of isolation and alienation may arise if a client is cut off with no means of reconnection.

Ethical and Legal Considerations in Online Counseling

In any practice of counseling be it face-to-face or online, professionals must always make rooms for ethical and legal ramifications of such practice. Therefore, the following are potential ethical and legal issues associated with providing online counseling services that counselors and therapists must take into consideration.

Substantially, threats to confidentiality occur at two levels in which during transmission and at the end of the session. Prior, what's under concern is that e-mails may be misinterpret by typos in the "to" field or hacked by computer hackers (Recupero & Rainey, 2005). Later, things that must take into account are the possibility where other persons may have access to the client's e-mail, such as employers or family members and at the same time, client e-mail may be accessible to the therapist's

office staffs. Other than that, the storage of transcripts of online counseling sessions by either the therapist or the client might bring up confidentiality issues (Mallen, Vogel & Rochlen, 2005).

As the era changed, the range of the Internet spreads beyond state and even international boundaries. When this happen, there will be an unclear application of laws as the client resides in a different jurisdiction than the therapist (Kanani & Regehr, 2003). Which one to be used –the jurisdiction in which the therapist is providing the counseling services or the client resides? The issue of jurisdiction also applies to the rights of clients to recompense complaints and not only to the legitimacy of the activity.

On the other hand, if the counselors and therapists are practicing outside of their jurisdiction whereby their experiences are inadequate within a given culture or a language barrier exists in the helping process it can result competence issues. Counselors may oversight some important signs without the aids of non-verbal cues and they might make incorrect presumptions regarding the client's cultural identity. Therefore, lack of knowledge about client's cultural issues may limit counselor credibility and eventually will lead to inappropriate counseling interventions (Sampson, Kolodinsky & Greeno, 1997).

Peterson and Beck (2003) assert that clients may perceive the accessibility of e-mail to mean that the counselor's door is always open. In addition, there is an expectation that whoever, include therapists with an e-mail address is instantly available and responsive as well as reachable all the time. By that, some of the clients may continue to send the therapist e-mails although they have terminated the session or some clients may even harassing and stalking their former therapists by using the Internet. Misunderstanding regarding the nature of the relationship between counselor and client may arise as e-mail appears to encourage familiarity and spontaneity (Bailey, Yager, & Jenson, 2002).

Codes of ethics in helping profession oblige counselors and therapists to be competent in their chosen practice and have sufficient education to declare their expertise so that clients' welfare are protected as well as free from professional misconduct (Kanani & Regehr, 2003). Some therapists may not have high level of technological knowledge of computers that is requisite for online counseling. For instance, some practitioners may not have had specific training in text-based psychotherapeutic.

It is an ethical duty for therapists of various disciplines to warn or protect if clients present a danger to either themselves or others. However, it is harder to access and to intervene in an emergency via online counseling. This is because when therapy is conducted face-to-face, therapists are on hand to evaluate and manage psychological crises (Carlbring & Andersson, 2006).

Contrarily, Internet communication does not always allow or limit counselors to access the violence signs or potential of a client (Kanani & Regehr, 2003). Hence, there are possibilities that counselors failed to perceive and responded appropriately to existing communications problems. Then, as anyone can lie about their information such as age, gender, and situation, identity authentication can be an issue when working online (Ragusea & VandenCreek, 2003).

Therefore, online counseling services can provide challenges regarding to client identification (Fisher & Fried, 2003). Counselors and therapists may be facing difficulties to determine whether the client holds an appropriate mental capacity to consent because there is no pre-existing relationship between therapist and client beforehand. For instance, it is common for youth to use Internet and thus there is a likelihood whereby underage youth is using online counseling services without getting the consent from their parents or caregivers.

Essentially, instead of getting informed consent from the client it is also crucial for the client to understand the possible risks and probable benefits of a suggested intervention. However, to date the benefits of various forms of online counseling are still being examined and debated in the literature and thus it can be a difficult task to mental health and helping professions.

Barak (1999) pointed out those professionals without sufficient credentials tend to offer online counseling services as it is easy to access. Therefore, scam is much easier to constrain in the anonymous online world. Other than that, individuals whom seek for online counseling and to make an accurate decisions about which services are good and which are not good may also be difficult as there is a long list on this services at the time being.

Suggestions for Better Practice

Suggestions for a better practice based on the relevant research findings are discussed next after addressing numbers of disadvantages and ethical concern identified in online counseling. The following paragraphs discuss some of these summarized suggestions in respect of the identified disadvantages and ethical concern.

Initially, it is crucial for counselors to inform clients of the standard limits to confidentiality for example child abuse and suicidal ideation, and the threats to confidentiality regarding to transmission of information through electronic, as well as the procedures being used to protect confidentiality (Fisher & Fried, 2003). On the other hand, clients should also be informed of their own confidentiality affliction whereby they should be advised to do their online counseling in a room with privacy where they wouldn't get intruded by anyone (Ragusea & VandeCreek, 2003). Essentially, the risk of records keeping of online therapy

sessions should also be informed to the clients which includes the methods and the time period of online sessions records are being retained (Kanani & Regehr, 2003). For some practicing novice counselors and therapists, there will be supervision sessions and thus clients should be made aware of the access to the records of online sessions (Oravec, 2000).

Concerning to jurisdiction issues, Zack (2008) emphasizes online counselors should be familiar with the licensure restrictions and exemptions in their jurisdiction as well as the jurisdictions in which they clients are reside. Hence, counselors and therapists shall only provide their services in jurisdictions in which they are licensed. Online therapists should also provide links to websites of all relevant certification and licensing boards. Besides, sensitivities to the diverse cultures shall develop by counselors as well. For instance, counselors must be alert in making assumptions about things such as names and expressions and familiar with clients' local cultural norms and local events.

Intake form basically contains certain information regarding to the ethnic and cultural background of the client. However, for some culture and populations, this may seem as bias part of the counselor and therapist. Therefore, Sampson Jr., Kolodinsky, and Greeno (1997) suggests if the therapist is happening to come across this unexpected situation, therapist should proceed slowly and clarifying to the client about their perceptions of thoughts, feelings, and behaviors

In online counseling, vague relationship between counselors and clients might happen. Hence, steps must be taken by the counselor in order to avoid encouraging unnecessary excessive dependence. Kanani and Regehr (2003) suggest counselors can establish a time frame for responses to maintain boundaries rather than immediate responses expected by clients. Thus, counselors and clients shall establish appropriate rules with regard to suitable use of e-mail communication.

As online counseling is different from face-to-face counseling session, tone and language might perceived wrongly by the clients. Therefore, the tone of e-mails should always be professional in which avoid anger, annoyance and other unprofessional tones. Inappropriate jokes, unprofessional social or self-disclosing statements should be avoided and counselors should use professional tone and language that is usually used in the office. It is important to note that for clients who are suffering from severe boundary problems, e-mail should not be used.

Concerning the competency of online counseling services, counselors should seek out necessary training (Zack, 2008) which cover technology, theory, applications and ethics, as well as licensing laws. Online training should also take account of skills in text-based communication and protecting client's welfare and information online. Thus, counselor shall only use online software that is within their capabilities or if new software is used to expand their competencies.

Concerning the language used in online counseling, counselors may need to develop an ability to understand the style and interpret the content of e-mails written by the client particularly youth as they have developed their own language on the Internet. This includes language that is characterized by abbreviations, spelling phonetically, and the absence of many of the rules of grammar (Fenichel et al., 2002).

Counselors can use emotional bracketing and descriptive immediacy in online counseling (Murphy & Mitchell, 1998). Emotional bracketing includes bracketing the emotional context behind the typed words in order to allow the client to hear the intended vocal tone in the words whereby descriptive immediacy includes providing the client with images for better understanding the counselor's words.

Counselors can also use spacing and pacing techniques to exercise a higher degree of control over the online counseling process. Variety of emotional nuances and facial expression can conveyed by using "smileys", emoticons and other commonly used symbols. With that, clients and counselors can develop a set of standardized emoticons and acronyms in the session. In order to prevent misinterpretations and to make sure the client understands what the counselor is saying and that the counselors understands what the client is saying, the counselor should check with the client continuously (Stofle, 1997).

It is important to note that online counseling is not suitable for individuals who are having psychosis problems. Therefore, counselors should aware about not taking on clients who are suffering from psychiatric disorders for online counseling and needing immediate attention, clients who are significantly depressed (Carlbring & Andersson, 2006), individuals who might give danger to themselves or others, such as serious substance abusers and those who presenting psychotic or actively suicidal ideation. Besides, counselors should not take on individuals who are highly reactive and potentially dangerous, such as those with borderline personality disorder, paranoia or dissociative disorders.

Concerning on crisis situations, it require quick responses and should not be addressed online whereby clients who are experiencing such situations should be encouraged to seek face- to-face counseling. Moreover, online counseling websites should disclose topics that are not appropriate for online counseling, such as sexual abuse and violent relationships. Lastly, online counseling websites should have notices for individuals who have suicidal ideation with information about hotlines, crisis centers and emergency departments of hospitals (Manhal-Baugus, 2001).

Conclusion

Overall, online counseling has both advantages and disadvantages and a number of legal and ethical considerations surrounding its offering and provision. Research in the area of Internet therapy or online counseling focuses primarily on self-help interventions with little therapist involvement and there is limited certain empirical evidence with respect to the efficacy of online counseling between therapist and client.

Online counseling is a great responsibility as is counseling an individual face to face. Both face-to-face and virtual relationship should be treated with the highest ethical professionalism. It is important to note that whenever an online client is communicating in a virtual world, his or her problems are still very much real.

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Usability and User Satisfaction of Hardware-Software Interfacing Visualization Kit for Novice Learning Programming

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Abstract

Com port is the interface of choice for most of the projects that require communication between a computer and external device or peripherals. This study has developed an experimental tool that serves as a practical hands-on learning kit for novices in exploring and mastering hardware-software interfacing in visual environment. After exploring the developed experimental tools, learners could understand the use of computer to configure, control and connect external devices via com port in visual environment. Based on the questionnaire feedback, the developed tool seems very useful and helpful for beginners, which have minimum skills in electrical and electronic engineering in understanding hardware-software interfacing programming better. 15.

Keywords: hardware-software interfacing; programming; visualization

1. Introduction

The ICT is a bustling new industry with programming, database, software engineering, project management, networking and creative multimedia appears to be the most-wanted skills (Ungku Harun Al'Rashid, 2004). Research findings show that industries' requirements for software engineers are high, and this indicated that programming personals are critical needs for industries nowadays (Ahmad Rizal, Nurliana & Yahya, 2008). However, the programming skills needed by the industries were lacking in most of the local graduates, which forces industries to hire software engineers from abroad to fulfil their requirement (Knowledge Worker Exchange, 2004). Due to these, institutes of higher learning strive to plan, design and develop or revise programming courses in their curriculum to fulfil the current industries' needs. Question arises, were the students really being prepared to meet the needs, especially in hardware-software interfacing programming areas? Basically, university's aims are mainly to produce graduates with highly-developed intellectual, rather than practical capabilities (Moreira, 2004). The lectures in university were very theoretical and even weekly laboratory sessions were very textbook-based (Moreira, 2004). It is also found that only two to four percent preferred hands-on programming, while the majority preferred to do technical writing, software analysis and design (Moreira, 2004). Unavailability of adequate teaching and learning aids for students to experience proper practical skills might be among the reason contributing to these drawbacks. Therefore, efforts are needed to develop tools specifically designed to fulfil the requirements of beginner programmers (Pears et al., 2007).

2. Research Objective

The objective of this study is to design and develop program visualization and test its effectiveness among novice learners. The initial phase of this study was only focused on design and development of the program visualization kit for hardware software interfacing programming, specifically for beginners. The study was focused on hardware software interfacing, since most of the previous studies found on program or algorithm visualization were mainly emphasized on software and very rare or almost none on hardware software interfacing programming, specifically for beginners. Research findings have shown; educational aids developed without considering the educational principles may and may not work well. It is unarguable on the existence of abundance of hardware-software interfacing teaching aids in the commercial market. However, most of these kits were not grounded on

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educational research outcomes. Furthermore, most of the kits emphasized more on microcontroller technology, which is unsuitable for novice programmers in mastering hardware-software interfacing fields.

3. Development Methodology

The designing, developing and testing of hardware-software interfacing kit (ComPort V1.0) process was mainly grounded on ADDIE Instructional Design framework, which consists of the analysis, design, development, implementation and evaluation phases.

3.1 Analysis

The big picture of the complete instructional design process was established during this phase as follows:

3.1.1 Identify the content

A first step in exploring hardware software interfacing is learning how to get most from a port with the everyday application and peripherals, which include find, configure and handle (Axelson, 2000). Computer ports are mainly differentiated into two categories that are parallel communication ports and serial communication ports. Fundamentally, a port is a set of signal lines that microprocessor uses to transmit and receive data with other components. Most computer ports are digital, where each signal or bit is 0 or 1. Parallel port transfers multiple bits concurrently, while serial port transfers a bit at a time. Most personal computers come with one parallel port and a number of serial ports. On newer personal computers and laptops, parallel port is mostly not included, since nearly all the newer peripherals use serial port. Therefore, the serial port appears to be the port of choice in this study.

There are many types of serial ports available, ranging from the ubiquitous RS-232 port to a newer RS-485, USB, IEEE-1394 and IrDA interfaces (Axelson, 2000). Almost all the computers have at least one RS-232 port. This interface is useful when the computer, and the peripherals need to be connected are physically far apart. RS-232 links are slow. Along with each byte, the transmitting devices normally add a start and stop bit. Even at 115 200 bits per second, which is a typical maximum rate for a serial port, the data transfer rate with one start and stop per byte is just 11 520 bytes per second. RS-485 is another serial communication choice in computers, which can use cables as long as 4000 feet and allows up to 32 devices to connect to a single pair of wires. Other interfaces similar to RS-232 and RS-485 are RS-422 and RS-423. A better option for serial interfacing is Universal Serial Bus (USB), a project of a group that includes Intel and Microsoft (Axelson, 2000). A single USB port can have up to 127 devices communicating at either 1.5 Megabits per second or 12 Megabits per second over a 4-wire cable. The USB standard also describes both the hardware interface, and software protocols. Newer computers may have numerous USB port built-in that can be used without any added hardware and software drivers. The IEEE-1394 high-performance serial bus, also known as Firewire, is another serial interface of choice. It allows up to 63 devices to connect with a computer, with transmission rates of up to 400 Megabits per second. The 6 wire cables can be as long as 15 feet, with daisy chains extending to over 200 feet. The interface is popular for connecting digital audios and video devices. The Infrared Data Association (IrDA) interface is a wireless serial communication over distances of 3 to 6 feet. The link transmits an infrared signals at up to 115 200 bits per second. It is intended for short-range communication where cabled interface is inconvenient. Newer computers and peripherals now have IrDA interfaces built-in. In conclusion, USB is the serial interfacing of choice in this study, based upon its ability, speed and availability in most of the computer system nowadays.

Notably, serial port is harder to interface than the parallel port for parallel communication. Any peripherals connected to the serial port need the serial transmission converted to parallel for parallel interfacing. This can be done using UART. On the software side, there are many more registers need to be attended to than on a Standard Parallel Port (SPP). This study intended to develop the serial to parallel conversion hardware and the software compatible to it. Since the kit is for novice, the conversion circuit and program were not the main concern to be introduced to the learners. The main concern would be on ways to access the hardware in software. In conclusion, the main objective of this study is to develop a hardware interface to facilitate hardware visualization and software interface to facilitate program and algorithm visualization.

3.1.2 Identify the target learners

Programming tools were generally developed to meet professional preference's requirement; they often have extensive sets of concepts and features that are problematic for novices. For that reason, efforts are needed to develop tools specifically designed to fulfil the requirements of beginner programmers. Thus, the target learners of the kit developed would mainly be secondary and tertiary level students who have very minimum skills in electronic and electrical engineering, and hardware software interfacing programming.

3.1.3 Identify the environment, delivery and instructional strategies

No matter how well the visualization tool was designed, is educationally ineffective if students were not engaged actively in the learning process. Therefore, lab activities which engage various active learning approaches in promoting problem-solving skills will be the delivery and instructional strategy. This will be done in following phase.

3.1.4 Identify the suitable software and hardware

The main concern for beginners should be on understanding the basic programming concepts instead memorizing the rigid syntaxes and rigid commands; simpler command and syntax should be the language of choice for them. Consequently, after gaining experience with these simpler languages, students can move to more general-purpose, commercially available languages more effectively. Therefore, Visual Basic and VB.net would be the language of choice in this study, since it's the simplest and preferable visual programming environment in most of the institutions.

For communicating with computer, the PIC microcontroller would be the choice. The PIC microcontroller uses a component called Universal Synchronous Asynchronous Receiver Transmitter (USART) for serial to parallel conversion. This component will be configured as a Full-Duplex asynchronous system that can communicate with peripheral devices, such as CRT terminals and personal computers. As pointed out earlier, USB would be the port of choice for hardware software communication.

3.1.5 Identify the constraint and quality assurance

Rapid changes in software technology might be a challenge in ensuring the long term relevancy of the kit developed. For that reason, the kit and the lab activities developed do not stress much on specific programming language. The main objective would be on assisting learners in mastering the fundamental skills of hardware software interfacing programming in visual environment.

Enough hardware visualization kit for usability testing on the larger number of samples appeared to be another challenge. The challenge was due to funding constraint. However, this challenge could be tackled by employing presentation or collaborative learning strategy in gathering feedback on usability and performance.

3.2 Design and development

As pointed out in analysis phase, the main concern of the kit developed would be on assisting novice to understand the fundamental of hardware software interfacing. Programming in hardware software interfacing often involves number systems. Binary and hexadecimal appears to be an easy-to-read way of expressing the bit and byte oriented values for addressing in hardware software interfacing programming. Binary is also known as base 2 since there can only be two values that are 0=OFF and 1=ON. Binary representations are useful in seeing the value of each bit in a byte. Numbers representing 0 are not counted. Meanwhile, numbers representing 1 are counted. Hexadecimal or base 16 is another major numbering system, which is easier to work on large numbers. The numbers are counted from 0 to 9 and followed by letters A to F. The letters A through F represent decimal values 10 through 15, respectively. Hexadecimal numbers have either h suffix or 0x prefix. Each character in hexadecimal number represents 4 bits that make hexadecimal numbers a convenient way to express 8 or 16 bit numbers. In particular, the content of ComPort V 1.0 was mainly focused on assisting novice learners in mastering these skills before proceed to programming part, particularly in visual programming environment.

Sweller, Van Merrienboer & Paas (1998) claimed, "Learners often view worked example, rather than explanatory texts, as the primary and most natural source of learning material" (p. 274). For that reason, text explanation was minimized and the worked example approach will be emphasized more. Mostly, this will be tackled in the lab manual which will be designed in the following study. However, the approach was also imposed minimally in the kit developed. Basically, worked example refers to description of how to solve problem, or in other word, states and steps needed for the solution (Caspersen & Bennedsen, 2007). Worked example approach will be followed by engagement and problem-solving approach in sequence to assist novice learners' schema acquisition and automation in a more systematic manner. Considering the limitation of working memory, the above-mentioned tasks would be segmented and presented in different tabs with minimizing the extraneous load in mind. The first tab is brief introduction on addressing; the second tab is binary output and input manipulation; the third tab is hexadecimal output and input manipulation; the fourth tab is algorithm visualization, which consists of one worked example, and learners could practice their own programming as well. The final tab is brief explanation on interfacing in Visual Basic.

Beside the standard VB commands, customized commands were also developed to minimize the complexity of hardware software interfacing programming (example: *out* to manage output, *inp* to manage input, *goto* to manage looping, *delay* to manage timer). Since, the main concern of the kit is to assist novice programmers in understanding the fundamental concepts, simplified commands are expected to minimize intrinsic load throughout the learning processes. A VB component was also developed for actual interfacing in Visual Basic or VB.net environment. Basically, the software architecture is depicted in Figure 1.
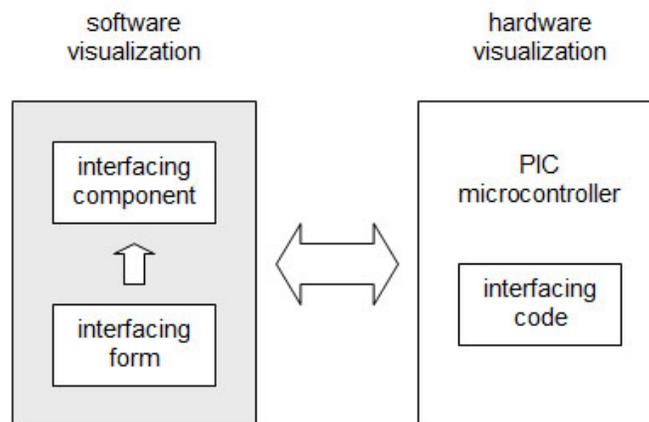
Fig. 1. ComPort v 1.0 software architecture

The design and development of software and hardware visualization were carefully grounded on educational principles gained from literature. Besides the layout, typography, colour and font, and other basic principles such as prevent distraction elements, avoid cluttered information, consistency, several other principles were also employed to improve cognitive economy as proposed in Naps et al. (2003) and Khuri (2001). The completed hardware visualization and software visualization are as in Figure 2 and Figure 3.

Fig. 2. Hardware visualization of ComPort V 1.0

Fig. 3. Software Visualization of ComPort V 1.0

3.3 Implementation and evaluation

Throughout the development process, expert review from both academia and industry was conducted on attribute related to pedagogy and technical as well. Usability study was conducted once the design and development processes were wholly completed. The usability and user satisfaction questionnaire, which was adapted from Post-Study System Usability Questionnaire (PSSUQ), was used to obtain feedback from the participants. Originally, PSSUQ is a research instrument that was developed for use in scenario based usability evaluation at IBM. The modified version of the questionnaire for this study consists of 21 items, which were divided into seven categories namely design/layout, functionality, ease of use, learnability, satisfaction, outcome/future use, and errors/system reliability. The questionnaire's items are 7-point scales with 1 for strongly agree, followed by next numbers in sequence with the end point 7 for strongly disagree.

The research participants were 35 university students, whose ages ranged from 19 to 21, and were enrolled in a Diploma in Games course. The study was conducted during the final session of their first programming course in the curriculum. Therefore, participants have basic knowledge in structured programming. However, they have no experience in hardware software interfacing programming. Moreover, the participants also lack of skills or none at all, in electronic and electrical engineering.

Enough hardware visualization kit for usability testing on a larger number of samples appeared to be a challenge. Adding to this, the participants were beginners, it is impossible for them to explore the kit on their own due to no prior knowledge about the content. Mainly, without the lab manuals with worked examples, that will only be developed in the second phase of the study. Nevertheless, these challenges were tackled by employing presentation learning method in gathering feedback on usability and satisfaction.

The study was performed in the computer lab session that lasted for one hour. The features of ComPort V 1.0 were presented in projected presentation condition. Detailed explanations with several worked examples were given before moving to practice and discussion session. The participants went through the presentation session for about 15 minutes; they were allowed to ask question and discuss throughout the session as well. The discussion session last for around 15 minutes. The session was ended with participants answering the questionnaire.

4. Results and Discussion

Cronbach alpha for usability and user satisfaction questionnaire was .95, indicating that overall the scales had acceptable reliability.

Design/Layout: Overall in design and layout aspects, the learners liked the interface of the kit (M=2.60, SD= 1.26), organization of the information presented was clear (M=2.49, SD=1.22), and the interface was pleasant to be used (M=2.51, SD=1.33).

Functionality: The kit has all the functions and capabilities that the learners expected (M=2.60, SD=1.41), the information retrieved from the kit was effective in helping them to complete related tasks (M=2.4, SD=1.59), and the learners agree that all the features in the kit functions well (M=2.60, SD=1.58). Additional individualized testing is needed to further affirm this claim. This will be done in following phase of the study.

Ease of use: The learners agree that the kit was simple to use (M=2.17, SD=1.69), the information needed was easy to find (M=2.20, SD=1.47), the information provided was clear (M=2.14 , SD=1.29), and overall; the kit was easy to use (M=2.34, SD=1.64).

Learnability; The learners agree that it was easy to learn to use the kit (M=2.22, SD=1.51). They found that, there was too much information to read before able to use the kit (M=2.97, SD=1.65). Even so; they agree the information provided was easy to understand (M=2.56, SD=1.27). According to the written comments by learners, the information appearing in the addressing table, need to be simplified to avoid confusion. Taking this into consideration, in the following study, the addressing table will be simplified with only the related information will be displayed in each respective tab.

Satisfaction: In general, the learners felt comfortable using the kit M=2.57, SD=1.48), they enjoyed exploring it (M=2.29, SD=1.32), and overall they were satisfied with the kit (M=2.51, SD=1.58).

Outcome/Future use: The learners agree that they could become productive quickly using the kit (M=2.17, SD=1.40), they were convinced that the kit could improve their programming skills (M=2.31, SD=1.71), and based on their current experience using the kit; they would use it regularly (M=2.37, SD=1.23).

Errors/system reliability: The learners agree that whenever they made mistake using the kit, they could recover easily and quickly (M=3.17, SD=3.36). They agree that the kit gave error messages that clearly told them how to solve the problem (M=2.86, SD=1.62).

Overall outcome of the questionnaire clearly indicates learners' satisfaction of ComPort V 1.0. However, the outcome of this questionnaire is only limited to projected presentation use of the kit. Further study needs to be conducted on personalized learning condition. By experiencing more challenging hands-on practices, the finding may differ. As discussed in earlier section, for this to take place, more organized lab manuals is needed. Further study on performance will also be conducted in the following research.

5. Conclusions

No doubt, programming appeared to be among the challenging course to be taught and learned, specifically if it involves novices. Combination of adequate teaching strategies, customized teaching aids and suitable language selection, unquestionably plays the potential role in eliminating the problems faced by novices in learning programming. Therefore, this study series intended to design and develop teaching kits to assist programming learning, focusing on hardware software interfacing programming for novice. The first phase of study was mainly concentrated on design and development of hardware visualization and software visualization. The design and development processes were carefully grounded on educational principles to ensure the maximum effectiveness of learning. The outcome of usability and user satisfaction questionnaire clearly indicates learners' liking of the kit developed. Notably, no matter how well the visualization tool was designed, is educationally ineffective if students were not engaged actively in the learning process. Therefore, lab activities which engage various active learning approaches in promoting problem-solving skills will be the aim of second phase of the study.

Acknowledgement

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13th International Educational Technology Conference

Usage Of Facebook: The Future Impact Of Curriculum Implementation On Students In Malaysia

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Abstract

Facebook can increase interaction between teachers and students in web-based communication. Many research studies related to the use of Facebook by students and impact on their academic achievement but none of the research focused on futures study related to Facebook in education. The objective of this study was to get consensus on the benefits of the use of Facebook as a tool for teaching and learning in the future, student participation in teaching and learning process, suitability of subject in teaching and learning process via Facebook in the future, the impact of the use of Facebook in skills of students and the impact of the use of Facebook in terms of students' character in the future. In this study, Fuzzy Delphi Method using a seven-point Linguistic scale was used to get consensus of 20 experts consisting of 10 specialist teachers, five IT specialists and five lecturers in the Faculty of Education. This study can be beneficial not only to teachers and students, but also as a reference to the education system in Malaysia to transform education through collaboration with social networking technology in the future. All the domains and subdomains in this study obtained consensus from the experts.

Keywords: Facebook; Fuzzy Delphi; The Future Impact

1. Introduction

Launched in February 2004, Facebook is a social networking service with a mission to make the world more open and connected (Facebook, 2012). People use Facebook to keep in touch with friends and family, to find out what is happening in the world, and to share and express their opinions. Facebook, which is a popular social networking site, is one of the most-used social networking sites today with millions of users (Bicen & Carvus, 2010; Cain, 2008; Mazman & Usluel, 2010; Ross et al., 2009). Facebook has quickly become one of the most popular social sites (Ross et al., 2009). As of October 2012, Facebook has more than one billion monthly active users; about 81% of monthly active Facebook users are outside the United States and Canada, and 552 million active users daily on average in June 2012 and 600 million monthly active users are using Facebook through a mobile device in September 2012 (Facebook, 2012).

Facebook is basically a social networking site online where individuals can share pictures, their biodata and join a group of friends who are online (Buckman, 2005; Cabada et al., 2009). Although many online websites such as MySpace and Friendster are also designed to connect people, Facebook is generally considered the leading social networking site used by college students (Golder, Wilkinson, & Huberman, 2007). For example, in the United States, the use of Facebook is now very popular among the students with the participation of over 90% among undergraduate students, as reported in a number of surveys (Ellison, Steinfield, & Lampe, 2007; Stutzman, 2006). It has also become one of the social networks most used by British students (Madge, Meek, Welles, & Hooley, 2009) and South African students (Shambare et al., 2011).

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A motivating factor for popularity of social networking sites among young consumers is that the social networking site provides users with more flexibility and freedom to express their feelings (Shambare et al., 2011). This is because technology use has changed the way we communicate with each other, the way we use language, the way we read and write, the way we think and the way we teach (Crystal, 2008a, 2008b; Johnson, 2009; O'Brien & Sharber, 2008). Thus Facebook is said to have a positive impact on the lives of college students (Munoz & Towner, 2009). By offering virtual office hours through Facebook teachers have a positive impact on student satisfaction as they are able to communicate with students outside of the classroom (Li & Pitts, 2009). This presents a clear opportunity to bring Facebook into education. Students should be given information on the use of Facebook in education because Facebook can facilitate the sharing of information related to school and student learning and students can also have discussion in FB about a difficult topic.

Facebook allows the exchange of information among the students on one hand, and between students and teachers on the other, potentially making it an important educational tool for effective teaching requires educators to guide, nurture, develop and transmit knowledge to students on an ongoing basis (Alger, 2009). To find strength in technological progress along with the development of pedagogy, academics suggest the ideal combination of technology integration in learning and social constructivism in order to achieve the objectives of contemporary education (Koohang, Riley, Smith & Schreurs, 2009; Neo 2010; Sadik 2008). Thus, technological tools such as Facebook can be used to communicate and clarify the concept and content of the course to engage students with information (Solvie & Kloek, 2007). For that reason, it is expected that the implementation of Facebook in the curriculum will enhance the effectiveness of teaching and learning.

Many research studies on Facebook lead to the use of Facebook, the effects of teacher self-disclosure via Facebook on teacher and student relationship and increase academic achievement among Facebook users. Reynol (2011) used the method of statistical analysis to examine the relationship between frequency of use and the students' participation in Facebook. Neil (2009) used qualitative analysis to study the frequency of students using Facebook for educational purposes while Muhammad Kamarul Kabilan et al. (2010) used statistical analysis to examine whether university students assume Facebook is a useful and meaningful tool in the educational environment that can support the learning of English. However, not many studies about Facebook have covered the use of Facebook in implementation of the curriculum. Total study about Facebook is not broad enough, especially about the future studies using Fuzzy Delphi method. Therefore this study was conducted in order to see the use of Facebook among students and its impact on the future implementation of the curriculum in Malaysia using Fuzzy Delphi method.

2. Purpose Of The Study

The purpose of this study was to obtain expert consensus on the impact of the use of Facebook among students and teachers on the implementation of the curriculum of the future.

This study is aimed at answering the following research questions:

1. What is the consensus of experts on the impact and benefits of the use of Facebook in terms of teaching aids in teaching and learning in the future implementation of the curriculum?
2. What is the consensus of experts on the impact and benefits of the use of Facebook in terms of student involvement in the teaching and learning process in the future implementation of the curriculum?
3. What is the consensus of experts on the impact and benefit the use of Facebook in terms of the suitability of the subject in the process of teaching and learning in the future implementation of the curriculum?
4. What is the consensus of experts on the impact and benefits of the use of Facebook in terms of the suitability of the subject in the process of teaching and learning in the future implementation of the curriculum?
5. What is the consensus of experts on the expected impact of the use of Facebook on the skills of students in the future implementation of the curriculum?

3. Methodology

To get future expectations, recommended information collected through the survey data obtained from experts. For example by using the Delphi method (Afghan, 2007). The Delphi method was explored in 1950 by the RAND Corporation (Dalkey, 1969). This method includes survey conducted in two or more rounds. After each round, the researcher will give the results of the previous round so that experts can review or retain their original answers. Questionnaires carried out separately and the experts do not know each other. This method is often perceived to create a good interaction within the group (Rowe, 1991).

Although the Delphi method has been widely used in education, especially in anticipation of the future, this method have its drawbacks. Among the weaknesses of the Delphi method (Saedah Siraj, 2007):

1. Reliability of the data depends on expertise; if the researcher fails to deliver real experts mean the study will lose credibility.
2. Experiments are repeated on a sample and this will cause boredom to the sample.
3. A small number of experts are not able to resolve all the issues studied.
4. Less chance of getting a response from the emotional aspect.

To solve the problem of ambiguity in the consensus of experts, researchers from around the world have created new methods. Murray, Pipino, and Gigch (1985) proposed the application of Fuzzy Delphi Method Teory into semantic variables used to solve the problem of ambiguity in the Delphi method. Kir and Folger (1988) suggests the use of average normalization modes and Ishikiwa et al. (1993) used the maximum-minimum along with the cumulative frequency distribution and scoring for organizing fuzzy expert opinion on fuzzy numbers. Expert prediction interval value is then used to derive the fuzzy numbers that will form the fuzzy Delphi method. Hsu and Chen (1996) proposed a fuzzy aggregate equation. By using this similarity function, the similarity between experts can be collected and fuzzy numbers can be built directly into each expert to determine the degree of agreement between them. Then the coefficient of consensus is used to get value assessment fuzzy numbers for all specialists. If the degree of agreement is too low among all experts then the questionnaire must be administered again.

The advantages of Fuzzy Delphi Method are:

1. Saves time on the questionnaire.
2. Save costs.
3. Reduce the total number of surveys, questionnaires increase the recovery rate.
4. Experts can fully express their opinions, ensure completeness and consistency of opinion.
5. Taking into account the ambiguity that cannot be avoided during the study. This method does not misinterpretate original expert opinion and gives their real reactions.

Therefore this study using Fuzzy Delphi method as the main method of review as the advantage obtained in Fuzzy Delphi method over the Delphi method. Expert questionnaire is a very good tool and is useful in the process of data collection conducted in Delphi method if the method and process of interviewing individuals cannot be done due to time constraints and group composition (Dalkey, 1963). **Data Analysis**

Expert evaluation was collected through a questionnaire survey. A total of 20 questionnaires were recovered and verified. All assessment that measured were converted into fuzzy sets based on expert response using a 7 point linguistic scale for the benefit of the use of Facebook in the implementation of the curriculum in the future from aspects of teaching aids, student involvement in teaching and learning, expectation of suitability to subject for the use of Facebook, for aspects of the students' skills and personality had been analyzed based on the actual response.
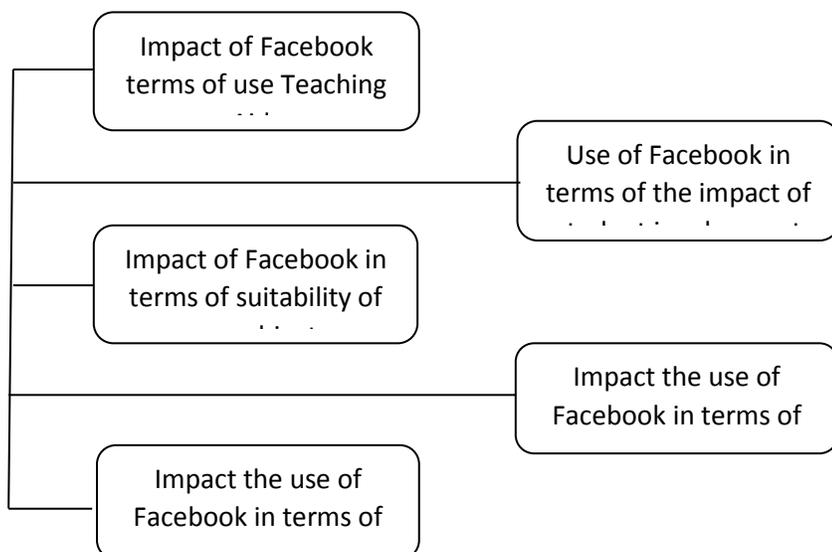
Figure 1. The expected impact of the use of Facebook in the implementation of curriculum

The distance between two fuzzy numbers is calculated by measuring the average deviation between the data evaluation experts. From the data analysis of the threshold value is greater than 0.2 then the second round of questionnaires is run. In the second round if the threshold value is less than 0.2 it means consensus from all the experts has been achieved.

In this study, the criteria used to evaluate the group consensus on the basis that the agreement is more than 75% (Chu & Hwang, 2008; Murry & Hammons, 1995). In first round of acceptance of the group is 89.10%. Group consensus estimates in the second round is 91.43%.

After obtaining the consensus of the group, the averages of the Fuzzy number were obtained.

Table 2: Average Fuzzy Number for benefits of implementing the use of Facebook in the future curriculum for aspects of teaching aids

Criteria	Average Fuzzy No
Using a Facebook page for an announcement	(0.81, 0.96, 1.00)
Inform students about homework to do.	(0.71, 0.88, 0.97)
Inform learning objectives that will be implemented.	(0.63, 0.80, 0.94)
Share information about teaching and learning.	(0.65, 0.82, 0.94)
Plan learning activities to be carried out.	(0.64, 0.82, 0.96)
Teacher observations of student homework.	(0.62, 0.80, 0.94)

Table 3: Average Fuzzy Number for benefits of implementing the use of Facebook in the future curriculum for student involvement in aspects of teaching & learning

Criteria	Average Fuzzy No

Building a 'group' for the class being taught.	(0.74, 0.89, 0.97)
Handle or discussion forum online.	(0.74, 0.90, 0.98)
Weekly tutorials conducted.	(0.72, 0.89, 0.98)
Question and answer session conducted in FB.	(0.70, 0.86, 0.96)
Students prepare early after getting information from the teachers through a Facebook page.	(0.67, 0.84, 0.96)
Students who have difficulties communicating in simple class interact in FB.	(0.70, 0.87, 0.97)

Table 4: Average Fuzzy Number for benefits of implementing the use of Facebook in the future curriculum for appropriate subjects

Criteria	Average Fuzzy No
Science subjects (Biology, Physics, Chemistry) and Mathematics	(0.63, 0.82, 0.95)
History and Geography	(0.69, 0.86, 0.96)
Bahasa Malaysia / English / Tamil / Chinese	(0.71, 0.87, 0.97)
Islamic Education / moral.	(0.64, 0.82, 0.95)
Subject Art Education / Physical / Music	(0.69, 0.86, 0.97)

Table 5: Average Fuzzy Number for benefits of implementing the use of Facebook in the future curriculum for the skills of students

Criteria	Average Fuzzy No
Have the skills to find information	(0.68, 0.84, 0.95)
Skills appropriate to the needs of the current job market.	(0.65, 0.82, 0.95)
Have skills in technology.	(0.70, 0.86, 0.96)
Have the skills to think critically and creatively.	(0.68, 0.85, 0.96)
Lack of social communication skills for many students to interact in cyberspace.	(0.74, 0.89, 0.97)

Table 6: Average Fuzzy numbers for the benefit of the use of Facebook in the implementation of the curriculum in the future for aspects of students' character

Criteria	Average Fuzzy No
Increase student motivation.	(0.61, 0.80, 0.94)
Make students self-reliant.	(0.70, 0.87, 0.97)
Students are more interested in their studies.	(0.61, 0.80, 0.94)
Religion and moral values eroded.	(0.60, 0.80, 0.95)
Students take an active part in the discussion.	(0.62, 0.80, 0.94)
Build a sense of having a Facebook account.	(0.70, 0.87, 0.97)

To find out the ranking of each variable, defuzzifying was conducted. Table 7, 8, 9, 10 and 11 show the position or ranking for each of the variables and sub variables.

Table 7: Position for the benefit of the use of Facebook in the implementation of the curriculum in the future for aspects of teaching aids

Criteria	Fuzzy Evaluation	Score	Ranking
Using a Facebook page for an announcement	(16.20, 19.10, 20.00)	18.6	1
Inform students about homework to do.	(11.20, 15.10, 18.30)	14.925	2
Inform learning objectives that will be implemented.	(11.40, 15.10, 17.80)	14.85	3
Share information about teaching and learning.	(10.60, 14.60, 17.90)	14.425	4
Plan learning activities to be carried out.	(9.80, 13.80, 17.20)	13.65	5
Teacher observations of student homework.	(9.40, 13.40, 17.10)	13.325	6

Table 8: Ranking for the benefit of the use of Facebook in the implementation of the curriculum in the future for student involvement in aspects of T & L

Criteria	Fuzzy Evaluation	Score	Ranking
Building a group for the class being taught.	(11.40, 15.30, 18.20)	15.05	1
Handle or discussion forum online.	(11.60, 15.20, 18.00)	15	2
Weekly tutorials conducted.	(11.20, 15.00, 18.10)	14.825	3
Question and answer session conducted in FB.	(10.20, 14.20, 17.60)	14.05	4
Students prepare early after getting information from the teachers through a Facebook page.	(10.00, 14.00, 17.50)	13.875	5
Students who have difficulties communicating in class interact in FB.	(10.00, 14.00, 17.30)	13.825	6

Table 9: Rating for the benefit of the use of Facebook in the implementation of the curriculum in the future for appropriateness aspect of subjects

Criteria	Fuzzy Evaluation	Score	Ranking
Science subjects (Biology, Physics, Chemistry) and Mathematics	(13.20, 16.40, 18.80)	16.20	1
History and Geography	(11.80, 15.10, 17.70)	14.93	2
Bahasa Malaysia / English / Tamil / Chinese	(10.20, 14.20, 17.70)	14.08	3
Islamic Education / moral.	(9.80, 13.80, 17.20)	13.65	4
Subject Art Education / Physical / Music	(9.20, 13.20, 16.90)	13.13	5

Table 10: Ranking for the benefit of Facebook use in the implementation of the curriculum in the future for the skills of students

Criteria	Fuzzy Evaluation	Score	Ranking
Have the skills to find information	(11.20, 15.20, 18.50)	15.025	1
Skills appropriate to the needs of the current job market.	(11.20, 15.20, 18.40)	15	2
Have skills in technology.	(11.00, 15.00, 18.30)	14.825	3
Have the skills to think critically and creatively.	(10.60, 14.60, 18.00)	14.45	4
Lack of social communication skills for many students to interact in cyberspace.	(10.60, 14.60, 17.90)	14.425	5

Table 11: Ranking for the benefit of Facebook use in the implementation of the curriculum in the future for aspects of students' character

Criteria	Fuzzy Evaluation	Score	Ranking
Increase student motivation.	(11.60, 14.90, 17.50)	14.73	1
Make students self-reliant.	(10.80, 14.80, 18.10)	14.63	2
Students are more interested in their studies.	(10.00, 14.00, 17.60)	13.90	3
Religion and moral values eroded.	(9.80, 13.80, 17.40)	13.70	4
Students take an active part in the discussion.	(9.60, 13.60, 7.30)	13.53	5
Build a sense of having a Facebook account.	(8.80, 12.80, 16.70)	12.78	6

5.Discussion and Conclusion

Based on the results of this study, of the five variables to measure the benefits of the use of facebook in curriculum implementation in the future is accepted by consensus by the experts involved. This shows that the use of facebook in the future implementation of the curriculum is very desirable because it coincides with the advanced technology nowadays where the use of very high virtual space.

Ranking needs in this research is to identify the most important subvgariable for each variable. The aim is to put the variables according to priority, from the highest priority until the lowest priority.

For variable Facebook as teaching aid, the sub variable with the first ranking is "using the Facebook page for an announcement telling" and the final ranking is "Plan learning activities to be carried out". This statement is supported by Mazman & Usluel, 2010; Bicen & Carvus, 2010; Ross et al., 2009; Cain, 2008 stating that Facebook is a social networking site popular nowadays because it is used by millions of consumers; this implies that facebook is a medium suitable for making an announcement to students in the future implementation of the curriculum.

For the second variable, namely aspects of student involvement showed sub variable ranked first is "to build a group of classes taught" and the final ranking is "conducting weekly tutorials". The findings in the first ranking for this second variable is very timely with the opinion of Alger (2009) which states that the ability of Facebook is to promote the exchange of information among the students in one hand, and between students and teachers on the other, and potentially make it an important educational tool for effective teaching requires educators to guide, nurture, develop and transmit knowledge to students. Indirectly, facebook can be used as a tool to build a group in class and tutorials regularly scheduled to be delivered to each group.

For variable suitability subjects, the sub variable that gets ranked first is "Bahasa Malaysia / English / Tamil / Chinese" and the final ranking is the "subjects of science and mathematics". This shows that it is very easy to use FAcebook for subjects involving only theory without involving calculations. Findings ranking for variable findings suitability subjects clearly shows us that Facebook is a tool that is useful and meaningful educational environment that can support the learning of English (Muhammad Kamarul Kabilan et al., 2010).

The fourth variable, namely the students' skills, shows knowledge gets first ranking is "have the skills to find information" and "skills to think critically and creatively" has fallen into the final ranking. It is known that the use of Facebook really is capable of helping students get the information quite easily available from virtual search. But the disadvantage is to produce students who are relatively less use common sense and think to produce an idea.

The last variable is the aspect of students' character. Ranked first show is "build morale to have a Facebook account" and the last is "religious and moral values being eroded". This can be proved by the many social problems arising with the use of control and understanding of facebook. This is proved by Galiffa (2009) which states that the uncontrolled use of Facebook also allows students to engage in immoral activities during the communication process.

The conclusion to be drawn from this scientific research is the use of Facebook is seen as a medium and an effective tool for curriculum in the future. This is supported by the efforts made by the government in creating a free wifi zone in selected areas. This effort is seen as being able to expand and maximize the use of Facebook in the curriculum of the educational system of our country. The respondents from the experts were also seen reaching a consensus agreement that Facebook be made a medium in the teaching and learning process in the future because it is capable of affecting the education system as well as in line with current technology. Apart from the benefits of using Facebook, researchers feel the negative effects also exist, because if students use so much time on social networking sites such as Facebook this will leave them less time to learn and have a negative impact on their studies such as low academic achievement. According Zuwairi (2010), logging on to Facebook a long time can cause active students to turn passive. Therefore, we suggest that the government and experts involved in either of the fields of education and ICT study and create a model that is believed to be able to compensate and prevent the negative effects arising from the use of Facebook in teaching and learning systems for implementation of the curriculum in the future.

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Use of Information Communications Technology (ICT) in Malaysian science teaching; A microanalysis of TIMSS 2011

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Abstract

ICT is a resource that is used by many science teachers worldwide. An evaluation of ICT use in learning science was carried out by Trends in International Mathematics and Science Study (TIMSS) 2011. Resources used by teachers as classroom instruction is one of the major factors that influence students' achievements. The objectives of this paper are to examine the use of ICT in teaching science in Malaysia and the effects on students' achievement based on the TIMSS 2011 results. The results revealed that the average science score of Malaysian Form Two students was 426 which was lower than the international TIMSS scale average and Malaysian Form Two students were ranked number 32 in science among 45 participating countries. This study revealed that 33% of students were taught by teachers who used ICT for science instruction. This was about doubled the international average (16%). However, the percentage of students who had computers available for science lessons was 17% and the use of computers in a month was very low (14-17%). Students seldom use ICT to look up ideas and information, to perform scientific procedures or experiments, to study natural phenomena through simulations, to process and analyze data and to practice skills and procedures. Based on these findings, implications towards science teacher education will be discussed.

Keywords: Student centered; Information and Communication Technology (ICT); Science Education; Malaysian Students' Achievement; Secondary education: TIMSS 2011.

Introduction

Information and communication technology (ICT) includes a wide range of approaches to teaching based on various traditional and innovative instructional theories. Although instructional technology can be used to support student-centered inquiry-based learning, however simply installing computers and using computer software in schools has done little to change the didactic teaching methods that is prevalent instructional approach in schools (Cohen & Ball, 1990; Cradler, 1994; Cummins, 1996; Goodlad, 1993; Lim, 2007; Niederhauser & Stoddart, 2001; Stoddart & Niederhauser, 1993; Van Dusen & Worthen, 1992, 1995).

Malaysia education system has emphasized the use of ICT in classroom. School inspectorates, school management and lecturers of universities and institutes always ensure the use of ICT in the classrooms. All schools were supplied with computers and computer laboratories under *Program Komputer dalam Pendidikan* (Computer in Education Programme) and ICT Literacy Programme for secondary school (Curriculum Development Centre, 2007). Besides that, science and mathematics teachers also received personal laptop and educational software under *Pengajaran and Pembelajaran Sains dan Matematik dalam Inggeris* (Teaching and Learning Science and Mathematics in English hereafter state as PPSMI) policy since 2003. Prior to this, these subjects were taught using the Malay language, the national language for Malaysia. The move from Malay to English as a teaching medium is to take advantage of the vast resources available in English worldwide. To overcome the lack of English proficiency of teachers, Curriculum Development Centre (CDC) of the Malaysian Ministry of Education developed several educational softwares which were teaching courseware. All Malaysian schools were supplied with the teaching courseware and are easy to be accessed by teachers.

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According to Niederhauser and Stoddart (2001), educational software can be grouped into two categories. Software that draws on the didactic tradition is grouped in the Skill-based Transmission category, while software that can be used in more constructivist ways in the Open-ended Constructivist category. Two types of traditional skill-based transmission software were identified; namely Drill-and-Practice and Keyboarding. Software included in these categories draw on objectivist behavioural principles of learning aimed at helping students internalize basic facts and skills. According to Niederhauser and Stoddart, this category of software is used to introduce content in hierarchical steps, present stimuli, provide immediate feedback and reinforcement, allow for repetition and practice, and monitor students' progress. There are three types of open-ended constructivist software; namely Interactive and Educational Game, Exploratory, and Tool programmes.

The use of information communication technology (ICT) was one of the instructional activities investigated in *Trends in International Mathematics and Science Study (TIMSS)* 2011. TIMSS is a series of international assessments of students' achievement in mathematics and science and this assessment is done once in every four years among participating countries. TIMSS's report provides vital information on key curricular, instructional, and resource-related factors that can impact teaching and learning process in Mathematics and Science (Martin et al., 2012). Malaysia has participated in TIMSS since 1999.

In 2011, national representative samples of students in 63 countries and 14 benchmarking entities (regional jurisdictions of countries, such as states) participated in TIMSS. Countries and benchmarking participants could choose to participate in the Year 4 assessment or the Form 2 assessment, or both. Forty five (45) countries and fourteen (14) benchmarking entities participated in the Form 2 (Grade 8) assessment. However, Malaysia had chosen to only participate in the Form 2 assessment.

Science assessment framework for TIMSS 2011 consists of a content dimension specifying the subject matter domains to be assessed within science (for example, biology, chemistry, physics, and earth science at Form 2) and a cognitive dimension specifying the cognitive domains or skills and behaviours (that is, knowing, applying, and reasoning) expected of students as they engage with the science content. The content domains differ for the Year 4 and Form 2, reflecting the nature and difficulty of the subjects taught at each level. At the Form 2 level, physics and chemistry are assessed as separate content domains, and receive more emphasis than at Year 4, where they are assessed as one content domain i.e. physical science. The cognitive framework, however, is the same for both levels, encompassing a range of cognitive processes involved in learning science concepts and engaging in scientific inquiry right through the primary and lower secondary school years.

2. Malaysian Science Result in TIMSS

Malaysia average achievement in the Form 2 content domains of biology, chemistry, physics, and earth science showed differing strengths and weaknesses. Although Malaysia has an overall science average scale score of 426 in TIMSS 2011, but we scored higher in physics with a score of 435 (see Table 1). The overall average scores for biology and chemistry were 427 and 426 respectively. The problem was the earth science domain which we only scored 401. Although our content domains score were slightly different, the most important aspect is to analyse the problems in our science education and improve the overall results.

Table 1.Malaysia overall and content domains average scale score

Rank.	Country	Overall Science Average Scale Score	Average Scale Score for content domains			
			Biology	Chemistry	Physics	Earth Science
1	Singapore	590(4.3)	594(4.8)	590(4.7)	602(4.2)	566(4.5)
2	Chinese Taipei	564(2.3)	557(2.5)	585(3.9)	552(4.5)	568(2.9)
3	Korea, Rep. of	560(2.0)	561(2.4)	551(2.2)	577 (2.8)	548 (3.2)
21	Turkey	483 (3.4)	484 (3.7)	477 (4.0)	494 (3.7)	468 (3.5)
27	Thailand	451(3.9)	460 (4.3)	436 (4.6)	430 (4.5)	466 (4.1)
32	Malaysia	426 (6.3)	427 (6.2)	426 (6.6)	435 (6.6)	401 (6.5)
40	Indonesia	406 (4.5)	410 (4.7)	378 (4.9)	397(5.4)	412(5.6)

( ) Standard errors appear in parentheses. Some results may appear inconsistent due to rounding.

There are four domains at Form 2; biology, chemistry, physics, and earth science. The same three cognitive domains; knowing, applying, and reasoning, were used at both the Year 4 and Form 2. Knowing covers the students' knowledge of science facts, procedures, and concepts. Applying focuses on the students' ability to apply knowledge and conceptual understanding in a science problem situation. Reasoning goes beyond the solution of routine science problems to encompass unfamiliar situations, complex contexts, and multi-step problems. (Martin et al., 2012)

In general, participants in TIMSS 2011 with the highest overall science average scale score also had the highest achievement in the cognitive domains, although most countries showed a relative strength in one cognitive domain or another (see Table 2). Malaysian students were strong in the reasoning domain (439 average score), average in the applying domain (424 average score), but weak in the knowing domain. This is quite different from other countries. Malaysian students were found to be able to do higher order thinking, but were knowledgeably weak.

Table 2. Comparisons of Countries' Achievement in Science Cognitive

No.	Country	Overall Science Average Scale Score	Cognitive Domains		
			Knowing	Applying	Reasoning
1	Singapore	590(4.3)	588(4.9)	589 (4.4)	592 (4.5)
2	Chinese Taipei	564 (2.3)	569(2.7)	570(2.7)	551(2.9)
3	Korea, Rep. of	560(2.0)	554(2.9)	561(2.0)	564(2.2)
21	Turkey	483 (3.4)	490 (3.8)	478 (3.4)	483 (3.4)
27	Thailand	451(3.9)	443(4.7)	451(4.1)	453(4.2)
32	Malaysia	426 (6.3)	403(7.0)	424(6.2)	439(5.8)
40	Indonesia	406(4.5)	402(5.4)	398(4.7)	413(5.2)

( ) Standard errors appear in parentheses. Some results may appear inconsistent due to rounding.

Besides students' science achievement in content domains and cognitive domains, TIMSS 2011 also evaluated five assessments and their effects on a student's achievement. The five assessments that were evaluated are: home environment support for science achievement, school resources for teaching science, school climate, teacher preparation and classroom instruction.

This article will focus on the use of ICT in Malaysian science teaching resources. In addition, this article will also discuss other classroom resources and activities employed in science lessons such as the use of textbooks, workbooks or worksheets, and science equipment and materials.

Method

Data were extracted from the results of TIMSS 2011. Only data on the 'types of resources used in science lesson' and 'how computers were used during science lessons' were analyzed. Descriptive statistics was used in the analysis to describe the types of resources used in their science lessons, and the various strategies employed in using computers in teaching science.

Findings

1. Use of computer software for science instruction

The result of TIMSS 2011 revealed that 33% of Malaysian students were taught by teacher using computer software for science instruction. This was about doubled the international average (16%). Please see Table 3. However, the Malaysian students' science achievement was still low (score of 426). From the result, it can be inferred that Malaysian science teachers used computer software for science instruction; however, it appears that only marginal benefits are derived as reflected in the students' achievement.

Table 3.Resources Teachers Use for Teaching Science
Reported by Teachers

Country	Percent of Students Whose Teachers Use							
	Textbooks		Workbooks or Worksheets		Science Equipment and Materials		Computer Software for Science Instruction	
	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement	As Basis for Instruction	As a Supplement
Malaysia	83 (2.5)	16 (2.3)	39 (3.8)	61 (3.8)	40 (3.4)	59 (3.4)	33 (3.8)	59 (3.8)
International Avg.	74 (0.4)	24 (0.4)	35 (0.5)	60 (0.5)	43 (0.5)	54 (0.5)	16 (0.4)	61 (0.5)

( ) Standard errors appear in parentheses. Some results may appear inconsistent due to rounding.

In the classroom resources and activities for teaching science, we found that textbooks were the main resources used by the science teachers as the basis of science instruction. The percentage of Malaysian students (83%) who were taught with these methods was higher than the international average (74%). Science equipment and materials were the next most frequently used with 43% of theinternational average. Workbooks or worksheets were less frequently used (35% of international students on average) but still heavily used in some countries. Computer software was less frequently used as a basis for instruction; which is only 16% on average. All of the following materials except textbooks were popular as supplementary instructional resources at the Form 2 level: workbooks or worksheets, with 60% of students; science equipment and materials, with 54%; and computer software, with 61%.

The result also revealed that Malaysian science teachers were more didactic than their international counterparts in teaching science. Majority of students (83%) were taught with textbooks as the basis for instruction. Less than 50% of the students were taught with workbooks or worksheets, science equipment and materials, and computer software as the basis for instruction. Please see Table 3. These findings showed that Malaysian teachers are influenced by the Confucian education culture where a greater proportion of science lessons are centred on learning from textbooks and memorizing facts. This is different from the Australian education system which has a longer historical influence from social-constructivist theorists such as Bruner and Vygotsky. Teaching in Australian schools involved a greater proportion of activities such as designing and doing science experiments, and working in small groups (Ying et al., 2012)

2. Computer Activities during Science Lessons

According to TIMSS 2011, countries are investing in technology as a way to enhance teaching and learning. Availability of computers and other technology in the science classroom can facilitate successful implementation of the curriculum. According to the Contextual Framework outlined in TIMSS 2011 Assessment Frameworks, computers and the Internet provide students with ways to explore concepts in-depth, trigger enthusiasm and motivation for learning, enable students to learn at their own pace, and provide students with access to vast information sources.

Internationally, on average, less than half (46%) of Form 2 students had computers available during their science lessons, ranging from 12 % in Ghana to 84% in Kazakhstan. Students with computers available during their lessons had slightly higher science achievement than students without computers available. On average, one-third (28–39%) of Form Two students, were asked to do the following on at least a monthly basis: look up ideas and information, do scientific procedures or experiments, study natural phenomena through simulations, process and analyze data, and practice skills and procedures. We found that only 17% of Malaysian students had computers available during their science lessons (see Table 4). Furthermore less than one-fifth (14-17%) of Malaysian Form 2 students, were asked to do the following on a monthly basis: look up ideas and information, do scientific procedures or experiments, study natural phenomena through simulations, process and analyse data.

Table 4. Computer Activities During Science Lessons
Reported by Teachers

Country	Computers Available for Science Lessons			Percent of Students Whose Teachers Have Them Use Computers At Least Monthly				
	Percent of Students	Average Achievement						
	Yes	Yes	No	To Look Up Ideas and Information	To Do Scientific Procedures or Experiments	To Study Natural Phenomena Through Simulations	To Process and Analyze Data	To Practice Skills and Procedures
Malaysia	17 (3.3)	447 (13.1)	421 (6.8)	17 (3.2)	15 (3.0	17 (3.2)	15(3.0)	14 (2.9)
International Avg.	46 (0.5)	481 (1.0)	475 (0.8)	39 (0.5)	28 (0.5)	30 (0.5)	31 (0.5)	33 (0.5)

( ) Standard errors appear in parentheses. Some results may appear inconsistent due to rounding.

Although computer software was used for science instruction, teachers seldom cultivate cognitive skills of their students. Malaysian science teachers used computer software didactically and as a result of this, students are weak in knowing, applying and reasoning (see Table 2).

Discussion

TIMSS 2011 revealed that the science results for Malaysian students dropped drastically when compared to the results of TIMSS 2007. Although PPSMI was abolished in 2012 (Curriculum Development Centre, 2011), many teachers are still using the teaching courseware which were developed by Malaysian Ministry of Education. This could explain the higher average scale score obtained by our teachers in using computer software as compared to the international average score. They used the teaching courseware frequently as it was developed by the Ministry of Education.

Singapore also has its own ICT programme and is called as the Masterplan for ICT in Education (MP1) which was launched in April 1997. Clear objectives were set in the policy. The main goal of MP1 was not only to ensure that schools integrated ICT in their curriculum but also developed a culture of thinking, lifelong learning, and social responsibility (Singapore Ministry of Education, 1997). The ministry emphasized the use of Internet, software designed for the curriculum, open tools such as word-processing, spread sheets, and mind mapping packages, and learning management systems. The use of ICT in Singaporean education then changed from information receiving towards finding, collecting and synthesizing relevant information, and from learning to problem solving and communicating ideas effectively. Singapore teachers supported learner autonomy of the students by providing them with worksheets and checklists, and engaged them in dialogues to scaffold the learning processes. (Lim, 2007)

However in Malaysia, the microanalysis of TIMSS 2011's data on how the students use computers revealed that less than one-fifth (14-17%) of the Form 2 students used it to look up for ideas and information, do scientific procedures or experiments, study natural phenomena through simulations, process and analyse data, and practice skills and procedures. This shows that most teachers did not use the computers to enhance their students' cognitive skills. This could be related that the low average scale score obtained by our students in the science domain. As described by Niederhauser and Stoddart (2001), ICT-based learning, can be used in the didactic tradition and constructivist ways. In the Malaysian scenario, ICT was used as this tradition. On the other hand, constructivism in science teaching was highlighted in many studies (Cheung & Toh, 1992; Yager, 1991). If students construct new knowledge out of the experiences that they encounter, then it makes sense for the teacher to grasp some part of their experience and connect it to the knowledge to be taught. In order to ensure students' understanding requires active involvement, ample opportunities to practice what has been learnt should be given. Though the emphasis is on the student, constructivism does not dismiss the active role of the teacher or the value of expert knowledge. Constructivism modifies that role, so that teachers help students to construct knowledge rather than reproduce a series of facts. The constructivist teacher provides tools such as problem-solving and inquiry-based activities with which students formulate and test their ideas, draw conclusions and inferences, and pool and convey their knowledge in a collaborative learning environment (Toh et al., 2004)

Thus, our students were not trained or instructed to obtain maximum benefit from the use of computer. There are computer softwares such as the tool software programmes (e.g. the spreadsheet, Internet and graphic organizer) that can support learners in their learning as they find, organize, manipulate and present information. However, the instructional value of these programmes lies in how they are used. Students can use the Internet to access information, a spreadsheet to organize data collected in experiments, a graphics package to prepare diagrams and charts, a word processor to organize and present textual information, and a multimedia presentation programme to prepare and present a final report. Such activities promote independent and group interaction in completing tasks (Niederhauser & Stoddart, 2001) , thus support learner autonomy to achieve students' engagement in higher-order thinking.

Conclusion

It is evident that TIMSS 2011 revealed that Malaysian science teachers used computer in their science instruction however they seldom cultivate cognitive skills of their students. Malaysian science teachers used computer software didactically and as a result of this, students are weak in knowing, applying and the skill of reasoning. This issue need to be addressed in the science teacher education programme; both pre-service and in-service level. Besides that, all schools should have sharing sessions of successful or unsuccessful ICT-mediated lesssons at school among the teachers. These sessions can provide ideas to the teachers how to conduct computer-based lessons and motivation that if others people can do it, we can also do it. They need to be trained in using ICT in constructivist ways in order to provide a flexible learner-directed workspace. The computer should be seen as a tool for learning, rather than a teaching machine.

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Use of Nonverbal Communication in the Classroom as a Way of Enhancing Classroom Teaching: A Case Study of Solusi High School, Zimbabwe.

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Abstract

Daily classroom teaching is still inefficient although a lot of time and money has been spent on it; one of the main reasons being that some vital aspects of teaching, like nonverbal communication are either neglected or not understood by the teachers. This descriptive study investigated the teachers' use of nonverbal communication in the classroom and how it enhances teacher effectiveness as an instructor and as a disciplinarian. The research combined observation and interview data collection methods. It was established that, although teachers have relatively limited knowledge on nonverbal communication, they use quiet a number of them with positive impact on pupils' learning.

Keywords: Nonverbal; cues, oculesics, haptics, paralanguage; proxemics; disciplinarian; instructor; chronemics

1. Main Text
1.1. Introduction

Teaching is an old profession which is heavily based on social competence and prospective teachers have been trained for decades in the field so that they can effectively teach pupils in the classroom. A lot of teaching assisting technology is also employed in the classroom. However, in Zimbabwe (Solusi High School inclusive) pass rate is still low, for instance, according to Zimbabwe Students Solidarity Trust, for the 172 698 pupils who sat for "O" Level examinations in 2012, only 31 767 passed with at least five subjects which is the "O" Level pass-cut-line.

One of the tools which might seem to be ordinary but can be of great importance for teaching instruction and classroom management is nonverbal communication.

Fie, fie upon her!
There is language in her eyes, her cheek, her lip.
Nay her foot speaks….
Ulysses in Shakespeare's Troilus and Cressida

Shakespeare clearly indicates that messages can be derived from parts of the body movement and behavior.

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Nonverbal communication has been defined by Gamble and Gamble (2002) as any communication we communicate without using words. Nonverbal communication, due to the popularity it is gaining especially in the education circles, has spawned a vocabulary of its own which includes proxemics, chronemics, among other terms (Portch 1982). It constitutes most of the communication that takes place between the teacher and the pupils in the classroom. Mehrabian (Undated) from his experiments established that 93 percent of communication among his sample was nonverbal. This means that teaching necessitates, on the part of the teacher, the ability to accurately encode and decode elements of nonverbal communication.

1.2. Statement of the Problem

Although it has been proved by research that most of the communication in the classroom is nonverbal, its value is still underestimated. Some teachers either lack the skill of interpreting the nonverbal cues or they do not value them. As a result, classroom teaching is still inefficient and pass rate, at both "A" and "O" levels, is still low.

This research is therefore geared at answering the following questions:

- Which nonverbal cues do the teachers use in the classroom?

- What is the relationship between teacher-pupil interaction, classroom management and lesson delivery?

- What are the profiles of teachers in terms of age, gender, professional qualifications and teaching experience and what impact does it have in the use of nonverbal communication?

1.3. Purpose of the Study

The study investigated the teachers' use of nonverbal communication in the classroom and how it enhances teacher effectiveness as an instructor and as a disciplinarian.

1.4. Materials for Data Collection

Audio-visual tape recorders, check lists and interview schedules were used. Okon (2011) propounds that the videotaped material captures an unbiased evidence of teacher behaviour and teaching situation.

1.5. Subjects of the Study

All academic ZJC teachers at Solusi High School, Matabeleland South in Zimbabwe were used for this study.

1.6. Research Procedure and Methodology

The researcher obtained written research permission from the following authorities before the research could be embarked on: Solusi University Faculty of Education and Solusi High School Headmaster.

The researcher combined the observation and interviews as tools for data collection. As a nonparticipative observer, the researcher used the ZJC Solusi High School academic subject teachers to find out how teachers use nonverbal cues in their classrooms. She invited audio-video shooting specialists who brought and installed audio-visual tape recorder equipment at strategic positions soon before the lessons began. Each teacher was shot twice on different occasions. The obtained videos were used by the researcher and experts from the Solusi University English and communication Department to fill in the prepared checklist for teachers' nonverbal cues. SPSS was used to analyze data from the check list. Regression was computed in order to find the relationship between teacher-pupil interaction, lesson delivery and classroom management.

An inventory of the information gathered from the observations was strengthened by structured interviews which were conducted to the teachers in question after the last day of observation. The obtained data was synthesized into a coherent description.

1.7. Results and Discussion

1. It was established that teachers used quite a number of nonverbal cues in the classroom with positive impact on pupils' learning and discipline.

- Chronemics (the use of time) was respected by the teachers in accordance to suggestion by Payne (2001) that the way teachers perceive time, structure it and react to it helps set the stage for classroom communication.

- Teachers were also conscious of proxemics (working environment and space) in line with finding by Papa (2008). On the same note, one interviewee exclaimed, "A neat environment facilitates learning".

- However, the absence of haptics (touch) during the teaching-learning process can prove that the Zimbabwean culture, just like the Asian culture (Hybels & Weaver 1997), has a negative attitude toward the touch.

- Professional dressing was valued by teachers since dress is associated with a person's character, dedication, mood and behavior (Manombe, 2009). Teachers also agreed that is important for pupils to be dressed for the occasion, "The smart ones (pupils) seem to be serious with everything including school activities, thus they are likeable", one interviewee echoed.

- Oculesics (facial and eyes expressions) and kinesics (body movement) have pivotal roles to play in both lesson delivery and classroom management. Neil (1989) has similar findings in his research.

- Appropriate use of chalkboard enhances learning. On the part of the pupils' handwriting, two of the interviewed teachers said that it has nothing to do with pupils' performance while the other three concurred that it impacts pupils' performance.

- Paralanguage (nonverbal communication that is associated with a person's use of voice) was mainly depended on. The following table shows the teachers' use of voice for effective lesson delivery. On the table, it can be seen that in almost all the occasions, teachers used their voices to advantage as shown by a fairly high mean of 3.4 to 4.6.

Table 1: Teachers' paralinguistic cues

Description of Teachers' paralanguage	min	max	sum	mean	std
Modulates voice accordingly	4	6	23	4 .6	0.894
Speaks fluently	3	5	19	3.8	1.095
Accents word meaning through tone	3	6	19	3.8	1.304
Speaks rapidly when exited	0	3	5	1	1.414
Vocal qualities contributes to pupils' understanding	3	5	20	4	1.000
Modulates voice to retain pupils' interest	2	5	17	3.4	1.517
Has vocal pauses ("ums", "uhs" etc)that disturbs fluency	0	3	3	0.6	1.342

2. It was also discovered that classroom management was directly related to lesson delivery.

- The relationship between classroom management and lesson delivery, as exposed by regression analysis on Table 2(a) and by partial correlation analysis, Table 2(b) was found to be strong with a coefficient of .855 in both occasions.

Table 2(a): Predictive validity of classroom management on lesson delivery

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate		Change statistics			
					R Square Change	F Change	Df1	Df2	Sig. F Change
1	.855(a)	.731	.641	.38576	.731	8.136	1	3	.065

F=8.136, Sig=.065

Table 2(b): Partial correlation analysis

Model		Unstandardized coefficients	Standardized coefficients	t	Sig		Correlations	
			Beta			Zero order	Partial	Part
1	(Constant)	.641		-.581	8.136	.855	.8553	.855
	CM		.855	2.852				

Table 2(a) shows an F value of 8.136 and a significant F Change of 0.65, which is fairly high. The Adjusted

R Square is 64.1% meaning that the contribution of classroom management to lesson delivery is 64.1%.

Such a percentage is high and indicates that relationship is true and is not a matter of chance.

This shows that the more the classroom is managed, the more effective is the lesson delivery. This finding i

agrees with that of Sidney (2005) who remarked that there is no learning in a class where pupils misbehave.

- A correlation analysis on teacher-pupil interaction, classroom management and lesson delivery was done
  and the results are shown on the table below.

Table: 3: Correlations of teacher-pupil interaction, lesson delivery and classroom management

		TPI	CM	LD
TPI	Pearson correlation	1	.050	-.384
	sig.(2-tailed)		.936	.524
	N	5	5	5
CM	Pearson correlation	.050	1	.855
	sig.(2-tailed)	.936		.065
	N	5	5	5
LD	Pearson correlation	-.384	.855	1
	sig.(2-tailed)	.524	.065	
	N	5	5	5

The computed correlation analysis showed that there was neither relationship between teacher- pupil

interaction and classroom management (.050) nor between teacher- pupil interaction and lesson delivery

(-.384) as indicated in table above. This means that teacher-pupil interaction does not necessarily enhance

both lesson delivery and classroom discipline.

However, it can be argued that teacher-pupil interaction was nonverbally motivated as shown below.

Table 4: Teacher-pupil interaction

			95% Confidence interval	
TPI	Mean	Std. Error	Lower bound	Upper bound
1	3.240	.279	2.665	4.832
2	3.640	.360	2.897	4.383
3	4.320	.395	3.506	5.134
4	5.000	1.616	1.66	8.334
5	3.400	.342	2.695	4.105

Teacher Five has the highest teacher-pupil interaction mean with a mean of 5.00 while the other teachers

were also doing fairly well with mean ranging from 3.24 to 4.32.

3. It was gathered that teachers' nonverbal competency is affected by age in agreement to Knapp and Hall (2004) who argue that nonverbal signs and signals develops from childhood till the age of 30 and seems to decrease later on in life; but in contrast to Bov'ee and Thill (1997) who assert that age has no effect on nonverbal communication.

4. The study exposed that professional qualifications affects teachers' nonverbal competency in line with Knapp and Hall (2002) who say that the understanding of socially agreed meaning for nonverbal signs is key for effective professional communication and requires proper training. Okon (2011:1) in his study also recommends, "Teachers should learn to use nonverbal communication in order to improve the quality of classroom teaching."

5. Many years of teaching proved not to result in nonverbal competence just as Knapp and Hall (2002) discover that experience (which they termed on-the-job-training) on its own, without proper training, is insufficient for the teachers. However, in contrast to the findings, f Neil (undated) proposed that experienced teachers use nonverbal tactics in a sophisticated way based on their previous teaching knowledge.

6. What proved not to affect nonverbal knowledge and animation is sex. This finding is similar to that of Klinzing and Aloisio (2004) where no significant differences, on different sexes, were found between university students and school principals in Germany. The finding, however, negates that of Hall (1998) and Knapp and Hall (2002, 97) which revealed that women are more effective decoders and encoders than men.

1.8 Implications

Nonverbal cues are powerful tools for both lesson delivery and for class management; hence they should be skilfully used to enhance classroom teaching.

1.9 Recommendations

Finally, based on the findings of the study, it can be recommended that further research on nonverbal communication should be done in Zimbabwe at all levels of education with the hope that, when such information can be available, it can lead to teacher improvement. This is of paramount importance because, currently, very little research in this field has been done.

Acknowledgements

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13th International Educational Technology Conference

Using mobile phone texting to support the capacity of school leaders in Ghana to practise Leadership for Learning

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Abstract

Several years into a collaborative professional development programme to build the Leadership for Learning capacity of Basic school headteachers throughout Ghana, the challenge is to sustain commitment, deepen understanding and share learning among the school leaders. Employing ubiquitous mobile phone technology, weekly text messages have been sent to the programme's 175 initial participants. During the year of the pilot project different forms of messages have been tried, and feedback from recipients suggests their value. The paper reports experience and findings from the pilot, and considers plans for scaling-up to reach all 18,000 Basic schools across the country.

Keywords: professional development; mobile phone; text messages; SMS; Leadership for Learning; headteachers; school leaders; Ghana

Introduction

Scalability and sustainability are issues central to many educational reform efforts, not least a programme of professional development to support school leaders in Ghana, in the west of Africa. Three years into the programme we started experimenting with mobile phone texting (Short Message System or SMS) as a way of maintaining regular contact with 175 core participants. This paper begins with a brief overview of the programme, followed by a review of literature relating to the use of SMS, before reporting our experience of using text messages in different ways during a year-long pilot. We analyse the types of message sent and the replies received, discuss what we have learnt and consider the possibilities for using SMS to support thousands of headteachers.

1.1 The Leadership for Learning Ghana programme

Internationally headteachers (ie school principals) are recognised as pivotal to school improvement (Robinson, Hohepa & Lloyd, 2007), and research in Ghana (Oduro 2008; Zame, Hope & Respress, 2008) has identified the lack of leadership preparation and ongoing professional development in the country as key issues. Since 2009 the Centre for Commonwealth Education at the Faculty of Education, University of Cambridge (http://www.educ.cam.ac.uk/centres/cce/) has been working in collaboration with the Institute for Educational Planning and Administration at the University of Cape Coast, Ghana to address this need. The Leadership for Learning (LfL) programme in Ghana (MacBeath, Swaffield, Oduro & Ampah-Mensah, 2012) aims to enhance the leadership capacity of headteachers in kindergarten, primary and junior-high schools (collectively known as Basic schools) and thus improve the quality of learning. It is based on a framework developed through an international project (MacBeath & Dempster, 2009) which has at its centre five principles for practice, namely: a focus on learning; conditions for learning; dialogue; shared leadership; and a shared sense of accountability.

15 Ghanaian 'Professional Development Leaders' (PDLs) comprising lecturers from the University of Cape Coast and other higher education institutions, officers of the Ghana Education Service (GES), and a headteacher undertook an accredited course at the University of Cambridge during which they considered the applicability of LfL to Ghana and prepared to lead programme workshops. An initial cohort of 124 headteachers from all over Ghana attended a

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residential workshop in 2009, reconvening in 2010 and 2011 to share their experiences, provide mutual support and continue learning. Other key groups particularly circuit supervisors and district, regional and national directors were also introduced to LfL, and through these early participants many other headteachers became involved. The GES adopted the LfL framework as national policy and incorporated it into its headteacher handbook. It is estimated that over 3,000 school leaders throughout the country have now attended sessions on the Leadership for Learning principles. While official activity accounts for much of this expansion many of the original cohort of headteachers have also shared their knowledge and experience with local colleagues. We were keen to encourage this organic spread while being concerned that the fidelity of the framework and principles should be maintained as practice adapted to local circumstances. Continued support for the first group of leading edge headteachers seemed essential but more face-to-face meetings were impossible. Printed newsletters (which continue) are welcomed but are infrequent and expensive to produce and distribute.

We therefore began to consider the possibilities of using mobile phone texting to support the capacity of school leaders in Ghana to practise LfL.

The use of SMS to support professional development

Across large proportions of Sub-Saharan Africa people rely on mobile phone technology and in particular SMS for daily communications. In Ghana mobile phone penetration could be described as 100 per cent since subscriptions reached 24.4 million in 2012 (ITWeb Africa, 2012), nearly matching the national population of 25 million. Mobile phones and SMS are the preferred method of communication in Ghana as in other countries in the region, with only 14 per cent hard line internet access (Ghana Internet Service Providers Association, 2013).

SMS has been used to deliver a number of services in developing economies with good success, especially banking services (Porteous, 2006; Peevers & Douglas, 2008) and to support population health programmes and clinical trials (Armstrong et al., 2012; Dean et al, 2012; Ollivier et al., 2009). Education and SMS is notably absent from the research literature, save for a few research projects spanning the last decade and an emerging interest in the opportunities that have, as yet, remained underdeveloped (Kidd & Murray, 2013; Ford & Batchelor, 2007; Traxler & Dearden, 2005; Traxler, 2007; Visser & West, 2005; Valk & Rashid, 2010). The case for integrating SMS in education to support learning and professional development has largely arisen from the work of non-governmental organizations (NGOs) such as Front-line SMS (http://www.frontlinesms.com/) and English in Action (EIA) (Walsh & Power, 2011; Walsh et al., 2013).

Walsh et al.'s (2013) recent paper reviewing the work of EIA highlighted the potential of mobile phones for supporting increased access to professional development, citing the ubiquity and cost effectiveness of the technology as a key rationale. The benefits of using mobile technology and infrastructure for creating professional development opportunities are clear, yet it has not been widely used for this purpose. In part this may be because, as Ramli, Ismail and Idrus (2010) point out, effective professional development is about more than simply providing access to resources (important as they are) and providing a conduit for communication. Practitioners need to be continually applying their learning in practical situations, to adopt a spirit of enquiry, and to reflect on experience, all in the context of collaborative learning. Meaningful interactions among colleagues and with critical friends and supportive frameworks are key. Duncan-Howell (2010) reported teachers participating in online communities teachers spending up to three hours a week engaged with CPD, but as Walsh and colleagues pointed out these web-based discussion forums require easy, reliable and affordable internet access. Similarly, the lack of ICT infrastructure constrains use of the Open Education Resources (OER) available through the Teacher Education in Sub-Saharan Africa project (Harley & Simiyu Barasa, 2012). Accepting that there are differences in what can be achieved through e-learning that includes regular access to email, video content, video conferencing and so forth in regions where this technology is widely available, we imagined that benefits could be achieved through text messaging alone using simple mobile phones.

Piloting text messaging in Ghana

In March 2012 we began sending weekly text messages to core participants in the LfL programme. The recipients comprised 116 headteachers (the original cohort allowing for attrition through death and redeployment), 36 circuit supervisors and 23 others including the Professional Development Leaders, Ghana Education Service Directors, and members of the research teams in the Universities of Cape Coast and Cambridge.

The video, voice and text messaging service Skype was used to send and receive text messages. Skype was chosen as it was a cost effective solution that offered the functionality required of the pilot, namely, to send and receive messages to large numbers of recipients efficiently with the opportunity to maintain a record of activities over time. The messages were typically 30 words / 150-160 characters in length. A Skype account called LfL Ghana was established, enabling recipients to clearly identify the source of messages, and to ensure they could text or call replies.

The pilot study came to an end in April 2013, transitioning to a monthly information sharing service while the outcomes of the pilot were reviewed and a proposal for an expanded and extended SMS programme finalised.

3.1 Messages sent

43 messages were sent during the year's pilot study beginning in March 2012. They were sent on Monday mornings during the Ghanaian school terms.

The focus and wording of the messages were worked out through dialogue among the LfL teams in Cambridge and Cape Coast, with the programme researcher and co-ordinator taking the lead. We agreed that the initial messages would focus on the five LfL principles; thereafter we developed the texts predominantly through experimentation and response to circumstances. The messages created fell into five categories: announcements; prompt to thought or action; request for feedback – open; request for feedback – 'yes'; and sharing participant response. The totals and percentage of each type of message, together with two examples of each type for illustrative purposes are given in table 1.

Table 1. Types, numbers and examples of messages sent (with message number and date)

Category	Example 1	Example 2
Announcements n = 12 ie 28%	SMS5: Welcome to the 3rd term! We hope you had a restful holiday. We wish you the best in Leadership for Learning this term! A new Monday message coming next week. (02/05/12)	SMS41: LfLGhana shared your story at the 'Year of Ghana Conference' in Atlanta, USA. Participants were impressed at your hardwork. Keep it up! Keep the LfL flag flying. (25/03/2013)
Prompt to thought or action n = 9 ie 21%	SMS7: LfL Ghana supports Shared Accountability across the whole school: What are you doing this week to encourage a shared responsibility for learning? (14/05/12)	SMS23: LfLGhana believes in Critical Friendship as a tool for effective school leadership. For this week, we want you to reflect on the qualities of a critical friend. (15/10/2012)
Request feedback – open n = 13 ie 30%	SMS10: LfLGhana wants to know what YOU think is the biggest change in your school/classroom since starting with Leadership for Learning? We'll share results next week! (04/06/2012)	SMS34: Good morning! How could Monday messages help you more from week to week? What leadership topics/issues would you like to discuss or share? (21/01/2013)
Request feedback – 'Yes' n = 3 ie 7%	SMS27: LfLGhana is now in over 2000 schools across Ghana. Reply YES if you have shared your LfL expertise with other Headteachers (12/11/2012)	SMS20: LfLGhana is looking for BIG IDEAS on how to develop shared leadership with teachers. If you have an idea, reply YES and we will contact you. Thank you! (24/09/2012)
Sharing participant responses n = 6 ie 14%	SMS14: LfL Ghana wants to share a msg we received: "The greatest change in my school is teachers' attitude towards work… with BECE results up… 54% to 81% since 2009" (03/07/12)	SMS25: LfLGhana shares this response to last week's msg. I've adopted 2 schs around me. I share the good news with them. I also take advantage to share some good practices with heads I get into contact with. (29/10/12).

The categorisation of messages is a retrospective analysis to summarise the types of messages sent, although the categories are not entirely mutually exclusive. For example SMS8 *'LfL Ghana wants to share this text from an STL[186]: "Use yourself as a practical example to demonstrate leadership and learning for others." What do you think? (21/05/2012)'* both shared a response and prompted thought. Other messages could be classified or interpreted in different ways. This was particularly the case with those messages that were prompts to thought or

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[186] STL = School Transformational Leader, the term adopted for themselves by the initial cohort of headteachers in the programme.

action (for example SMS7 in table 1 above), which initiated feedback even though this was not their original intention.

As we experimented with different types of messages and responded to circumstances some patterns in the types of messages sent developed. Most obviously, 'announcement' messages were typically sent at the beginnings and endings of school terms, although in addition these kinds of messages were sent as the need or opportunity arose, for example to announce the death of a leading member of the programme and to inform everyone of LfL Ghana programme developments such as workshops for District Training Officers. The first messages sent (SMS1-4 and 6&7) focused on the LfL principles, prompting participants to think about and hopefully extend their current practice. These initial messages were phrased as questions without explicitly asking for responses, and we were pleasantly surprised to receive unsolicited feedback. We therefore started sharing some of the participants' responses (SMS 8&9) and directly requesting their ideas (initially SMS10, 11, 13). Mindful that recipients could only send text replies at their own personal cost we experimented with the form of feedback request, on occasions (SMS 20, 27, 29) asking for a simple 'Yes' reply. The first of these messages asked for ideas about how to develop shared leadership with teachers, and said that a 'yes' reply would initiate contact for further details. The programme co-ordinator in Ghana then made telephone contact with each of the respondents, which proved to be difficult and time consuming. Subsequent 'reply yes' messages were used without a promise of follow-up to seek feedback about (and also indirectly prompt) the prevalence of an aspect of practice (sharing LfL expertise with other headteachers), and to gauge interest in developing the text messaging service (by the opportunity to text other headteachers directly).

3.2 Responses received

All bar two of the 43 messages sent during the year generated text responses from recipients, even though only 16 of the messages (37 per cent) were explicitly designed to do so. In total 390 text replies were received, giving a mean average of nine replies per message. One message (SMS27) elicited 42 replies, the greatest number received in any one week. Not surprisingly this text was in the form 'reply yes', and the other messages that prompted particularly large number of responses (SMS21&31) were the other two of this type. The 13 messages that requested open feedback generated an average of nine replies each, with the totals for individual messages ranging from four to 18. Replies to the ten messages that were prompts to thought or action, and the six that were sharing participants' responses to previous messages were fewer, although as explained above some of these also prompted thought ('... What do you think?') and could also have been interpreted as a direct request for feedback. The 12 announcement messages precipitated a total of 60 replies, an average of five per message although there was considerable variation. 14 people responded to the news of the death of one of the Professional Development Leaders, expressing their shock, condolences, and appreciation of his work.

Responses to announcements were typically expressions of thanks; quite a few people replied to seasonal greetings in similar vein. Two of the open feedback messages (SMS26&33) explicitly asked for programme participants' views about the text messages. The 16 responses were all positive, welcoming the regular texts as reminders of the LfL principles and practices, as in: *'Messages we get from LfL Ghana serve as buck-ups that refresh our minds on the five principles'*. The SMS messages were described as *'... highly inspiring and motivating'*, and for some at least reduced the sense of isolation: *'It also brings us closer to our coordinator/ PDLs even though we are apart'*. Only three participants mentioned anything about short-comings of the messaging system: *'... at times you may not see the message early enough to reply'; 'what is not good is that sometimes it comes in broken messages which entails missing texts';* and *'using SMS much cannot be discussed'*. This latter point resonated with the 31 positive replies received in response to SMS29: *'LfL Ghana wants to know if you would like to have the opportunity to text other Headteachers about LfL through our messaging system. Reply YES if you do'*.

The majority of the 390 replies focused on details of the Leadership for Learning programme and the way the participants were putting the LfL principles into practice: detailed analysis of their content is beyond the scope of this paper. Beyond the one word replies *'yes'* and *'thanks'*, responses ranged in length from a few words, to a sentence or two, to quite extended paragraphs. The longest reply received was 117 words (728 characters).

The patterns of replies from different categories of participants are shown in table 2. 71% of all participants responded at least once, although there were differences among the groups with 66% of headteachers and 69% of circuit supervisors doing so compared with 100% of those in the 'others' category. However, it was among the headteachers that the most frequent respondents were found, with 14% of them replying more than six times and 7% sending more than 10 responses in the year. The most prolific respondents were headteachers, with one replying to 26 of the 43 messages sent.

Table 2. Responses by group

	Headteachers		Circuit supervisors		Others*		All participants	
Number of recipients	116		36		23		175	
Total number of replies	304		60		26		390	
Average number of replies	2.6		1.7		1.1		2.2	
Replied at least once	76	66%	25	69%	23	100%	124	71%
Replied 1-5 times	60	52%	23	64%	23	100%	106	61%
Replied 6-10 times	8	7%	2	6%	0	0%	10	6%
Replied more than 10 times	8	7%	0	0%	0	0%	8	5%

*Professional Development Leaders, Ghana Education Service Directors, University Staff.

4. Discussion

A year of experimenting with text messages in the context of the LfL programme in Ghana convinces us of the value and potential of supporting professional practitioners in this way. Our pilot had a number of limitations, not least the lack of an evaluation process that systematically gathered feedback from all the participants and related participation to a range of professional development outcomes particularly student learning. Nevertheless through reflecting on the experience and reviewing data generated we are able to contribute to the small but growing body of research knowledge in the area, and have learnt a number of lessons to inform our continued support of the LfL Ghana programme.

Ubiquitous mobile phone ownership and network coverage throughout Ghana, together with what is now considered fairly basic communication technology, provide the means for cheap and reliable messaging with large numbers of school leaders. There are however practical issues and time requirements for setting up the recipients' phone numbers in the Skype messaging system and for administration. Wording concise messages takes practice, and although the ambiguous nature of some of our messages yielded unexpected benefits (as in alerting us to the readiness of recipients to respond), in retrospect we could have been clearer about the precise purpose of each message and ensured the wording conveyed that purpose. Nevertheless we were able to send weekly messages that had the potential to sustain commitment, deepen understanding and share learning among the 175 core participants of the LfL programme.

Perhaps the most important finding from the pilot is that nearly three-quarters (71%) of participants replied at least once, indicating that SMS is a practical method of communication with school leaders in Ghana. However, we do have to be cautious in drawing conclusions and interpreting patterns of responses. In particular we do not know how to interpret the complete lack or paucity of responses from individuals: it may be that our messages were not received, that the cost of replying was prohibitive, that participants were fully committed to practising LfL in their schools but did not wish to send text messages themselves, or that some school leaders were disengaged. Responses to direct requests for feedback about the messages were overwhelmingly positive, and suggested that the messages provided a sense of community, valued direct and frequent connection to the co-ordinator at the University of Cape Coast, and helpful reminders of key aspect of the programme. Whilst recognising that in any group there will be individual differences we continue to be heartened by the desire of a number of headteachers in particular to communicate, some responding fulsomely even to simple end of term greetings. We are convinced that regular text messaging supports the engagement and commitment of LfL programme participants, aids programme fidelity, and has the potential to enhance learning through the sharing and development of practices.

5. Looking ahead

Our challenge now is to build on the experience of experimenting with text messaging as a means of supporting school leaders and find a way of extending it to many more school leaders across Ghana. We are currently working together with the SHM Foundation (http://www.shmfoundation.org/) to develop a system that is scalable, sustainable, and meets the LfL programme participants' expressed desire to be able to communicate directly with one another. The proposed model is based on considerable work already undertaken by The SHM Foundation in using SMS in this way. Multiple small groups of say 12 headteachers would be established, each with a more experienced facilitator who would be attached to a total of 15 headteacher groups and who in turn would belong to a

support group with 15 others aided by a senior facilitator. This approach would allow approximately 3000 headteachers to join a small support group with whom they could interact directly via SMS, and through the facilitators could be in contact with the LfL Ghana programme co-ordinator, Professional Development Leaders and university teams. A six-fold replication would have the potential to include all 18,000 Basic school headteachers across Ghana.

There is much work to be done to bring this vision to a reality, not least to secure the funding necessary for such a large-scale, albeit cost effective, model of on-going professional development support and LfL capacity building. All our experience, and particularly the dedication, enthusiasm and commitment of educators throughout Ghana and at all levels of the system, suggests the value of the endeavour and prospects for success. The infrastructure, systems and communication habits developed would be a strong foundation for future more multi-media ICT-supported professional learning if smart phones and broadband internet connection become common in Ghana. No doubt there will be considerable difficulties to be overcome, but mobile phone technology could be the key to quality learning in Ghanaian schools where the LfL principles of a focus on learning, conditions for learning, dialogue, shared leadership and a shared sense of accountability are embedded and sustained.

Acknowledgements

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Vocational School Students' Attitudes Towards Internet

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Abstract

Internet is shown among the main ways of learning in many recent research findings. Many masses like personnel and students prefer meeting their need for obtaining knowledge with internet above all. This positive impact of internet on learning can be better increased with the determination and direction of various psychological perceptions of the learners'. One of these psychological traits is attitude towards internet. In this study, 265 undergraduate students', from various departments of Tunceli Vocational School of Tunceli University, attitudes towards internet were investigated. The Attitude Towards Internet Scale was used as the data collection instrument. The opinions gathered with the application of the scale were compared in terms of gender, grade, experience of computer education, age and field of study variables. Some of the findings are as following: the attitude towards internet does not differentiate meaningfully in terms of gender and grade variables; whereas there is a meaningful difference of opinions in terms of the field of study variable.

Keywords: Attitude Towards Internet, Internet, Learning, Vocational School Students

INTRODUCTION

Internet has been widespread in other fields as well as in education. Learners consider internet as the main and initial source of information (Tuncer, Yılmaz and Tan, 2011; Tuncer and Kaysi, 2011). With the spread of internet technology, the tendency of getting information via books or library has become gradually less. About half of the students begin using computers during their undergraduate years, and nearly two-thirds of them make use of internet for educational purposes (Usta, Bozdoğan and Yıldırım, 2007). Thus, it can be claimed that the internet technologies will have an ever-increasing importance as either the source of learning or a part of the learning activity itself in the future. Yet, it should not be thought that internet is beneficial under every circumstance and situation, and can be resorted to regardless of any regulation concerning it. As it is in other kinds of learning activities, the learners' psychological perceptions concerning internet should be known, and thus actions should be taken accordingly. And one of these psychological perceptions is attitude towards internet.

The attitude towards internet is defined as the feelings, thoughts and experiences regarding internet activities (Erkan, 2004; Esgi and Bardakci, 2007). As regards its educational use, the learners' feelings, thoughts and perceptions towards the object are quite significant. And sometimes these psychological properties create an effect as a generalization. For example, Mitra and Steffensmeir (2000) state that easy internet access encourages positive attitudes towards computers. When the fact that internet has already begun to be used in learning environments so frequently is taken into consideration, it is possible that students' negative attitudes towards this technology may be generalized for schools, and thus there could be increases in loss of learning.

This study aims to investigate the vocational school students' attitudes towards internet. As the vocational schools conduct educational activities for any given profession, it is thought that the students receiving education in this departments will be so closer with internet very soon and in their future lives as well. Within this study, it was

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questioned whether the vocational school students' attitudes towards internet change in terms of gender, grade, experience of computer education, age and fields of study variables.

METHOD

The design of this study can said to be a survey model. As Karasar (2009:76) puts it, it is aimed to describe past or present situations in the survey model. The survey model is resorted to in the case of larger samples differently from other research designs (Büyüköztürk et al., 2008:177).

The Attitude Towards Internet Scale, developed by Nickell and Pinto (1986) and adapted by Tuncer (2012), was used as the data collection instrument. As a result of the adaptation of this 19-items and one-factor scale, it was observed that the scale consists of 15 items and four dimensions. The factors of the scale were labeled as "Internet Anxiety", "Future of Internet", "Internet Facilities" and "Drawbacks of Internet". This four-factors structure accounts for 51.860 % of the total variance. The cronbach's alpha reliability coefficient of the scale is .81.

The sample of the study consists of 265 students receiving education at various departments of the Tunceli Vocational School of Tunceli University. 200 of these students are females (75.5 %), and 65 of them are males (24.5 %). 160 of the students are in the first year (60.5 %), while 105 of them (39.5 %) are in the second year of their study. The students are from 7 different programs. The ages of the students range from 16 to 28, and the age mean is 22.13.

FINDINGS

The attitudes towards internet were compared in terms of gender, grade, and experience of computer education, age and field of study variables. The results of the independent groups t-test which compares the vocational school students' attitudes towards internet in terms of gender variable are given in Table 1 below.

Table 1: Comparison of Attitudes towards Internet in terms of Gender

| Dimension | Gender | n | $\overline{X}$ | SS | Levene's test | | df | T test | |
					F	p		t	p
Internet Anxiety	Female	200	2,58	,98	,852	,357	263	-1,705	,089
	Male	65	2,82	1,02					
Future of Internet	Female	200	3,44	,98	,017	,897	263	1,915	,057
	Male	65	3,17	1,00					
Internet Facilities	Female	200	3,66	,82	5,275	,022	263	-	U=6013,00 p=,303
	Male	65	3,59	,70					
Drawbacks of Internet	Female	200	3,47	,95	5,667	,018	263	-	U=6295,00 p=,612
	Male	65	3,44	,80					
The Whole Scale	Female	200	3,29	,61	3,450	,064	263	,213	,832
	Male	65	3,27	,50					

As can be seen in Table 1 above, the vocational school students' attitudes towards internet do not present any meaningful differences in the sub-dimensions of the scale and in the whole scale itself in terms of gender.

Another variable investigated within the study is the grade variable. The results of the independent groups t-test which compares the vocational school students' attitudes towards internet in terms of grade variable are given in Table 2 below.

Table 2: Comparison of Attitudes towards Internet in terms of Grade Variable

| Dimension | Grade | n | $\overline{X}$ | SS | Levene's test | | df | T test | |
					F	p		t	p
Internet Anxiety	1st Year	160	2,61	,95	2,105	,148	263	-,746	,457
	2nd Year	105	2,70	1,07					
Future of Internet	1st Year	160	3,42	,97	,127	,722	263	,949	,343

	2nd Year	105	3,30	1,03					
Internet Facilities	1st Year	160	3,64	,72	8,979	,003	263	-	U=8114,500
	2nd Year	105	3,65	,89					p=,639
Drawbacks of Internet	1st Year	160	3,47	,90	,514	,474	263	,173	,863
	2nd Year	105	3,45	,93					
The Whole Scale	1st Year	160	3,29	,54	2,821	,094	263	-,022	,982
	2nd Year	105	3,29	,63					

As a result of the analyses, no meaningful difference was found in terms of the grade variable.

There were also comparisons of the internet attitudes of those students who had somehow received computer education before and those who had never received any computer education before. It was tried to identify whether experience of computer education is an effective variable on attitudes towards internet. The results of this analysis are shown in Table 3 below.

Table 3: Comparison of Attitudes towards Internet in terms of Experience of Computer Education Variable

					Levene's test			T test	
Dimension	Experience of Computer Education	n	$\overline{X}$	SS	F	p	df	t	p
Internet Anxiety	Experienced	101	2,48	1,02	,478	,490	263	-2,061	,040
	Unexperienced	164	2,74	,97					
Future of Internet	Experienced	101	3,30	1,03	,810	,369	263	-,932	,352
	Unexperienced	164	3,42	,97					
Internet Facilities	Experienced	101	3,79	,71	4,210	,041	263	-	U=7052,500
	Unexperienced	164	3,55	,82					p=,042
Drawbacks of Internet	Experienced	101	3,56	,79	5,920	,016	263	-	U=7774,500
	Unexperienced	164	3,41	,97					p=,398
The Whole Scale	Experienced	101	3,30	,54	3,492	,063	263	,231	,818
	Unexperienced	164	3,28	,61					

According to the analysis results in Table 4, in the "internet anxiety" dimension of the attitude towards internet scale, a meaningful difference was found in favour of those who had not received computer education before (t(263)=2,061, p<.05). As the distribution was not homogenous, a Mann Whitney U test was conducted, and a meaningful difference was observed in the "internet facilities" dimension of the scale in favour of those who had received computer education before (U=7052,500, p<.05).

Another problem that was scrutinized in this research was whether the internet attitudes change according to age. The Kruskal Wallis H test analyses conducted in order to explain this problem are in Table 4 below.

Table 4: Kruskal Wallis H test comparing Attitudes towards Internet in terms of Age Variable

Dimension	Chi-Square	df	p	Difference
Internet Anxiety	3,238	3	,356	-
Future of Internet	5,292	3	,152	-
Internet Facilities	1,127	3	,771	-
Drawbacks of Internet	2,406	3	,492	-
The Whole Scale	2,093	3	,553	-
Age: (16-19, 59 people), (20-23, 154 people), (24-27, 39 people), (28 and over, 13 people)				

As can be understood from the data in Table above, no meaningful difference was identified in terms of the age variable. The last problem that was scrutinized in this research was whether the internet attitudes change according to the field of study. The Kruskal Wallis H test analyses for this are given in Table 5 below.

Table 5: Kruskal Wallis H test comparing Attitudes towards Internet in terms of field of study

Dimension	Chi-Square	df	p	Difference
Internet Anxiety	9,840	6	,132	-
Future of Internet	10,934	6	,090	-

Internet Facilities	12,848	6	,046	7-1,7-2,7-3,7-4,7-5
Drawbacks of Internet	6,568	6	,363	-
The Whole Scale	8,145	6	,228	-

Field of Studies: (1.Child Development, 120 people), (2.Electricity and Energy, 22 people), (3.Accounting and Tax Practices, 26 people), (4.Fashion and Design, 51 people), (5.Hair Care and Beauty Services, 11 people), (6.Construction Technology, 8 people), (7.Computer Technologies, 27 people)

Upon comparisons in terms of field of study variable, some meaningful differences were found in the "internet facilities" dimension of the attitude towards internet scale between the department of Computer Technologies ($\overline{X}$ =4,04) and the departments of Child Development ($\overline{X}$ =3,65), Electricity and Energy ($\overline{X}$ =3,48), Accounting and Tax Practices ($\overline{X}$ =3,58), Fashion and Design ($\overline{X}$ =3,53) and Hair Care and Beauty Services ($\overline{X}$ =3,45) (X^2=12,848, p<.05).

DISCUSSION

As a result of the study, it was identified that attitudes towards internet do not present any meaningful differences in terms of gender, grade and age variables, but present meaningful differences in terms of experience of computer education and field of study variables. The meaningful difference in terms of experience of computer education is in the "internet anxiety" and "internet facilities" dimensions of the attitude towards internet scale. And the meaningful difference found in the "internet facilities" dimension in terms of field of study is between the department of Computer Technologies and the departments of Child Development, Electricity and Energy, Accounting and Tax Practices, Fashion and Design and Hair Care and Beauty Services.

The find that the attitudes towards internet do not present any difference in terms of gender is compatible with the findings of the researches done by Tuncer and Berkant (2010), Usta, Bozdoğan and Yıldırım (2007), Birişçi, Metin and Demiryürek (2011), Çavuş and Gökdaş (2006), Gezer and Sevim (2006), Tavşancıl and Keser (2002), Tekinarslan (2008), Yıldırım and Bahar (2008) and Zhang (2007). However, Erdoğan (2008) concludes that there is a meaningful difference in terms of gender in the "social interaction" dimension of the attitude towards internet in his study, and Yıldırım and Bahar (2008) find the same result in the "communication" and "Anxiety" dimensions of their internet attitudes scale. Bahar, Uludağ and Kaplan (2009) and Kol (2010) also conclude that the attitudes towards internet change in terms of gender.

The find that the attitudes towards internet do not present any difference in terms of grade variable seems to be compatible with those of Bozkurt, Demirer and Şahin's (2010). Moreover, the find that there is a meaningful difference in terms of fields of study is the same as those of Yanık(2010), Tavşancıl and Keser(2002) and Yıldırım and Bahar (2008).

The fact that internet is utilized so much in daily life makes it more significant to know the users' attitudes towards it. The positive attitudes towards internet contribute to the increase in the success of learning activities. It is especially essential to create and improve a positive attitude towards internet in younger age groups for educational objectives. Families should be informed about the negative aspects of internet environment for young children, and there should be taken some precautions in order for children to perceive the internet as a safe environment. In addition, it should be made sure that teachers and members of other professions develop a positive attitude in this regard with the help of the activities organized by their institutions.

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Research of the Web Based Education Awareness: Ege University Example

Web Tabanlı Eğitim Farkındalığının Araştırılması: Ege Üniversitesi Örneği

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Özet

Bilgi ve iletişim teknolojilerinin yarattığı değişimler, eğitimi tüm yaşam alanlarına yaymıştır. Uzaktan eğitim; eğitimde fırsat eşitsizliği sorunlarının aşılmasında ve değişen toplumsal koşullarının yarattığı yaşam boyu eğitime duyulan gereksinimin karşılanmasında önemli alan haline gelmiştir. Dolayısıyla web tabanlı eğitimin farkındalığı, günümüzün kendi kendine öğrenmeyi öğrenen, kendi gelişimini ve kariyer planlamasını yapabilen bireylerin yetiştirilmesinde önemlidir. Toplumun genelinde olmasa da, üniversite öğrencileri bu konuda daha bilinçli olabilmektedir. Bu çalışmada, üniversite öğrencilerinin web tabanlı eğitime yönelik farkındalıkları tespit edilmeye çalışılmaktadır. Öğrenciler üzerinde yapılan araştırmada elde edilen veriler, SPSS programı ile demografik değişkenler temelinde sorgulanmaktadır.

Anahtar Kelimeler: Uzaktan Eğitim, Web Tabanlı Eğitim, Web tabanlı Eğitim Farkındalığı.

Abstract

Changes created by information and communication technologies spread education to all fields of life. Distance education has become an important field in fulfilling the need for lifetime education created by changing public conditions and in overcoming the opportunity inequality problems. Therefore, web based education awareness is important in bringing up individuals who can learn self-learning and perform self-development and career planning. Although not common in public, university students can be more conscious about this issue. In this study, the aim is to determine the web based education awareness of university students. Data obtained from the research made on students is questioned by SPSS program in basis of demographical variables.

Keywords: Distance Education; Web Based Education; Web Based Education Awareness.

1.Giriş

Günümüzde bilgi ve iletişim teknolojilerindeki gelişmelerin etkisi eğitim alanına da yansımış ve köklü değişimler yaratmıştır. Web ortamı, bireylerin kendi kendine öğrenme sürecini yönetme olanağı sağlamaktadır. Böylelikle web tabanlı eğitim, yaşam boyu öğrenme de gerekli olabilecek bilgi ve beceriyi kazandırmayı sağlayan uygun yazılıma sahiptir. Söz konusu eğitim uygulamaları, çağdaş eğitim gereksinimlerini karşılayabilecek bir eğitim biçimidir. World Wide Web ve online konferans sistemler gibi teknolojiler, 7 gün 24 saat açık öğrenme ortamları sağladığından üniversitelere, kamu ve özel kurumlara uzaktan eğitimi gerçekleştirme imkanı sağlamaktadır. Böylece uzaktan eğitim kurumlarının sayısı giderek artmaktadır.

Geleneksel üniversite eğitimi eğitmenlerin dersleri ve ders notları ile sağlanırken, bilgi ve iletişim teknolojilerinin hızla artmasıyla, uzaktan eğitim ve e-öğrenme ortamları oluşturulmuştur (Malley,& McCraw,1999). Bu nedenle, web tabanlı eğitimde bilişim teknolojilerinin kullanımı ve farkındalığı eğitimin başarısı için gereklidir. Eğitimin web tabanlı olması, bireyler arasında fırsat eşitsizliğini ortadan kaldırmakta, zaman tasarrufu sağlamaktadır. Çünkü mekan kısıtı olmadan istenilen yerden ve öğrenmeye istekli kişi için uygun zaman aralığında bağlanma özgürlüğü sunmaktadır. Bilgisayar becerilerine sahip olan bireyler web tabanlı eğitime kolaylıkla adapte olabilmektedir. Toplumun diğer katmalarına göre üniversite gençliği, görece bilişim teknolojisine daha çok kullanmakta ve bu alanda daha çok donanıma sahip olmaktadır. Bu durum web tabanlı eğitime girişteki toplumsal ve bireysel engelleri oldukça azaltmaktadır. Eğitimde bu alandaki değişimin yaygınlık kazanmasında söz konusu öğrencilerin

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farkındalıkları, önemli bir unsurdur. Ancak bu eğitimin yaygınlaştırılması ve bu konudaki bilinçlendirmenin hızla yapılması gerekmektedir.

Öğrenciler arasında bu eğitimin yaygınlaşabilmesi için öğrencilerin web tabanlı eğitim hususunda bilgi düzeyi önemlidir. Bu alan öğrencilere çift dal ve yan dal yapma olanakları sağladığından, eğitimde yeni fırsat alanları sağlamaktadır. Örgün eğitimle ders saatlerinin çakışması ve bu konuda öğrencide farkındalık sağlanamaması ve onlara sunulan fırsatlardan yeterince yararlanamamaktadırlar. Bu nedenle örgün eğitim web tabanlı olarak desteklenirse, eğitimdeki fırsat eşitsizlikleri azaltılabilmekte ve kariyer gelişimlerinde kendilerine yeni eğitim ortamları sunulmuş olmaktadır.

Bu eğitim ortamının yaygın kullanımının arttırılmasında üniversite öğrencileri bilgi teknolojileri kullanım becerileri ve yeniliklere duyarlı olmaları daha yoğun ilgi gösterebilmektedirler. Oysaki tüm üniversiteler başta olmak üzere, lise, ortaöğretim, dershane gibi eğitim kurumlarında söz konusu eğitimle öğrencilere destek sağlanabilir. Öğrencilerin zamandan ve mekândan bağımsız, bireysel gelişim sağlayabilecekleri, sadece okulda değil, meslek gelişim ve e-sertifika programlarında, işyerinde öğrenme ortamlarında web tabanlı eğitimden yararlanabilecekleri farkındalığı sağlanırsa, uzaktan eğitimin anahtarı olan, kendi kendine öğrenme, kendi kendini değerlendirme, iletişim araçlarını kullanma, işbirlikçi öğrenme konularında da bilinçlendirilebilirler (Martens, Bastiaens & Kirschner,2007). Böylece bireyler sadece eğitim hayatlarında değil, iş hayatlarında da yaşamları boyunca yeni bilgi ve beceriler kazanmaya ihtiyaç duyduğunda, değişimlere uyum sağlayabilecekleri eğitim ortamını da tanımış olurlar. Bu nedenle günümüz eğitim sistemi, her yaşta ve özellikteki bireylerin faydalanabileceği şekilde yapılandırılması gerekmektedir (Demiralay& Karadeniz, 2010).Dolayısıyla bireyler için yaşam boyu öğrenme ortamı da sağlanmış olur.

Yaşam boyu öğrenme resmi ve gayri resmi biçimlerde gerçekleşen bir süreçtir. Bir başka deyişle yaşam boyu öğrenme ile hızla değişen ekonomik, kültürel, sosyal ve teknolojik çevreye uyum sağlama adına, gereksinim duyulan bilgilere çeşitli kaynaklardan ulaşma, bu bilgiyi değerlendirme ve kullanma becerileridir. Bu süreci tamamlayan diğer bir unsur da kendi kendine öğrenmedir. Bu nedenle, bilgiye ulaşma ve bilgiyi kullanma becerisi olarak tanımlanan bilgi okuryazarlığı yaşam boyu öğrenmenin de temel taşıdır (Polat& Odabaş, 2008). Web tabanlı eğitim sistemi bireylere kendi kendine öğrenme, bilgiye ulaşma, temel eğitime desteğin yanında kariyerlerini geliştirmek için de bir fırsat sunmaktadır. Söz konusu eğitim, yaşam boyu öğrenmeyi aktif hale getirdiğinden, yükseköğretimin yanında hem kamu hem de özel sektör bu eğitim biçiminde yararlanabilmektedir. Çünkü, söz konusu eğitim ile sadece yükseköğretimde değil, kendini geliştirmek isteyen bireyler mesleki gelişimleri için e-sertifika programlarından da yararlanabilirler.

Web tabanlı eğitimden yararlanabilmek için öğrencilerin söz konusu eğitimden haberdar olma ve farkındalıklarının artırılması gerekmektedir. Yapılan araştırmalarda, üniversite öğrencilerinin bakış açısı farklıdır fakat olumlu yöndedir. Çünkü öğrenciler arasında geleneksel olmayan öğrenci profilleri mevcuttur. Öğrenciler hem çalışmakta hem aile sorumluluğu almaktadır. Bu arada da eğitimlerini tamamlamak istemektedirler. Bu nedenle öğretimde web tabanlı öğretime dönüşümü gerekli görmektedirler. Web tabanlı eğitim ile internet etkileşimi ve bilginin kalitesine erişmek öğrenciler tarafından cazip karşılanmaktadır. Hatta Web ilişkili eğitimsel aktiviteler, öğrencinin motivasyonu nu ve kendine saygısını artırmaktadır. Web tabanlı öğrenme ortamları, öğrenmeyi destekleyen ve teşvik eden içeriği yaratmak için web kaynaklarını kullanmaktadır. Web hem eğitimci hem de öğrenci için de pek çok özellikler sunmaktadır. Örneğin ders kitaplarında veya eğitimci tarafından verilen notlar içerisinde yer almayan çok geniş bilgi zenginliği sağlar. E-posta, konferans araçları, sanal topluluk olan haber grupları yoluyla öğrenciler bilgi, fikir alışverişi yapabilmekte, Web tabanlı eğitim öğrencilerin günün her saatinde eğitimlerini almaları için önemli bir faktör olmaktadır. Bu eğitim formatıyla, öğrencilerin motivasyonunun arttığı düşünülmektedir. Diğer bir öğrenci grubu ise, web tabanlı eğitim ile materyal ve dersten daha çok şey öğrenildiği savunmaktadır. Ayrıca WBE, kendi kendine disiplini ve iyi zaman yönetim becerisini öğretmektedir. Web tabanlı eğitim kullanmayan fakültelerde teknik destek. yazılım, içerik hazırlamak için zaman yetersizliği, öğrencinin bilgi eksikliği gibi bir takım kısıtlar bulunmaktadır (Daugherty & Funke,1998).

O'Malley&McCraw(1999) tarafından yapılan araştırmanın amacı, online ve uzaktan öğrenmenin etkililiğinde öğrenci farkındalığının ve algısını araştırmaya yöneliktir. Diğer bir araştırmaya göre, online öğrenme ve uzaktan öğrenme teknolojilerinin öğrenciler tarafından gerekli bilgi ile ilişkili olmadığı düşünülmesine rağmen, yine de bazı yararlarının olduğunun öğrenciler tarafından algılandığı ortaya çıkarmaktadır.

Geleneksel eğitim sürecinin öğrencinin gereksinimleri, eğitim pratikleri, sosyal değişiklikler gibi bileşenlerle yapısal engellerin söz konusudur Bu nedenle sosyoekonomik özellikleri, personel değişkenliklerini ve iletişim becerilerinin temelinde değişikliğe uğradığının dikkate alınması gereklidir. Uzaktan ve online eğitimin fark dilen

özelliklerin aşılmasında, öğrenci ve ders uyumu, bir takım üstünlükleri içerir. Süreç son olarak, puanlar ve programlar online ve uzaktan eğitimin fark edilen etkiliğinin bölümleridir (Martens, Bastiaens & Kirschner, 2007)

Online eğitimin üniversitelerin lisans, yüksek lisans, doktora programlarında düzenlenmesi giderek artmaktadır. Öğrenciler online erişimi talep ettiklerinde üniversiteler ve kurumlar bu talebi karşılamaya çalışmaktadırlar. Ancak programın gerçekliği ve uygulanabilmesi özellikle öğrencilerin farkındalıklarının artırılması ile mümkün olmaktadır (Song vd.,2004). Bu farkındalık, öğrenenin kendi öğrenmesiyle ilgili olarak inisiyatif ve sorumluluk alıp, öğrenmesini yönlendirebilmesi ve kendi kendine öğrenebilmesi için çok önemlidir. Böylece birey, "öğrenmesini planlayabilme, izleme ve değerlendirme" yeteneği kazanır (Baltacı & Akpınar, 2011). Çünkü, deneyimi olan öğrenciler söz konusu eğitimin verimliliğini bildiği için, eğitimde kullanılan teknolojileri rahatlıkla kullanabiliyor ve dolayısı ile eğitim performansı da artıyor. Öğrencinin web tabanlı eğitim konusunda bilinçlendirilerek motivasyonu sağlanırsa, öğrenme deneyimi daha başarılı olmaktadır. Çünkü farkındalık ve bilinçlenme, öğrencinin kurs materyallerini takibinin devamı için katalizör olmaktadır (Picciano,2002). USA'da 2008 yılında yayınlanan bir araştırma da, farkındalığı yüksek olan öğrencilerin daha fazla söz konusu eğitimden memnun oldukları ortaya çıkmıştır (So& Brush, 2008), Bir başka çalışmada da, online öğrenme de öğrencilerin yüksek öğrenme düzeyleri ve memnuniyetleri, yüksek aktivite düzeylerine bağlıdır. Online öğrenme de başarı için, kendi kendine öğrenme becerisi ve artan ilgi gerekmektedir (Howland & Moore, 2002). Bu nedenle eğitim etkiliği ve web tabanlı eğitimin yaygınlaşması için öğrencilerin farkındalıklarının arttırılması gerekmektedir.

Web tabanlı eğitim uygulamalarının sözel derslerde daha başarılı olacağı düşünülmektedir. Fakat sayısal derslerle ilgili kanaat, eğitim teknolojilerini kullanarak bu derslerin anlatılabilirliğinin kavranamamasından kaynaklanmaktadır. Söz konusu eğitim uygulamalarını gerçekleştirilecek üniversiteler, eğitim hakkındaki kanaatleri olumlu yöne çevirme konusunda çaba göstermelidirler. Eğitimin başarısında, algı ve farkındalık son derece önemlidir. Uzaktan eğitim ile ilgili olumsuz değerlendirmelerin önemli bir kısmının, uzaktan eğitim hakkında yeterince bilgi sahibi olmamaktan kaynaklandığı düşünülürse, üniversitelerin bu alanda yeterli düzeyde bilgilendirme yapmalıdır. Özellikle eğitim teknolojileri ile nelerin başarılabileceği anlatılmalıdır (Antalyalı, 2004).

2. Literatür Taraması

Bu konuda yapılan bir çok araştırma mevcutttur. *O'Malley&McCraw* (2007)'de %54'ü kadın, %46'sı erkek 128 kişi üzerinde yaptığı araştırma da,   öğrencilerin online eğitimin geleneksel eğitimden daha etkili olduğunu düşündükleri online eğitimi geleneksel eğitime tercih ettikleri görülmektedir. Geleneksel eğitim sürecine göre zaman tasarrufu, programlar ile uyum sağlama, öğrenciye daha fazla kur olanakları sağlamaktadır. Online eğitimden çok şey öğrenemeyeceklerini düşünmelerine rağmen, sınıf tartışmalarının da sürece katkı sağlayacağını düşündükleri ortaya konulmaktadır. Online eğitim konusunda istekli olmalarına rağmen, yine de geleneksel kursları tercih etmemektedir. Çünkü uzaktan eğitim yoluyla eğitimin daha yararlı olacağına yönelik tutum içinde oldukları görülmektedir (Martens, Bastiaens & Kirschner, 2007). Dolayısıyla öğrenciler geleneksel ve uzaktan eğitim arasındaki farklılıklar ve web tabanlı eğitim üstünlükleri konularında bilinçlendirilmeleri gerekmektedir.

2006 yılında USA'da 26 öğrenci üzerinde yapılan bir araştırmada, 34 madde Likert ölçeği (1-asla, 2-nadiren, 3-bazen, 4-sık sık, 5-her zaman)ile öğrencilerin uzaktan eğitimdeki algıları araştırılmıştır. Geleneksel, karma ve uzaktan eğitim konusunda öğrencilerin algıları karşılaştırıldığında, öğrencileri tarafından en yüksek oran eğitmen desteğinin geleneksel eğitimde daha etkin olduğuna ilişkindir. Geleneksel eğitimdeki ortalama(4.68) karma eğitimde (4.66), uzaktan eğitimde (3.62) 'dir. Eğitmenler geleneksel eğitimde pozitif ve negative geribildirim sağlar (5), yeterli derecede soruları açıklarlar (5), katılımcıyı cesaretlendirir(5), sorulara zamanında cevap bulunur(4.8), eğitmen ile iletişim kurmak kolaydır(4.4). Öğrenci etkileşimleri ve işbirliği konu olduğunda karma sistemleri daha etkili olduğu düşünülür (Biggs,2006). Ancak web tabanlı eğitim sistemindeki eşzamanlı ve eş zamansız iletişim ve etkileşim araçları göz önüne alındığında söz konusu eğitim geleneksel eğitimden sunduğu fırsatlar da göz önüne alındığında daha fazla tercih edilecektir.

Etkili öğrenme çevrelerinde sosyal etkileşim gereklidir. İnternet ve web'le geliştirilmiş öğrenme çevreleri, iletişimlerin diğer modülleri arasında görece etkili olarak görülmektedir. 2002 yılında USA'da 35 öğrencinin, sınıf etkileşimleri ve memnuniyet farkındalıkları Likert ölçeği ile değerlendirilmiştir. Öğrencilerin %63'ü tüm etkileşimlere katılırken,%59'u grup etkileşimlerine katılmaktadır (Driver,2002). Etkileşim, web tabanlı eğitimin en önemli özelliklerinden birisi olduğundan öğrencilerin sadece grup etkileşimlerine değil, birbirleri ve eğitmenleri ile de etkileşimlerinin artırılması konusunda bilinçlendirilmesi gerekmektedir.

Yüksek öğretimde web tabanlı eğitimlerin yaygınlaştırılmasıyla, en uygun öğrenme çevrelerini sağlamak amacıyla, öğrencilerin deneyimlerini kontrol etmek önemlidir. Howland ve Moore(2002)'nın yaptıkları çalışmada amaç, web tabanlı eğitim hakkındaki pozitif tutumlarını ve kendi kendini yönetmek konusundaki tutumlarını raporlamaktır. Çalışmada, negatif tutumlu öğrenciler, kendi kendini değerlendirmede ve eğitim içeriğini en az anlayabildikleri görünmektedir ve daha fazla yardıma ihtiyaçları bulunmaktadır. Ayrıca, öğrencilerin beklentileri, onların web tabanlı eğitim deneyim ve stratejilerindeki etkiyi tanımlamaktadır.

Yapılan çalışma 48 öğrenci üzerinde üç farklı online eğitim alan karşılaştırılmıştır. 36'sı kadın 12'si erkektir. Öğrencilerin %56'sı için ilk kez online eğitim alırken, %6'sı daha önceden web tabanlı eğitimden yararlanmışlardır. Öğrencilerin %90'ı bilgisayar kullanarak rahatladıklarını ve bu nedenle web tabanlı eğitim aldıklarını belirtmişlerdir. Söz konusu eğitim, kendi kendine öğrenme, kendi kendine güven, öğrenenin beklentilerini doğrulamak Web tabanlı öğrenme deneyimlerinin başarısı için önemlidir. Öğrenciler Öğrenmede daha aktif ve daha bağımsız olmaları gerektiğini farkına varmışlardır. Çok başarılı olarak deneyimlerini ortaya koyan öğrenciler, öğrenmeleri için bağımsızlık ve sorumluluk düzeylerinin daha yüksek olduğu görülmektedir. Diğer taraftan negatif tutumlu öğrenciler, eğitmenleri ile daha fazla geribildirime ihtiyaç duymaktadırlar. Kendi kendini değerlendirmeyi daha az güvenilir bulmaktadırlar. Eğitmenin geribildirimi ve etkileşimi olmaksızın kendilerini terkedilmiş olarak hissedeceklerini ifade etmişlerdir (Howland& Moore, 2002).

2002 yılında 540 online eğitimden mezun olan öğrenciler üzerinde yapılan diğer bir araştırma da , erkek öğrencilerin %55'i, kızların %45'i online eğitimden mezun olmuşlardır. %49.6'sı bilgisayarı çok iyi, % 48.5'ı orta düzeyde, %1.9'sı da az düzeyde bilgisayar kullanabilme becerisine sahiptir. %47.4'ü daha önce hiç online eğitim almamış, %23'ü bir kez, %29.6'sı 2 veya daha fazla online eğitim almıştır (Carswell & Venkatesh, 2002). Öğrencilerin online eğitim alması bilgisayar becerilerine ne kadar sahip oldukları ile ilişkilidir. Çünkü, teknolojiye olan ilgi ve merak bireylerin zamanını kullanma ve yaşa boyu öğrenmeye katılabileceğinin göstergesidir.

2002 yılında 30 kişi üzerinde yapılan bir başka pilot çalışmaya göre, geleneksel ve uzaktan eğitim öğrencilerinin iletişimleri arasında bir farklılık ortaya çıkmıştır. Geleneksel eğitim yapan öğrenciler düzenli olarak haftada bir kez eğitmenleri ile iletişim kurarken, online eğitim alanlar, telefon. video-konferans- e-posta gibi araçlarla daha rasgele bir iletişim sağlamaktadırlar (Wheeler, 2002). Web tabanlı eğitimin zamandan ve mekandan bağımsız oluşu, öğrencilere istediklerinde iletişimlerini artırmayı sağlamaktadır.

2001 yılında Chicago'da 74 öğrenci üzerinde yapılan araştırmaya göre, öğrencilerin hiçbiri daha önce web tabanlı eğitim almamıştır. Öğrencilerin %59.6'sı kadın, %40.4'ü erkektir. Web tabanlı eğitim esnek zaman yönetimi sağlar. Bu özellik öğrenciler kendi kendine disiplinin, aktif öğrenmenin, söz konusu eğitime başlamak için girişimde bulunmaları gerektiğinin farkındalığı için önemlidir. Ancak bu öğrenciler için, işyerinde internet erişimine sahip olma evde geçirilen bilgisayar zamanı önemsiz konulardır. Esneklik ve zaman yönetimi bakımından ders materyallerinin dağıtılması için teknolojinin uygulanmasının faydalı olacağını farkındadırlar. Öğrencilerin cinsiyete ile öğrenmenin elverişli olduğunu düşünmeleri arasında anlamlı bir ilişki söz konusudur. %66 erkek, %34 kadın web tabanlı eğitimi kolay bulmaktadır. Öğrencilerin cinsiyetleri ile e-öğrenmedeki sosyal etkileşim arasında anlamlı bir ilişki söz konusudur. %60 kadın bu fikre katılırken erkeklerde bu oran %40'dır. Eğitimdeki içerikleri dağıtılırken teknolojideki uygulamaların faydalı olduğunu düşünmektedirler. Eğitime katılanların birbirleri ile tartışıp konuşmaları için özellikle önemlidir(Valenta vd.,2001). Ayrıca öğrencilerin eğitmenleri ile yapacakları etkileşimin önemi de göz ardı edilmemelidir. Her zaman yüz yüze iletişim ve etkileşim daha etkili olmaktadır.

2000 yılında Beatty tarafından yapılan çalışmaya göre öğrencilerin yaklaşık %68'i öğrenme materyallerinin kaynağı olarak internet ortamını kullanmalarından dolayı memnunlar. Bu öğrencilerin doyumu web tabanlı eğitime erişme hızlarına, esnekliğe, öğrenci ve eğitmen arasındaki etkileşime bağlıdır (Peters, 2001). Çünkü öğrenci eğitim süreci içinde birtakım teknik sorunlar yaşarsa, bu sorun öğrencinin eğitimden uzaklaşması yönünde bir eğilimin doğmasında etkili olabilmektedir.

Türkiye'de Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi İşletme Bölümü üçüncü sınıf öğrencileri üzerinde yapılan araştırmada, öğrencilerin uzaktan eğitim algılarını ölçmek için anket uygulaması kullanılmıştır. Öğrencilerin uzaktan eğitim değerlendirmeleri genellikle olumsuzdur. Yapılan korelasyon testinde, sınıf ortamında ders dinlemekten daha fazla verim alanların uzaktan eğitime daha olumsuz baktığı anlaşılmıştır. Bununla birlikte öğrencilerin bilgisayar bilgi düzeyi ile uzaktan eğitim değerlendirmeleri arasında bir korelasyon olmadığı tespit edilmiştir. Dersi uzaktan eğitim ile alan grubun % 51'inin uzaktan eğitim ile ilgili kanaatleri olumlu yönde değişmiştir. Bu da göstermektedir ki uzaktan eğitim ile ilgili olumsuz değerlendirmelerin önemli bir kısmı uzaktan eğitim uygulamaları hakkında yeterince bilgi sahibi olmamaktan kaynaklanmaktadır. Öğrencilerin içerik değerlendirmeleri ile ilgili sorulan soru da bu kanaati desteklemektedir (Antalyalı, 2004). Dolayısı ile farkındalığın önemi bir kez daha ortaya çıkmaktadır.

Gürcistan'da 1998 yılında yapılan araştırmaya göre, Mezun olan öğrencilerin %63'ü, mezun olmayanların %55'i, online aktivitelere katılırken, eğitmenleri ve sınıf arkadaşları arasındaki iletişimin kalitesi ve derecesi hakkında olumlu düşünmektedirler. Öğrencilerin %77'si e-posta hizmetlerini düzenli olarak kullanmaktadırlar. Ancak mezun olmayanların %13'ü, mezun olanların %26'sı, bilgisayara erişim zorluğu ve teknoloji kullanım becerisi eksiklikleri olduğunu ifade etmişlerdir. Mezun olan öğrencilerin %52'si Web tabanlı eğitimin zamandan tasarruf edeceklerini düşünmektedirler (Daugherty & Funke, 1998).

California üniversitesinde yapılan başka bir araştırmada, geleneksel öğrenenlerle, sanal ortamda öğrenenlerin performansları ve algıları karşılaştırılmıştır. 1998-1999 eğitim yılında 151 geleneksel eğitimdeki öğrenciler, 49 sanal ortamda eğitim alan öğrencilerden oluşan 200 öğrenci üzerinde yapılmıştır.%95 anlamlılık düzeyinde her iki grup arasında, cinsiyet, sınıf düzeyi, okul, hem sayısal hem de sözel yetenekleri arasında anlamlı bir ilişki söz konusudur. Çalışma yapılırken, sanal ortamdaki öğrencilerin performanslarının daha yüksek olacağı beklenirken, aksine puanlarında çok az bir oranda farklılık bulunmuştur. Sanal ortamdaki öğrencilerin final sınavlarındaki performansları, cinsiyet, sınıf düzeyi ve etnik kökene göre bir farklılık gösterirken, sosyal, sağlık, fen bilimlerinde okumalarına göre bir farklılık bulunmamaktadır (Navarro & Shoemaker, 2000).

Öğrencilerin bilgisayara erişim özellikleri, olarak adlandırılabilecek evde ya da dışarda kullanma durumunun online eğitimlerine karşı onların tutumlarını etkilemekte olduğu görülmektedir. Bilgisayara evinde sahip olan öğrenciler, uzaktan eğitim aktivitelerini daha elverişli kullanabilirlerken da McMahon vd.(1999) tarafından yapılan araştırmada, öğrencilerin online eğitime karşı tutumlarının değişkenliklerinin %50'si bilgisayara erişimden kaynaklandığı ortaya çıkmıştır. Öğrencilerin erişimlerinin yanında bilgisayar kullanım beceri düzeyleri de online eğitim ilgisi üzerinde etkili olmaktadır.

Online eğitimi negatif olarak yaklaşan öğrencilerin özellikle part –time yada full-time çalışan öğrencilerdir. Evlerinde bilgisayar sahip olmayan öğrencilerin web tabanlı eğitim için bilgisayar laboratuvarını kullanabilmek için ek zamana ihtiyaçları vardır. Bu erişim eksikliği, çalışan öğrencilerin negatif reaksiyonlarına katkıda bulunur. Online eğitim alan öğrencilerin bazıları, belirli zamanda oluşan online sohbet ve eşzamanlı iletişimden hoşlanmayabilirler. Öğrencilerin diğer şikayetleri, online eğitimle ilgili aktiviteleri gerçekleştirmek için e-posta okuyup göndermek için yeterli zamanlarının olmamasıdır (Peters, 2001).

Bir araştırmaya göre insanlar hayatları boyunca öğrendiklerinin %15'ini okulda, %85'ini okul dışında öğrenmektedir (Ersoy, 2009). ABD'de okullarda verilen eğitimin temel hedeflerinin neler olması gerektiğine ilişkin 2000 yılında hazırlanan bir raporda, bilgi toplumunda yaşayan bireylerin başarılı bir iş performansı gösterebilmelerinde gereksinim duyacakları araçlardan biri de yaşam boyu öğrenmedir (Polat & Odabaş,2008).

3.Uygulama

3.1. Amaç ve Yöntem

Çalışma betimsel özellikli bir araştırmaya dayalıdır. Ege Üniversitesi Fen, Sosyal ve Sağlık bölümlerinde okuyan 447 öğrenci üzerinde gerçekleştirilmiştir. Veriler anket tekniği ile elde edilmiştir. Öğrencilerin uzaktan eğitim konusundaki farkındalıkları ve bu konudaki düşüncelerinin bölüme ve bulundukları sınıfa göre değişebileceği varsayılmıştır. Özellikle sosyal bilimlerde okuyan öğrencilerin uzaktan eğitim konusundaki farkındalıklarının ve söz konusu eğitime eğilimlerinin var olacağı düşünülmüştür. Ayrıca öğrencilerin farklı sınıfta olmalarına göre bu konudaki farkındalıklarının eğitimlerinin başlangıcında ve bitişinde etkili olabileceği düşünülmüştür. Bu nedenle bölüm, sınıf ve cinsiyet bağımsız değişkenler olurken, öğrencilerin web tabanlı eğitim konusundaki farkındalıkları ve bakış açıları bağımlı değişkenler olarak kabul edilmiştir. Çalışmada amaçlı örnekleme yöntemi kullanılmıştır. Elde edilen sayısal veriler SPSS istatistik paketi kullanılarak test edilmiştir. Bağımlı değişkenler frekans dağılışları ile analiz edilirken, aynı zamanda cinsiyet, bölüm ve sınıf değişkeni ile öğrencilerinin web tabanlı eğitime yönelik farkındalıkları λ^2 analizi istatistik tekniği ile değerlendirilmiştir.

3.2.Araştırmanın Hipotezi

H_0: Öğrencilerin web tabanlı eğitim farkındalıkları cinsiyete göre değişmemektedir.
H_1: Öğrencilerin web tabanlı eğitim farkındalıkları cinsiyete göre değişmektedir.

H_0: Öğrencilerin web tabanlı eğitim farkındalıkları eğitim formasyonuna göre değişmemektedir.
H_2 Öğrencilerin web tabanlı eğitim farkındalıkları eğitim formasyonuna göre değişmektedir.

H$_0$: Öğrencilerin web tabanlı eğitim farkındalıkları eğitim formasyonu sürecindeki durumlarına(sınıfa) göre değişmemektedir.

H$_3$: Öğrencilerin web tabanlı eğitim farkındalıkları eğitim formasyonu sürecindeki durumlarına(sınıfa) göre değişmektedir.

3.3.Bulgular

Demografik Özellikler

Cinsiyet: Çalışma %56.8 kadın ve %43.2 erkek üzerinde uygulanmıştır.
Bölüm: Araştırmaya katılan öğrencilerden %44'ü Sosyal bilimlerde, %36'sı Fen bilimlerinde ve %20 'si de Sağlık bilimlerinde eğitim görmektedir.
Sınıf: Çalışmaya katılan üniversite öğrencilerinden %62.4'ü bölümlerinde 1.sınıfta, %17.7'si 4. Sınıfta, %17.4'ü 2.sınıfta, %2.5 da 3.sınıfta okumaktadır.

3.4. Web tabanlı Eğitim Farkındalığının Değerlendirilmesi

Web tabanlı eğitimi kullanabilmek için öncelikle bilgisayar becerilerinin ve iletişim tekniklerinin bu eğitimi kullanacaklar tarafından yeterince uygulanabilmesi gerekmektedir. Bu bağlamda araştırmaya göre, gençlerin %75.8'i bilgisayar becerilerini kullanabilmektedir. Bilgisayar ve iletişim günümüzün vazgeçilmesi imkansız araçlarından olduğundan öğrencilerin %91.3 e-posta gibi iletişim araçlarını kullanmaktadır. Günümüzde web tabanlı eğitimin önemi giderek artmaktadır. Ancak bu konudaki eğitim farkındalığı bilinmemektedir. Bu nedenle yapılan çalışmada araştırmaya katılan öğrencilerin %70'i web tabanlı eğitimden haberdar iken %30'u bu kavramı hiç duymadıklarını belirtmişlerdir. Web tabanlı eğitimi duyan öğrencilerden sadece %14'ü bu eğitimden yararlanmışlardır. Ancak yararlanmayan öğrencilerden yaklaşık %28'i bu eğitimi almak istemektedirler. Web tabanlı eğitim almış öğrencilerin %28'i bu eğitimi arkadaşlarına tavsiye etmektedir. Eğitim alan öğrencilerin %7.6'sı lise ,%6.7'si üniversite eğitimlerinden web tabanlı eğitimden yararlanmışlardır. Söz konusu eğitimden haberdar olan gençlerin %37'si web tabanlı eğitimin gerekli olduğunu düşünmektedir.

Çeşitli gereksinimlerle bu eğitim uygulanabileceğinden öğrencilerin %30'u okula gidemeyenler ya da eğitimini yarıda bırakanlar için, %13.4'ü ikinci ve üçüncü bir meslek sahibi olmak isteyenlere, %13.6'sı yeniliklere uyum yapmak ve kendini geliştirmek isteyenlere, %7.6'sı kariyer gelişiminde fırsat yakalamak için, %6'sı bir meslek sahibi olmak için web tabanlı eğitimi uygun bulurken, öğrencilerin yaklaşık %15'i kişinin durumuna göre her zaman kullanabilecekleri bir eğitim şekli olduğunu düşünmektedirler. Öğrencilerin %20'si dershanelerde, %12.1'i liselerde, %25.1'i üniversitelerde, %26'sı ise eğitim kurumlarının hepsinde web tabanlı eğitimi destekleyici olarak uygulanabileceğini düşünmektedirler. Öğrencilerin %25'i eğitim kurumu seçerken web tabanlı uzaktan eğitimin mevcut olması tercihlerini etkilediğini belirtmişlerdir. Çünkü lise, üniversite ve dershaneler gibi eğitimlerinin önemli aşamalarında öğrenciler anlamadıkları konuları zamandan ve mekandan bağımsız olarak tekrar edebilme olanağına sahip olmaktadırlar.

Toplumun eğitim düzeyi o ülkenin gelişmişlik düzeyini göstermektedir. Özellikle günümüzde üniversite mezunu olan gençlerin sayısı giderek artmaktadır. Eğitimli gençlerin artması iş bulmada gençlerin artılarının olması kaçınılmaz hale gelmektedir. Bu nedenle öğrenciler üniversite de okurken kendilerine sağlanan çift dal ve yan dal imkanlarını kaçırmak istememektedir. Ancak örgün eğitimlerinde zaman kısıtı olması nedeniyle bu isteklerini geri planda tutmaktadırlar. Bu bağlamda, öğrencilerin %41'i çift ve yan dal yapmak için web tabanlı eğitimi bir umut olarak düşünmektedirler.

Web tabanlı eğitimi hayatımızın her aşamasında kullanabildiğimizden meslek ve bireysel gelişim için de vazgeçilmezdir. Çünkü birçok sektör işe alınan elemanlarını kariyer gelişimlerini devam ettirmek için bir seri eğitim zincirlerinden geçirmektedir. Ancak bu durum işverene hem maliyet getirdiğinden hem de işgücünün o dönemde eksilmesi nedeniyle web tabanlı eğitimi tercih etmektedirler. Geleceğin meslek sahibi olacak olan gençlerin %30'u iş hayatlarında da eğitimin ve web tabanlı eğitimin uygulandığını bilmektedirler. Söz konusu eğitimi, öğrencilerin %18'i lisans, %6.9'u yüksek lisans, %5.6'sı doktora eğitimlerinde, %12.5'u e-sertifika programlarında, %15.7'si bireysel gelişimlerinde, %13.4'ü derslerine katkı sağlamak için, %11.4'ü meslek gelişim programlarında, %5.4'ü anlaşılması güç programlarda, %6.5'u iş yerlerindeki öğrenme programlarında, %23'ü de her durumda web tabanlı

eğitimin kullanılmasını uygun bulmaktadırlar. Web tabanlı eğitimin zamandan ve mekandan bağımsız olması, zamandan tasarruf sağlaması, fırsat eşitsizliğini ortadan kaldırması nedeniyle herkes tarafından kullanılmaktadır. Çalışmaya katılan öğrencilerin %21.9'u öğrencilerin, %10'u meslek sahibi kişilerin, %8.1'i ev hanımlarının, %13'ü eğitimini tamamlamış iş arayanların, %21.9'u ise açık öğretim de okuyan öğrencilerin%26.6'sı ise herkesin bu eğitimi alabileceğini düşünmektedir. Öğrencilerin %60.4'ü web tabanlı eğitimin örgün eğitimden tamamen farklı olduğunu ifade etmektedir.

Söz konusu eğitimin birçok avantajı bulunmaktadır. Öğrencilerin %18'i mekan kısıtı olmadığından,%18.6'sı zaman kısıtı olmadığından, %15.4'ü ekonomik olması yönünden, %24.5'u tekrar edilebilme özelliğine sahip olduğundan, %11.6'sı istenilen konuya ulaşma imkanı verdiğinden, %7.6'sı sık güncellenebildiğinden, %7.8'i sınırsız bilgi kaynağı olduğundan, %8.1'i devam edilen eğitim kurumuyla eş zamanlı eğitim imkanı sağladığından, %7.8'i bireysel gelişim için, %27'si ise sayılan tüm özelliklerin hepsini kapsadığından web tabanlı eğitimi önemli bulmaktadırlar. Öğrenciler bu eğitimin kullanımını yaşa (%14.5), cinsiyete (%3.8), bölüme(%28.6) göre değiştiğini düşünmekte ve coğrafi bölgelerle de bağlantılı(%8.7) olduğunu belirtmektedirler. Ayrıca %23 öğrenci ise kullanımın belirtilen dört değişkene göre de değiştiğini düşünmektedirler. Gençlerin %7.2'si web tabanlı eğitim ile iş hayatında başarılı bir kariyer, %16.6'sı yaşam boyu öğrenme sağlanabileceğini, %12.8'i fırsat eşitsizliklerinin giderilebileceğini, %10'u eğitimin niteliğin artabileceğini, %16.6'sı öğrencilerin derslerine katkı sağlanabileceğini, %5.1'i eğitimde belli bir standart sağlanabileceğini ifade etmektedir. %23.9 'u ise belirtilen kriterlerin hepsi için web tabanlı eğitim kullanılabileceğinin farkında olduğunu belirtmişlerdir. Öğrenciler web tabanlı eğitimin önemini ve nedenlerini göz önüne alarak, %58.6'sı her eğitimin uzaktan eğitim olarak Web'le desteklenemeyeceğini düşünmektedirler. Öğrencilerin %36.9'u örgün eğitimlerinde destekleyici olarak web tabanlı eğitimi kullanmak isterken, az bir oran olsa da %4'ü şu an bu durumdan faydalanmaktadır.

3.4.1. Cinsiyet ile Gençlerin Web Tabanlı Eğitim Farkındalığı İlişkilerinin Değerlendirilmesi

Öğrencilerin cinsiyeti ile bilgisayar becerilerini uygulayabilmeleri arasında %5 anlamlılık düzeyinde bir ilişki söz konusudur(p=0.001). Erkek öğrencilerin %84'ü bilgisayar becerilerini uygulayabiliyorken, bu oran kızlarda %69.7'dir. Buna göre erkek öğrencilerin teknolojiye daha rahat ayak uydurdukları ortaya çıkmaktadır. Bu konuda kız öğrenciler biraz daha pasif kalmaktadırlar. Cinsiyet ile öğrencilerin üniversite eğitiminin web tabanlı eğitim ile desteklenebilmesi tercihinde de anlamlı bir ilişki söz konusudur(p=0.05). Erkekler(%30.1) kızlardan(%21.3) daha fazla oranda üniversitelerin bu eğitimle desteklenebileceğini düşünmektedir. Ayrıca öğrenciler cinsiyet ile web tabanlı eğitim kullanımı arasında da yine teknoloji kullanımına bağlı olarak bir değişim söz konusudur(p=0.0005).

3.4.2. Bölüm ile Gençlerin Web Tabanlı Eğitim Farkındalığı İlişkilerinin Değerlendirilmesi

Öğrencilerin bölümleri ile her bölüme web tabanlı eğitim verilebilmesi konusundaki farkındalıkları da arasında da anlamlı bir ilişki söz konusudur (p=0.037). Sağlık bölümlerindeki öğrencilerin %20'si, Fen bilimlerindeki öğrencilerin %8.1'i ve Sosyal bölümlerindeki öğrencilerin %8.2'si söz konusu eğitimin her bölüme uygun olduğunu düşünmektedir. Bu oranların düşük olması öğrencilerin kendi aldıkları eğitimle bağlantılıdır. Uygulama eğitimlerinin web tabanlı olarak nasıl verileceği konusunda endişeleri bulunmaktadır.

Çalışmada farklı bölümlerdeki öğrencileri web tabanlı eğitim ile ilgili fikirleri alındığında, bölüme göre öğrencilerin açık öğretimdeki okuyan arkadaşlarının söz konusu eğitim için uygun oldukları düşünmeleri arasında da anlamlı bir İlişki söz konusudur (p=0.04). Sağlık bilimlerinde okuyanların %32.2'si, fen bilimlerinde okuyanların %21.7'si, sosyal bilimlerde okuyanların ise %17.4'ü bu eğitim şeklinin açık öğretim de okuyanlar için uygun olduğunu düşünmektedir. Bu durum eğitimin özellikle sağlık ve fen bilimlerinde okuyan öğrencilerin uygulama derslerinin olması bu farklılığa yol açmıştır. Çünkü kendi bölümlerindeki derslerle açık öğretimde okuyan arkadaşları için empati kurduklarında sadece basılı materyallerle değil, aynı zamanda görsel ve eğitmen desteği, etkileşim ve tekrar olanağını sağlayan web tabanlı eğitime gereksinim duyduklarını düşünmektedirler.

3.4.3. Sınıf ile Gençlerin Web Tabanlı Eğitim Farkındalığı İlişkilerinin Değerlendirilmesi

Üniversite öğrencilerinin okudukları sınıflar ile web tabanlı eğitimi önermeleri arasında da anlamlı bir ilişki söz konusudur (p=0.003). Özellikle 1. ve 2. sınıfta okuyanların %75'i bu eğitimi önerirken, 3.ve 4. sınıfta bu oran %32'ye düşmektedir. Buna göre 1. Ve 2. Sınıf derslerinin temel olması ve bu konuda öğrencilerin tekrar ve yeni

bilgi kaynağının sınırlı olması nedeniyle web tabanlı eğitime yönelerek istedikleri zaman mekandan bağımsız olarak istedikleri kadar tekrar edebilirler. Ancak 3. ve 4. sınıf öğrencilerinin dersleri branşa yönelik uygulamaya dönüştüğünden web tabanlı eğitime o an ihtiyaçları olmadığından önermemektedirler. Oysaki meslek edinimlerinde, kariyer gelişimlerinde ve e-sertifika programlarında çok etkili web tabanlı eğitim kullanılmaktadır.

Gençlerin okudukları sınıf ile web tabanlı eğitimle ne zaman tanışmaları arasında da anlamlı bir ilişki söz konusudur (p=0.001). Öğrencilerin 1.ve 2 sınıfta okuyanların % 73'ü lise eğitimin de web tabanlı eğitim alırken bu oran 4. Sınıfta %26.5'a düşmektedir. Ayrıca 1.ve 2.sınıfta okuyanların % 76.7'si üniversitede uzaktan eğitimi alırken, sınıf ilerledikçe nu oran %23.3 olmaktadır. Çünkü giderek söz konusu eğitim yaygınlaştığından her gelen yeni nesil daha erken bu eğitim şekliyle tanışmaktadır.

Öğrencilerin okudukları sınıf ile hangi eğitim kurumu web ile desteklenebilmesi arasında anlamlı bir ilişki söz konusudur (p=0.027). 1.ve 2. Sınıfta okuyan öğrencilerin %88.6'sı Dershanelerde web tabanlı eğitimi gerekli görürken. 3.ve 4. Sınıftaki öğrencilerde bu oran daha azdır(%19.4).Bunun sebebi, 1. sınıf öğrencileri dershane ortamından yeni çıktığından orada karşılaştıkları güçlükleri bu eğitim şekliyle aşabileceklerini düşünmektedirler.

Sınıf ile öğrencilerin web tabanlı eğitim kullanımı yaşa göre değişmektedir düşünceleri arasında anlamlı bir ilişki söz konusudur (p=0.010). Özellikle 1. Ve 2. Sınıflarda okuyan öğrencilerin %87.7'si, bu fikri desteklemektedir. Kendileri ev arkadaşlarının teknoloji kullanımının farkındalığını bilerek daha çok gençlerin web tabanlı eğitime yönelebileceklerini düşünmektedirler. Genç nesil giderek bilinçlenmektedir. Bu nedenle eğitimin yaşam boyu gerekli olacağının farkındadır. Bu farkındalık öğrencilerin kaçıncı sınıfta okumaları ile yaşam boyu öğrenme sağlandığı düşünceleri arasında anlamlı bir farklılık sağlanır (p=0.013). 3. ve 4. sınıfta okuyan öğrenciler yaşam boyu öğrenmenin sağlanmayacağı fikrine daha az oranda katılmaktadır. Çünkü gelen yeni nesil ve teknolojinin hızla artması öğrencileri daha bilinçli yapmaktadır.

Öğrencilerin okudukları sınıf ile örgün eğitimi destekleyici olarak web tabanlı eğitimi kullanmak istemeleri arasında anlamlı bir ilişki söz konusudur (p=0.012). 1. ve 2. sınıfta okuyan öğrencilerin %84.2'si bu fikri desteklemektedirler. Çünkü, eğitimlerinin başında olduğundan ve temel derslerin daha çok teorik olması nedeniyle bu eğitim şekline ihtiyaç duymaktadırlar.

4.Sonuç

Bilişim teknolojileri öğrencilerin eğitimleri üzerinde önemlidir. Web tabanlı eğitimin geleneksel ve sosyal medya ortamlarındaki mesajlarda popülerliğinin artması geleneksel eğitimlerde online eğitimle desteklenmesi nedeniyle öğrencilerin bu konuda bir ön bilgiye sahip oldukları görülmektedir. Ancak online eğitimin başarısının artması ve eğitime yönelik talebin artması için öğrencilerin farkındalıklarının artırılmasının gerekli olduğu görülmektedir. Bilgisayar okuryazarlığının artmasıyla web tabanlı eğitimine yönelik tutumlarının da öne çıktığı görülmektedir. Dolayısı ile her yaştan öğrenci söz konusu eğitimin avantajlarını öğreniyor ve eğitimde başarılı olmak içinde bilgisayar becerilerini geliştirmektedirler. Ayrıca öğrencilerin bilgisayar sahipliği ve kullanım becerisi, bireylerin bilgisayar tabanlı eğitim farkındalığını etkilemektedir.

Web tabanlı eğitim kendini sürekli geliştirmek isteyen bireyler için birçok fırsat sunmaktadır. Bununla birlikte, eğitim kurumlarının zaman ve mekan kısıtından, kapasite yetersizliği gibi sebepler ile eğitim alamayan bireyler düşünüldüğünde, tek başına uzaktan eğitim, bu tür kitleler için uygulanması zorunlu olan ve gerekli şartlar oluşturulduğunda öğretim açısından geleneksel eğitimin gerisinde kalmayan bir uygulamadır. Ayrıca kendi kendine öğrenme, değerlendirme ve motivasyon online öğrenmede daha önemlidir.

Öğrenciler teknik problemlerden ve deneyim eksikliklerinden dolayı online öğrenmeyi zor bulmaktadırlar. Bazı öğrenciler, dokümanların online ortamda görüntülenmesini, dosya transferlerinin, ne kadar gerekli olduğunun farkında değiller. Ancak bilgisayar becerisi olan ve online kurs deneyimi olan bireyler için web tabanlı eğitim zor değildir. Birçok öğrenci, kurs içeriği eğlenceli ve ilginç olarak hazırlandığında online eğitimin kullanımını kolay olduğunu düşünmektedirler. Zamandaki esneklik ve erişim, görevlerini tamamlamak için kolaydır. Online öğrenmeye pozitif beklenti ile yaklaşan öğrencilerin başarıları daha yüksektir (Peters, 2001). Howland ve Moore(2002)'ın çalışmasında negatif tutumlu öğrencilerin, web tabanlı eğitim içeriğini yeterince anlayamadıklarından yardıma ihtiyaçları bulunmaktadır.

Yapılan çalışmada, öğrencinin çoğunluğu bilgisayar becerilerini kullanmaktadır. Öğrencilerin yarısından fazlası web tabanlı eğitimden haberdar iken, bu eğitimden yararlananların oranı düşüktür. Bu nedenle eğitim yaygınlaştırılmalı, öğrenciler arasında da farkındalığın oluşturulması gerekmektedir. Öğrenciler web tabanlı eğitimin, özellikle eğitimini yarıda bırakanlar için uygun olduğunu düşünmektedirler. Buna karşın çift dal ve yan dal yapmak isteyen öğrenciler web tabanlı eğitim sisteminden yararlanmak istemektedirler. Bireylerin gelecekteki

meslek edinimlerinde ve meslek gelişimlerinde söz konusu eğitim önemli olduğundan herkesin bu eğitimi alabileceğini düşünmektedirler. Ayrıca öğrenciler, web tabanlı eğitimin, cinsiyete, yaşa, bölüme göre değiştiğini ve coğrafi bölgelerle de bağlantılı olduğunu düşünmektedirler. Çünkü bu eğitim şekliyle farklı coğrafi bölgede bulunan için fırsat eşitsizliği de ortadan kalkmaktadır.

California'da Navarro & Shoemaker (2000)'ın araştırmasında cinsiyet, sınıf ve hem sayısal hem de sözel bölümde eğitim alan öğrencilerin arasında anlamlı bir ilişki olduğu gibi bu çalışmada da aynı benzerlik söz konusudur. Erkek öğrenciler daha fazla bilgisayar becerilerine sahip olduğundan web tabanlı eğitime yaklaşımları da daha pozitifdir. Kız öğrenciler bu konuda pasif kalmaktadırlar. Bölümle öğrencilerin web tabanlı eğitimi kimler için uygun görmeleri arasında da anlamlı bir ilişki vardır. Öğrenciler bu eğitim şeklinin açık öğretimde okuyan öğrenciler için uygun olduğu düşünülebilir. Çünkü kendi bölümlerindeki derslerle açık öğretimde okuyan arkadaşları için empati kurduklarında sadece basılı materyallerle değil, aynı zamanda görsel ve eğitmen desteği, etkileşim ve tekrar olanağını sağlayan web tabanlı eğitime gereksinim duyduklarını düşünmektedirler. Öğrencileri okudukları sınıf ile web tabanlı eğitimi önermeleri, farkındalıkları, bu eğitim sisteminden yararlanmak istemeleri arasında anlamlı bir ilişki söz konusudur. Üniversitede alınan temel derslerin sözel olması nedeniyle istedikleri zaman mekandan bağımsız olarak istedikleri kadar tekrar edebildiklerinden söz konusu eğitimi önermektedirler. Ancak 3. ve 4. sınıf öğrencilerinin dersleri branşa yönelik uygulamaya dönüştüğünden web tabanlı eğitime o an ihtiyaçları olmadığından önermemektedirler. Web tabanlı eğitim yaygınlaştığından her gelen yeni nesil daha erken bu eğitim şekliyle daha erken tanışmaktadır. Üniversiteye yeni adım atmış öğrenciler, dershanelerde be eğitimi gerekli görürken, bitirmek üzere olanlar yaşam boyu öğrenme sağlayacaklarından mesleki gelişim ve e-sertifika programları için uygun bulmaktadırlar. Böylece başlangıçta ortaya konulan hipotezler yapılan araştırma ile doğrulanmıştır.

Carswell ve Venkatesh(2002) tarafından yapılan çalışmada %47.4'ü ve Valenta (2001)'nın yaptığı araştırmada öğrencilerin tamamı hiç online eğitim almamışken, Ege üniversitesi öğrencileri'nin %86'sı söz konusu eğitimden hiç yararlanmamıştır. Ayrıca %28'i bu eğitimden yararlanmak istemektedir. Çünkü öğrencilerin bilgisayarlı eğitim farkındalığı olmadığı ve bu konuda bilinçlendirmenin eksikliğinden kaynaklanmaktadır. *O'Malley&McCraw* (2007)'ın çalışmasında da öğrenciler online eğitimi geleneksel eğitimden daha etkili olduğunu düşünüyor ve geleneksel eğitime tercih etmektedirler. Bu çalışmada ise öğrenciler yüzyüze eğitimi tercih ederken, %36.9'u örgün eğitimin web tabanlı eğitim ile desteklenebileceğini savunmaktadırlar.

Dolayısı ile öğrenciler geleneksel ve uzaktan eğitim arasındaki farklılıklar ve web tabanlı eğitim üstünlükleri konularında bilinçlendirilmelidir. Web tabanlı eğitimin yaygınlaşması için öğrencilerin farkındalıklarının arttırılması gerekmektedir. Etkileşim, web tabanlı eğitimin en önemli özelliklerinden birisi olduğundan öğrencilerin sadece grup etkileşimlerine değil, birbirleri ve eğitmenleri ile de etkileşimlerinin artırılması konusunda bilinçlendirilmesi gerekmektedir.

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Web-based Instruction Model under Constructionism for Critical Thinking Development

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Abstract

The purposes of this research were to firstly construct the web-based Instruction model using the constructionism approach for critical thinking development of undergraduate students. Secondly, to compare critical thinking score between before and after learning via the web-based instruction and lastly to study the student satisfaction toward the web-based instruction that constructed by researcher. Results of the research were shown as follows: the web-based Instruction model using for critical thinking development the constructionism approach should include ten phases: 1) critical preparation, 2) review the issue,   3) elaborate learning, 4) arranging data, 5) thinking and diagnosing, 6) interpersonal communication, 7) verify the solution,   8) implementation, 9) transfer of innovations, and 10) yielding evaluation. It was found that after learning from the web-based Instruction the student's critical thinking score was higher than before learning at .05 level of significance. The student's satisfaction toward the web-based instruction were at the high level.

Keywords: Web-based Instruction Model, Constructionism, Critical Thinking.

Nomenclature	
A	Web-based Instruction Model
B	Constructionism
C	Critical Thinking

Introduction

The critical thinking is an important element of all professional fields especially in the field of education and student's development. In order to achieve the outcomes set out in the school curriculum framework, all the students should obtain the critical thinking skills. Critical thinking is a process of thinking carefully based on the use of knowledge, reflection, reasoning, and experiences in the interpretation, analysis, and rational evaluation. Integration of technology into a lifelong learning process according to constructionism model is one of the teaching and learning method, which requires the students to create knowledge by themselves and complete the tasks. The method focuses on learning by doing to create projects, works and results according to the interest of the learners by using media and technology on a computer network based learning program. The learners will understand themselves, understand the importance of their endeavour and practice on patience and problem solving. The media suitable for this method is one that correlates to the subject matter and can be self-taught. It can be seen that web-based learning is gaining popularity in today's education system through its ability to bridge the knowledge gap between students, especially on the higher education (Tongdeelerd, 2004). Thailand's education system is moving towards a network learning system and the web-based instruction is a teaching and learning method that has been supported by the attributes and resources of the internet. It means that teaching and learning methods on the internet can support the constructionism model. The learners must have the ability to push themselves for self-improvement, control their learning environment and gain support for learning material (Bumrungcheep, 2012). Also, the previous research concluded that web-based instruction with mixed media can help the learner develop and create their own

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knowledge base, with the learner being the central focus of critical thinking process (Mai, 2005). Therefore, the author chose to apply the web-based instruction model to develop her teaching method, focusing on constructionism and critical thinking.

Objectives

The objectives of this research were to: 1) to construct the Web-based Instruction model using the constructionism approach for critical thinking development of undergraduate students 2) to compare critical thinking score between before and after learning via the web-based instruction and 3) to study the student satisfaction toward the web-based instruction that constructed by researcher.

Methodology

1. **Population and Sample of Student:** The population was 190 students in 2nd semester, 2012 academic year, Faculty of Education, Kasetsart University. The sample of this experimental research was 28 students selected by simple random sampling.
2. **Content:** The 28 students who enrolled in the course 01173112 Personal and Community Health were selected as the subjects in this research study. This research experiment took 7 weeks and each week the students learn the contents by using the constructionism cycle on the internet and study the materials as planned. In each week, the students will choose one health problem issue that they were interested in, and study through the web-based instruction designed by the researcher. Before the experimental started on the first week and after the experimental was ended on the 7th week, the students were given the critical thinking test.

3.Research Instruments

- 3.1 Web-Based Instruction under Constructionism for Critical Thinking Development
- 3.2 Web-Based Instruction Assessments suitability
- 3.3 Satisfaction questionnaire
- 3.4 Lesson plan
- 3.5 Cornell Critical Thinking Test (Level Z) (Ennis, R.H. and Millman, J. 1985)

The Cornell Critical Thinking Test was developed and translated into Thai language by Asst. Prof. Dr. Panita Wannapirun. It took 50 minutes for 52 questions, 6 skills in critical thinking test (Ennis,1985) as follows:
1) interpretation 2) analysis 3) evaluation 4) inference 5) explanation and 6) self-regulation.

4. Data collection and analysis: Data were analyzed by mean, standard deviation, and Dependent Samples t-test.
The research focus was to develop the Web-Based Instruction model. This research experiments were designed into three phases to achieve the objectives as follows.
Phase 1: Literature review related research studies in the current state in order to find out a way to develop a new form of teaching and learning method. The conclusion of the literature review was for creating a prototype method of the Web-Based Instruction to develop critical thinking skills and then use for discussion among ten experts in a focus group.
Phase 2: Developing Web-Based Instruction under model to develop critical thinking skills (Rampai N. and Sopeerak S. 2011).
Phase 3: Evaluating Web-Based Instruction Model under Constructionism for Critical Thinking Development on the subjects. The research experiment was the One Group Pretest-Posttest Design.

Analysis and discussion

The analysis, synthesis and comparison of the teaching curriculum according to the constructionism method for developing critical thinking was done through a focus group between ten experts. The conclusion of activities can be concluded as follows to be a model for web-based instruction model under constructionism for critical thinking.
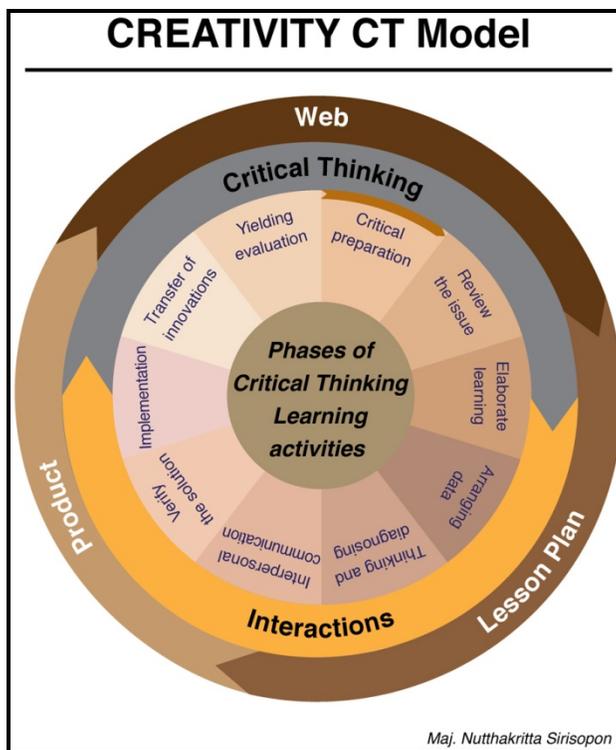
**Figure 1** CREATIVITY CT Model
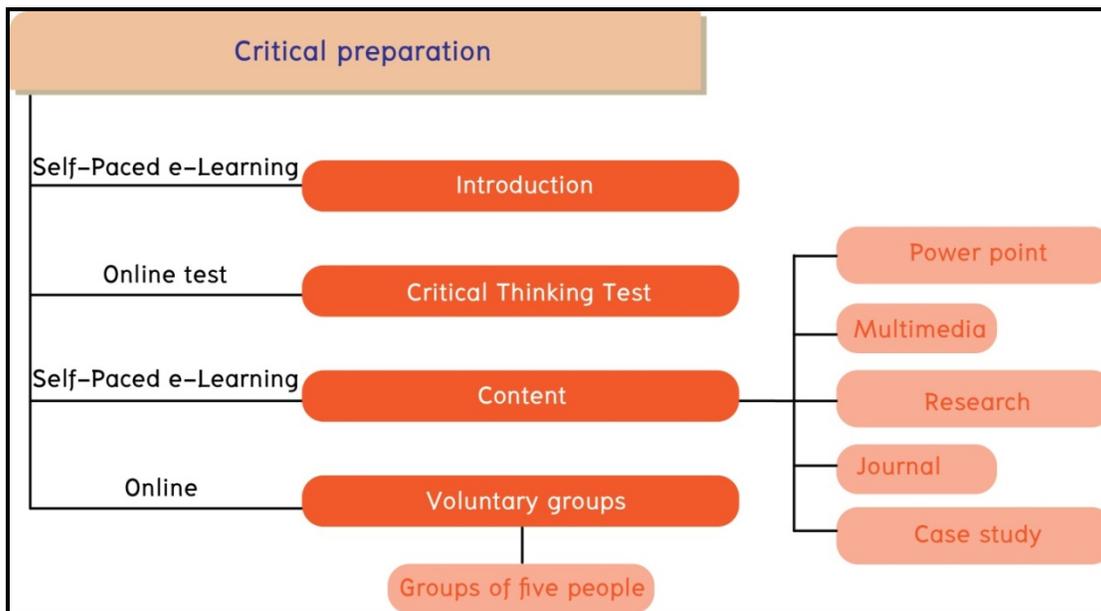
**Figure 2** Critical preparation
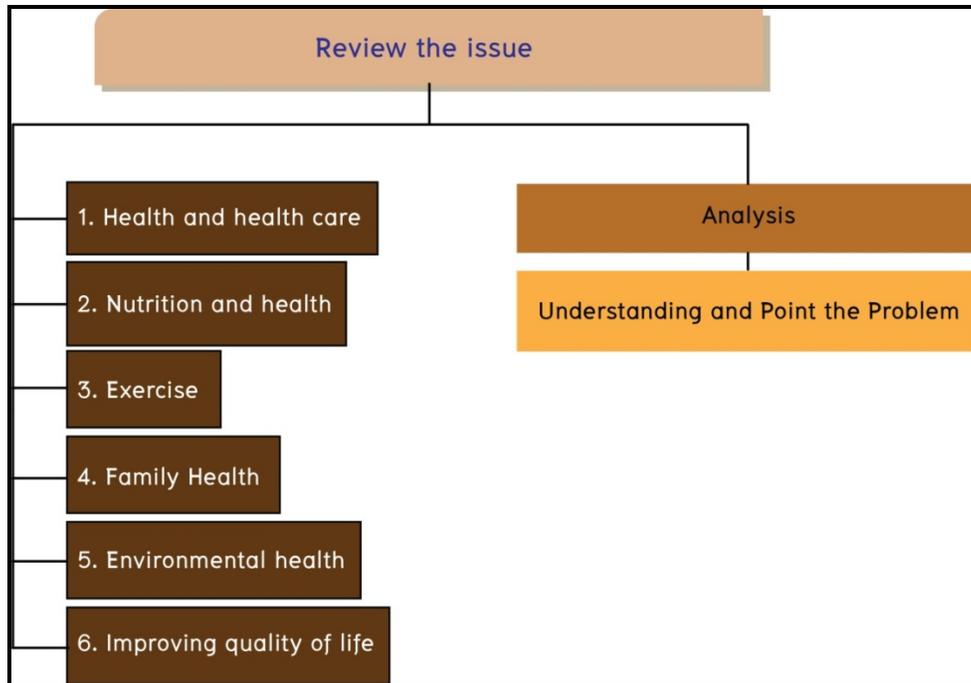
**Figure 3 Review** the issue
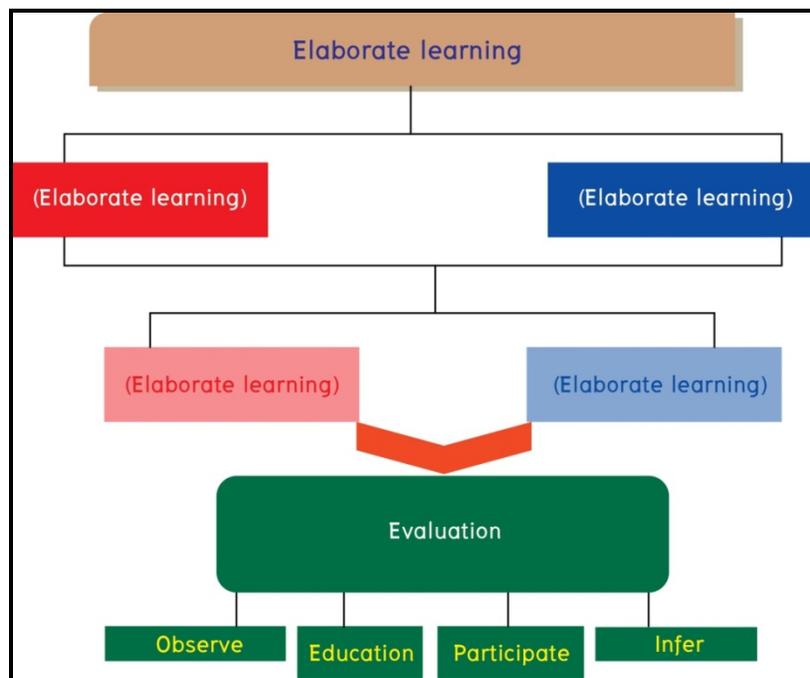
Figure 4 Elaborate learning
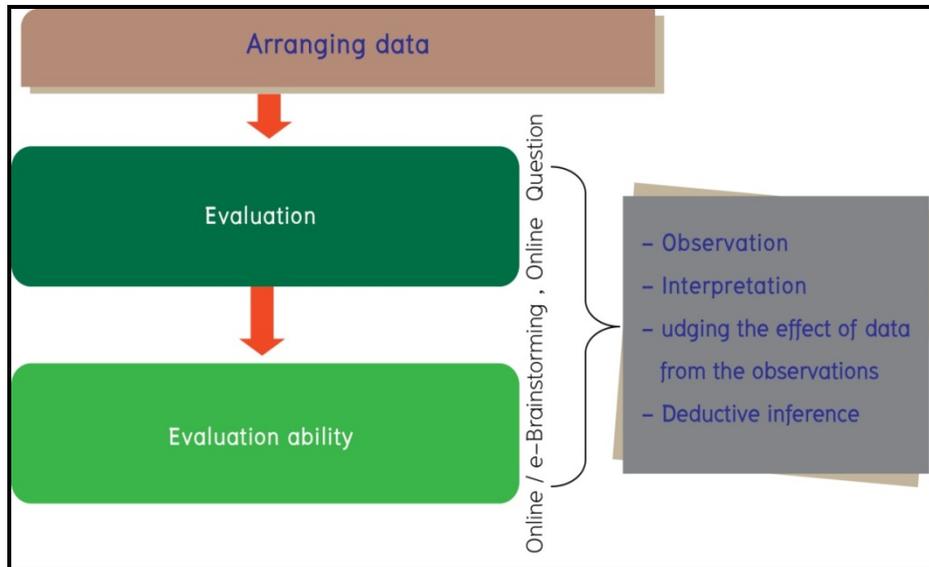
**Figure 5** Arranging data
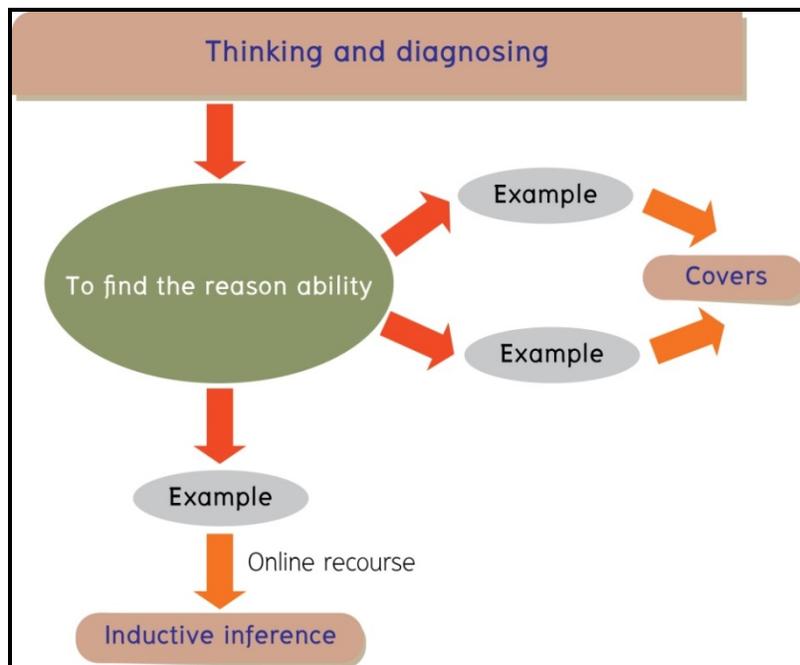

Figure 6 Thinking and diagnosing
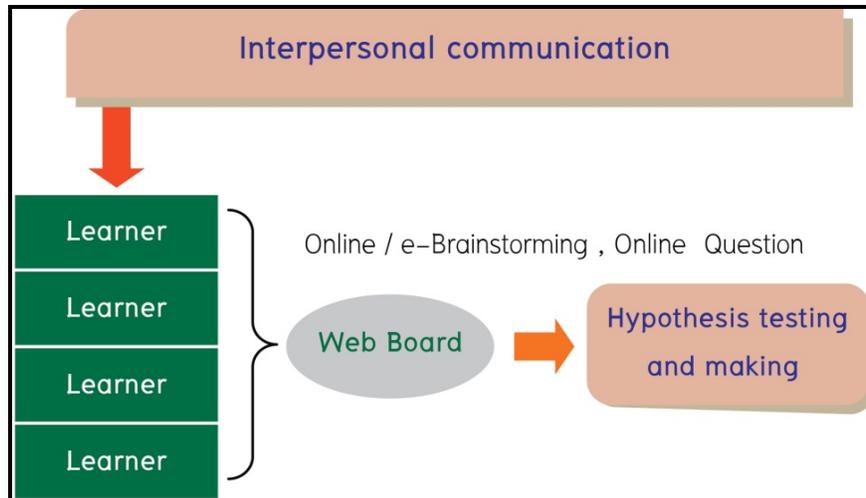
Figure 7 Interpersonal communication
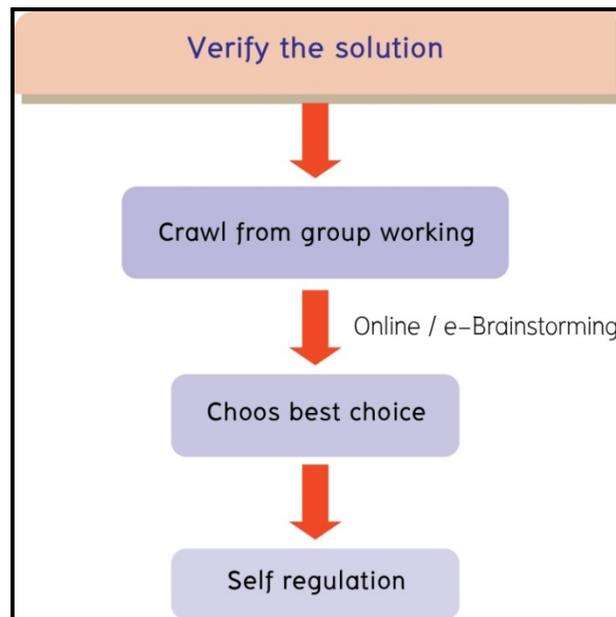

Figure 8 Verify the solution
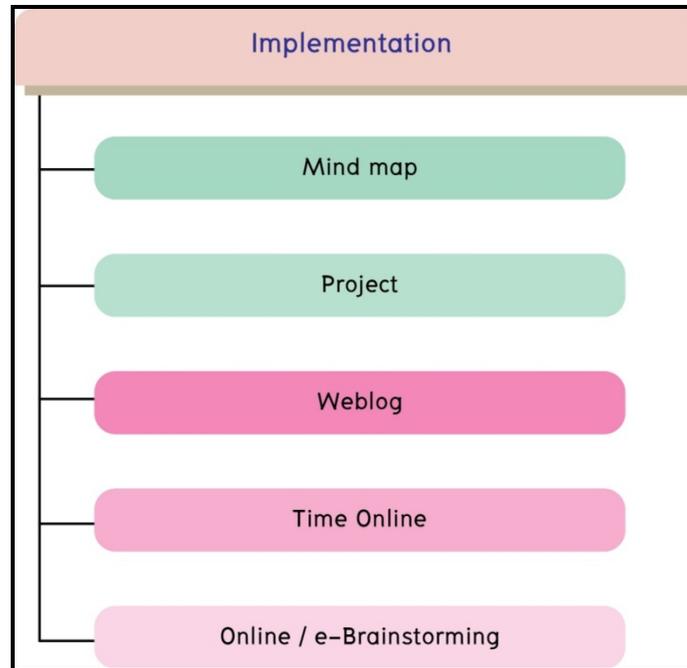
Figure 9 Implementation
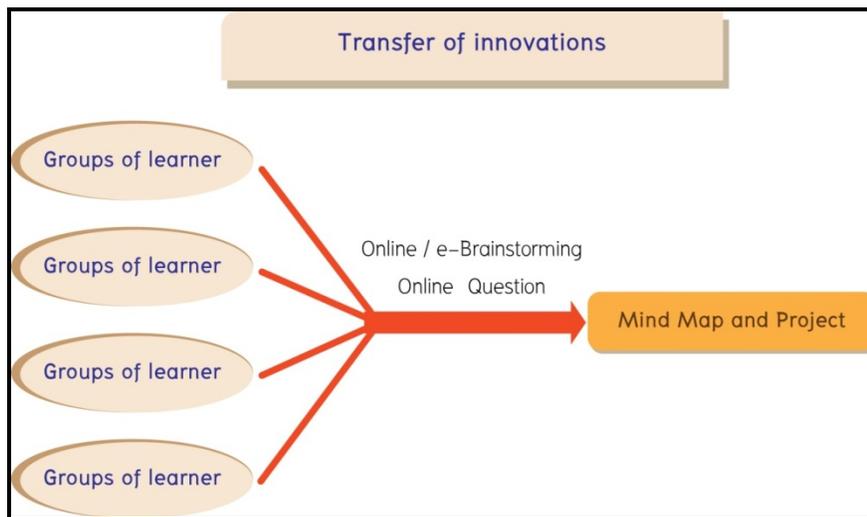
Figure 10 Transfer of innovations
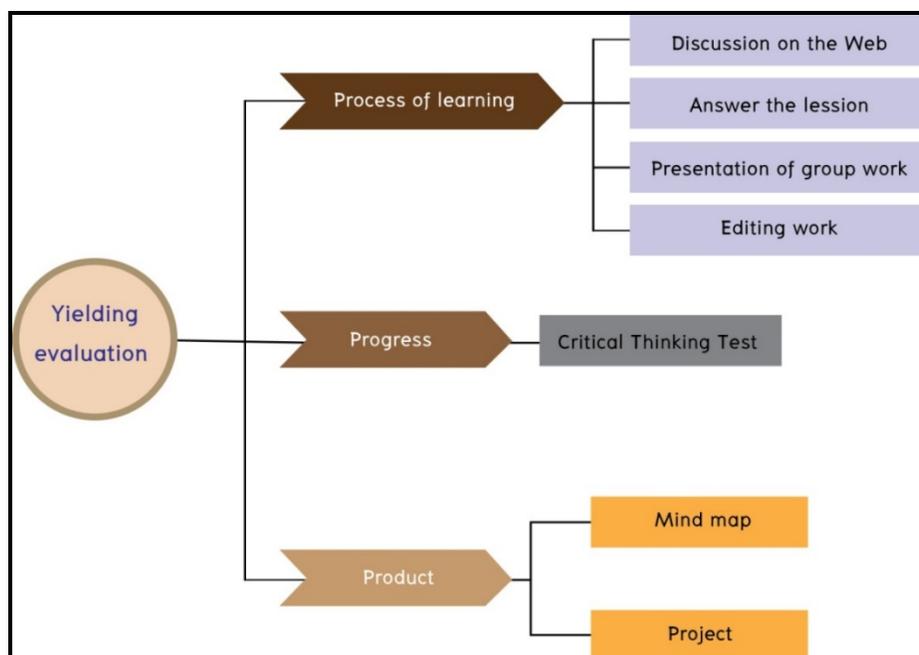
Figure 11 Yielding evaluation

Result CT test	n	$\overline{X}$	S.D.	t	p
Pre-test	28	35.93	4.27		
Posttest	28	42.36	3.42	18.97	0.00

Table 1 Result Critical Think test

Table 1: Depicts the comparison between critical thinking test results before and after going through the web-based instruction model under constructionism for critical thinking. It was found that students achieved an average pre-test score of 35.93 and a post test score of 42.36 from a total of 52 points. Hence, it was found that after learning from the web-based instructions, the students' critical thinking score was higher than before learning at .05 level of significance.

The result of this study for the satisfaction of the students towards the web-based instructions found that the students using the new type of learning method have a satisfaction score of $\overline{X}$ = 4.91. The student's satisfaction toward the Web-based Instruction was at the high level.

Conclusions and recommendation

The process, activities and method of learning that were developed can be improved the critical thinking of the students and can be applied in real teaching environment. The testing and evaluation for each learning program can be done when the learning activities for each process was completed such as assignment completion, activities participation level, class participation during brain storm process and evaluation of six dimension of critical thinking of Ennis (1985) including interpretation, analysis, evaluation, inference, explanation, and self-regulation.

Learning method developed through the web-based instruction under constructionism for critical thinking development has created a web-based learning system that can help the students challenge themselves, satisfy their own need for realization of their learning potential and ultimately improve the learning process of the students.

Acknowledgement

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What does PowerPoint mean to you? A Phenomenological Study

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Abstract

The purpose of this research is to understand in depth the perceptions and lived experiences of the postgraduate students whose lecturers are using PowerPoint in the classroom. The sample of this research is the postgraduate students of the University of Malaya in the Faculty of Education. The sampling is purposive and they have passed at least one semester in the Faculty of Education. This study searched to describe what it was like for a UM postgraduate student in the Faculty of Education to learn through PowerPoint. Data collection was based on focus group and individual interviews. The results have shown that the research participants have opposite feelings toward PowerPoint. Some of the students consider PowerPoint interesting at the beginning of the lecture but boring and tiring a few minutes later. Others feel happy when lecturers refer to PowerPoint in delivering the lecture's content. However, participants hold PowerPoint does not support face-to-face interaction in the classroom. The analysis of the interviews shows that some factors like PowerPoint construction and management, subject knowledge and the teaching skills are potentially effective in using PowerPoint in the classroom.

Keywords: PowerPoint; Postgraduate Student; University; Experience

Introduction

During the last several decades, the application of technology in education has overcome the traditional methods of teaching. One of the most common tools of technology in classrooms is the presentational software Microsoft's PowerPoint (Bates & Poole 2003). Since it was developed in 1990, PowerPoint has been debated as an effective presenter in education. According to Brown and Harlin (2007), PowerPoint became widely available and used for a variety of purposes in today's university and public school classrooms. To Anderson (2004) electronic slides are becoming an important presentation tool in the classroom. They allow advanced preparation of material, improving organization of the presentation and giving a means of showing information-rich content such as complex tables, formulas, programs, and diagrams. Roblyer and Doering (2013), consider three advantages for PowerPoint; organizing thinking about a topic, enhancement the impact of spoken information and providing collaboration on presentations.

However, the positive effectiveness of PowerPoint in classroom teaching and learning has been the main topic of many articles, the ways instructors use it in their classrooms is still limited in research. Some argue that it has negative effects according to the poor use of it. Voss (2004) stated that students feel ignored in lecture halls when the instructor is focusing on the presentation and not paying attention to the class. She also viewed that the instructor may not be able to leave the podium because he doesn't have a remote mouse to advance to the next slide. Young (2006) explained in a survey that a good PowerPoint presentation can enliven a lecture by offering imagery to support key points, and having a prepared set of slides can keep professors from straying off on tangents. Many students also praise PowerPoint slides for being easy to read, noting that professors' chalkboard scrawls can be

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illegible. Nevertheless, students say some professors simply dump their notes into PowerPoint presentations and then read them, which can make the delivery even flatter than it would be if the professor did not use slides. Tufte (2003) disapproved PowerPoint for poorly designed presentations, stating that the program's templates limited the options that presenters have in communicating with their audiences.

PowerPoint in Higher Education

In higher education, lectures are rapidly giving way to PowerPoint presentations. Usually the slide ware is combined with a computer, an LCD projector, and a screen in the classroom setting. So many colleges and universities have rooms equipped with technology necessary for any instructor to display information via PowerPoint presentations (Bartsch & Cobern 2003).Graig and Amernic (2006) have shown that students like to be taught using PowerPoint. Also Bartsch and Cobern (2003) have found that students believed that they learned more from PowerPoint lectures. Despite of the effectiveness of PowerPoint presentations to both teachers and students, they are one of the most easily misused teaching aids (Priya, 2012).

Focusing on teaching, Creed (1997) argued about PowerPoint in several points: first, "You may get less feedback from the class because your eyes and theirs are on the screen rather than looking at each other;" second, students don't have a chance to synthesize what they've heard; and third, the emphasis is on the quality of your presentation rather than your students' learning.

 Bates and Poole (2003) outlined that it is important for any instructor to ask himself before advancing a PowerPoint-based lecture to the students, for whose benefit is the PowerPoint software being used. Is it primarily to help you as the teacher to ensure that you cover the main points and follow the careful preparation you have invested in the lecture or is it to help the students to ensure that they have a record of the main points of the lecture? (p. 110). They also stated that the teacher should care about the amount of the information in the slides and because of large amount of information students become tired of the presentation.Young (2006) has shown that without training professors, good technology will mean bad teaching. The study also stated that students said that some professors simply dump their notes in the presentations and read them, which can make the delivery even flatter than it would be if the professor did not use slides.Cernamo (2011) said that the instructor doesn't have to worry about the design of his presentation; he can leave this to the students. Instead, the instructor has to worry about the content. In this research, we will consider PowerPoint as an educational tool, which would be studied according to its addressees.

Aim and research questions

Most research about the integration of PowerPoint into teaching have focused on satisfaction and/or reaction of the users, whose purposes are mainly to evaluate the result of PowerPoint integration, but in this research the purpose is to understand in depth the perceptions and lived experiences of the postgraduate students whose lecturers are using the PowerPoint in class. The results of this research will be useful for the lecturers to consider learning experiences of their users as a baseline for further improvement. For achieving this aim, the researchers attempt to answer the following questions:

1. What are postgraduate students' experiences in learning through PowerPoint?

2.   What contexts or situations have influenced postgraduate students' experiences in learning through PowerPoint?

The sample of this research is the postgraduate students of the University of Malaya (UM) in the Faculty of Education. The sampling is purposive and they have passed at least one semester in the Faculty of Education.

Research Methodology

The research purpose requires focusing attention on the qualitative aspects of the experience itself. So phenomenology was chosen as an appropriate methodology to answer the research questions. This study searched for a thick and holistic analysis to describe what it was like for a UM postgraduate student in the Faculty of Education to learn through PowerPoint. In this research, phenomenology is an appropriate methodology to answer the research questions. It involves both a descriptive and interpretative analysis of an experience. We have conducted focus group interview and semi-structured individual interviews.

This phenomenological study was designed to investigate students' perspectives of classroom interaction when PowerPoint is used for delivering information about the lecture's topic to them, their feelings when attending a PowerPoint-based lecture and their views on the use of PowerPoint presentations by their lecturers in the classroom. The study also tries to understand if the students perceived as part of their learning in classroom to learn efficiently from PowerPoint about the topic at hand. For data collection, we have used individual and focus group interviews. Thirteen postgraduate students participated voluntarily in this study. The individual and focus group interviews were audio recorded for transcription purposes.

Procedure

Data analysis involves making sense of the text and provides an interpretation of the larger meaning of the data. In this study data was collected through open-ended questions asked to the participants then an analysis evolved from the replies provided by the participants. Multiple level of analysis was done by the researchers from specific to general levels. First, the interviews were transcribed into a text form. Transcriptions were read repeatedly to get some concepts. By concept meant a single thought or idea. Initially concepts like "Boring", "tiring", "irrelevancy", "wordy", "gaining information", "No face to face interaction" etc. emerged.Then the concepts were grouped into categories and the text was analysed by correlating the categorized data to the research questions.

Findings

As part of this study, an attempt was made to discover the main concepts that would come from the analysis of the data collected from the interviews. The study of these concepts was intended to provide a better understanding of the students' experiences in attending PowerPoint-based lectures.

7.1. Experiences of attending PowerPoint based lectures.

Participants considered PowerPoint as a supporting tool for the lecturer but decrease the interaction between them and him/her. Most of them agreed that PowerPoint is so boring in the classroom setting. It can be drawn from participants' responses that they only benefited from PowerPoint in having the information that can be reached at any time needed. Some of the main themes of their experiences are as follow:

PowerPoint as a supporting tool for outlining the lecture:

The focus group participants mentioned that PowerPoint is beneficial in the classroom when it is used to deliver the lecture. They suggested that better way to read the topic is through the PowerPoint slides.

"I feel very happy when we have PowerPoint slides because I know. Ok. That is what we are going to learn. So my mind will not be diverted because we are focusing on the words on the PowerPoint so… PowerPoint gives me a clear idea of what the lecture is about."

Students see that via PowerPoint presentations they can have clear ideas about the topic and the objectives of the lecture. Moreover, it helps them in understanding what the lecturer is talking about.

Susskind (2005) in his study shows that students have positive attitudes about the course and greater self-efficacy with PowerPoint. According Priya (2012) PowerPoint is very easy to be learned and used. PowerPoint encourages and supports teaching by facilitating the material presentation. It is a support to the oral regular lectures as it provides outlines for the discussions. It also gives structure to the lecture by dividing it into several steps. The study of Hill, Arford, Lubitow and Smollin (2012), shows the majority of undergraduates consider slides the most useful when they outline lectures and they believe PowerPoint is the best way to organize and simplify course material.

PowerPoint brings boredom to class and distracts learners

Most of the research participants have negative feelings toward PowerPoint. They consider PowerPoint interesting at the beginning but boring and tiring after a few minutes. One student tells:

"For me PowerPoint seems to be interesting at the beginning of the class but later on it becomes a bit boring because I become tired to get the words and I tend to lose focus and switch off"

Some others think the cause behind the feelings of boredom and the impact of distraction is that some PowerPoint presentations are uploaded with excessive information:

"PowerPoint is too wordy and somehow it distracts my attention, it even makes my eyes tired and I lose focus"

According Hill et al. (2012 students desire presentations which are "not too much text on each slide"(P. 249).

PowerPoint doesn't support Classroom interaction:

Participants hold "It doesn't support face to face interaction in the classroom". Many participants expressed they had limited interaction either with each other or with the lecturer, and they hesitated to ask questions as hardly can find an answer, and interacted only if the lecturer asks a question so they refer to the slides in front to provide answers. They described preferred lecturers as those who present detailed explanations about the topic guidelines in the slides rather than those lecturers who read only. The read only-lecturers leave negative effect on them and may distract them from the main core of the lesson. Instead, participants viewed that it will be interactive if lecturers include some hypermedia to their presentations.

 "PowerPoint doesn't allow for any collaborative learning and basically lecturers use PowerPoint just for presentation but not for any other purposes. Their Presentations are all in a linear basis just bullets and after bullets. If they can merge it with some video files or YouTube videos that are relevant to the lesson it may not be so boring."

Adams (2006), holds, PowerPoint disrupt dialogue between lecturer and students and favours "pre-determined monologue and teacher-centred pedagogy over unpredictable dialogue and other pedagogical forms" (P. 403). According Hill et al. (2012) research in some subjects like sociology, which requires discussion, critical thinking and debate, PowerPoint inhibit the development of these characteristics. Some researchers criticize PowerPoint which, change teaching from conversation into presentation (Adams, 2006).

Also, if we accept the idea of Marambe, Vermunt, and Boshuizen (2012) that Asian culture (including Malaysian culture) discourages the expression of thought, we could tell, PowerPoint stabilize this characteristic of the culture.

Influential contexts on postgraduate students' experiences in learning through
    PowerPoint.

PowerPoint construction and management

Participants feel that they are lacking concentration when the lecturer only read from the slides, as they do not have to follow or to listen to him/her because they can read what is on the screen.

"…because I know later I would read the same slide again, so why do I have to listen".

The majority of the participants commented that the lecturers use the PowerPoint in a boring way, which consequently leads to having a boring and distracting lecture. Some said that the information provided in the slides is sometimes not relevant to the topic of the lecture.

"Some lecturers put in the PowerPoint something that is irrelevant to what we suppose to know so the lecture becomes very boring"

Bartsch and Cobern (2003) study approve this view that PowerPoint can be beneficial, but material that is not pertinent to the presentation can be harmful to students' learning.

While others viewed that the lecturer is only using it as a support tool or a guideline to a boring lecture. For better using PowerPoint one of the students recommends as follows:

"So the PowerPoint is important but not for the entire lesson. Lecturer can use it in part of the lesson but certain parts of the lesson should be group discussions or just simply talking with teacher, answering his questions. It should be used as part of the lecture but not the entire lecture"

Another participant holds that:

"Three-hour lecture is a very long time when the lecturer use PowerPoint and he must check from time to time if his students understand or not the topic of the lecture. For example in my case, my English is not so good so it will be better if he checks our understanding of the lecture"

Young (2009 cited in Roblyer & Doering, 2013) cites a British study that reported students' perceived use of PowerPoint-based lectures among the most boring they experience.

Subject knowledge, teaching skills and the PowerPoint usage

Most participants agreed that the lecturers mainly use PowerPoint for presentation purposes only to demonstrate that the lecturer is using technology in his or her classroom.

"PowerPoint is a one way tool, it is only used to present".

One student who is a college teacher believes, lecturer use PowerPoint because in the evaluation form, one item is application of the technology in the class, so it requires lecturers to use PowerPoint as a symbol of technology. Hill et al research shows some lecturers, particularly" newer lecturer who do not have the security of tenure and are often adjunct or contingents lecturers"(2006 P. 253), use PowerPoint, because teaching evaluation form requires them.

Some researchers think many instructors are hiding behind the slides. Priya (2012) said that teachers could get away with not having an understanding of the subject by presenting pre-prepared presentations on topics, thereby avoiding oral lectures completely.

The study of Yilmazel-Sahin (2009) reported that instructors (a) use PowerPoint as a straight lecturing tool, (b) read directly from slides, (c) present the whole class in PowerPoint, (d) present information on the slide that is directly copied from the textbook. In addition, significantly more undergraduate students reported experiencing PowerPoint overload due to overfull presentations and the rapid pace of instruction.

Also the results research of Burke and James (2008) indicated that (a) students have a significantly less favourable overall view of PPT's influence on cognitive learning and classroom interaction than faculty members; (b) unlike faculty members, students do not believe that posting notes on the Web will decrease their motivation to attend class; and (c) both faculty members and students perceive that PPT has a favorable impact on notetaking quality, content recall during exams, emphasis on key lecture points, and holding student attention during class. The authors offer implications for instructors and future research.

Two different things enrich using PowerPoint. First using all features of this software and not limiting to linear style and words. One student tells:

"I can understand more when the lecturer uses a simple picture to explain the topic. By using the animations or pictures, the lecturer ensures that I still want to listen to his lecture"

Klemm (2007 cited in Roblyer & Doering, 2013) offers several tips for using PowerPoint, better, including showing only a few slides at a time before having students apply the information, having some slides with just images or diagrams. Moving around the room while showing slides, taking the last slide off the screen when moving on to student work, and not giving out hard copies of slides.

One clear message from the participants was that the use of PowerPoint in the classroom overtime switched them off, they lacked attention and could not follow the lecturer but only focus on the words appeared in the slides knowing that later they would read them or just copied them during the lecture. However, they could do some discussions with their peers if the points are cleared to them or at least laid in front of them.

The only thing that participants considered to gain from PowerPoint presentations is the information about the topic.

"I guess I gain from PowerPoint some sort of information".

Participants also expected from PowerPoint attracting them or engaging them in the lecture but they said it was boring and distracting.

Finally it is necessary to mention that according to Hardin(2007), the impact of PowerPoint on students learning is more dependent on instructor variables than on whether PowerPoint was used. In other words, the PowerPoint is more influential if is used by a knowledgeable and skilful instructor.

When it comes to the use of PowerPoint in the classroom, the general feelings of students would like to have more attractive and interactive PowerPoint Presentations. Much can be learned from taking students' views and opinions about their lecturers' use of technology in the classroom. Through students' perspectives on the classroom interaction when technology is integrated, a problem of focusing on the technology and ignore the students always manifest in their discussions.

This study provides particular guide that we need to attract the lecturer's attention that technology is important but might not be the solution for most of the educational problems. The study shows that the views of students are of great importance specifically when the targets are directed towards enhancing the teaching and learning processes.Further study of this issue with a larger sample of students with diverse educational backgrounds and characteristics would give us more insights into the perception of gaining the desired learning outcomes by technology in the different educational settings.

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What Drives a Successful Web-Based Language Learning Environment? An Empirical Investigation of the Critical Factors Influencing College Students' Learning Satisfaction

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Abstract

With a great potential for enriching and vivifying all kinds of educational applications, web-based instruction is becoming a progressively more impressive apparatus for language learning resource delivering around the world. In this study, a web-based language learning (WBLL) system was employed to support college students' English as foreign language (EFL) learning. Based on the concepts of social cognitive theory (SCT), this study proposes a conceptual model that examines the determinants of college students' learning satisfaction in a web-based language learning environment. The model is validated using a cross-sectional survey of 306 college students. The partial least squares (PLS) method was applied to validate the measurement properties and proposed hypotheses. The empirical findings demonstrate that college students show positive incline towards the use of the web-based language learning system for EFL courses and signify a possible benefit from its use in the long run. The results can provide insight into those factors that are likely significant antecedents for planning and implementing a web-based language learning system to enhance student learning satisfaction.

Keywords: social cognitive theory; learning satisfaction; second language acquisition; web-based language learning

Introduction

Over the past decades, the use of web-based technologies for second language instruction has become a critical issue of interest for language learning since the advent of multimedia computing and the Internet has reshaped the mode of computer use in language instruction (Warschauer et al., 2000; Zhao & Lai, 2008). With either synchronous or asynchronous communication through the Internet, language learners can communicate and interact with other learners or native speakers of the target language throughout the world in a time-saving and cost-effective way (Cavus& Ibrahim, 2009). Given this intensive learning environment, language teachers world-wide encounter a new challenge in how to create effective language instruction through web-based technologies with the goal of preparing students for the new information society and equipping them with the ability to communicate effectively in English via computer networks.

Even though web-based environments provide flexibility in time, space and distance and are well recognized by students, some students report feeling isolated, lacking confidence or lacking support and feedback, which consequently leads to poor language learning performance (Hara & Kling, 2000; Hauck & Hurd, 2005; Yang et al., 2008). This necessitates research in several disciplines to justify what factors actually influence students' satisfaction with the use of the web-based language learning systems, how that influences students' perceptions as well as the causes and effects of such a virtual learning environment. Increasingly, as web-based language learning (WBLL) continues to impact students around the world, it is important to gain a better understanding of the influencing factors to improve teachers' instruction and students' learning activities. Moreover, the integration of Internet technology and language learning curriculum has shifted the focus from a teacher-centered classroom to a learner-centered environment which empowers the learner through control over lesson content and the learning process (Fotos & Browne, 2004). The adoption of web-based systems in supporting language learning has made it significant to probe the crucial determinants that would entice learners to use WBLL systems and enhance their learning

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satisfaction. The degree of student learning satisfaction with WBLL courses plays an important role in evaluating the effectiveness of WBLL systems adoption. Hence, comprehending the essentials of what determines student learning satisfaction can provide second language acquisition insights into developing effective strategies that will allow educational institution administrators and instructors to create new educational benefits and value for their students (Zhao & Lai, 2008).

Because WBLL environments differ from typical classroom, a review of previous research in language learning technology shows that there is a lack of studies that have examined the crucial factors that determine student learning satisfaction with WBLL systems, such as individual cognition, technological environments, and the social contexts. There is a need for more in-depth research to understand what determines student learning satisfaction in a WBLL environment and to investigate how these factors influence student perceptions of WBLL contexts and their causal relationships. Drawing upon the perspective from social cognitive theory, in this study, we proposes a nomological network to identify the underlying factors and causal relationships in predicting language students' satisfaction with web-based language learning, the results of this study can enable administrators and faculty members to make necessary improvements. The research questions thereby stand out clearly to address the followings questions: (1) What are the influencing factors of college student's satisfaction with WBLL? (2)What are the relationships among the cognition, technological, and social factors and student satisfaction with the use of a WBLL system?

Theoretical foundation and conceptual model

Web-based Language Learning

A web-based language learning (WBLL) environment integrated the use of multimedia and web-based technologies and became a new method for language learning. Related research (Chang, 2005; Chang & Ho, 2009) indicated that the nature of interactivity and immediate feedback of web-based learning environment has a positive effect on the stimulation of students' interest and ability in language learning. Taylor and Gitsaki(2004) stated that the students participating in web-based activities showed that use of the Web makes the course more interesting because of the varied and current information it provides. In general, the Internet and the WWW contributed to the enhancement of learners' active involvement and satisfaction toward learning in the web-based environment as well as the opportunities for learners to access and share information without the limitation of time and space.

Learners' perceptions and satisfaction regarding technology application in language learning have been the focus of numerous studies (Salaberry, 2001; Wu et al., 2010). Ayres (2002) pointed out that students appreciated and valued the learning process while they experienced using information and communication technologies (ICT). Fotos & Browne (2004) found that students participating in an e-mail exchange program enjoyed their learning because of the reduced fear of making mistakes in English and improved their self-confidence in using English. A survey, conducted by Taylor and Gotsaki (2004), investigated English as a foreign language (EFL) students' attitudes regarding the use of the Internet and web-based activities. It indicated that the use of the Web made the course more interesting and more enjoyable for the students because the Web offered timely and a variety of information. Moreover, the majority of students agreed that they felt comfortable using the Web to find information. As a result, their confidence using a computer increased. As to their intentions to use computer in learning processes in the future, most students indicated that they will continue to use the Web because they recognized the Web as a valuable learning tool and should be integrated in the course.

Social cognitive theory

Social cognitive theory is a widely accepted and empirically validated model for understanding and predicting human behavior and identifying methods in which behavior can be changed. According to Bandura (1986), the symbolic environment occupies a major part of people's everyday lives in modern society. Much of the social construction of reality and shaping of public consciousness occurs through electronic acculturation. The change of focus from teaching to learning has often been called a paradigm shift in education. Bandura's theory of self-regulation and self-efficacy can be seen as a paradigm shift within the individualistic approach, although it emphasizes the social environment in the learning process. The social context is considered as a determinant for the individual human being. The learning environment can be defined as a combination of the environmental determinants and behavioral determinants the learner can be interacting with. The applications of information and communication technologies (ICT) could be educational products that can be distributed via different methods and

media like electronic self-study materials. The cognitive idea of knowledge would lead to developing ICT teaching strategies (Web pedagogy, etc), goals and means to change the schemes of thought in the individual. Several studies have applied it as a theoretical framework to predict and explain an individual's behavior in IS settings. The theory argues that the meta-progress of a human being occurs through consecutive interactions with the outside environment and the environment must be subjected to one's cognition process before they affect one's behavior. It proposes that a triadic reciprocal causation among cognitive factors, environmental factors, and human behavior exists. Behavior is affected by both cognitive factors and environmental factors (Wood & Bandura, 1989). Cognitive factors refer to the personal cognition, affect and biological events. Environmental factors refer to the social and physical environments that can affect a person's behavior.

Research Model and Hypotheses Development

In this study, cognitive factors stand for the college students' cognitive beliefs that influence their behaviors in using WBLL systems. Two main cognitive variables: computer self-efficacy and learning outcome expectations are believed to be the most relevant factors affecting human behavior in using an information system (IS) (Ventkatesh et al., 2003). The social cognitive theory defined learning outcome expectations as the perceived consequences of a behavior and further noted they are a strong force guiding individuals' actions. The learning outcome expectations are derived from individual judgments regarding valuable outcomes that can be obtained through a requisite behavior. Individuals are more likely to perform behaviors that they believe will result in positive benefits than those which they do not perceive as having favorable consequences.

Learning outcome expectations are defined as the degree to which a learner believes that using WBLL systems will help him or her to attain gains in learning performance. Individual attitudes are a function of beliefs, including the behavioral beliefs directly linked to a person's intention to perform a defined behavior (Ajzen & Fishbein, 1980). User acceptance is an important indicator that measures a user's positive attitudes toward the IS and predicts their behaviors while using the system, based on theory of reasoned action. Satisfaction is a good surrogate for user acceptance and is often used to measure learners' attitude in computer-mediated learning studies (Chou & Liu, 2005). Thus, we conceptualize the student's attitude toward WBLL systems as the learning satisfaction with the WBLL systems－defined as the sum of student's behavioral beliefs and attitudes that result from aggregating all the benefits that a student receives from using WBLL systems. Therefore, the following hypothesis is proposed.

H1: A higher level of learning outcome expectations for WBLL systems use will positively associate with a higher level of learning satisfaction with WBLL systems.

We define computer self-efficacy as the confidence in one's ability to perform certain learning tasks using WBLL systems. Prior research has shown that increases in computer self-efficacy improve initiative and persistence, which lead to improved performance or outcome expectations (Francescato et al., 2006), including attitude and behavioral intention (Venkatesh & Davis 2000). In the context of computer-mediated learning, empirical evidence indicates that increases in computer self-efficacy improve students' confidence in their computer-related capabilities, which in turn leads to a perception of positive learning outcome expectations to the learning courses (Santhanam et al., 2008). That is, computer self-efficacy could reduce learning barriers in using WBLL systems. If students have higher computer self-efficacy and can control WBLL systems, they will perceive the systems' usefulness and value, which in turn motivates their intention to use WBLL systems. Accordingly, the following hypothesis is proposed:

H2: A higher level of individual's computer self-efficacy will positively associate with a higher level of learning outcome expectations for WBLL systems use.

System characteristics and digital material functionality have the potential to directly affect perceived usefulness of IS (Hong et al., 2002) that are thought to be similar concepts in learning outcome expectation. Several empirical evidences have argued that both digital material functionality (Zhang et al., 2000) and system characteristics (Pituch & Lee, 2006) affects the effectiveness of computer-mediated learning. That is to say, learners perceiving a higher level of system characteristics and digital material functionality in WBLL systems will lead to a higher level of learning outcome expectations for WBLL systems use. In addition, in the WBLL systems environment, the diverse digital material functionality can be delivered and accessed depending upon the support of appropriate system characteristics WBLL systems facilitated (Pituch & Lee, 2006; So et al. 2008). Thus, we consider that the digital material functionality highly depends on the power and quality of system characteristics of WBLL systems. Therefore, the following hypotheses are proposed:

H3: A higher level of system characteristics of WBLL systems will positively associate with a higher level of learning outcome expectations for WBLL systems use.

H4: A higher level of system characteristics in WBLL systems will positively associate with a higher level of digital material functionality of WBLL systems.

H5: A higher level of digital material functionality in WBLL systems will positively associate with a higher level of learning outcome expectations for WBLL systems use.

H6: A higher level of digital material functionality in WBLL systems will positively associate with a higher level of learning satisfaction for WBLL systems use.

In computer-mediated instructional design, there is an increasing focus on facilitating human interaction in the form of online collaboration, virtual communities, and instant messaging in the WBLL systems context. From the group interactions perspective, social environment factors, such as collaborative learning (Francescato et al., 2006), learning climate (Chou & Liu, 2005) and social interaction (Johnston et al. 2005) are important antecedents of beliefs about using an e-learning system. Prior research shows that social interaction has a direct effect on the usage of an e-learning system. The interactions among students, between faculty and students and learning collaboration are the keys to learning process effectiveness. In addition, the emotional learning climate is an important indicator of learning effectiveness. A positive learning climate encourages and stimulates the exchange of ideas, opinion, information, and knowledge in the organization that will lead to better learning satisfaction. That is, when learners believe that WBLL systems provides effective student-to-student and student-to-instructor interactions and improves learning climate, they will be more satisfied with WBLL systems. Therefore, the following hypotheses are proposed:

H7: A higher level of digital material functionality in WBLL systems will positively associate with a higher level of learning climate in WBLL systems.

H8: A higher level of interaction will positively associate with a higher level of digital material functionality of WBLL systems.

H9: A higher level of interaction will positively associate with a higher level of learning climate.

H10: A higher level of social influence will positively associate with a higher level of learning climate in WBLL systems.

H11: A higher level of learning climate will positively associate with a higher level of learning satisfaction with WBLL systems.

Based upon the foregoing theoretical underpinnings, we consider that the social cognitive theory is applicable to the WBLL context. The research framework is thus proposed and shown in Fig. l.
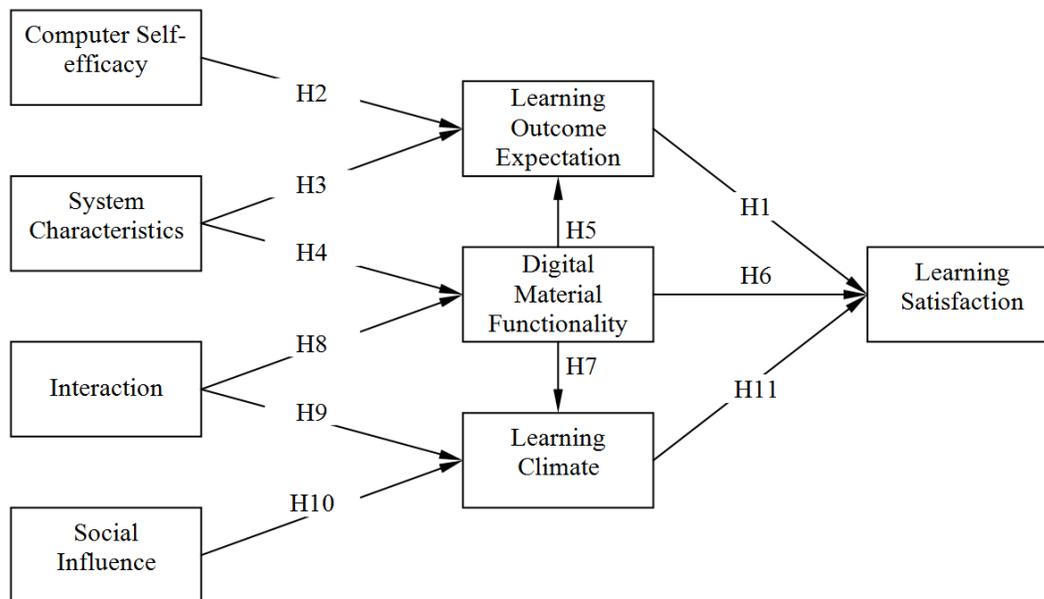
35. Fig. 1. The conceptual framework

Research Design

Instrument development

Constructing the survey instrument began with developing the related influencing factors of college students' satisfaction towards the use of WBLL systems and generating the corresponding scale items. Prior research was reviewed to ensure that a comprehensive list of items was developed. Once the item list for the initial questionnaire was generated, an iterative personal interview process (including faculty, teaching assistants, and representative students) was conducted to refine the draft instrument. These interviews enabled the researcher to gauge the clarity of the tasks, assess whether the instrument captured the desired phenomena, and verify that important aspects have not been omitted. This process continued until no further modifications to the questionnaire were necessary. Feedback from the interview processes served as the basis for correcting, refining, and enhancing the experimental scales. For instance, scales were eliminated if they represented the same aspects with only slightly different wording and modified if the semantics were ambiguous in order to enhance the psychometric properties of the survey instrument.

Then, after completing the development of the related scale items, several small-scale pretests were conducted with a small group of respondents to ensure the completeness and appropriateness of the scale items developed. A self-administered survey instrument was then developed and used to collect the data for this study. The finalized questionnaire for the study consisted of two parts including participants' demographic data and their responses to the scale items. The participants' basic information included gender, age, academic major, experience in web usage, experience in language learning and frequency of using the web. The second part recorded the participants' perceptions on the scale items for each latent variable. All items are measured via a seven-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Participants

The empirical data was gathered using a self-administered questionnaire. At first, students were comprehensively told to respond to the survey as candidly as possible; there were no right or wrong answers regarding the items in the questionnaire, and that their participation in the survey was irrelevant to his or her final grade for the course. This study was focused on assessing their perceptions regarding usage of WBLL. The participants were self-administered the 36-item questionnaire after the mid-term examination of the WBLL course to ensure that they have actually used the WBLL system. For each question, respondents were asked to circle the response which best described their level of agreement. As mentioned above, the approach taken to test the relationships posited in the proposed research model and the research hypotheses was a field study using a survey methodology for data collection.

The study was conducted at a well known university of science and technology, located in southern part of Taiwan. The targeted population for the study consisted of all students enrolled in the WBLL courses in this college. This WBLL course was a compulsory course for the students in the night college and the affiliated continuous college of this institute. As a result, 763 students in this college had to enroll in the WBLL course. Students taking the course were from different majors including gemology, business administration, early childhood education, information management, beauty science, social work. All of the students who had ever taken the WBLL courses were qualified to be invited to participate in the survey. The potential non-response bias was assessed by comparing the early versus late respondents that were weighed on several demographic characteristics. The results indicated that there were no statistically significant differences among demographics between the early and late respondents. The results indicated that none of the chi-square values were statistically significant ($p > 0.05$, two-tail tests).

Analysis methods

The empirical data collected were analyzed using the partial least squares (PLS) method, which is particularly suitable for identifying the variance and validating the causal relationships between latent variables comprising complex theoretical and measurement models (Chin, 1998). The proposed hypotheses for the predictive and nomological validity of the principle constructs of the research model were simultaneously validated. The PLS method allows for the validation of the measurement model and the estimation of the structural model. The questionnaire we administered in the large-scale survey included items worded with proper negation, and the items were shuffled to reduce the monotony of questions measuring the same constructs. The statistical analysis strategy

involved a two-phase approach in which we first assessed the psychometric properties of all scales through confirmatory factor analysis (CFA), and then validated the structural relationships by bootstrap analysis.

Data Analysis and Results

Measurement properties

All the constructs in the conceptual model were modeled as reflective and were measured using multiple indicators. The assessment of item loadings, reliability, convergent validity, and discriminant validity was performed for the latent constructs through a CFA. Reflective items should be unidimensional in their representation of the latent variables, and therefore correlated with each other. Factor loadings of scale items should be above 0.707, showing that over half of the variance is captured by the constructs (Straub et al., 2004). Also, all constructs in the measurement model should exhibit good internal consistency as evidenced by their composite reliability scores. The composite reliability coefficients of all constructs and the AVE in the proposed conceptual framework were also checked for the adequacy. The analysis results of CFA show that all constructs exhibit good internal consistency as evidenced by their composite reliability scores. The composite reliability coefficients of all constructs and the AVE in the proposed model are adequate, ranging from 0.93 to 0.97 and from 0.73 to 0.90, respectively.

There are two requirements used in assessing discriminate validity: (1) indicators should load more strongly on their corresponding construct than on other constructs in the model; and (2) the square root of the average variance extracted (AVE) should be larger than the inter-construct correlations (Chin, 1998). The percent of variance captured by a construct is given by its AVE. We also evaluated the discriminant validity of the major constructs of the conceptual framework using the PLS analytical method. The results show that all constructs meet the requirements. The values for reliability coefficients are all above the suggested minimum of 0.7. All constructs share more variance with their indicators than with other constructs. Thus, the convergent and discriminant validity of all constructs in the proposed research model can be assured.

Hypotheses testing

The path coefficients and explained variances for the conceptual model in this study are shown in Fig. 2. T-statistics and standard errors were generated by applying the bootstrapping procedure with 200 samples and the path coefficients were re-estimated using each of these samples. A test of the structural model was assessed to confirm to what extent the causal relationships specified by the research model were consistent with the available data. The PLS method does not directly provide significance tests and path coefficient confidence interval estimates in the proposed model. Hypotheses and corollaries testing were performed by examining the size, the sign, and the significance of the path coefficients and the weights of the dimensions of the constructs, respectively. The statistical significance of weights can be used to determine the relative importance of the indicators in forming a latent construct. We found that all specified paths between constructs in our research model had significant path coefficients. The results provide support for our research model. As shown in Figure 2, the analysis results indicate that the model explained 64 percent of the variance in learning satisfaction. Similarly, 76 percent of the variance in digital material functionality, 69 percent of the variance in learning outcome expectations and 67 percent of the variance in learning climate were explained by the related antecedent constructs. The magnitude and significance of these path coefficients provides further evidence in support of the nomological validity of the research model.

As for the students' cognitive factors, hypotheses effectively drawn from computer self-efficacy to learning outcome expectations (H1) and learning outcome expectations to learning satisfaction (H2) are supported by the significant path coefficients, respectively. That is, students who had higher computer self-efficacy will have higher learning outcome expectations, which in turn will lead to higher learning satisfaction. Regarding to the effects caused by the principle WBLL technological influencing factors, the analysis results also confirm the proposed hypotheses drawn from system characteristics to digital material functionality (H3) and learning outcome expectations (H4). In addition, hypotheses drawn from digital material functionality to learning outcome expectations (H5), learning satisfaction (H6) and learning climate (H7) are also supported by the significant path coefficients. Pertaining to the aspect of social environment factors, the plausible hypotheses drawn from interaction to digital material functionality (H8) and learning climate (H9) are supported, respectively. That is, interaction significantly influences the learning outcome expectations and learning climate. The two hypotheses, drawn from social influence to learning climate (H10) and from learning climate to learning satisfaction (H11), are also

confirmed by the significant path coefficients. Explicitly, social influence will have direct effect on learning climate, which in turn will influence students' perceptions on their learning satisfaction. As a whole, positive learning outcome expectations, superior digital material functionality and high-quality learning climate will have direct effects on learning satisfaction; among them, digital material functionality provide the greatest contribution to college students' satisfaction in the WBLL environment.
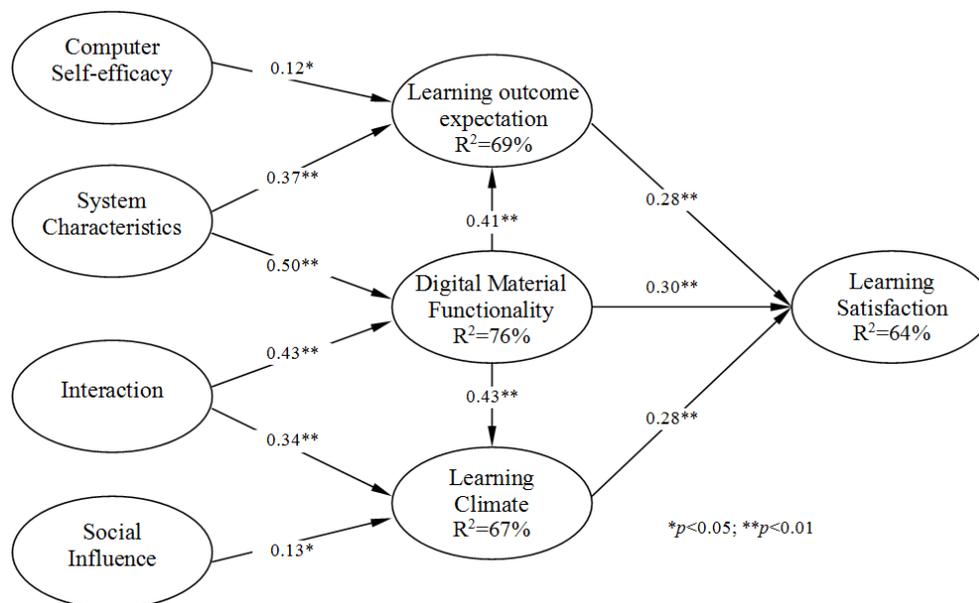
36. Fig. 2. Results of PLS analysis.

Discussions and Conclusion

Today, the importance of the applications of web-based technologies into English as a foreign language (EFL) learning has increased significantly around the world. In order for the success and effective implementations of WBLL systems, it is crucial for researchers to cumulate efforts from the continuations of rigorous scientific approaches, educational theories, and well-targeted procedures and techniques in the area of web-based language instruction. This study proposed a comprehensive model to investigate the influencing factors of college students' satisfaction in using a WBLL system, developed measures for these constructs, and validated the conceptual model through a rigorous PLS analysis. Drawn from the empirically results, this study provided interesting insights into the applicability of the related constructs, with respect to explaining perceptions, belief, and satisfaction of EFL students in using the WBLL system.

Although our study provided interesting insights into college students' satisfaction with the use of WBLL systems, it has several limitations that also represent opportunities for future research. This research was conducted in Taiwan, the findings in the study might not hold true in other countries. Thus, the valid instrument was developed using the large sample gathered from only one vocational-technology college in Taiwan, a confirmatory analysis and cross-cultural validation using another large sample gathered elsewhere is required for improving the generalizability of the instrument. Hence, other samples from different areas in Taiwan or other nations should be gathered to confirm and refine the factor structure of the instrument, and to assess its reliability and validity. These issues are worth of further pursuance in the future study. Future research, in different samples and longitudinal studies, are necessary. The validity of a measure cannot be truly established on the basis of a single study. Measure validation requires the assessment of the measurement properties over a variety of samples in similar and different contexts. In the future, an instrument for measuring students' intentions to use a synchronous web-based learning system should also be developed. More attention also can be directed toward understanding the antecedents and consequents of other web-based instruction systems. In addition, the status of gender gap between female and male groups of students in using web-based instruction systems for language learning remains unclear. In view of that, there is a

need for further studies to elaborate upon this issue and enhance our understanding of how gender difference impacts on the adoption and use of WBLL.

By and large, the main theme of this study was to enrich our understanding of college students' satisfaction with web-based language learning. Given the undeniable reality that IT is ubiquitous in all sorts of educational contexts, such research has value for theory development as well as for practice. There is no doubt that the validation of a measure or a conceptual framework concerning the WBLL systems cannot be established only on the basis of this single study. Several avenues for future work remain and the researcher hopes the findings of this study can stimulate others to extend this line of research further. Measure validation requires the assessment of the measurement properties over a variety of samples in similar and different contexts. The future research can place efforts on developing the instrument for measuring students' behavioral intentions to use synchronous or blended web-based learning systems in e-learning environments. Also, more attentions can be heading towards understanding the antecedents and consequents of other web-based learning systems.

Acknowledgments

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Yeni Eğitim Teknolojileri ve Derinliğin Kaybı (Yeni Teknolojilerin Eğitimde Yabancılaştırıcı Etkisi ve Bilginin Metalaşması Sorunu)

Ali Öztürk[192]

Özet:

Teknolojideki büyük gelişmeler tüm alanlarda olduğu gibi eğitim-öğretim faaliyetlerinde de önemli değişmelere yol açmaktadır. Bu gelişmeler bilginin daha kolay ulaşılabilir, anlaşılabilir, sistemli ve denetlenebilir taraflarını güçlendirmektedir. Belki bunlarla birlikte birçok yeni olumlu gelişmeden de bahsetmek gerekir. Ancak eğitim-öğretim faaliyetlerinde yoğun biçimde kullanılan teknolojik mekanizmanın bilgiyi ve onun araçlarını da yeniden düzenlediği, bu yeni sistematiğin ise düşünüldüğünden daha büyük yeni çıkmazlara kaynaklık ettiği gözlenmektedir. Öncelikle bilgiyle-erdem, bilgiyle-derin anlama ve dolaysıyla bu yeni gelişmelerin yüksek muhakeme ve sorgulayıcı aklı dışlayan bir sistematiğe dönük bir yapılanmaya neden olduğu düşünülmektedir. Bu çalışma temelde bu yeni teknolojilerin bu değişime nasıl kaynaklık ettiği ve bu sorunların üstesinden nasıl gelebileceğimize dair temel tartışmaları içermektedir.

Anahtar kelimeler: İmajoloji, Simülasyon, Bilgi, Hikmet ve Yeni Teknolojiler

Giriş

Teknolojinin hayatımızı kolaylaştırdığı, dünyayı küçülttüğü zaman ve mekan mefhumunu başkalaştırdığı ve de bilgiye ulaşmayı herkes için her an imkan dahilinde kıldığı herkesçe kabul edilmektedir. Bu süreç insanlığa birçok yeni imkanlar kazandırmıştır. Nitekim önceleri bilginin -özellikle de batı söz konusu olduğunda- zor ulaşılabilir, imtiyazlı ellerde kapalı işleyişe sahip ve de pahalı ve ulaşılamaz niteliği baskındı. Modern teknolojilerin gelişmesi tüm kültür ve bilgi değerlerinin teknolojik araçlar üzerinden her an ve her yerde ulaşılabilir olmasını sağladı. Bu bilginin yaygınlaşması ve ulaşılabilirliği açısından devrim niteliğindedir. Bu ve benzeri olumlu gelişmelerin yanı sıra teknolojinin bilgiyi kendi tabii halinde bırakmadan onu kendi form ve içeriklerine uyarlayıcı despotik karakteri nedeniyle bilgide özgün ve özgül kayıplar meydana geldiğine ve dahi bilginin dönüşerek yatay bir çoğulluk, dikey bir benzerlik arz ettiği dehşete düşüren bir anlamayla bizi yüz yüze bırakmaktadır. Yani bilgi yaygınlaşmış, çoğalmıştır. Ancak içerik ve mahiyeti fakirleşmiş ve çölleşmiştir. Bilginin plastik makyajı mükemmelleşmiş ancak içeriği byte ve bit düzeneğine göre sezgisel, duygusal, hikmetli, muhakemeye dayalı, insani ve tanrısal olan niteliklerini yitirmiştir. Her tür bilgi Çin malı, ikinci dereceden aynileşen, büyük çokluğa rağmen gerçekte büyük bir yoksullukla karşı karşıya kalmıştır.

Yeni Teknolojiler ve Eğitim

Sanayileşmenin gelişimini tamamladığı ilk dönem açısından insanlar; bilgi ve tipolojilerini sanayileşmenin gerçeğine indirgeyerek anlamlandırmaya çalışmışlardı. Ancak, sanayileşmeye

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indirgenen bilgi ve tipolojik korteksin zamanla, ihtiyaç hissettiği diğer işlevlerini sanayileşmenin sonuçlarını yeniden tasarlayarak, sanayileşmeye indirgenmiş bilgi yerine sanayileşmenin insan tipolojisinin ihtiyaç hissettiği üst kümeye yükselterek cevap bulma yolunu seçmiştir. Böylece insana dair birçok tespiti mekanik ve dijital aletlerin dayandığı kavramlarla rahatlıkla izah edebilmemiz bir tesadüf değildir[193].

Bütün bunlara bağlı olarak üretilmiş şeyler yeni bir anlam kazanarak egonun bireysel ve kolektif kendini yüceltme edimi olarak ürünü, narsist tüketimi, fedakarlık düzeyinde bir ayin formuna dönüştürmüştür. Böylece bireyin kendini tanımlaması sahip olma arzusuna indirgemiştir. Semboller kültürel değerleri kodladığı gibi arzuları da kodlamaya başlamıştır[194]. Artık doğanın bazı karelerini ancak bir takım markalarla özdeşleştirerek algıladığımız söylenebilir[195]. Bu durum sosyal bilimlerin kavramlarını hızla işgal eden tekno-metodik süreçlerle devam edip gitmektedir.

Üretilmiş doğa; yeni bir akıl, yeni bir tipoloji, yeni bir özgürlük anlayışı ve yeni bir medeniyet tanımına geçit veriyordu. Paraya sahip olmayı bilen insandan, parayı farklı harcamayı bilen insana, teknolojinin organikleştirilip ruhlarının pazara çıkartıldığı homojen kaynaklı heterojen davranışlara, bu ekoloji dilediğinizce farklı okuma ve üretme özgürlüğünün kapılarını açıyordu[196].

Bu sürecin gerçekte birçok alanda yaşanan yapısal değişikliğin bir sonucu olduğu da açıkça görülmektedir. Nitekim bu değişimin sosyoloji gibi tümcü sistematikleri önemli ölçüde etkilediği gözlenmektedir. Yapısal bozulma dönemi (Sanayileşme ve Fransız Devrimiyle) ile birlikte önemli yer alan sosyoloji ve dilbilim gibi bilimlerin krallığını sona erdirdi[197]. Batı klasik modern öğretilerle küreselleşmenin sonuçlarını toplamakta güçlük çekeceğinin farkındaydı. Bu yüzden de daha pratik, yaygın, esnek kısmen de kaotik saptamalarla yol bulmaya çalışmaktadır. Stratejilerini besleyen makro, uzun vadeli enstantaneler yerine gündelik kullanıma ait entelektüel beyin fırtınaları daha cazip olmaya başladı. Buna bağlı olarak bilimsel analizler çok kolay bir biçimde talk-show programlarında yer alma imkânı bulabilmektedir. Kavramsal gerçekliğin bu süreçte yeniden üretilmesi, kültür endüstrisi çerçevesinde gerçek bir kültür olmaklığı yok etmiştir[198].

Bu sürece bağlı olarak simgesel olarak farklılaşan ancak diğer tüm yönleriyle benzeşen karşıtlık ilişkisi üzerinden daha çok yıkıcı bir kimlik anlayışıdır. Nihayet sürecin çok önemli başka bir boyutuysa Baudrillard'ın tespit ettiği "simülasyon çağında" gerçekte ne bir öznenin ne de bir kimliğin mümkün olamayacağı bir yabancılaşma biçiminin yaşandığıdır[199].

Gerçekte kültür sanayisi modernitenin mekanikleştirici ve indirgemeci bütününden doğmuştur. Haidegger sanayi toplumunun insanlığı getirdiği bugünkü noktayı şu acımasız ifadelerle eleştirmektedir: Endüstri toplumu, başlı başına öznelliktir. Tüm nesneler bu özneye göre düzene sokulmuştur. Endüstri toplumu kendi tüm nesnelliğinin sorgusuz sualsiz tek ölçüsü durumuna gelmiştir. Endüstri toplumu kendi yarattığı kapatılmışlık içinde var olmaktadır[200]. Böylece aydınlanmanın eleştirel aklı yerine bilinçten yoksun bırakılmış bir toplumsal dönüşümden

[193] Öztürk, İmajoloji, İstanbul, 2008.

[194] Wernick, 1996, 60-71.

[195] Kearney, 1988

[196] Öztürk, 2008.

[197] Armond Mattelart, **Beyin İğfal Şebekesi**, s. 258.

[198] Öztürk, 2008.

[199] Jean Baudrillard, **The Consumer Society**, SagePubkications, London, 1998, p. 188.

[200] Martin Haidegger, **Teknik ve Dönüş**, Çev. Necati Aça, İstanbul, Bilim Sanat Yayınları, 1998, s. 23.

bahsedilebilir. Modernitenin en önemli savı olan özgürlüğün kaynağı "özgür irade", bu büyük yeni üretim biçimi kanalları arasında körleşmektedir. İşte bu süreç modern insanın sistem ve ekonomi üzerinden tanım bulan ilgisini kültür ve yaşamsallık üzerinden eleştirilmesine dayanaklar üretti. Nitekim Batılı düşünürler ve okulları "endüstri toplumu" başta olmak üzere Bell ve arkadaşları; "sanayi sonrası" toplumu, Frankfurt okulu bünyesinde "endüstri kültürü"[201]Baudrillard "simülasyon toplumu', "tüketim toplumu", ve birçok düşünür "bilgi toplumu", "kitle toplumu" ve postmodern toplum" gibi yeni tanım alanıyla klasik moderniteden yollarını kısmen ayıracak eleştirel savlar geliştirdiler.

Batıda yaşanan ve her şeyi metalaştıran bu sürecin gerçekte modernitenin savlarına tam olarak aykırı olduğu iddia edilemez. Nihayetinde indirgemeci ve araçla yol bulan insanın yeni macerasına işaret eden bir süreçtir. Gerçekte modernitenin ilk hallerinin daha mitolojik söylemlerle yol bulduğu dahi iddia edilebilir. Belki de büyük paradoks modernitenin ilk halleri geleneğe ait ya da metafiziki olarak addedilen unsurları neredeyse mistik ve metafizik bir formla eleştirirken, post-durumsal söylemlerin geleneksel ve mistik unsurları oldukça şeyleşmiş ya da maddeleştirilmiş bir formda savunduğu gözlenmektedir.

Toplumsal ilerlemede teknik, amacın önüne geçmeye başladıkça değerlerin yerini roller almaya başlıyor. Değerlerin yitiminin sağduyunun yetimini de beraberinde getirmesi kaçınılmaz bir süreç olarak karşımızda duruyor. Yenidünya bize statü ve rolün toplumsal hayatı belirleyen temel şey olduğunu söylüyor. Rol ve statü öne çıkınca o da kendine özgü değer dünyası inşa ediyor. Doğal olarak bu yeni yol imaj yoludur. Buna baplı olarak gelişen imaj oluşturmacılığı veya yapıcılığının profesyonel seviyede işin uzmanları tarafından icrasının yanında; artık insanlar da adeta sözden tasarruf ediyormuşçasına, insanlar arası ilişkilerinde imajlarını konuşturmaktadır. Neredeyse, imaj, çağdaş insanın kartviziti durumuna dönüşmüştür[202]. Böylece soyut düşünmede tutarlılık önemli bir done iken bu yeni soyutlamalar tutarlılığı tarazlıyor. Çünkü artık önemli olan gösterge sayısını artırmaktır. Bu da Baudrillard'ın ifadesiyle diyalektiği yok ediyor ona göre "simgesel evrende diyalektik diye bir şey yoktur[203]"

Bilgisayarlaşma süreci, çizgi film, reklamsal anlam göstergelerinin temel oluşturması, birçok yapıda değişim meydana getirdiği gibi eğitim ve öğretimde de yeniden şekillenmeler doğuracak ve bu çerçevede bilgi özne-nesne ve şey ilişkisinin sorumluluk ve insansal oluş temelinden eğlendirici bir figürasyon evrimine uğradığını daha yakından hissedeceğiz. Belki de artık sınıftaki bir ders ile talk-showlar arasındaki fark kurumsal mekandan başka bir ayrıklık içermeyecektir. Soyut düşünme ve sorgulama biçim ve içerikleri hazır imajsal argümanlara ve grafiklere yerini tamamen bırakacak gibi görünmektedir. Bu da adalet, eşitlik, ahlak vs. gibi insanın sağduyusuna karşılık gelecek temel ve olmazsa olmaz kavramların hayatımızdan hızla çıkıp gitmesine sebep verecektir. Yeni yetişen kuşak için birer nostaljik eğlence argümanlarına dönüşeceklerdir. Daha acımasız olanı ise, insanlar kahkahalar atarak izleyip eğlendikleri dizilerdeki *eğlence kurbanı insanların* aslında kendileri olduklarının farkına bile varamayacak, roldeki kahramanın kendisi olmadığı için de ayrıca üzülecektir. Negatif alanın negatif düzlemdeki paradoksu insan holist seriminin neresinden neşet buluyor; bu ciddi bir araştırma konusu olarak açığa çıkmaktadır[204].

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[201] Douglas Kellner, SocialTheoryandCulturalStudies,**SociologyAfterPostmodenizm**, London, Sage Publications, 1997, p. 141.

[202] Açıköz, M., Etkili İletişim, Elis Yay., Ankara, 2005: 118

[203] Baudrillard, 2002: 30

[204] Öztürk, 2008: 112

Modern dönemde eğitim tek kanaldan fakat çok elden; sanayinin üretilmesine ve merkezi topluma adaptasyona veya muhalefete yönelik bir hamle iken, II. Modern dönemde eğitim, tek elden fakat farklı kanallardan; psişikleştirilen değerlerin dinamikleşmesine yardımcı olan ya da bu süreçte farklı tarafların oluşturulmasına yönelik bir rekabet alanı olarak tezahür etmekteydi.

Kültür ayrım ve benzerliklerin ayırt edici doneleri olarak, sosyal hayatın biçimlerini ve medeniyetleşme serüveninin formunu etkileyen temel doneler şeklinde tezahür ettiklerine tanık olunmaktadır. Kutsalın açılımının eylemsel düzeyde muayyen ritlere dökülmesi onlara ikonografik ve imajsal bir yüz kattığı söylenebilir. Fakat kutsalın içkinliği imajsal bir içerik ile anlaşılamaz, onun somutlaşmış kimliksel açılımları bu düzlemde değerlendirilmek durumundadır[205].

Tüm bu gelişmeler gerek eğitim kurumları gerekse müfredat ve gerekse eğitime konu olan tüm bireyleri yeni düzenekler üzerinden sistematize etmektedir. Öncelikle bireyin eğitimden beklediği en büyük şey hikmet ve tecessüsüne karşılık gelecek ilmi arayışlar, medeniyet ve kültürüne intisab edecek kültürel ve ahlaki donanım ve kişisel menkıbesinden sıçrama yaratabilecek entelektüel arayışlarına bir cevap bulmaktan çok sertifkasyon ve mekanik sosyo-kültürel ağlar içerisinde pür-pragmaya dayalı gelecek kaygısıyla mücehhez olunan bir mekanizmayı örgütlemektedir. Modern devletlerin inşası esnasında katı ve hantal ideolojik paradigmaların kurbanı olan eğitim mekanizmaları insanın tabii arayışlarına cevap bulacak mekanizmalar kurmazdan hemen evvel günümüz post-modern ve küresel araçlar üzerinden pazara dönük tüketici aklın bir parçası haline gelmiş durumdadır. Bu sosyo-politik gerçeklik tercih edilse bile asıl sorun teknik mekanizmadan kaynaklanan sığlaştırıcı ve sıradan çoğaltıcı yeni paradigmalara imkan tanımayan mekanik bir bilgilenme biçimine yol açmasıdır. Örneğin bir tıp öğrencisi bir hastalığın tüm komplikasyonlarını deneyimleyecek bir birikimle yorumlama yolunu seçmek yerine sıradan bir grafiker gibi ışık oyunlarına bağlı olarak oluşmuş birtakım göstergeler üzerinden teşhisler koymayı daha gerçekçi bulmaktadır. Kuşkusuz bu öğrenme veya araştırma biçimi yadsınacak veya dışlanacak bir biçim değildir. Ancak kastedilen sadece yardımcı bir unsur olacak bir mekanizmanın hemen hemen tek yol olarak anlaşılması ve yaygınlaştırılmasıdır.

Sonuç

Eğitimin işlevlerinden biri de elbette yeni gelişmelere uygun araç ve imkanlar geliştirmektir. Ama bunu yaparken kendi köklü işlevinden tamamen koparak araçsal aklın bir aracı haline gelmemelidir. Eğitim öncelikle insanın erdem arayışını ve ulvi süreçlerinin birer yansıması olarak hizmet görmelidir. Ayrıca medeniyetimizin taşıyıcı rolünü unutmamalıdır. Yeni gelişmelerle birlikte bireyin kişisel menkıbesine katkılar veren imkanlara da yol açmalıdır. Bu da tek başına teknolojik indirgemeci kaynakların kullanımıyla imkansızdır. Teknolojinin amaç haline getirildiği bir uygarlığın insanlığa mutluluk getirmesi de tek başına mümkün değildir. Bu da bazı göstergelerin araçlarını kavrayan okuma biçimleriyle olmaz. Bununla birlikte muhakeme eden duyarlılık gösteren, krite eden, hikmeti önemseyen, değerle bilgi arasındaki ilişkiyi koparmaksızın bilginin ahlakiliği üzerinde titreyen bir mekanizma ve duyarlılık ile mümkündür.

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Young Malaysian Children's Silence in a Multicultural Classroom

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Abstract
In a multicultural classroom, second language learners' silence has always been related to the lack of understanding the target language or psychological or linguistics withdrawal. However, the findings of the study reported in this paper presented a different explanation. The study employed an ethnographic case study research design exploring the second language acquisition experiences of three six year old Malaysian children who were attending a mainstream multicultural classroom in the United Kingdom. Data were gathered through interviews with the children, their class teacher and their mothers. Classroom and home observations were also carried out as a means of triangulation. Findings from the teacher and parents' interviews illuminated that the silence was due to cultural practices as well as a display of personality. Meanwhile the children's responses as well as observations of their behaviours indicated their silence as a coping mechanism in their language learning process as well as their way of expressing their identity. This implies that teachers of multicultural classrooms need to understand and be aware of the different meanings of silence and be better prepared in dealing with children from different cultural backgrounds.

Keywords: Silence • Multicultural Classrooms•Young Malaysian Children•Identity•Ethnographic Case Study

INTRODUCTION

Silence in classrooms among second language learners are always related to the lack of understanding the target language or psychological or linguistics withdrawal [1]. However, studies also provide culturally related explanation for silence in multicultural classrooms [2; 3]. More recent study illuminated silence as the result of increasing student diversity which caused learners to develop identity in the learning process [4]. These different explanations have an impact on the role of teachers in multicultural classrooms as they now need to be aware of the cultural differences and how these would affect the students' behaviours in the classrooms. It also has impact on the training teachers need to have prior to teaching in a multicultural classroom.

However, according to reviews of research on preparing pre-service teachers to work with diverse students, the cultural gap between teachers and students is growing [5; 6]. This is because pre-service teachers come to multicultural classrooms with little cross-cultural experience and knowledge and tend to have limited visions of what multicultural teaching entails [6].

This phenomenon underpins the purpose of this article which aims to explore what silence in a multicultural classroom means to three young Malaysian children who were experiencing acquiring English as their second language. It illuminates a better understanding of what silence means in a multicultural classrooms from the perspectives of three young Malaysian children aged six, their mothers and teacher. This paper also discusses other studies conducted on students from various cultural background to see what silence means to the different cultures. This paper also provides pedagogical implications for teachers of multicultural classrooms.

MULTICULTURAL CLASSROOMS AND DIVERSITY

A multicultural classroom not only blends students from various countries but also creates a learning environment in which culture is defined by a myriad of things [7]. Although culture generally focuses on ethnicity, diversity can be defined by numerous student characteristics and other factors related to learning. These factors include ethnicity, place of birth, immigration status, age, gender, lifestyle, and educational and career background. These contribute to the cultural diversity in multicultural classrooms.

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Diversity does not exist if all students represent the same background, regardless of the background. In addition, diversity also requires children to cope in a different school environment which may affect their socio-emotional conditions. In other words, children in a multicultural classroom are not only learning new subjects, but they must also acquire the language of instruction; not only for learning purposes but also for communicating and interacting with their peers and teachers. Both tasks are not easy because when the children enter their classroom, apart from their cognitive ability, they also bring along their own language or mother tongue, learning styles, attitude and many other social cultural variables that will have an impact on their learning process in general and language acquisition process specifically. This often ends with children not participating in the communication or learning process. In other words, they become quiet or silent. However, does this mean that they do not understand what they are doing or learning? Or are they not interested in the learning process? Another important aspect is how to manage this silence and maximize its effects on learning? This means that teachers need first to understand what silence means to these diverse learners.

UNDERSTANDING SILENCE

Studies conducted on second language learners from various cultural backgrounds indicate the existence of different uses of silence; that, the use of silence may be differently interpreted in an EFL context [2]. This study on the use of silence among Japanese learners learning English as a foreign language (EFL) illuminated the use of silence for deep thought. While among Chinese students, silence has been associated with the classroom communication behavior of Chinese students studying in American universities [3].

A multi-case ethnographic study on 20 Asian graduates from China, Hong Kong, Taiwan, Korea, Japan and Indonesia revealed that these students' silence were related to five different categories of factors, respectively: cognitive, pedagogical, affective, sociocultural and linguistic [3]. This implies that the linguistic factor is not the most significant factor leading to their silence. It also implies that silence may be a part of their learning style which will have an impact on teachers' teaching style. The match between these two is vital as studies have shown that learning takes place much better if students' learning styles match teachers' teaching styles.

The question now is how a students' learning be enriched with this knowledge and the understanding of silence. The final decision is to what extent and how negotiation between learners and teachers in terms of learning style, teaching style and methods, itself needs to be negotiated in each learning circumstances. It is valuable to be flexible and open to appreciate good aspects of our own and others through the negotiation between learners and the teachers. Also, this is not a matter of winning or losing a better position. Both learners and the target cultures' identity and the way in which people express themselves should be respected in a culturally sensitive way.

Another challenge in managing diversity is related to teachers' readiness or preparedness in dealing with diversity in multicultural classrooms. A review of literature on teacher education for multicultural education reveals that despite the changing demographics that make public schools more culturally and linguistically diverse and the growing body of knowledge on issues of diversity and difference, multicultural teacher education continues to suffer from a thin, poorly developed, fragmented literature that provides an inaccurate picture of the kind of preparation teachers receive to teach in culturally diverse classrooms [5].

As student diversity in the classroom increases, it is imperative that teachers use a variety of teaching methods. Hence, it is recommended that diversity be conceptualized as comprising three main components: input, process, and output. Input refers to the student's background, or what the student brings to the educational setting [7]. Process refers to the educational setting or learning environment where learning is maximized. The interaction of input and process leads to output, measured by student success. Similarly, [8] illuminated the important role of teachers in designing and monitoring learning activities for culturally diverse groups that are perceived as personally rewarding, academically enriching, and professionally relevant.

This could best be achieved by deliberate efforts to constructively capitalise on cultural diversity for raising students' awareness of future workplace demands and by embedding the relevance of intercultural competencies in the context of prospective professional practice. Group learning activities that incorporate cultural dimensions of the professions and that are carried out with continuous, structured teacher support are expected to lead to positive, secure, and rewarding experiences for all students involved. As part of regular teaching, teachers need to be sensitive to and prepared for potential challenges arising in culturally diverse group work.

MATERIAL AND METHOD

The purpose of the study discussed in this paper was to explore young Malaysian children's experiences acquiring a second language; that is English. Three research questions underpinned the whole study. This paper however, presents the findings and discussion on one of the findings related to the first research question: How do young Malaysian children experience Second Language Acquisition in the U.K? This study was qualitative in nature and employed an ethnographic case study design.

An ethnographic case study enables knowledge to be obtained through encounters with the subjects and their views and behaviours are continuously being interpreted to give meaningful explanations [9]. The techniques of data collection in this study were interviews and observations. Three children aged six named Azlan, Hazwan and Aida (pseudonyms), their class teacher and the children's mothers were interviewed and tape recorded. The children were also observed at school and home. All adult participants had given a written consent and their identities were kept anonymous. Parents' consent included their children's participation in the study.

There were three phases of the data collection in a six months time frame. A total of 27 interviews (3 interviews with each adult participant and 4 interviews with each child, and 3 group interviews), 19 classroom observations and 12 home observations were carried out. Copies of the transcriptions were given to the adult participants for correction or addition of information. This was to ensure clarification of what the participants had said during the interviews and to show the interpretations made in deriving the themes which represented the concept or idea that the parents conveyed. Transcriptions of the children's interviews were also given to the parents as a means of validating the children's responses because the children would not be able to remember what they said. The children's responses or answers would indicate the children's perception which the parents would expect of their children. All the transcriptions were analysed according to the principles of grounded theory through constant comparative analysis to derive themes and categories.

The study was conducted in a mainstream elementary school in Devon, United Kingdom. According to the school's population analysis taken in the 2004/2005 session (the time of data collection for the present study), there were 264 children enrolled at St. Peter's Church School. 60 (15%) were non-English as their first language pupils. Some of these children were local families who have come from Vietnam, China, India, Pakistan or the Caribbean. There were also children whose parents were postgraduate students or lecturers at the university such as the children from Malaysia, Iran and Egypt [10] The variety of student backgrounds indicates that the school had its own 'unique' learning context and the children were familiar with cultural and language differences. Meanwhile, the composition of the pupils in the classroom involved in this study was 22 pupils with English as their first language pupils and 11 with English as An Additional Language (EAL) pupils. The EAL pupils were 3 Malaysians, 3 Indians, 4 Iraqis and 1 Japanese pupil.

RESULT AND DISCUSSION

Data from the interviews with the children, their mothers and teacher as well as observations of the children's behaviour are presented in this section and discussed in relation to understanding why these three Malaysian children were silent in their classroom. The observed behaviour such as being quiet, not participating actively or not raising their hands to respond are interpreted as them being 'silent'. These responses and observations were coded as 'characteristics' which was also related to diversity and cultural differences.

According to the teacher, Mrs. Smith (pseudonym), the children "… *are quite reserve… they don't always have their hands up …they tend to understand before they speak … they haven't got the confidence to speak out or to put it in any sentence … this is about confidence in large group… I still wonder if it is a cultural thing, compared to the Iranian who are extrovert and loud all the time … the Malay children are very polite, very considerate … conscientious in their presentations…*" (Interview Teacher Phase 1).

This reflects the teacher's perception and observation that the Malay children may not behave as actively as indicated by them not raising their hands to volunteer answers. Although she believes that this may be due to the children's lack of confidence or attempt to make sense before they speak, the teacher felt that it may be also be a cultural driven behaviour. This is because she compared the Malaysian children's behavior with the Iranian children whom she observed were more extrovert and loud. Also she felt the Malaysian children may be quiet because they

were being polite and considerate. This indicates that the teacher was observing and comparing the children's different behaviours to understand why and how silence may take place. It would be easier for her to understand had she been given the training or knowledge on how children from different cultures behave as well as knowledge on what to expect of them.

As responded by the teacher that she received *no specific training* and that her knowledge was gathered *a lot from experience* (Teacher interview Phase I). Nevertheless, she also admitted that she received *support from teachers and advisor* (Teacher Interview Phase I), From her experience, she concluded that there is a need to have *a good relationship with the children, knowing a bit more of the background of the children because* if [we] know, [we] can see why [the children] are making the error. The teacher also felt that there should be *more dual language text* to help the children in their learning. The teacher's concern was however on the *need to know the difficulty ... is it learning difficulty or language difficulty* (Interview Teacher phase 3). The teacher also described what she did in teaching English to the culturally diverse children in her classroom, She [did not] *have a formal grammar lesson*. However, she used *visual materials, things around the room* and illustrations of pictures – *the words next to the pictures*, *more practical thing ... encourage speaking ... through role play and classroom assistants' model conversations*. These show that a teacher needs to be creative and sensitive teaching multicultural diverse learners.

Meanwhile, according to Azlan's mother, *when the first few months in nursery ... [Azlan] just kept quiet, he just listened... he looked at how people talk... from there he became brave to ask .. he started to practice*. This was interpreted as Azlan's way of trying to make sense of want he was listening. He was actually observing and listening and 'silently' learning and acquiring the language. His mother felt that he started participating or using the language when he became more confident. Perhaps because then Azlan's repertoire of the language was then to him large enough that he was brave enough to participate.

Hazwan's mother on the other hand said that Hazwan *likes to think... he is the type who observes and then thinks back... he will think and then he can do it...* She also felt that Hazwan was quiet in the class *because that's their (L1 students) language... they* (Malay children) *would let others answer the question or respond... they* (Malay children) *do not want to compete.* This shows that Hazwan's mother felt that her son's silence was more related to his characteristics of being observant; not that he was not understanding or not wanting to participate. Similarly, Aida's mother said that Aida *is not a talkative child* but she is *interested in learning English.* Hence, Aida was observed to be very quiet in the class during the lessons.

It may be concluded that the children's mothers felt that their children were quiet and it was not an indicator of them not understanding but as their way of dealing with the learning environment as well as a display of their characteristics. Nevertheless, not raising hands or not being actively participating in classroom discussion is a common scenario in Malaysian as well as other Asian classrooms. The children's responses also indicate similar beliefs. Both Azlan and Hazwan said that they would just *follow what they* (his friends) *do* and *watch teacher first* (said Aida). Interestingly Aida also said *I don't know what that mean ... I don't put up hand.*

When observed, these Malaysian children were quiet in comparison to the other children with English as their first (L1) or another language (EAL). They volunteer less in terms of raising their hands to answer questions. When asked, Hazwan said that he did not put up his hands because *somebody else answer*. There were also instances where he wsas observed whispering answers to Azlan to answer. However, the teacher said that she had *to ask them quite direct questions... address specifically to them* if she wanted these Malaysian children to participate. These responses and observations indicate that the children were silent and the teacher as well as the children's mothers understood this behavior and did not have any negative interpretations. They understood the children's silence.

One interesting finding was of the school observation. It was observed that there were attempts to make the school and all its pupils receptive of other mother tongues by having names of rooms written in English and Arabic (the majority of the children with EAL had Arabic as their mother tongue). The school also employed a Pakistani lady to work as a dinner lady. The
children with EAL were allowed to speak in their mother tongue at school. These were attempts made by the school to create an environment that is familiar and non-threatening to the children. They will feel comfortable as there are many people of different cultural background that are accepted and welcomed in the school. Hence the children will not feel afraid to participate in the classroom as well as the school's activities and no longer be silent.

All these created an environment that was 'friendly' to the children with EAL. The environment also enabled children with English as their mother tongue to be familiar with different cultures and language. This situation reflects the first form of provision mentioned by [11] who identified three potential forms of provision made by local authorities and schools for EAL learners. These forms may be found either exclusively of one another or combined in different ways within a school. The first form is by supporting language awareness in multilingual classrooms. This is where attempts are made to make the school and all its pupils receptive to the various mother tongues the children bring to school. The second form is through community language teaching. This is where the school sets up classes in the languages shared by a certain percentage of pupils within the school and local community. The third form is through bilingual support for curriculum learning. This means that children with English as an additional language have full access to the curriculum through bilingual support to enable them to draw on their full linguistic competencies in the development of their cognitive concepts and knowledge of the different subject areas of the primary education.

CONCLUSION AND IMPLICATION

In conclusion, based on the qualitative data gathered through this ethnographic study, silence in a multicultural classroom carries different connotations for these young Malaysian children, their mothers as well as their teacher. This finding further supports that silence is culturally related – perhaps an identity of the Asian identity. Nevertheless, silence is not perceived as a negative impact or an indicator that the children were not learning or acquiring the language. It shows that they were actually learning or acquiring the language 'silently'. What is more important is that teachers need to understand this and find means to enhance their students' learning experiences. This includes creating a classroom environment that fosters respect and welcomes diverse viewpoints. Parents as well as other members of the schooling community too should understand the diversity in multicultural classroom and support the growth and development of all learners in the classroom. One significant implication is that teachers should be aware and understand the different meanings of silence as perceived by different cultures. This also means that teachers teaching in multicultural classrooms should be prepared and trained to manage these differences. Hence, teacher training should include multiculturalism not as an aspect of differences but rather as a means to manage the differences. More studies from a cultural lens should also be conducted to illuminate other learning aspects that are interpreted differently across cultures.

ACKNOWLEDGEMENT

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Using Eye Tracking Method and Video Record In Usability Test of Educational Softwares and Gender Effects

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Abstract

The research examines the usability of gender factor which is important in educational softwares. Math educational software is used in the research and software's level is primary education. Used method in the research is case study with eye-tracking and video record. Eye- tracking technology, screen captures, mouse and keyboard movies and one-way mirror observation used in the research. While students doing their task the application area, students behaviors have been recorded by camera. Study group is consist of six primary education's student. This student's eye movements to be examined while they used the software. The areas are defined where the students looked the longest and the most frequent in the educational software's interface. Heatmap, scanpath and fixation count analyzes are used in the research. Usability researches which used eye-tracking method are limited in Turkey. This research will contribute the literature for developing primary educational softwares. Findings to be discussed and overtured for the educational softwares.

Introduction

Features such as "configurability to facilitate learning" and "quality of software" provide usability (user-friendliness) to educational software. Usability in this context can be defined as easy and effective performance of tasks specified in an application by users defined as target group, under suitable environmental conditions, following provision of required training and technical support. In practice, usability can be defined in terms of measurement of efficiency, effectiveness and satisfaction levels shown by users in the target group, while performing the tasks assigned. Effectiveness reflects the extent of success achieved by users in performing tasks using the application, and in this sense, effectiveness can be measured as the percentage of ability to perform a task. For instance, if the task expected involves finding the location of specific information on a webpage, effectiveness can be expressed in terms of user's success achieved in finding the correct information. Measurement of effectiveness is not alone sufficient to evaluate usability. Other sources (time, cost, etc.) used for performing a specified task are evaluated by measuring the efficiency. In the webpage example, efficiency can be measured by the time spent or by the ways followed by a user to perform a given task, or by the total number of steps taken to complete the task, etc. Satisfaction is the measure of opinions developed by users while using the application (e.g. likes, dislikes, etc.). Satisfaction does not have a critical importance with respect to usability at the same level as the efficiency and effectiveness; it is directly affected by efficiency and effectiveness. Satisfaction can be measured using satisfaction questionnaires prepared for this purpose(Çağıltay and Others, 2006).
According to Nielsen (1993) usability has five attributes:
Learnability: How easy is it for users to perform simple tasks at their first sight of the design?
Efficiency: Once they learn the design, how fast do users perform the tasks?

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Memorability: After some time away from the design, how easily do users use it once they return to it?
Errors: How many mistakes do users make and how easy is it for them to recover from mistakes?
Satisfaction: How much does the design satisfy users?

Methods of measuring usability as seen in the literature include Think Aloud, Cooprative Evaluation, Protocol Analysis, Automated Analysis, Interviews, Questionnaires, Eye-tracking, and Psychological measurement.

Eye-tracking method stands out in that data are obtained from the primary source. Like the example of recording movements of eyes during reading, the eye-tracking method has been used in the field of psychology for approximately 100 years(Schiessl and Others, 2003). This method has been utilized in usability researches conducted on information sharing interfaces such as the Internet, e-mail and video-conference, etc. since the 1990s in the field of human-computer interaction(Benel , Ottens & Horst, 1991; Ellis ve diğerleri, 1998; Cowen,2001). Objective and quantitative data related to how long users look at the target can be obtained utilizing special state-of-the-art devices designed to track the movements of the eyes(Duchowski, 2002). Movements of the eyes provide information as to where individuals focus their attention, what information they disregard, what they are disturbed by the most, etc(Russell, 2005). When the usability studies conducted using eye-tracking method in the literature are examined, one can see many usability studies conducted in many fields such as webpage use, evaluation of the university websites, computer games, and TV programs, etc(Çağıltay and Others, 2006; Byerly, 2007; Russell, 2005). However, there are no studies conducted on usability of educational software, utilizing the eye-tracking method. This study aims to assess usability of Primary Education seventh-grade mathematics course software based on the gender factor, using the eye-tracking method, and to contribute to the literature in this context.

Within the scope of this study, usability of primary education seventh-grade mathematics course software was evaluated based on the gender factor. Answers to the following questions were sought:
1. "Do the scanpaths involve differences, when the gender factor is considered in educational software?"
2. "Do the heatmaps involve differences, when the gender factor is considered in educational software?"
3. "Do the fixation counts involve differences, when the gender factor is considered in educational software?"
4. "Do behaviours involve differences, when the gender factor is considered in educational software?"

Method

Case study was used as the research model in this study. Qualitative and quantitative data collection methods were used concurrently. Quantitative data obtained from eye-tracking processes were used together with the empirical qualitative data. Movements of the eyes of the subjects were recorded during performance of two tasks assigned. After recording the subjects' experiences with the educational software, the eye movements of the subjects were analyzed using the SMI software, and the findings and results are provided in the study.

The study group consisted of primary education students. The study covered six primary education students in total. Written permissions of the guardians of the students were obtained. All participant students had minimum 2-year experience in using computers. The study was conducted at the Human-Computer Interaction Laboratory (HCI Laboratory) of the Marmara University Ataturk Faculty of Education, Department of Computer and Instructional Technologies. The HCI Laboratory is equipped with cameras, eye-tracking devices, test computers, observer computers, observer room, control unit, microphones and amplifier, sound mixer, and sound insulation.

Findings

Subjects used within the scope of the study consisted of three male(subject 1-2-3) and three female(subject 4-5-6) students. Scanpaths of the subjects were recorded and screenshots were captured within the scope of the question "Do the scanpaths involve differences, when the gender factor is considered in educational software?".

Tasks assigned to the subjects were to "quit the test" and "quit the software" . Findings relating to the scanpaths of the six subjects were as follows.
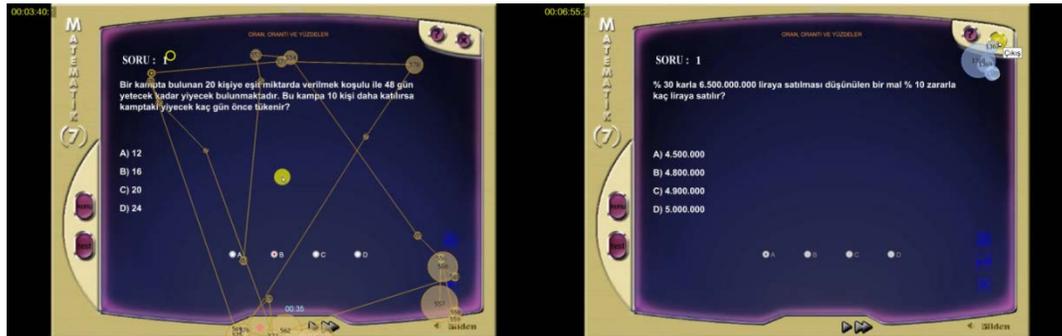
Figure 1. Subject 4 scanpath figure about "quit the test" task and Subject 3 scanpath figure about "quit the software" task

The following findings were made when the scanpath results for the "quit the test" task were analyzed:
- The Subject 1 looked at the test button, answer card button, and quit test button respectively.
- The Subject 2 looked at the answer card button, test button, quit test button, page change buttons, and quit test button respectively.
- The Subject 3 looked only at the quit test button.
- The Subject 4 looked at the question field, company logo, quit test button, page change buttons, and question field respectively.
- The Subject 5 looked at the answer card button, quit test button, and answer buttons.
- The Subject 6 looked at page change button, quit test button, answer card button, company logo, page change buttons, answer choices, question field, and help button respectively.

The following findings were made when the scanpath results for the "quit the software" task were analyzed:
- Subject 1, Subject 3 and Subject 4 looked only at the quit software button.
- Subject 2 looked at the subject - test buttons, and the quit software button respectively.
- Subject 5 and Subject 6 looked at the answer choices and the quit software button.

Heatmaps of the subjects were recorded and screenshots were captured within the scope of the question "Do the heatmaps involve differences, when the gender factor is considered in educational software?".

Tasks assigned to subjects were to "quit the test" and "quit the software". Findings relating to the heatmaps of the six subjects were as follows

Figure 2. Subject 6 heatmap figure about "quit the test" task and Subject 3 heatmap figure about "quit the software" task

The following findings were made when the heatmaps results for the "quit the test" task were analyzed:
- Heatmaps of the Subject 1 concentrated on the test button, answer card button and quit test button.
- Heatmaps of the Subject 2 concentrated on the answer card button, test button, quit test button, and page change buttons.
- Heatmaps of the Subject 3 concentrated only on the quit test button;

- Heatmaps of the Subject 4 concentrated on the question field, company logo, quit test button, page change buttons and question field.
- Heatmaps of the Subject 5 concentrated on the answer card button, quit test button and answer buttons.
- Heatmaps of the Subject 6 concentrated on the page change buttons, quit test button, answer card button, company logo, page change buttons, answer choices, question field, and help button.

When the heatmap findings relating to the "quit the software" task were analyzed, it was seen that the heatmaps of the Subject 1, Subject 3 and Subject 4 concentrated only on the "quit software" button; heatmaps of the Subject 2 concentrated on subject-test buttons and exit software button, and the heatmaps of the Subject 5 and Subject 6 concentrated on answer choices and exit software button.

Fixation counts of the subjects were recorded and screenshots were captured within the scope of the question "Do the fixation counts involve differences, when the gender factor is considered in educational software?".

Tasks assigned to the subjects were to "quit the test" and "quit the software". Findings relating to the fixation counts of the six subjects were as follows.
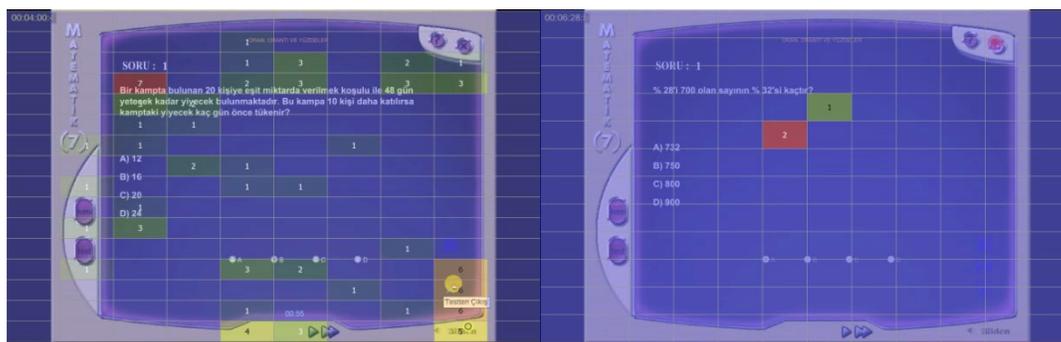
Figure 3. Subject 4 fixation count figure about "quit the test" task and subject 1 fixation count figure about "quit the software" task

The following findings were made when the fixation count results for the "quit the test" task were analyzed:

- The Subject 1 focused on the test button, page change buttons, and the answer card button the most.
- The Subject 2 focused on the quit test button, answer card button, page change buttons, test button and answer choices the most.
- The Subject 3 focused on the quit test button, answer buttons, answer card, and answer choices the most.
- The Subject 4 focused on the question field, quit test button, page change buttons, company logo and answer choices the most.
- The Subject 5 focused on the answer buttons, answer choices, and answer card buttons the most.
- The Subject 6 focused on the page change buttons, quit test button, answer buttons, answer choices and the question field the most

The following findings were made when the fixation count results for the "quit the software" task were analyzed: The Subject 2 focused on the question field, subject button, answer choices, answer buttons and the quit button the most; the Subject 3 focused on the question field and the quit button the most; and the Subject 6 focused on the question field the most. The Subjects 4 and 5 focused on the empty spaces of the page during the task.

Videos of the subjects were recorded and grafics were demostrated within the scope of the question "Do behaviors show differences, when the gender factor is considered in educational software?".


Timeline Area

Timeline of Speaking Color
Timeline of Silence Color (pink)
Timeline of Positive Mimic Color
Timeline of Negative Mimic Color
Timeline of Neutral Mimic Color (orange)

Timeline of Inactive Color (green)
Timeline of Active Color
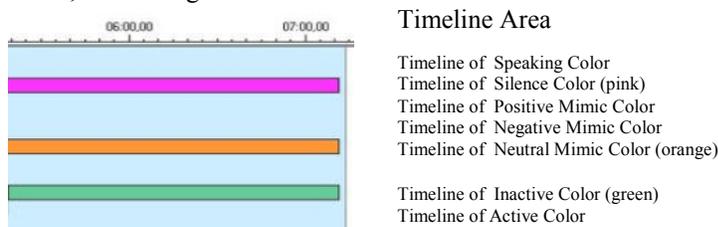
Figure 4: Graphic of Subject 3's behaviors and mimics about "quit the test" task and "quit the software" task

Subject 3 was doing task silence, neutral mimic and inactive. These findings were similar to eye tracking findings.
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Timeline Area

Timeline of Speaking Color
Timeline of Silence Color (pink)

Timeline of Positive Mimic Color
Timeline of Negative Mimic Color (green)
Timeline of Neutral Mimic Color (orange)

Timeline of Inactive Color (green)
Timeline of Active Color (blue)
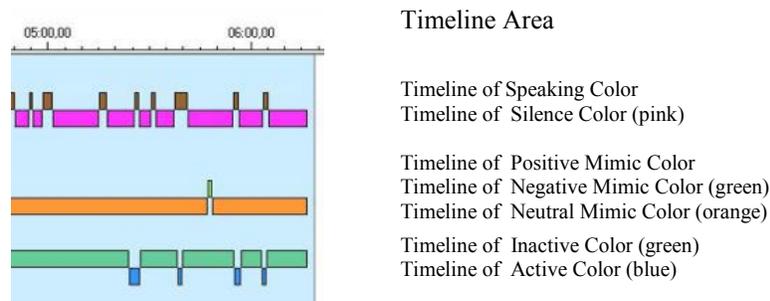
Figure 5: Graphic of Subject 6's behaviors and mimics about "quit the test" task and "quit the software" task

During the task, subject 6 was silent in general; however, she sometimes spoke. She displayed neutral mimic and the body was inactive. These findings were similar to eye tracking findings.

Based on the findings obtained from the eye-tracking method, it was seen that the female subjects' fixation spread over a larger area and that they focused in more details compared to the male subjects. Distribution of the fixation and fixation counts relating to the "quit the test" task, and the heatmap findings relating to the "quit the software" task support the interpretation that fixation of females spread over a larger area and in more details compared to males.

Conclusion

Based on the fixation count, scanpath and heatmap findings of this study, it can be said that females have higher scanpath performance and that their fixation counts spread over a larger area on the page. This finding is similar to the findings of the study conducted by Schiessl et al (2003).

The study revealed that similar symbols used for similar tasks caused confusion. It was noticed from the eye-tracking findings that the subjects tended towards the quit test button that was similar to the quit software button, when they were asked to quit the software on the test screen. Likewise, the subjects tended towards the top right section of the screen, which they considered to be the location of the quit button, when they were asked to quit the software on the test screen. It was seen that past experiences and habits with respect to the design of the educational software influenced behaviors of the subjects. Sennersten (2004) included in his findings the opinion that pre-knowledge and experiences influenced behaviors of his subjects.

Recommendations for development and design of educational software:

- Interfaces can be designed based on the differences in eye-tracking results of different genders. Thus, a different interface can be offered to users according to their gender. This would enable development of more personalized and user-friendly software serving the purpose.

Recommendations to researchers:

- Educational software can be designed based on distribution of fixation between genders. Such software can be studied in terms of usability using the eye-tracking method.
- In educational software or other interactive media environments, fixation times, fixation counts and fixation orders on a number of other objects (graphics, text, animation) can be studied in other dimensions such as age groups, gender, etc.

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Using 5E or 7E Teaching Model as an Instructional Design Model

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Abstract

An instructional design refers to the current plan and procedures for any instruction and serves as a guide helping about the implementation of an instruction. Almost all instructional design models have the same routine with ADDIE process- analysis, design, development, implementation and evaluation. The main goal of the ADDIE instructional design model is to increase the value and efficiency of teaching and training by fitting instruction to jobs while guaranteeing that students learn the knowledge required and get the expertise to do their jobs. 5E model is a helpful framework that guides instructors to provide learning experiences for students which consists of five phases: Engagement, Exploration, Explanation, Elaboration, and Evaluation. In the 5E model, "E" symbolizes every phases of the model. The 7E instructional model which is developed format of 5E instructional model. The proposed 7E model expands the *engage* phase into two components—*elicit* and *engage*. Also, in the 7E model, *elaborate* and *evaluate* phases expand into three components— *elaborate, evaluate,* and *extend.* In this paper, it is suggested that 5E or 7E model can be used as an instructional design model. 5E or 7E teaching model can serve as an instructional design model for future studies conducted in different disciplines. Also, the effects of this type of use of 5E or 7E model can be examined. In conclusion, it is clear that 5E and 7E teaching models are quite suitable for designing the content and the teaching process.

Keywords: Instructional design model, 5E and 7E models

Introduction

An instructional design refers to the current plan and procedures for any instruction and serves as a guide helping about the implementation of an instruction (Baturay, 2008). Reigeluth (1983) defined as instructional design is "a discipline that is concerned with understanding, improving and applying methods of instruction" (p.4). Instructional design is a complex and circular process which is creative and active (Gustafson & Branch, 2002). Many different variations of instructional design models have been described (Dick & Carey, 1996; Kemp, Morrison, & Ross, 1998; Seels and Glasgow, 1998; Smith & Ragan, 1999), however, almost all models have the same routine with ADDIE process-analysis, design, development, implementation and evaluation (Allen, 2006; Baturay, 2008; Gustafson & Branch, 2002). ADDIE is general model for instructional design process also it is not linear, but more of a loop (Özbek, 2009). The main goal of the ADDIE instructional design model is to increase the value and efficiency of teaching and training by fitting instruction to jobs while guaranteeing that students learn the knowledge required and get the expertise to do their jobs (Allen, 2006). The first step of ADDIE model is the analysis phase that is the basis for all other phases (Gillespie, 1998). During this phase, some important areas should be analyzed: identification of instructional needs, recognizing of learner characteristics and capacities, determination of educational goals and purposes (Özbek, 2009). In the design phase, learning objectives and assessment techniques are developed; instructional contents, activities, processes and resources are defined by teachers or designers (Gillespie, 1998). The development phase involves preparing student and instructor materials through the results from the analysis and design phases (Kemp, Morrison, & Ross, 1998). The implementation phase is concerned with delivering of the instruction and achievement of the objectives and goals as a designed previously (Gillespie, 1998). The evaluation

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phase involves both summative and formative evaluations which often appear in various phases of the model (Baturay, 2008). Formative evaluation is used to identify needed revisions of the instruction besides summative evaluation involves collecting data to assess the whole instruction (Gustafson & Branch, 2002).

5E Instructional Model

Constructivism is a dynamic and interactive notion of learning (Ergin, 2012). Based on the constructivist approach, students should construct their own knowledge and understanding by themselves, instead of transfer knowledge to them by teachers. The approach mostly cares about students' real life experiences (İşman, Baytekin, Balkan, Horzum, & Kıyıcı, 2002). In this approach, the use of learning cycle in the classroom helps students redefine, rearrange, elaborate and change their initial concepts through interactions and connect their new knowledge to real-life situations (Bybee, 1997; Duran, Duran, Haney, & Scheuermann, 2011). Constructivist theory can be implemented through many different teaching models or designs, one of these are the 5E instructional model (Ergin, 2012). 5E instructional model grounds on the constructivist approach. 5E instructional model has been modified over time. After the 5E learning cycle model created by J. Myron Atkin and Robert Karplus in 1962 and later modified from the Science Curriculum Improvement Study (SCIS) program in the late 1980s, 5E instructional model was developed as a component of the Science for life and Living curriculum created through the Biological Sciences Curriculum Study (BSCS) (Bybee & Landes, 1990).

In 5E learning cycle, while teacher presents a problem and materials to investigate, students execute their own procedure to solve the problem under the teacher guidance therefore this cycle can be considered like a guided inquiry (Fazelian, Ebrahim, & Soraghi, 2010). 5E model is a helpful framework that guides instructors to provide learning experiences for students (Tanner, 2010). Also, it is the most effective way for engaging students in learning (Ergin, 2012). The 5E model consists of five phases: Engagement, Exploration, Explanation, Elaboration, and Evaluation (Figure 1). In the 5E model, "E" symbolizes every phases of the model. Each phase has a specific function and contributes to the teacher's coherent instruction and to the learner's formulation of a better understanding of scientific and technological knowledge, attitudes and skills (Bybee et al., 2006).
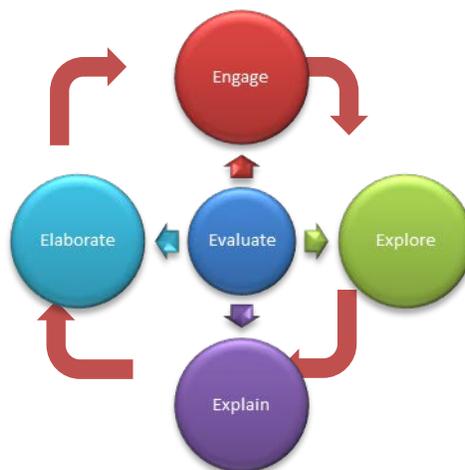
Engagement Phase: The first phase engages students in the learning task (Bybee et al., 2006). In this phase, teacher uses short activities to take attention and generate curiosity about topic of the lesson. The activities should make connections between past and present learning experiences (Bybee et al., 2006). In this way, teacher assesses students' prior knowledge through responses to the questions and helps them to become engaged in new concepts. It also helps students create connections between their prior knowledge and the new learning concept.

Figure 1. 5E model phases (Ergin, 2012)

Table 1. Teacher and Learner Role in Engagement Phase of 5E model (Akar, 2005, p.21)

Teacher	Learner
calls up prior knowledge	poses problems
has an interest	asks questions
experiences doubt or disequilibria	reveals discrepancies
has a question(s)	causes disequilibria or doubt
identifies problems to solve, decisions to be made, conflicts to be resolved	assess prior knowledge

Exploration Phase: While students are engaged in activities and ideas in the first stage, they need time to explore these ideas in this second phase. Students use prior knowledge to generate new ideas, explore questions, and test possibilities (Bybee et al., 2006). Exploration is an opportunity for students to think what they understand or misunderstand in the learning process. Exploration phase involves active participation by students.

Table 2. Teacher and Learner Role in Exploration Phase of 5E model (Akar, 2005, p.22)

Teacher	Learner
hypothesizes and predicts	questions and probes
explores resources and materials	models when needed
designs and plans	makes open suggestions
collects data	provides resources
builds models	provides feedback
seeks possibilities	assesses understandings and processes
self reflects and evaluates	

Explanation Phase: The explanation phase is "to present concepts, processes, or skills briefly, simply, clearly and directly" (Bybee, 1997 p.80). First, students give their own explanation or interpretations which acquire from the engage and explore parts of the lesson after teacher introduces scientific or technological explanations about topic of the study in a direct or formal manner (Bybee et al., 2006). Teacher helps students in understanding the connections between their own explanations and formal facts through uses many multimedia elements (Campbell, 2000). In the end of the phase, students should explain their exploratory experiences with using common scientific knowledge (Bybee et al., 2006).

Table 3. Teacher and Learner Role in Explanation Phase of 5E model (Akar, 2005, p.23)

Teacher	Learner
clarifies understandings	provides feedback
shares understandings for feedback	asks questions, poses new problems and issues
forms generalizations	models or suggests possible modes
reflects on plausibility	offers alternative explanations
seeks new explanations	enhances or clarifies explanations
employs various modes for explanation (writing, art, etc)	evaluates explanations

Elaboration Phase: Students are encouraged to develop broader and deeper understanding and skills, what they have experienced through the above three phases (Campbell, 2000). This phase helps students to transfer of concepts, ideas, explanations or skills to closely related but new situations (Bybee et al., 2006). At this phase, students try to extend the concepts which they already learned before also make connections to other related concepts and apply their understanding on real-life situations. Moreover, students apply elaboration strategies to ask questions, solve problems, projects, experiments and make decisions (Akar, 2005).

Evaluation Phase: Although informal evaluation can be occurring throughout the 5E sequence, this phase especially involves formal assessment (Bybee, 1997). Teacher evaluates students' progress toward achieving the learning outcomes and can complete the formal assessment after the elaboration (Bybee et al., 2006). Evaluation phase encourages students to assess their own progress. In this phase, alternative evaluation techniques can be used

such as performance evaluation, portfolio, concept map, structured grid, project, drama, poster, peer assessment, and individual assessment (Turgut & Gürbüz, 2011).

7E Instructional Model

The 7E instructional model which is the developed form of 5E instructional model by Eisenkraft in 2003. Although the basic steps are the same for the theoretical parts of the two teaching models, there might be some differences between the two teaching models based on their uses (Özbek, Çelik, Ulukök, & Sarı, 2012). The proposed 7E model expands the *engage* phase into two components—*elicit* and *engage.* Also, in the 7E model, *elaborate* and *evaluate* phases expand into three components— *elaborate, evaluate,* and *extend.* The transition from the 5E model to the 7E model is shown in Figure 2.
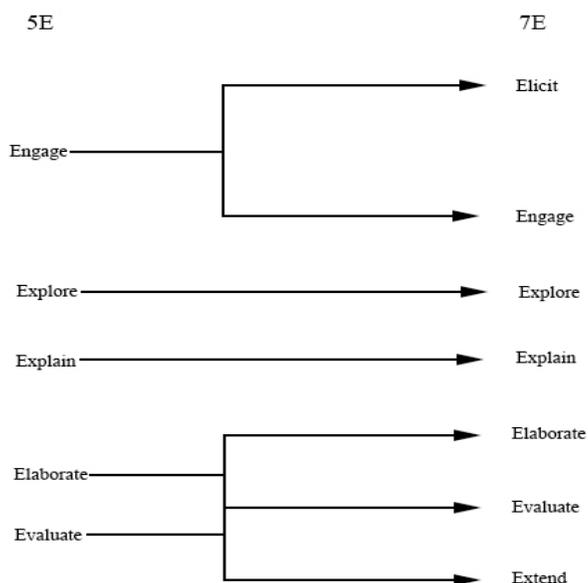

Figure 2. Then proposed 7E learning cycle and instructional design model (Eisenkraft, 2003)

In 7E model, engagement phase does not exchange with elicitation phase and the engagement phase is still a necessary component in an effective instruction. Elicitation is the phase in which the prior knowledge of the learner is elicited through questions and scenarios by teacher (Balım, Türkoğuz, Aydın, & Evrekli, 2012). Students construct new knowledge in relation to existing knowledge, therefore teacher needs to find out existing knowledge in learning process (Eisenkraft, 2003). This phase is helpful to enhance the role of eliciting students' prior knowledge without reducing the engagement phase (Fazelian et al., 2010).

The elaboration phase is called "transfer of learning" in psychology (Thorndike, 1923). The addition of the extension phase to 7E model may encourage students to practice the transfer of learning (Eisenkraft, 2003). In this way, teachers can prepare students to apply their understanding in daily life and adapt their constructed knowledge into other subjects.

Conclusion

In the literature, there are many instructional design models. In the present work, the ADDIE model of instructional design serving as the basis of the design models is mentioned. 5E and 7E teaching models, which are mainly used in science education in recent years (Moseley & Reinke, 2002; Özsevgeç, 2007; Türker, 2009; Temiz 2010; Şahin, 2010) but are not included among these instrucional design models, are presented in this paper. When

the instruction is taught according to 5E model, students activate their prior knowledge, overcome with misunderstanding, and use technological equipment more effectively (Ergin, 2012; Fazelian et al., 2010). Previous studies show that 5E instructional model helps to enhance students achievement, conceptual development and provided positive attitudes towards learning (Bayar, 2005; Özsevgeç, 2006; Sağlam, 2006). 5E instructional model also enhances teachers' classroom behaviors. Besides, it develops students' understanding and achievement (Akar, 2005). When the 5E instructional model is analyzed, it can be concluded that any teaching should have multiple phases and help the instructor build learning environments that are available to all students who may have different learning styles and preferences (Tanner & Allen, 2004). In this paper, it is suggested that 5E or 7E model can be used as an instructional design model. 5E or 7E teaching model can serve as an instructional design model for future studies conducted in different disciplines. Also, the effects of this type of use of 5E or 7E model can be examined. In conclusion, it is clear that 5E and 7E teaching models are quite suitable for designing the content and the teaching process.

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Leadership styles in synchronous and asynchronous virtual learning environments

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Abstract

A comparison of the effects of transactional and transformational leadership in synchronous and a synchronous online teamwork was conducted. In the study, groups of four participants interacted in online text chat and online text forum in problem solving tasks. The groups were leaded by a confederate who acted as a transactional or a transformational leader. Satisfaction in the interactions and participations communicative styles were assessed. Results indicated that transformational leadership is more satisfying, and cognitive and metacognitive style oriented than transactional leadership that is more participative style oriented.

With the advent of new media technologies and the recent advances in networking environments and telecommunications, many researchers have improved their study to the proliferations of teams that do not work face-to-face, but interact over a computer-mediated-communication network.

One of the most important characteristics of groups that discuss in virtual and direct interactions is leadership. In the last twenty years research has increasingly focused on leadership in work groups. The growing amount of research on interaction in face-to-face contexts does not correspond to a similar increase in research on groups interacting with computer-mediated-communication.

Leadership in computer-mediated-groups

Zigurs (2003) maintains that virtual groups afford us a unique opportunity to redefine leadership. According to the traditional model, leaders are supposed to offer encouragement, reward, and motivation – mostly through their physical presence or comments – and reinforce the development of relations inside the group. A virtual environment makes it necessary to revise some aspects of leadership, partly due to the fact that interaction now takes place with a machine. One of the fundamental characteristics of this new context is the *recognizability* of the leader's status. In face-to-face interactions, leadership indicators involve body language, vocal inflection, eye contact, clothing, etc., which in a computer-mediated-communication can be difficult to detect. Consistent with the media richness theory (Daft & Lengel, 1984), the medium forces the leader to adopt other indicators to let followers know he/she is in

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charge, which include frequency of intervention, small delays between request and responses, being (almost) always available.

Among the approaches to the study of leadership that accurately describe the complexity of the changes under way in our society and in modern organizational contexts, one of the best known is the transformational/transactional framework (Bass, 1985, 1990, 1997).

In this perspective, the leader is the person who not only adapts to various situations, but is also able to transform the reference context. Bass (1990) discusses the difference between a transactional leadership model, in which the leader emerges as the result of transactions and exchanges with group members, whereas a transformational leader is a person willing to adapt to the changes and instability of situations and is also able to involve, motivate, and support collaborators in a manner consistent with the required transformations. The transformational style goes beyond the exchange of incentives and corrective transactions between leaders and subordinates and pushes collaborators out of the individual dimension so as to privilege the group, the mission, and the vision, focusing on long-term objectives and attempting to change existing situations. For Bass (1997) a leader can embody both types and constitute a model of leadership that moves along a continuum ranging from a transactional to a transformational style.

The transactional leadership model considers leaders "negotiating agents" who conciliate and sometimes compromise in order to obtain greater decision-making power within the group. To achieve this goal, leaders perform a series of actions that enable them to influence and convince those individuals who are capable of providing valuable support. Their activity consists in implementing interpersonal transactions in which tasks, expectations, and related awards are indicated and clarified. Followers are motivated by the opportunity to obtain the personal rewards that only the leader can grant, and prefer to replicate behaviors that have been successful and discard unproductive ones (Bass & Riggio, 2006).

Transactional leadership is based on two factors: contingent reward and management-by-exception. The leader administers positive reinforcement, awards, praise, and rewards when pre-determined goals are achieved; he utilizes negative reinforcement like punishment, reprimands, and negative feedback when mistakes and violations or failures occur (Bass & Riggio, 2006). In any case, rewards and punishments aim to ensure that the expected results are achieved and not at a transformation of the followers (Boal & Hooijberg, 2007).

The operational mode of a transformational leader brings individuals to seek rewards within themselves, favoring the personal growth of individuals and groups, as well as their self-awareness (Scaffidi Abbate & Ruggieri, 2008, 2011) According to Boal and Hooiberg (2007), while the transactional leader exploits interest that already exists in a group, the transformational leader tries to change the value system of each individual in order to construct a new one based on common goals. He/she actively engages with followers, obtaining their collaboration and encouraging them to identify with a vision of the job that goes beyond their immediate individual interests.

A way has thus been found to transcend the exchange of incentives and corrective transactions between leaders and followers – indeed, it is a way to amplify interests and raise consensus and awareness of the group's goals. People are encouraged to abandon their individual dimension in order to enhance the group and the organization, concentrating on long-term goals and attempting to change existing situations. This is accomplished by a leader who accompanies his collaborators, acting as a guide and motivator within a process of change and growth.

In general, research focusing on the effectiveness of transactional and transformational leadership within the context of virtual teams is relatively scarce (Hambey, O'Neill & Kline, 2007; Ji & Chuang, 2012).

In virtual teams transactional and transformational leaders are likely to play a vital role in facilitating the attainment of goals by providing structures, motivating and engaging team members, and attending to socio-emotional aspects of the team (Huang, Kahai & Jestice, 2010). By facilitating certain processes, these leaders introduce changes in followers' behaviors and in the way they interact with one another, thereby changing the capabilities of a team. Past research supports this view (Sosik, Avolio & Kahai, 2010), suggesting that transactional and transformational leadership in virtual teams can overcome process-based losses, thereby improving team creativity and strategies. The facilitation enabled by transactional and transformational leadership styles is likely to be more effective when a virtual team faces more challenging situations (Avolio, Kahai & Dodge, 2000; Joshi, Lazarova & Liao, 2009; Purvanova & Bono, 2009).

Moreover, virtual team research based on situational perspectives of leadership suggests that transformational leadership becomes more effective than transactional leadership in situations involving anonymity. Within these groups, transformational leaders are able to establish higher levels of trust, performance and job satisfaction compared to those of transactional leadership, but that the average level of satisfaction is lower than in face-to-face conditions (Hoyt & Blascovich, 2003; Ruggieri, 2009).

In summary, transactional and transformational leaders are expected to play a greater ''process facilitation'' role in virtual teams than established practices for face-to-face teams (Huang, Kahai & Jestice, 2009) .

Communication styles in virtual teams

According to media synchronicity theory (Dennis & Valacich, 1999), there are two types of communication characterizing virtual team interaction: synchronous and asynchronous.

In synchronous interactions team members communicate in real time, such as through teleconferencing, videoconferencing or chat. Synchronous communication media allow individuals to work on the same task, with the same information, at the same time (Baker, 2002). In asynchronous interactions team members communicate at different times, to solve a problem, to play a game or to join a project. The most used media are e-mail or online text forum and threaded discussions.

Comparing several communication media with each other will help increase our understanding of the technologies that allow virtual teams to collaborate most effectively (Baltes, Dickson, Sherman, Bauer & LaGanke, 2002).

Although in recent years there is a growing interest in the use of video (i.e. videoconferencing), the majority of studies that have examined computer-mediated-communication have used text-based systems. Particularly, online text chat and online text forum are the most common media used. A suggested benefit of this type of text-based interaction is that it may allow for more reflection and the ability to choose one's words more carefully than in face-to-face or telephone communication (Wolfe, 2002). Online text-based communication can also allow team members to more efficiently share ideas in brainstorming tasks because everyone can speak at once, thereby minimizing process losses (Griffith & Neale, 2001). Additionally, text-based communication may neutralize the tendency for increased relational conflict often observed in dissimilar groups, because these differences are less salient (Mannix, Griffith & Neale, 2002). Conversation in this medium, however, has also been criticized for lacking focus because multiple group members may be speaking at the same time (synchronous interaction) or overcommunicate (asynchronous interaction). Also, different rates of typing and reading can lead to more or less delayed responses by individuals within the group discussion, and could result in low contributions by some members who could otherwise improve the team's performance (Hambley, O'Neil & Kline, 2007).

In studies of computer conferencing there is a relatively little use of content analysis technique compared to other techniques such as surveys, interviews, participant observation and computer generated statistical manipulations. In the past, the most common methods for assessing the content and outcomes of online forums have been limited to frequency counts, message maps showing numbers of replies and message chains, and other similar quantitative measures. One notable exception to this was Henri's (1992) work, arguably one of the most influential and sophisticated cognitive analysis models for online interaction. Henri was a pioneer in utilizing content analysis to analyze the transcripts of discussions, in order to evaluate the quality of online learning communities. Influenced by this, researchers have been prompted to take up more challenging methods of content analysis in order to answer crucial questions related to social negotiation of meaning in computer-mediated-communication. Content analysis provides an opportunity to reach a better understanding of learning in a computer-mediated-communication environment since it can help to clarify the students' cognitive processes and ways of handling information during studies.

In Henri's (1992) model, a central concept in view of the content analysis instrument is interactivity. The definition of interactivity is borrowed from Bretz (1983), who states that interactivity is a three-step process: (1) communication of information, (2) a first response to this information, and (3) a second answer relating to the first. Her instrument to analyze the transcripts of discussions is based on a cognitivist approach to learning; although she also refers to particular concepts, such as learning in a cooperative mode and to the concept of collective knowledge.

Henri's analytical framework consists of five dimensions of the learning process that can be found in online text messages. Her work has laid the foundation for subsequent research. Particularly, Henri developed a quantitative approach which analyzed messages into units of meaning and attempted to measure social dimensions, interactivity, cognitive skills, levels of processing and metacognitive knowledge and skills.

The participative dimension comprises two categories: (1) overall participation, which is the total number of messages and accesses to the discussion and (2) the active participation in the learning process, which is the number of statements directly related to learning made by learners and educators. As she believes that messages of unequal

length cannot serve as precise measures of active participation, she proposes to divide messages into statements corresponding to units of meaning.

The social dimension comprises all statements or part of statements not related to the formal content of the subject matter. This operationalization is derived from the model of Berger, Pezdek and Banks (1987) that states that social presence is at work in any statement not related to the formal content of the subject matter.

The interactive dimension is first divided in two parts: interactive versus non-interactive (independent) statements. Secondly, the interactive statements can be further subdivided into explicit versus implicit interactions. Furthermore, two different types of interactive messages are distinguished: responses and commentaries. This leads to five categories, namely (1) direct (explicit) responses, (2) direct (explicit) commentaries, (3) indirect (implicit) responses, (4) indirect (implicit) commentaries, and (5) independent statements (Wever, Schellens, Valcke, & Van Keer, 2006).

The cognitive dimension consists out of five categories: (1) elementary clarification: observing or studying a problem identifying its elements, and observing their linkages in order to come to a basic understanding, (2) in-depth clarification: analyzing and understanding a problem which sheds light on the values, beliefs, and assumptions which underlie the statement of the problem, (3) inference: induction and deduction, admitting or proposing an idea on the basis of its link with propositions already admitted as true, (4) judgment: making decisions, statements, appreciations, and criticisms, and (5) strategies: proposing coordinated actions for the application of a solution, or following through on a choice or a decision. Furthermore, surface processing is distinguished from in-depth processing, in order to evaluate the skills identified (Wever, Schellens, Valcke, & Van Keer, 2006).

The metacognitive dimensions comprise metacognitive knowledge and metacognitive skills. Metacognitive knowledge is declarative knowledge concerning the person, the task, and the strategies. Metacognitive skills refer to ''procedural knowledge relating to evaluation, planning, regulation, and self-awareness'' (Henri, 1992, p. 131). Henri does notice however that although the messages can reveal useful information, it is impossible to reveal the totality of the metacognitive processes. This means that ''even if no metacognitive activity was noticed, one could not conclude that the students are weak in this area'' (Henri, 1992, p. 133).

The research

The aims of the present research project was to analyze if and how leadership style and communication medium used, interact with the followers communication style. As mentioned above, the status of group leader is definitely less recognizable in computer-mediated-groups due to the difficulty in the use of implicit indexes of status such as vocal inflection or eyes contact. The medium force the leader to adopt other indicators to let followers know about his/her being in charge: frequency of intervention, small delay between request and responses, being (almost) always available etc. This difference in leader's behavioral style may result in different ingroup dynamics which, in turn, may affect followers' interaction styles and satisfaction. Moreover, these possible difference may vary according to leadership style. In particular, transformational leaders are expected to be more effective in enhancing cognitive and metacognitive styles and job satisfaction.

Participants and design

Ninety-six Web user (51 males and 45 females) took part in this study. Participants' age ranged between 18 and 46 years (mean = 28.6; s.d. = 3.4). They were all enrolled, on a voluntary basis, from face-to-face and online friends, and explicit request in online communities, from two undergraduate students.

The participants were randomly assigned in a two conditions of a 2 (interaction mode: online text chat vs. online text forum) X 2 (management style of the group: transactional vs. transformational) mixed between-within participants design.

Procedure

The experiment was presented as problem solving activity. Specifically, the participants were given the task to a solve a brain teaser in online virtual groups that had to be solved in five days.

The groups use a Computer Supported Collaborative Work (CSCW) context using text chat (for those interacting in synchronous mode) or a forum (for those with asynchronous interaction).

Each group consisted of four participants and one senior expert – the confederate – who directed the group's activity. Every participant took part in two different conditions. On the whole, there were 48 groups composed of four participants plus the senior expert who acted as leader, who did not suggest the solutions, but who helped the groups to find itself. In one half of the groups, the senior expert was instructed to act as a transactional leader, and in the other half as a transformational leader. Instructions were created by following Mindgarden's (2000) Multifactor Leadership Questionnaire and its scales and subscales. Senior experts did not know the real aims of the research.

All activities of the groups (online chat and forum) were recorded. After completing the task, job satisfaction was assessed via self-report questionnaire.

Instruments

Content analysis. The content of the online chat and web-forums was coded according to Henri's (1992) framework. The messages were divided into "message units" for analysis. A message unit can be divided "by words, by a group of words, by proposition, by sentence, or by paragraph" (Henri, 1992, p. 134). Henri also notes that an objective determination of the unit of meaning is difficult to make. In the present study it turned out that message units tended to correspond to paragraphs, as this is the way that written communication is organized. This kind of analysis is considered more effective in analyzing discussion where a message often answers more than a question or presents more phases of the same contribution. Leader's message were excluded from the present analysis.

Job satisfaction. This was measured using the Satisfaction with Job - General (Dubinsky & Hartley, 1996; Italian version translated, validated and adapted by Barbaranelli, Bortone and Di Matteo, 2010), on a seven-point scale (from "very unsatisfied" to "very satisfied"), and specifically, five questions aimed at evidencing a person's level of satisfaction with respect to a performed task.

Results

Manipulation check. In all, 4515 units were coded. Two researcher, independently each other, coded all the messages. The coding reflected a middle-good agreement (for the five dimensions, $0.62 < $ Cohen's $k < 0.74$).

The analysis of univariate effects revealed the existence of significant differences between the effects of transactional and transformational leadership in four of five dimensions of Henri's model. Specifically, it was observed that relating to participative dimension, no differences were observed (p=n.s.). Transactional leaders conditions create higher score in social and interactive dimensions than transformational leaders (social: $F_{(1,4515)}=24.23$; $p<.01$; interactive: $F_{(1,4515)}=22.11$; $p<.01$). Differences also can be found in cognitive and metacognive dimensions. Indeed, transformational leaders generate more messages in this dimensions than transactional leaders (cognitive: $F_{(1,4515)}=18.56$; $p<.01$; metacognitive: $F_{(1,4515)}=19.17$; $p<.01$).

As regards to interaction mode, online text chat and online text forum, no differences were observed in participative dimension (p=n.s.). More messages in social and interactive dimensions were observed in online text chat than in online text forum (social: $F_{(1,4515)}=54.14$; $p<.01$; interactive: $F_{(1,4515)}=15.06$; $p<.01$). On the other hand, more messages in cognitive and metacognitive dimensions were observed in online text forum than in online text chat (cognitive: $F_{(1,4515)}=27.32$; $p<.01$; metacognitive: $F_{(1,4515)}=46.08$; $p<.01$).

No interaction effects emerge between leadership style and media in all five dimensions (p=n.s.).

Job satisfaction was analyzed in the two interaction conditions and the existence of a main effect was found ($F_{(1,96)}=17.3$; $p<.01$), ascribable to an higher level in chat than in forum condition. It was also observed that individuals in situations of transformational leadership possess higher levels of satisfaction with respect to the performed task ($F_{(1,96)}=12.4$; $p<.01$).

Discussion and conclusion

On the whole, these results enlighten a coherent scenario of the functioning of leadership in virtual teams and on the communicative styles which leaders evoke, examining the nature of online interactivity in problem solving processes. Interaction is one of the most important components of any learning experience and it is a crucial concept in online problem solving and education. The approach used, based on Henri's (1992) model of analysis, offered insights to understanding how the online leaders addressed discussions in online context. As Lally (2001, p. 401) points out: "One of the major strengths of Henri's approach to content analysis using categories is that it focuses on the social activity and the interactivity of individuals in a group at the same time as giving a picture of the cognitive and metacognitive processes of those individuals. However, one of its major limitations is that it gives no impression of the social co-construction of knowledge by the group of individuals as a group, in a discussion or a seminar". Although the instrument has been criticized (i.e. Pena-Shaff & Nicholls, 2004), it can be considered as pioneering work and has been the base for subsequent research.

A particularly interesting result concerns the distinction between transactional and transformational leadership. As shown by this study, working in an on-line group on the Web and being led by a leader who seeks the transformation of individual motivations (rather than a simple transaction involving resources) induces an increased level of cognitive and metacognitive communications.

The transformational leader is able to produce behavior that promotes individual potential and inspires an optimistic vision of the future that is oriented towards longer-term goals. These characteristics enable him to provide his group with incentives for self-aware thinking: being aware of one's own thoughts ensures that behavior truly useful for personal growth is adopted. Reinforcing forms of higher-level reasoning thus helps individuals to become more aware of their own untapped capabilities and offers continuous intellectual stimulus, encouraging people to do more than what they expected of themselves in the beginning; all this enhances levels of proactive personality and team identification.

Job satisfaction results are also consistent with what was postulated by Bass (1990) and confirmed by subsequent research on interaction via Web (Hoyt & Blascovich, 2003; Ruggieri, 2009), that is, that a primary characteristic of the transformational leader is his interest in satisfaction and, in particular, the job satisfaction of his co-workers, which also entails holding in high consideration their individual skills and aspirations. The transformational leader has thus the ability to influence the emotional climate of the work group, generating an effect on the job satisfaction of each individual collaborator. McColl-Kennedy and Anderson (2002) maintain that these leaders have a positive impact on the optimistic vision of their followers and also create a pleasant general emotional state in relation to the job itself.

Results show also how the choice of interactive tools for virtual exchanges has a fundamental role in guiding communication within virtual contexts. These media are not however used in a "neutral" and transparent way, but rather are instruments to which communication must adapt; they are therefore able to generate their own domains and relations that are not necessarily analogous to those that occur in face-to-face interaction.

These findings have significant consequences for groups that interact on the Web. Providing incentives for adopting specific models of leadership and media in virtual work groups represents in fact the first step towards creating motivated and effective groups. It follows that a worker who is more satisfied and aware of his own resources can guarantee greater personal success and, consequently, better results for the organization.

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Usage Of Thin-Client / Server Architecture In Computer Aided Education

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Abstract

With the advances of technology, thin-client / server architecture has become popular in multi-user / single-network environments. Thin-client is a user terminal in which the user can login to a domain and run programs by connecting to a remote server. Recent developments in network and hardware technologies (cloud computing, virtualization, etc.) have made the thin-client / server architecture more efficient with respect to total cost of ownership, administration, maintenance and security simplicity, and finally efficient power consumption. Therefore, the usage of thin-client / server architecture in computer-aided education has scaled up exponentially since 2010. In this study, we present our architecture in Public College with 270 user terminals and 9 servers. We describe the planning, design, testing and implementation phases of the new architecture and analyze the outcomes of this implementation in regard to students and staff.

Keywords: Computer Aided Education; thin-client / server architecture

1. Introduction

Thin Client / Server Architecture, which has been one of the hot topics in the information systems literature for the last decade, nowadays, becomes a powerful, secure and cost-efficient solution for Health, Finance, Education and other industrial sectors [1]. For instance, several public/private companies/institutions have tendency for cloud computing, virtualization, etc. to keep up with the speed of hardware/software technology development, and this improves the preference of Thin Client / Server Architecture. In addition to this, Thin Client / Server Architecture has different characteristics according to classical personal computer usage, which are described below in detail.

Thin Clients improve information system efficiency at several institutions. In Thin Client / Server Architecture, software and data are stored at the remote server on the network. However, it is possible to communicate and do data exchange with other clients on the network. As there is no local disk or portable media drive on thin client, user data is stored on the remote file servers on the network. Software upgrade is done remotely on the network. Thin clients have more lifetimes according to personal computers as they have less vulnerable hardware parts. Moreover, it is easier to user thin clients as they have standard software and user interface all over the related institution. In addition to this, ease of thin client installation makes recovery in case of system crash faster and lessens the need for technical assistance.

The information and data security can be improved with the usage of thin clients. As they do not have local disks or portable media drives, they are less vulnerable to anti-viruses and spy wares. Users can only store data on remote file servers and cannot copy or move critical data to a portable media. The usage of thin clients in a

domain on the network makes system administration easier and safer with respect to the remote user control and system policy checking in the domain that lessens the system internal threats.

Criteria	P C	THIN CLIENT
Operating System	Manual installation on local disk	Installed on flash memory (DOM). No need for manual installation.
Anti-Virus Protection	Needs anti-virus protection software	No need for anti-virus protection for portable media
Software Upgrade	Needs for manual software upgrade periodically.	No need for manual software upgrade. Only remote software upgrade.
System Recovery	Risk for system crash according to user faults.	Remote system recovery in case of system crash.
Local Drive Crash	Risk for local drive crash (bad sector, etc.)	No local drive and no data loss.
Hardware Upgrade	Needs for hardware upgrade periodically.	No need for hardware upgrade.
Data Backup / Recovery	Needs for data backup periodically in case of recovery after system crash.	Usage of remote file server. No local backup.
Power Consumption	300 - 350 watt. (avg)	8 - 20 watt. (avg)
Technical Assistance	Needs allocated technical staff for frequent hardware/software problems with respect to more portable hardware parts and software on local drive.	Less hardware/software problems and less allocated technical staff with respect to lower risk for system crash.
Emulation	Needs emulation software for connection to servers such as AS/400.	Pre-installed emulation software for connection to several server types.
Cost of Purchase	600 – 1000 $ (avg)	250 – 400 $ (avg)
Noise and Physical Appearance	Works more noisy according to several hardware parts. Needs more space.	Works quieter and needs less space.

Table 1. Comparison of PC and Thin Client with respect to several criteria.

Thin Client / Server Architecture is a cost-efficient information system infrastructure. Thin clients are cheaper, have less hardware parts and more lifetimes. At the same time, system management and maintenance is easier as software upgrade and data storage/backup are done on remote servers. Finally, thin clients have less power consumption than personal computers.According to above-mentioned characteristics, a detailed comparison of thin clients and personal computers with respect to several criteria is summarized in Table 1.

An example total cost of ownership analysis is presented in Table 2 with respect to purchase costs, software license costs, network support costs, desktop support costs, upgrade costs, security costs, power consumption, heat generation and office real estate.

Criteria	PC	Thin Client	Saving ($)
Purchase Cost	650	350	300
Hardware Upgrade (CPU, Memory, Disk etc.)	320	-	320
Software Upgrade (OS, User Programs, etc.)	250	-	250
Virus Protection	30	-	30
Upgrade labor Cost	250	-	250
Technical Staff Cost. (per 100 users)	3 staff = 180.000 (annual) 1800 (per user)	1 staff = 60.000 (annual) 600 (per user)	1200
Data Backup and Storage Maintenance	200	-	200
Power Consumption (watt/h)	350	20	450
Total savings per client after 5 years: 3000 $			

Table 2. Comparison of PC and Thin Client in terms of Total Cost of Ownership.

In the light of above analysis, we conclude that:

* Using thin client instead of PC saves 3000$ after 5 years (50$ monthly). In other words, thin client redeems itself after 7 months.

* In a middle-sized unit, using 100 thin client instead of 100 PC saves 300000$ in total. Besides, the fact that hardware is an imported product and has foreign currency cost shows the contribution of usage of thin client to country's economy.

Thin Client / Server Architecture has a prominent difference in terms of power consumption [1]. Forrester Research Inc. in 2008 shows that thin clients reduce power usage by 24% and carbon dioxide emission by 23% and increases the life span by five to ten years. By replacing the desktops by thin clients, nearly two-thirds of the power consumption can be reduced [2-4].

Thin Client / Server Architecture is used by educational institutions as they allow students to analyze real data in their research without modifying or removing data either deliberately or unconsciously [5]. Also, this architecture disallows unauthorized access to critical data from outside the institution. Moreover, computer-aided education has overlapping characteristics with Thin Client / Server Architecture in terms of multiple usage of digital resources and cost-effectiveness [6].

There are a lot of benefits of Cloud computing in education, (e.g. providing educational resource storage and databases, e-mails, educational applications and tools for students and teachers and clients located all over the world involving in an educational program) and advantages in cost for improve quality of system in terms of Total Cost of Ownership [7]. This encourages the use of thin clients in several implementation areas and has renewed people's interest in the thin client concept [8].

2. Implementation

To make use of Thin Client / Server Architecture in our public college having approximately 1000 students and 500 staff, we install 270 thin clients in total (222 for students and 48 for staff) at the moment. We also install 7 terminal servers and 2 file servers. The network diagram of this architecture is represented in Figure 1.
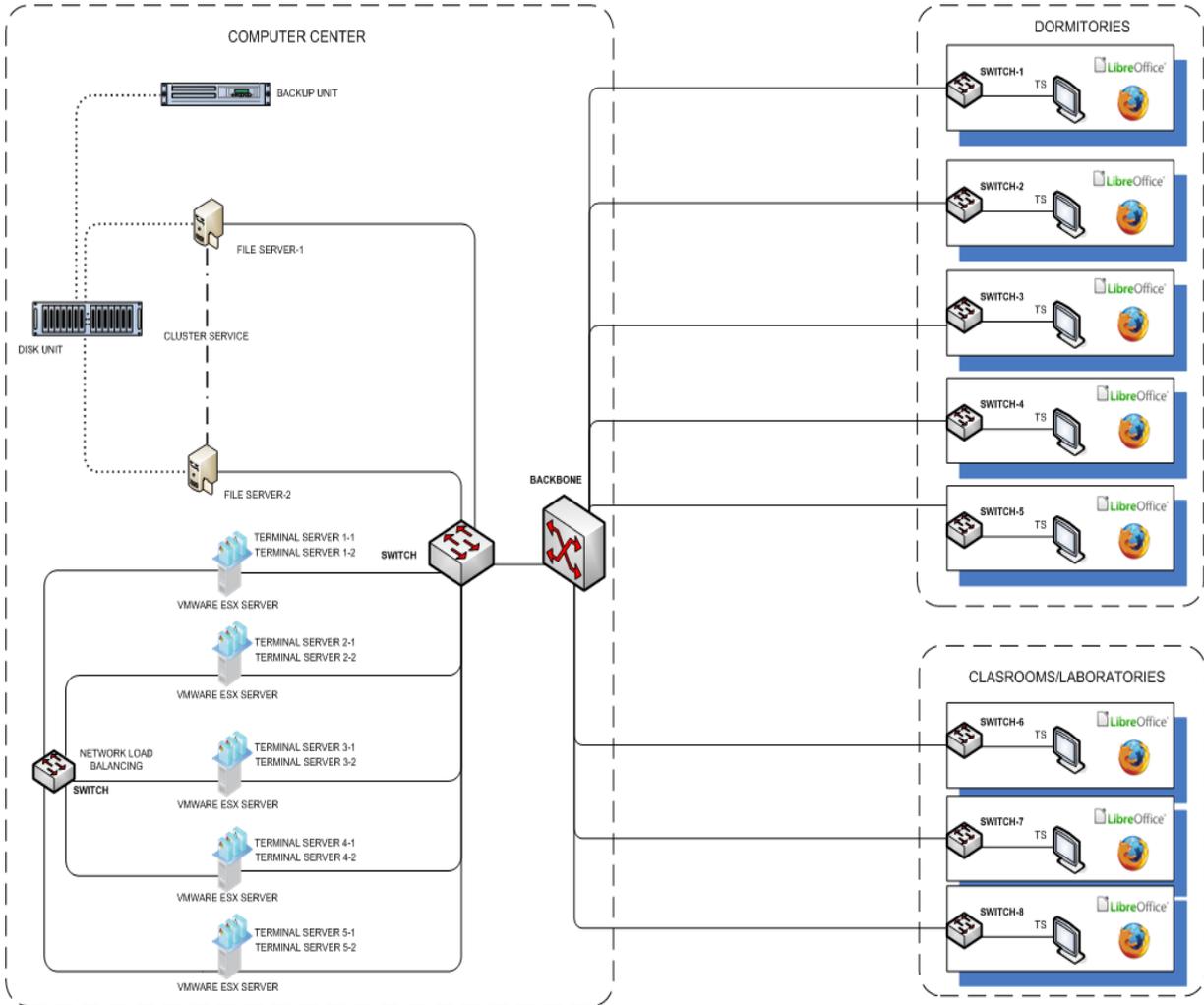

Figure 1. Thin Client / Server architecture in our college

We use thin clients having model as ASTC TA-1381 and terminal/file servers having model as IBM X3650-M3. We utilize VMware ESXi 4.5 software on terminal servers for the purpose of virtualization. We install Windows 2008 R2 Enterprise operating system on the servers. Also, we install Libre Office, Foxit Reader, 7zip, IrfanView, Mozilla Firefox, Thunderbird, Notepad++, VLC player, Eclipse and Dev C++ software programs on the terminal servers for users through thin clients.

We reserve one-gigabyte data storage on the file server for each student and the owner student can only access his/her corresponding data storage. In addition to this, we define roaming profiles for each student so that each student can define and use personal settings (shortcuts, program settings, etc.) on different thin clients without any loss of information.
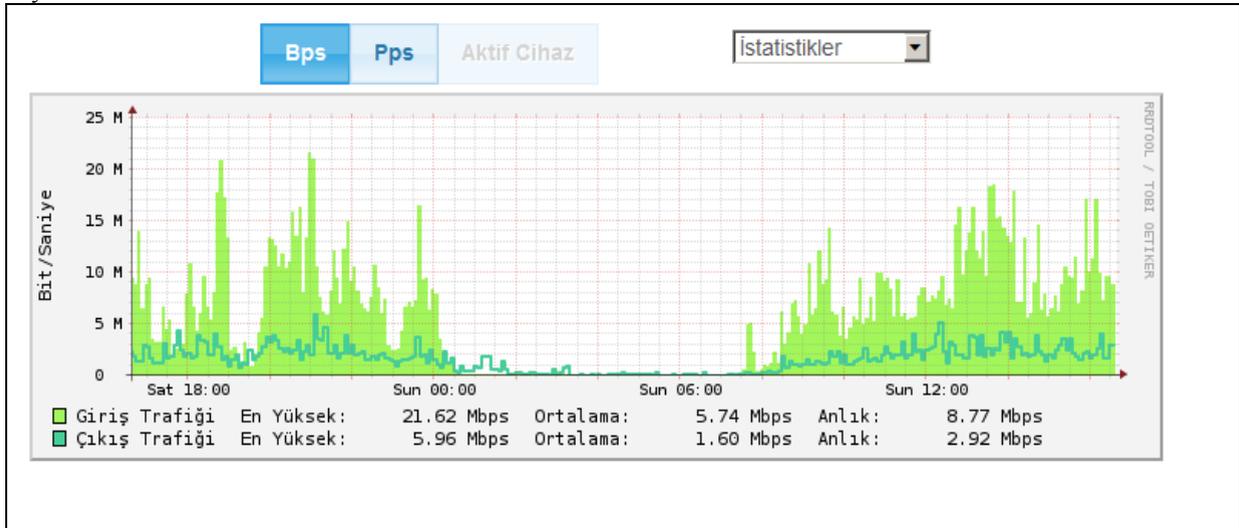

Figure 2. Usage of bandwidth before Thin Client / Server Architecture
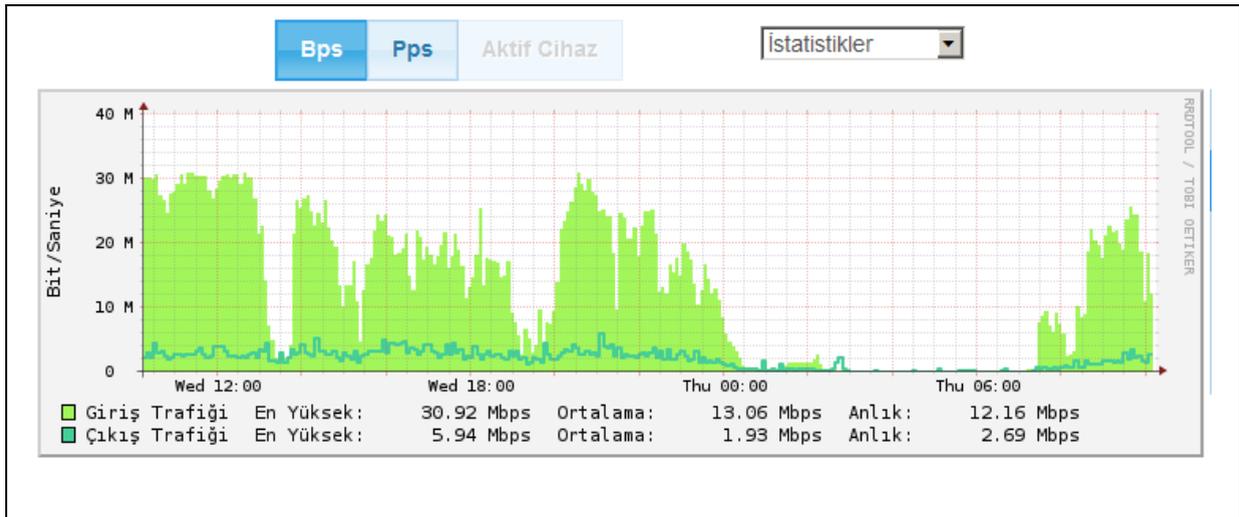

Figure 3. Usage of bandwidth on Thin Client / Server Architecture

We define two different server profiles on each terminal server with the usage of VMvare ESXi virtualization software. The first one is defined for students and the other one is defined for staff use. There are different settings and software programs on two virtual terminal server types. We define different hardware (SPU, RAM, etc.) usage settings on two servers at different times during the day. For instance, we reserve most of the

hardware capacity for staff during working hours as the students are taking classes. And, we reserve most of the hardware capacity for students after working hours as students mostly use thin clients on those times.

After the implementation, 10 hours labor force per daily is needed for maintenance problems. A survey about the new architecture is applied on the users and 91% of them express their satisfaction about the usage of thin clients. In addition to this, we analyze that the usage of bandwidth has increased after the implementation of the new architecture. At the moment, we have 30 Mbit/s Internet connection bandwidth in our college. The usage of bandwidth before this implementation is plotted in Figure 2, whereas, Figure 3 represents the usage of bandwidth on the new architecture.

Consequently, we make cost-effectiveness analysis of the new architecture by using several tools implemented in the literature and web. The overall analysis is described in Table 3.

Tool	Total saving	Period	Parameter
www.xiteb.net	107154 £	Annual	270 PC
www.netvoyager.co.uk	9,614,000$	Five year period	1000 Users
www.2x.com	312660$	Annual	270 PC
www.eu-energystar.org	79595€	For six year	270 Thin Client instead of 270 PC

Table 3. Cost saving analysis of our architecture according to several tools

3. Conclusion

The usage of Thin Client / Server Architecture for the purpose of computer-aided education scales up with respect to developments in the information systems technology. In this study, we present our architecture in a public college in which we install 270 thin clients for students and staff. The increase of bandwidth usage represents the effectiveness of this new architecture on the education in our college.

Students and staff can access to their data from several units (dormitory, lab, library, etc.) by using the same settings and interface (which is more user-friendly) as a result of roaming profile definitions. The need for new software in education can be met easily by installing them on a small number of terminal servers. In addition to this, we adjust the usage of resources by students and staff by using virtualization technologies so that, all users can use thin clients more effectively.

We also apply a survey on the users about the performance of new system and most of the users show their satisfaction through the survey. We also serve **need??** less maintenance labor for the hardware/software problems on the client side.

We analyze the cost of new architecture according to literature and several tools exist on the web. One of the important results is the less power consumption of thin clients, which is approximately 10% of personal computers. This has a big contribution not only to the total cost of ownership but also to reducing environmental impact. This can be seen as a social responsibility. After getting a primary saving and social responsibility contributions by implementing new computer architecture in education, we conclude that, the usage of Thin Client / Server Architecture will become widespread on educational institutions.

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YÜKSEKTE ÇALIŞMA İŞ GÜVENLİĞİ İÇİN YENİ BİR PROAKTİF EĞİTİM PROGRAMI

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Özet

Bu makalede Yüksekte Çalışma İş Güvenliği İçin Yeni Bir Proaktif Eğitim Programı(NOFALL) isimli AB Yenilik Transferi projesinin İhtiyaç Analizi İş Paketinin sonuçları ve değerlendirilmesi sunulmuştur. İhtiyaç Analizi Anketi, Bilgi Ölçümü, Duygu ve Tutum Ölçümü ve Geri Bildirim bölümü olmak üzere üç ana bölümden oluşturulmuştur. Anket, yüksekte çalışma gerektiren İnşaat, Elektrik, Telekomünikasyon ve Maden sektörlerindeki çalışanlara uygulanmıştır. Söz konusu proje kapsamında yapılan İhtiyaç Analizi Anketi çalışmasının sonuçları projeye olan gerekliliği açıkça ortaya koymuştur. Yüksekte çalışma iş güvenliği konusundaki sorunları tespit etmesi, eğitimlere olan ihtiyacı ve bilinç eksikliğini göstermesi bakımından da literatüre sunulmasına gerek duyulmuştur.

Keywords: NOFALL, falling from heights, occupational safety, work safety;

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1. Giriş

Düşmeler ve Yüksekten Düşen Cisimler sonucu oluşan iş kazaları, kayıtlı tüm iş kazaları içerisinde yaklaşık olarak %30 oranındadır. Bu oran istatistiklere bakıldığında, bir veya birden fazla cisim tarafından ezilmeler, batmalar, kesmeler vb sınıfına giren iş kazalarından sonra ikinci sıraya oturmaktadır. Yüksekte çalışma iş güvenliği konusu Türkiye'de AB üyeliği sürecinde hız kazanan ve yasalaşmaya başlayan bir süreçtir. Türkiye'de son yıllarda yüksekten düşme sonucu gerçekleşen kazalar ve ölümlerin AB ülkelerine göre daha fazla olması durumun ciddiyetini göstermektedir. Gelişmişlik düzeyi yüksek olan ülkelerde, Yüksekte Çalışma İş Güvenliği konusunda ayrı yasal düzenlemeler bulunmaktadır. Bunlar, Yüksekte Çalışma konusunda Risk Değerlendirmesi, eğitim, yeterlilik, ekipman konularında düzenlemeleri açıkça ortaya koymaktadır.

Yüksekte çalışma iş güvenliği ile ilgili literatürde birçok çalışma bulunmaktadır. Bu çalışmalar problemi ortaya koyan ve probleme çözüm üreten çalışmalar olarak iki kısımda incelenebilir. Başta inşaat sektörü olmak üzere meydana gelen iş kazalarının büyük bölümünün yüksekte çalışma esnasında olduğunu gösteren ve problemi ortaya koyan çalışmalar mevcuttur (Türkmen, Şenel, Şam, Üzün, 2005; Dizdar, Toprak, 2012). Bunun yanında çeşitli alanlarda yüksekte çalışma ile ilgili önlemleri ve önerileri içeren çok sayıda çalışma yapılmıştır (Görücü, Müngen, 2011; Naalcosh, 2012).

Yüksekte çalışma iş güvenliği konusunda birçok proje çalışması gerçekleştirilmiştir. Bu projelerden birisi NOFALL projesine de kaynaklık eden, Letonya PSI Darba Medicina firmasının gerçekleştirdiği LV/04/B/F/PP-172012 no'lu "The Development of Occupational Health and Safety Training Programme" isimli B tipi AB projesidir.

Makalenin 2. Bölümünde NOFALL (Yüksekte Çalışma İş Güvenliği İçin Yeni Bir Proaktif Eğitim Programı) Projesi tanıtılmıştır. 3. Bölümde İhtiyaç Analizi İş Paketi Faaliyetleri ve Sonuçları anlatılmıştır. Değerlendirme bölümde ise İhtiyaç Analizi Anketinin sonuçları değerlendirilmiştir.

2. Yüksekte Çalışma İş Güvenliği İçin Yeni Bir Proaktif Eğitim Programı Projesi(NOFALL)

Aralık 2011 tarihinde, Avrupa Birliği Eğitim ve Gençlik Programları Merkezi Başkanlığı, Leonardo da Vinci programı kapsamında, "Yüksekte Çalışma İş Güvenliği İçin Yeni Bir Proaktif Eğitim Programı" isimli Yenilik Transferi Projesi uygulanmaya başlamıştır.

Projenin amaç ve hedefleri şunlardır;
1. Yüksekte çalışma ile ilgili kaza oranlarını/yüzdelerini en aza indirmek,
2. Yüksekte çalışma ile ilgili eğitim programı hazırlamak,
3. Eğitim materyalleri geliştirmek,
4. Internet üzerinden iş güvenliği ve yüksekte çalışma iş güvenliği hakkında teorik eğitim vermektir.

Proje ortaklık konsorsiyumu içerisinde Kaya Yapı Şirketi yürütücülüğünde 4 ülkeden 8 ortak bulunmaktadır. Ortaklar Letonya'dan PSI Darba Medicina, İrlanda'dan EazySafe Learning Center, Almanya'dan Elmoba, Türkiye'den TEİAŞ, Sakarya Üniversitesi Teknoloji Fakültesi, Sakarya Teknik Ve Endüstri Meslek Lisesi, Sivil Toplum Kuruluşu olan MEGVEY Derneğinden oluşmaktadır. Proje, Yönetim, WEB Sitesi, İhtiyaç Analizi,

Adaptasyon, Pilot Uygulama, Ürün, Değerlendirme ve Yaygınlaştırma olmak üzere 8 adet iş paketinden meydana gelmektedir. Proje tamamlandığında elde edilecek sonuçlar şunlardır; proje hakkında bilgilerin paylaşılacağı ve interaktif eğitimlerin verileceği Türkçe, İngilizce ve Almanca WEB siteleri, Eğitim programı, Kitap, DVD, Genel iş güvenliği e-öğrenme modülü, Yüksekte çalışma iş güvenliği e-öğrenme modülü, Proje sonuçları ile ilgili dergi. Tüm bu sonuçlar ayrıca poster, broşür, yerel ve ulusal basın haberleri, çeşitli toplantı ve seminerler, İş sağlığı ve güvenliği fuarları gibi değişik platformlarda yaygınlaştırılacaktır.,

3. İhtiyaç Analizi İş Paketi Faaliyetleri ve Sonuçları

Yenilik transferi projeleri AB ülkelerinde daha önce uygulanarak başarı ile tamamlanan projelerin farklı ülkelerde geliştirilerek uygulanması esasına dayanmaktadır. NOFALL projesinde Letonya'dan PSI Darba Medicina tarafından 2002 yılında tamamlanan LV/04/B/F/PP-172012 no'lu "The Development of Occupational Health and Safety Training Programme" isimli B tipi AB projesinin Türkiye'ye geliştirilerek transfer edilmesi amaçlanmıştır. Projenin 3. adımı olan İhtiyaç Analizi İş Paketine, kaynak proje LV/04/B/F/PP-172012 (The Development of Occupational Health and Safety Training Programme) ve diğer ortak ülkelerde yapılan çalışmaların incelenmesi ile başlanmıştır. Ayrıca AB ülkelerindeki ve ülkemizdeki yasal düzenlemelerle ilgili literatür araştırması da yapılmıştır.

Gerçekleştirilen İhtiyaç Analizi İş Paketinin amaçları şunlardır;
1.Yüksekte çalışma iş güvenliği ile ilgili sorunları tespit etmek,
2. Sektör çalışanlarının iş güvenliği ekipman ve kullanım bilgilerini ölçmek,
3. Sektör çalışanlarının iş güvenliği önlemlerine karşı tutumlarını ölçmek,
4. Sektör çalışanlarının iş güvenliği konusundaki görüş ve önerilerini tespit etmek.

Bu amaçlar doğrultusunda yapılan ihtiyaç analizi anketi üç ana bölümden oluşmaktadır. Bunlar;
a.	Çalışanların ekipman ve kullanım bilgilerini ölçmek için Bilgi Ölçümü bölümü,
b.	Çalışanların iş güvenliği önlemlerine karşı tutumlarını ölçmek için Duygu Ölçümü bölümü,
c.	Çalışanlarını iş güvenliği tedbirleri ile ilgili sorunlarını ve görüşlerini belirlemek için Geri Besleme bölümü olarak belirlenmiştir.

İhtiyaç analizi anketi, yüksekte çalışma gerektiren İnşaat, Elektrik, Telekomünikasyon ve Maden sektörlerindeki onlarca şirket çalışanları, Sakarya Üniversitesi öğretim elemanları ve Meslek Liseleri öğretmenleri olmak üzere toplam 120 kişi üzerinde uygulanmıştır. Anket, çoktan seçmeli sorulardan oluşan bilgi ölçümü bölümünde 15 soru, "Tamamen Katılıyorum, Katılıyorum, Fikrim Yok, Katılmıyorum ve Hiç Katılmıyorum" seçeneklerinin sunulduğu duygu ölçümü bölümünde 15 soru ve görüş ve önerilerin alındığı geri besleme bölümünde 5 soru olmak üzere toplam 35 sorudan meydana gelmiştir.

Anket sonunda bilgi ölçümü bölümünden elde edilen sonuçlar şu şekildedir;

- Temel seviyedeki bilgiler %70 civarında bilinmektedir.
- Her dört kişiden biri seyyar merdivenin güvenli kullanımını bilmemektedir.
- Enerji ve Telekom sektöründe her beş kişiden biri hangi donanımları kullanacağını bilmemektedir.
- Her beş kişiden biri düşme riskini ortadan kaldıracak önlemlerin farkında değildir.

- Deneklerin % 55'i Güvenlik ve Sağlık İşaretleri Yönetmeliğini bilmemektedir.
- Her üç kişiden biri emniyetli bağlama tekniğini bilmemektedir.
- Deneklerin % 45'i salınımlı düşmeyi engellemek için yapılması gerekenleri bilmemektedir.
- Eğitim seviyesi düştüğünde bilgisizlik düzeyi artmaktadır. (% 55 İlkokul, % 30 Lise ve % 22 Yüksek Öğretim)

Yukarıdaki sonuçlar Şekil 1 ve 2'de grafiksel olarak sunulmuştur.

Şekil 1. Bilgi ölçümünden elde edilen bilgi düzeyleri

Şekil 2. Eğitim seviyesine göre bilgi düzeyleri
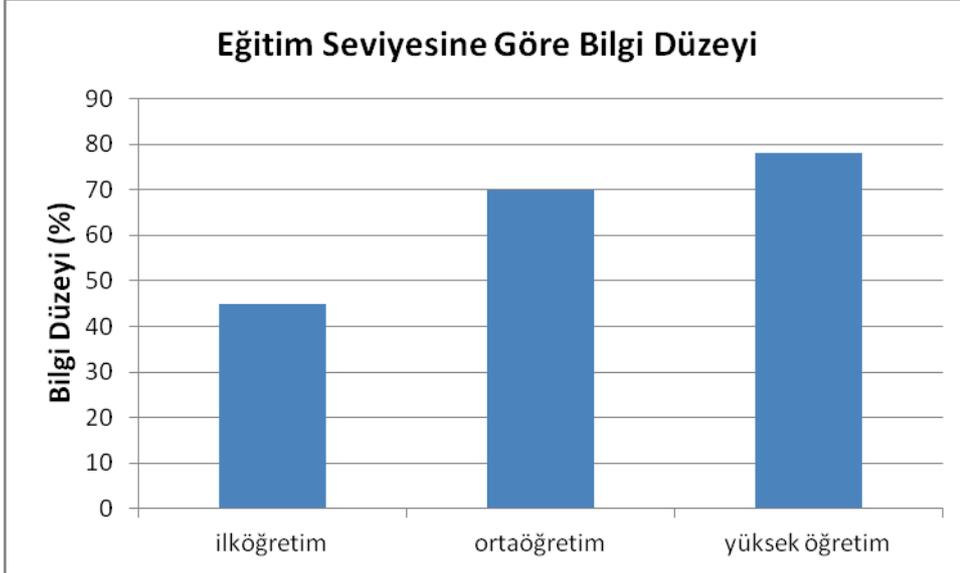
Anket sonunda duygu ölçümü bölümünden elde edilen sonuçlar şu şekildedir;

- Her dört kişiden biri acil nedenlerden dolayı kontrol amacıyla yükseğe çıkan personelin emniyet kemeri takmasına gerek olmadığı düşünmektedir.
    - Her üç kişiden biri işverenin kuralların uygulanmasındaki gevşekliğinin kazalara neden olabileceğini düşünmemektedir.
    - Her iki katılımcıdan biri iş güvenliği donanımlarının yeteri kadar güvenli olduğunu düşünmektedir.
    - Her iki katılımcıdan biri donanımları fiziksel rahatsızlık verdiği için kullanmamaktadır.
    - Her iki katılımcıdan biri yüksekte çalışma iş güvenliği ile ilgili ek mevzuatlara ihtiyaç olduğunu düşünmektedir.
    - Her iki katılımcıdan biri donanımların kullanımında yanlışlık yapmaktadır.
    - İnşaat sektöründe daha iyi bir bilinç vardır.
    - Her dört katılımcıdan biri düşmeyi önlemek için, iş ortamı tecrübesinin ekipmandançok daha önemli olduğunu düşünmektedir.

Anketörler geri besleme bölümünde, sağlam ekipmanların kullanılması, daha fazla eğitim, denetim ve kontrollerin artırılması ve fiziksel düzenlemeler ile ilgili konulara dikkat çekmişlerdir.

1.Değerlendirme

Yüksekte Çalışma İş Güvenliği İçin Yeni Bir Proaktif Eğitim Programı(Nofall) isimli AB Yenilik Transferi projesinin İhtiyaç Analizi Anketi, İnşaat, Elektrik, Telekomünikasyon ve Maden sektörlerinde yüksekte çalışma yapan 120 kişiye uygulanmıştır. Anket, Bilgi Ölçümü, Duygu ve Tutum Ölçümü, ve Geri Bildirim bölümü olmak üzere üç ana bölümden oluşturulmuştur.

Anketin Bilgi Ölçümü kısmından çıkan sonuçlara bakıldığında en temel seviyedeki bilgilerin bile çalışanlar tarafından %30 oranında bilinmediği görülmektedir. Enerji ve Telekom sektöründe çalışan her beş kişiden birisinin hangi donanımları kullanacağını bilmemesi dikkat çekmektedir. Her beş kişiden birisi düşme riskini ortadan kaldıracak önlemlerin farkında değildir. Her üç kişiden birisinin emniyetli bağlama tekniğini bilmemesi ve % 45 oranında kişinin de salınımlı düşmeyi engellemek için yapılması gerekenleri bilmemesi gibi sonuçlar potansiyel düşme risklerini açıkça ortaya koymaktadır. Deneklerin %55'inin Güvenlik ve Sağlık İşaretleri Yönetmeliğini bilmemesi, bilgi eksikliğini gösteren diğer bir sonuçtur. Anketörlerin eğitim seviyesi yükseldikçe bilgisizlik düzeyinin azalması da eğitimlere olan ihtiyacı gösteren önemli bir sonuçtur.

Anketin duygu ölçümü bölümünden elde edilen sonuçlara bakıldığında yüksekte çalışma faaliyeti yapanların iş güvenliği önlemlerine karşı tutum ve duygularında ciddi bir oranda gevşeklik olduğu görülmektedir. Örnek olarak her dört kişiden birisinin acil nedenlerden dolayı yükseğe çıkan personelin emniyet kemeri takmasına gerek olmadığı düşünmesinin ciddi bir risk oluşturduğu açıktır. Her üç kişiden birisi, işverenin kuralların uygulanmasındaki gevşekliğinin kazalara neden olabileceğini düşünmemektedir ki bu çok büyük bir eksikliktir. Her iki katılımcıdan birisi iş güvenliği donanımlarının yeteri kadar güvenli olduğunu düşünmemekte vefiziksel rahatsızlık verdiği için kullanmamaktadır ki, bu da tehlikenin boyutlarını gözler önüne sermektedir.

Anketörler geri besleme bölümünde, sağlam ekipmanların kullanılması, daha fazla eğitim, denetim ve kontrollerin artırılması ve fiziksel düzenlemeler ile ilgili konulara dikkat çekmişlerdir.

NOFALL projesi kapsamında yapılan İhtiyaç Analizi Anket çalışmasının sonuçları projeye olan gerekliliği açıkça ortaya koymuştur. Yüksekte çalışma iş güvenliği konusundaki sorunları tespit etmesi, eğitimlere olan ihtiyacı ve bilinç eksikliğini göstermesi bakımından da literatüre sunulmasına gerek duyulmuştur. Proje ortağı Sakarya Üniversitesi Teknoloji Fakültesi tarafından, anket sonunda elde edilen verilerin ve verilerden elde edilen sonuçların yer aldığı bir sonuç raporu hazırlanmıştır. Sonuç raporunun değerlendirilmesi ve literatüre sunulması amacıyla da bu makale hazırlanmıştır.

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