



10th INTERNATIONAL EDUCATIONAL TECHNOLOGY CONFERENCE

Proceedings Book
(Volume III)

Coordinator
Prof. Dr. Yavuz AKPINAR

General Coordinator
Prof. Dr. Aytakin İŞMAN

Acknowledgement

Dear Guests...

Welcome to the 10th International Educational Technology Conference IETC-2010.

"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-2010 received almost 700 applications. The conference academic advisory board accepted 350 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 conference is organized at Bogazici University in 2010. IETC-2011 will be organized at Istanbul University in 2011.

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-2010 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 - 2010" conference papers, which will be also published in TOJET. And finally, we would like to thank Sakarya University, Bogazici University, organizing team and The Turkish Online Journal of Educational Technology (TOJET) for successfully organizing and hosting "IETC-2010" in Istanbul, Turkey.

We have lots of participants from 19 different countries. These countries are Algeria, Argentina, Australia, Croatia, Cyprus, Georgia, Greece, Hungary, Iran, Italy, Japan, Lithuania, Malaysia, Netherlands, Nigeria, Portugal, Romania, Serbia, Slovakia, Slovenia, South Korea, Spain, Taiwan, The Former Yugoslav Republic of Macedonia, Turkey, Turkish Republic of Northern Cyprus, United Arab Emirates and United States.

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 Istanbul-Turkey and safe return back home. I hope that IETC-2010 will be a meeting you will pleasantly remember.

I hope we will meet again at the 11th International Educational Technology Conference - IETC-2011.

Thank you...

Prof. Dr. Aytakin İŞMAN

General Coordinator & Founder of IETC

Editor in Chief of TOJET

April, 26 2010

Conference General Coordinator

Prof. Dr. Aytekin İŞMAN

Conference Coordinator

Prof. Dr. Yavuz AKPINAR

Conference Associate Coordinator

Assist. Prof. Dr. Mübin KIYICI

Academic Advisory Board

Chair : Prof. Dr. Mehmet DURMAN

Prof. Dr. Kadri ÖZÇALDIRAN

- Prof. Dr. Ali BAYKAL (Boğaziçi University, Turkey)
Prof. Dr. Ali Ekrem ÖZKUL (Anadolu Uni.-YÖK Representative, Turkey)
Prof. Dr. Ali Rıza AKDENİZ (Karadeniz Teknik University, Turkey)
Prof. Dr. Ali ŞİMŞEK (Anadolu University, Turkey)
Prof. Dr. Antoinette J. MUNTJEWERFF (University of Amsterdam)
Prof. Dr. Arvind SINGHAL (University of Texas, USA)
Prof. Dr. Asaf VAROL (Fırat University, Turkey)
Prof. Dr. Aytekin İŞMAN (Sakarya University, Turkey)
Prof. Dr. Brent G. WILSON (University of Colorado at Denver, USA)
Prof. Dr. Buket AKKOYUNLU (Hacettepe University, Turkey)
Prof. Dr. Charlotte Gunawardena (University of New Mexico, USA)
Prof. Dr. Colin LATCHEM (Open Learning Consultant, Australia)
Prof. Dr. Colleen SEXTON (Governor State University, USA)
Prof. Dr. Don M. FLOURNOY (Ohio University, USA)
Prof. Dr. Enver Tahir RIZA (Dokuz Eylül University, Turkey)
Prof. Dr. Ferhan ODABAŞI (Anadolu University, Turkey)
Prof. Dr. Francine Shuchat SHAW (New York University, USA)
Prof. Dr. Gianni Viardo VERCELLI (University of Genova, Italy)
Prof. Dr. Hafize KESER (Ankara University, Turkey)
Prof. Dr. Halil İbrahim YALIN (Gazi University, Turkey)
Prof. Dr. Heli RUOKAMO (University of Lapland, Finland)
Prof. Dr. Ing. Giovanni ADORNI (University of Genova, Italy)
Prof. Dr. Jerry Willis (Manhattanville College, USA)
Prof. Dr. Marina Stock McIsaac (Arizona State University, USA)
Prof. Dr. Mehmet GÜROL (Fırat University, Turkey)
Prof. Dr. Mehmet KESİM (Anadolu University, Turkey)
Prof. Dr. Murat BARKAN (Yaşar University, TRNC)
Prof. Dr. Petek AŞKAR (Hacettepe University, Turkey)
Prof. Dr. Rauf YILDIZ (Çanakkale Onsekiz Mart University, Turkey)
Prof. Dr. Servet BAYRAM (Marmara University, Turkey)
Prof. Dr. Stefan AUFENANGER (University of Mainz, Germany)
Prof. Dr. Uğur DEMİRAY (Anadolu University, Turkey)
Prof. Dr. Yavuz AKPINAR (Boğaziçi University, Turkey)
Prof. Vahdettin SEVİNÇ (Sakarya University, Turkey)
Prof. Dr. Zeki KAYA (Gazi University, Turkey)
Assoc. Prof. Dr. Ahmet Zeki SAKA (KATU, Turkey)
Assoc. Prof. Dr. Arif ALTUN (Hacettepe University, Turkey)
Assoc. Prof. Dr. C. Hakan AYDIN (Anadolu University, Turkey)
Assoc. Prof. Dr. Cem BİROL (Near East University, TRNC)
Assoc. Prof. Dr. Eralp ALTUN (Ege University, Turkey)
Assoc. Prof. Dr. Fatoş SİLMEN (Near East University, TRNC)

Assoc. Prof. Dr. Ezendu ARIWA (London Metropolitan Uni., U.K.)
Assoc. Prof. Dr. Galip AKAYDIN (Hacettepe University, Turkey)
Assoc. Prof. Dr. Hüseyin UZUNBOYLU (Near East University, TRNC)
Assoc. Prof. Dr. Larysa M. MYTSYK (Gogol State University, Ukraine)
Assoc. Prof. Dr. Mehmet ÇAĞLAR (Near East University, TRNC)
Assoc. Prof. Dr. Mustafa Murat INCEOGLU (Ege University, Turkey)
Assoc. Prof. Dr. Mustafa Şahin DÜNDAR (Sakarya University, Turkey)
Assoc. Prof. Dr. Rozhan M. IDRUS (Universiti Sains Malaysia, Malaysia)
Assoc. Prof. Dr. Selahattin GELBAL (Hacettepe University, Turkey)
Assoc. Prof. Dr. Teressa FRANKLIN (Ohio University, USA)
Assist.Prof. Dr. Abdullah KUZU (Anadolu University, Turkey)
Assist.Prof. Dr. A. Aşkım KURT (Anadolu University, Turkey)
Assist.Prof. Dr. Betül ÖZKAN (University of Arizona, USA)
Assist.Prof. Dr. Diler ÖNER (Boğaziçi University, Turkey)
Assist.Prof. Dr. Erkan TEKİNARSLAN (Bolu AİBU, Turkey)
Assist.Prof. Dr. Günizi KARTAL (Boğaziçi University, Turkey)
Assist.Prof. Dr. Hamdi ERKUNT (Boğaziçi University, Turkey)
Assist.Prof. Dr. Hasan ÇALIŞKAN (Anadolu University, Turkey)
Assist.Prof. Dr. Hüseyin YARATAN (EMU, TRNC)
Assist.Prof. Dr. Işıl KABAKÇI (Anadolu University, Turkey)
Assist.Prof. Dr. Jagannath. K DANGE (Kuvempu University, India)
Assist.Prof. Dr. M. Ali ÖZTÜRK (Bahçeşehir University, Turkey)
Assist.Prof. Dr. Murat ATAİZİ (Anadolu University, Turkey)
Assist.Prof. Dr. Mustafa Murat INCEOGLU (Ege University, Turkey)
Assist.Prof. Dr. Mübin KIYICI (Sakarya University, Turkey)
Assist.Prof. Dr. Özcan Erkan AKGÜN (Sakarya University, Turkey)
Assist.Prof. Dr. Selma KOÇ Vonderwell (Cleveland Sta. Uni, Cleveland)
Assist.Prof. Dr. Suzan Duygu ERİŞTİ (Anadolu University, Turkey)
Assist.Prof. Dr. Tufan ADIGÜZEL (Bahçeşehir University, Turkey)
Assist.Prof. Dr. Nurşen SUÇSUZ (Trakya University, Turkey)
Assist.Prof. Dr. Nilgün TOSUN (Trakya University, Turkey)
Dr. Fahriye ALTINAY (EMU, TRNC)
Dr. İsmail İPEK (Bilkent University, Turkey)
Dr. Manoj Kumar SAXENA (Advance Institute of Management - India)
Dr. Zehra ALTINAY (EMU, TRNC)
Fahme DABAJ (EMU, TRNC)

Executive Board

Assist. Prof. Dr. Diler ÖNER - Boğaziçi University
Assist. Prof. Dr. Günizi KARTAL - Boğaziçi University
Assist. Prof. Dr. Hamdi ERKUNT - Boğaziçi University
Assist. Prof. Dr. Hüseyin YARATAN- Eastern Mediterranean University
Assist. Prof. Dr. Mübin KIYICI - Sakarya University
Assist. Prof. Dr. Özcan Erkan AKGÜN – Sakarya University
Assist.Prof. Dr. Selma KOÇ Vonderwell - Cleveland Sta. University
Inst. Aydın KİPER - Sakarya University
Inst. Aytaç KAYA - Sakarya University
Inst. Hüseyin ŞİMŞEK - Boğaziçi University
Inst. Metin ÇENGEL - Sakarya University
Inst. Selçuk Sırrı TERCAN - Sakarya University
Res. Asst. Fatma BAŞARAN - Sakarya University
Res. Asst. Onur İŞBULAN - Sakarya University
Res. Asst. Özlem CANAN - Sakarya University
Res. Asst. Zeliha DEMİR - Sakarya University
Res. Asst. Zeynep ÖNDİN - Boğaziçi University
Fahme DABAJ, EMU
Nejdet İCİL, EMU

Keynotes

| Date | Time | Topic | Keynote Speaker | Session Chair |
|------------|---------------|--|------------------------------------|---------------|
| 26-04-2010 | 13:00 - 14:00 | Work based learning at Middlesex University | Prof. Dr. Paul GIBBS | Hamdi ERKUNT |
| 27-04-2010 | 09:00- 10:00 | Personalized Journal Of Educational Technology In Turkey | Prof. Dr. H. Ferhan ODABAŞI | Mehmet GÜROL |
| 27-04-2010 | 13:00 - 14:00 | Building Transparency into Assessment: Technology as an Alignment Tool | Prof. Dr. Colleen M. SEXTON | Arif ALTUN |
| 28-04-2010 | 09:00 -10:00 | New Ways of Knowing: Technologies that Support the Shift from Hierarchical to Horizontal, Tacit, and Abductive Knowing | Prof. Dr. Jerry WILLIS | Yavuz AKPINAR |

TABLE OF CONTENTS

| | |
|---|------|
| RECREATION AND SPORT MANAGEMENT DEPARTMENTS' STUDENTS' VIEWS ON DISTANCE EDUCATION <i>Gülten Hergüner</i> | 1260 |
| REENGINEERING TECHNOLOGY BASED TEACHING IN PRIMARY SCHOOLS <i>Ahmad Dalal'Ah, Ruba Al Omary</i> | 1261 |
| RELATION BETWEEN THE RELIGIOUS BELIEFS AND POLITICAL PREFERENCES OF UNIVERSITY STUDENTS <i>Meryem Bulut</i> | 1265 |
| RELIABLE INTERNET RESOURCES USE BY UNIVERSITY STUDENTS IN COURSE PROJECTS <i>Yaşar Güneri Şahin, Sabah Balta, Tuncay Ercan</i> | 1268 |
| RESEARCH INTO BY ASSESING THE STUDY BEHAVIOURS OF VOCATIONAL HIGH SCHOOL STUDENTS (A SELCUK UNIVERSITY EXAMPLE) <i>Niğmet Köklü, Hatice Güzel</i> | 1273 |
| REUSABLE BLOGS PROPOSAL FOR BLENDED LEARNING <i>Carlos A. Torres-Gastelú, Ana M. Arras Vota</i> | 1278 |
| SAKARYA ÜNİVERSİTESİ BÖTE ÖĞRENCİLERİNİN BİREYSELLEŞTİRİLMİŞ ÖĞRETİM TASARIMI KONUSUNDAKİ GÖRÜŞLERİ VE ÖĞRENCİLERİN BU KONUDAKİ BİLGİ DÜZEYLERİNİN BELİRLENMESİ <i>Tuğra Karademir</i> | 1283 |
| SAKARYA ÜNİVERSİTESİ EĞİTİM FAKÜLTESİ 4. SINIF ÖĞRENCİLERİNİN EĞİTİM TEKNOLOJİLERİNE YÖNELİK YETERLİLİK ALGILARI <i>Mehmet Emin Kılınç</i> | 1288 |
| SANAL ORTAMDA YER ALAN WEB FORUM SAYFALARININ BİLİŞİM ETİĞİ AÇISINDAN DEĞERLENDİRİLMESİ <i>Tuncay Sevindik, Korhan Kayışlı</i> | 1292 |
| SANAT TARİHİ DERSİNDE BİR ÖĞRENME MODELİ OLARAK SANAL GERÇEKLIK UYGULAMALARININ ETKİNLİĞİNİN DEĞERLENDİRİLMESİ <i>Levent Çoruh, Adnan Tepecik</i> | 1297 |
| SAYISAL UÇURUMUN BOYUTLARI VE TEKNOLOJİ POLİTİKALARI <i>Hale Ilgaz, Süleyman Sadi Seferoğlu</i> | 1302 |
| SCHOOL - INDUSTRY COOPERATION AT ŞİŞLİ TECHNICAL AND VOCATIONAL HIGH SCHOOL AND ITS EVALUATION <i>Ferdi Boynak, Mustafa Özcan, Murat Tamer</i> | 1307 |
| SINIF ÖĞRETMENLERİNİN BİLİŞİM TEKNOLOJİLERİ FORMATÖR ÖĞRETMENLERİNİN UYGULAMALARI HAKKINDAKİ GÖRÜŞLERİ <i>Esra Keleş, Aslı Karakoç, Pınar Demirel</i> | 1311 |
| SINIF ÖĞRETMENLİĞİ 1. SINIF ÖĞRENCİLERİNİN HAZIRLADIKLARI MATEMATİK GAZETELERİNİN YARATICILIĞI <i>Güliz Şahin, Denizhan Karaca Ece, Burcu Sezginsoy</i> | 1318 |
| SMART LEARNING IN LAW ENFORCEMENT CONTEXTS: USING E-LEARNING EFFECTIVELY <i>Elizabeth R. Graham, Selcuk Zengin</i> | 1322 |
| SOCIAL NETWORKING SITES: REFLECTIONS ON USAGE AND POLICY ISSUES FOR COMMUNICATION EDUCATORS <i>Aysu Arsoy, Baruck Opiyo</i> | 1335 |
| SOCIAL NETWORKING THROUGH ONLINE COMMUNICATION IN WORKPLACE: DEVELOPING COLLEGIALLY <i>Aytekin İşman, Zehra A. Gazi, Fahriye A. Aksal, Sibel Dinçyürek</i> | 1337 |
| SMART SCHOOL: TOWARD BETTER PERFORMANCE <i>Mohammad Attaran, Saedah Siraj</i> | 1341 |
| SOME ASPECTS OF MANAGING INFORMATION TECHNOLOGY SERVICES <i>Zuzana Hnatova, Iveta Kremenova, Juraj Fabus</i> | 1345 |
| SOME RESULTS FROM THE SURVEY ON TURKISH STATISTICS EDUCATION II <i>Atif Evren, Doğan Yıldız</i> | 1348 |
| SOSYAL AĞLARIN İLKÖĞRETİM ÖĞRENCİLERİNİN BAŞARISI VE ÖĞRENME ORTAMI TERCİHİNE ETKİSİ <i>Bünyamin Atıcı, Öznur Çevik Polat</i> | 1352 |
| STUDENT THOUGHTS ABOUT PRACTIBILITY EFFECTIVENESS OF DYNED PROGRAMME (A CASE OF SAFRANBOLU) <i>Ahmet Eskicumalı, Adnan Ucur</i> | 1356 |
| STUDENT'S REFLECTIONS ABOUT PODCAST CREATION AND USAGE PROCESSES <i>Sacide Güzin Mazman, Yasemin Koçak Usluel, Vildan Çevik</i> | 1363 |

| | |
|--|------|
| STUDENTS' MOTIVATION TOWARDS COMPUTER USE IN EFL LEARNING <i>Gülten Genç, Selami Aydın</i> | 1367 |
| STUDENTS' PERCEPTIONS OF USING WEBQUESTS IN ELT <i>Harika Hamzaoğlu</i> | 1370 |
| STUDENTS' RETROSPECTIVE USABILITY EVALUATION OF PHYSICS MODULE IN MALAYSIA <i>Norlidah Alias, Saedah Siraj</i> | 1371 |
| SUFFICIENCY OF VOCATIONAL SCHOOL OF HIGHER EDUCATION STUDENTS ABOUT TECHNOLOGY USE <i>Sedat Cereci</i> | 1376 |
| SYMBOLIC COMPUTATION TECHNIQUES AS AN EDUCATIONAL TOOL <i>A.Y. Teşneli, N.B. Teşneli, B. Kanberoğlu</i> | 1377 |
| TEACHER CANDIDATES' PERCEIVED INFORMATION LITERACY SELF-EFFICACY AND PERCEIVED COMPUTER SELF-EFFICACY <i>Ahmet Adalier, Oğuz Serin</i> | 1382 |
| TEACHER EDUCATION FROM E-LEARNER TO E-TEACHER: MASTER CURRICULUM <i>Radojka Krneta, Danijela Milosevic, Dragana Bjekic</i> | 1383 |
| TEACHERS' ATTITUDES TOWARD INFORMATION AND COMMUNICATION TECHNOLOGIES: THE CASE OF TURKISH UNIVERSITY EFL INSTRUCTORS <i>Gencer Elkılıç</i> | 1384 |
| TEACHERS' KNOWLEDGE, USE OF ICT IN THE CLASSROOM, ATTITUDES AND TRAINING NEEDS <i>Ana García-Valcárcel Muñoz-Repiso, Francisco Javier Tejedor Tejedor</i> | 1388 |
| TEACHING AND LEARNING WITH PEN-BASED TECHNOLOGY <i>Tolga Gök</i> | 1393 |
| TEACHING THE DIAGONALIZATION CONCEPT IN LINEAR ALGEBRA WITH TECHNOLOGY: A CASE STUDY AT GALATASARAY UNIVERSITY <i>Ayşegül Yıldız Ulus, Gülay Kaya</i> | 1397 |
| TECHNOLOGICALLY ENHANCED TEACHING: BLOGS IN ELT <i>Hilal Büyükgöze, Lütfiye Cengizhan</i> | 1401 |
| TECHNOLOGY BARRIERS: CHALLENGES OF TEACHER CANDIDATES WHILE USING TECHNOLOGY <i>Hamit Caner, Bengi Sonyel, Hatice Nilay Hasipoğlu, Süheyla Ü. Erbilin</i> | 1405 |
| TEKNİK ÖĞRETMENLERİN BİLİŞİM TEKNOLOJİLERİNİ KULLANIM DÜZEYLERİNİN VE ÖĞRETİM SÜRECİNE KATKILARININ BELİRLENMESİ ÜZERİNE BİR ALAN ARAŞTIRMASI <i>Şenol Okay</i> | 1406 |
| TEKNOLOJİ ENTEGRASYON MODELLERİ <i>Zeynel Abidin Mısırlı, Adile Aşkı Kurt</i> | 1412 |
| TEKNOLOJİ VE ÖĞRENME EĞİLİMLERİ <i>Özlem Ozan</i> | 1413 |
| TEKNOLOJİK PEDAGOJİK İÇERİK BİLGİSİ MODELİNE GÖRE BİT'İN ÖĞRENME-ÖĞRETME SÜRECİNE ENTEGRASYONU İLGİLİ ÖLÇEK GELİŞTİRME ÇALIŞMASI <i>Filiz Kuşkaya Mumcu, Yasemin Koçak Usluel</i> | 1419 |
| TEXT-TO-SPEECH ANIMATED MOVIE CREATION: POSSIBLE USES IN LANGUAGE EDUCATION <i>Ferit Kılıçkaya</i> | 1424 |
| THE AUDIOVISUAL SIDE OF E-LEARNING: A WEB BASED MULTIMEDIA BROADCASTING MODEL <i>Alper Gedik</i> | 1428 |
| THE CORRELATION BETWEEN THE PERCEPTIONS OF EPS INSTRUCTORS AND EPS STUDENTS TOWARDS TECHNOLOGY USE IN THEIR CLASSES <i>Nazan Doğruer, İpek Meneviş</i> | 1431 |
| THE CORRELATION BETWEEN THE PERCEPTIONS OF PROSPECTIVE TEACHERS OF ENGLISH AND EPS INSTRUCTORS TOWARDS THE USE OF INSTRUCTIONAL TECHNOLOGY IN CLASS <i>İpek Meneviş, Nazan Doğruer, Ramadan Eyyam</i> | 1435 |
| THE ECLECTIC SCHOOL TECHNOLOGY PLANNING MODEL AND ITS APPLICATION IN THE EVALUATION OF ESENTEPE'S TECHNOLOGY INTEGRATION PROCESS <i>Aslıhan Saban</i> | 1440 |
| THE EFFECT OF ANIMATION FILM APPLICATION UPON THE STUDENTS' SUCCESS AND ATTITUDE IN THE PROCESS OF HISTORY LESSON <i>Kadir Ulusoy</i> | 1446 |

| | |
|--|------|
| THE EFFECT OF PEDAGOGICAL AND ANALOGICAL MODELS IN TEACHING OF ELECTRICS SUBJECT TO THE SUCCESS OF STUDENT <i>Niğmet Köklü, Ahmet Sarıkoç</i> | 1453 |
| THE EFFECT OF TWO DIFFERENT METHODS ON STUDENT SUCCESS IN THE TEACHING OF SUBCUTANEOUS INJECTION <i>Deniz Öztürk, Hülya Bulut</i> | 1457 |
| THE EFFECTIVENESS OF INSTRUCTION BASED ON INTERACTIVE COMPUTER SIMULATIONS ON ACADEMIC ACHIEVEMENT AND REASONING ABILITY <i>Serhat Uzunel, Özlem Koray</i> | 1462 |
| THE EFFECTS OF BRAIN BASED LEARNING IN TERMS OF ACHIEVEMENT AND ATTITUDE IN BIOLOGY LESSON <i>Eda Demirhan, Şenol Beşoluk</i> | 1466 |
| THE EFFECTS OF COMBINING WEBLOG AND FACE-TO-FACE INSTRUCTION: ENGLISH FOR HOSPITALITY AND TOURISM COURSE <i>Ru-Chu Shih</i> | 1472 |
| THE EFFECTS OF LEARNER'S CHARACTERISTICS ON THE EVALUATION OF A VIRTUAL SEMINAR <i>Melek Yaman, Dittmar Graf</i> | 1477 |
| THE EFFECTS OF TECHNOLOGY USE ON STUDENTS' SUCCESS IN ENGLISH LESSONS <i>Ramadan Eyyam, Hüseyin S. Yaratan</i> | 1481 |
| THE EFFICIENCY OF THE COMPUTER-ASSISTED LEARNING IN THE CASE OF A CHILD WITH DOWN SYNDROME <i>Ioana Iacob, Corina Musuroj, Alexandra Spataru</i> | 1485 |
| THE EVALUATION OF PRIMARY SCHOOL STUDENTS' EDUCATIONAL SOFTWARE INTERFACE DESIGN CHOICES <i>Ümit Demir</i> | 1487 |
| THE EVALUATION OF THE USAGE OF INSTRUCTIONAL TECHNOLOGY IN LEARNING ENVIRONMENTS BY PRIMARY SCHOOL CHILDREN <i>Özge Ayva, Sibel Zeytin Torun</i> | 1492 |
| THE EVALUATION OF UNIVERSITY STUDENTS' EDUCATIONAL SOFTWARE INTERFACE DESIGN CHOICES: THE CASE OF EDUCATION FACULTY <i>Ümit Demir, Eralp Altun</i> | 1497 |
| THE EVALUATION OF USING SIMULATORS OF ARITHMETIC AND LOGICAL OPERATIONS IN TEACHING COMPUTER SYSTEMS <i>Nebojša Stanković</i> | 1501 |
| THE EXAMINATION OF UNIVERSITY STUDENTS ATTITUDE TOWARDS E LEARNING <i>Serkan Mutluoğlu</i> | 1505 |
| THE FEASIBILITY STUDY OF USING ICT FEATURES IN IRANIAN SECONDARY SCHOOLS ACTIVITIES: THE CASE OF TEHRAN PROVINCE <i>Saadattalab, Ayat, Fathi Vajargah, Kourosh</i> | 1508 |
| THE IMPACT OF SENSE OF COMMUNITY ON LEARNERS' ACHIEVEMENT AND ATTITUDES <i>Bünyamin Atıcı, Uğur Batı</i> | 1512 |
| THE IMPACT OF TEACHERS' ATTITUDES AND BELIEFS ON ADOPTING BLENDED LANGUAGE TEACHING <i>Zuhal Okan, Meral Şeker</i> | 1516 |
| THE IMPORTANCE OF KNOWLEDGE TRANSFER IN ILL-STRUCTURED KNOWLEDGE DOMAINS FOR AN UNDERGRADUATE COURSE <i>Mehmet Akif Ocak, Serdar Çiftci</i> | 1522 |
| THE IMPORTANCE OF VISUAL MATERIAL AND VIDEO GAMES IN DESIGN EDUCATION <i>İ. Emre Kavut, Elif Özdoğlar</i> | 1526 |
| THE INFLUENCES OF ELEMENTARY SCHOOL SIXTH GRADERS' PARENTS' INTERNET LITERACY AND PARENTING STYLE ON INTERNET PARENTING <i>Shi-Jer Lou, Yuan-Chang Guo, Ru-Chu Shih, Hung-Tzu Liu</i> | 1531 |
| THE INVESTIGATION OF ATTITUDES OF FINE ARTS DEPARTMENT STUDENTS TOWARDS COMPUTER LESSONS <i>Işıl Güneş Modiri, Abdullah Ayaydın</i> | 1534 |
| THE LEXICAL IMPACT OF NANOTECHNOLOGY ON TURKISH AND ENGLISH LANGUAGE TEACHER EDUCATION | 1539 |

| | |
|---|------|
| <i>Dilara Demirbulak</i> | |
| THE NEED FOR IMPROVEMENT OF IT TEACHING | 1545 |
| <i>Anrieta Draganova</i> | |
| THE NEED FOR PEDAGOGICAL CHANGE IN ONLINE ADULT LEARNING: A DISTANCE EDUCATION CASE IN A TRADITIONAL UNIVERSITY | 1548 |
| <i>Sönmez Pamuk</i> | |
| THE PENCIL PLATFORM: CONNECTING LEARNERS, TUTORS, AND TOOLS | 1552 |
| <i>Matthias Heintz, Sebastian Weber</i> | |
| THE PERSPECTIVES ON COLLABORATIVE LEARNING: A CASE FROM COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY DEPARTMENT | 1556 |
| <i>Zülfü Genç</i> | |
| THE RELATIONSHIP BETWEEN COMPUTER-INTERNET ADDICTION AND FAMILY FUNCTIONS | 1559 |
| <i>Emre Balkan</i> | |
| THE RELATIONSHIP BETWEEN PROBLEMATIC INTERNET USAGE AND LONELINESS LEVEL OF PROSPECTIVE TEACHERS | 1563 |
| <i>Levent Deniz, Aylin Tutgun</i> | |
| THE ROLE OF ASYNCHRONOUS ELECTRONIC DISCOURSE IN A BLENDED TEACHER EDUCATION COURSE | 1566 |
| <i>Zeynep Koçoğlu</i> | |
| THE ROLE OF NATURAL ENVIRONMENT IN DISTANCE EDUCATION | 1570 |
| <i>Kimio Kondo</i> | |
| THE ROLE OF TECHNOLOGY IN TEACHING AND LEARNING: PERSPECTIVE OF PROSPECTIVE TEACHERS | 1574 |
| <i>Hacer Çiler Çil, Ömür Akdemir</i> | |
| THE TECHNOLOGICAL LEGAL EDUCATION IN HIGHER STUDIES IN BANGLADESH AND MALAYSIA: AN APPROACH FOR SUSTAINABLE DEVELOPMENT | 1578 |
| <i>Noor Mohammad</i> | |
| THE THOUGHTS OF PRIMARY SCHOOL PRE-SERVICES ABOUT THE TEACHING OF ATOM SUBJECT WITH COMPUTER SUPPORTED INSTRUCTION MATERIALS | 1583 |
| <i>Zerrin Ayvaz Reis, Elif Ince, F. Gülay Kırbaşlar, Zeliha Özsoy-Güneş</i> | |
| THE TURKISH ADAPTATION OF E-LEARNING ATTITUDE SCALE: RELIABILITY AND VALIDITY STUDIES | 1588 |
| <i>N. İzzet Kurbanoğlu, Mithat Takunyacı, Orhan Kocaman, Gamze Çetinkaya</i> | |
| THE URBAN ENVIRONMENTAL POLLUTION IN MALAYSIA: NEED TO IMPLEMENT THE ENVIRONMENTAL LEGAL EDUCATION FOR SUSTAINABLE DEVELOPMENT | 1592 |
| <i>Noor Mohammad</i> | |
| THE USE OF ADAPTIVE AND INTELLIGENT EDUCATIONAL HYPERMEDIA SYSTEMS IN THE DESIGN OF E-LEARNING ENVIRONMENTS | 1597 |
| <i>Özcan Özyurt, Hacer Özyurt</i> | |
| THE USE OF MANY LISTENING MEDIA-TYPES IN ONE MULTIMEDIA LISTENING APPLICATION | 1601 |
| <i>Vehbi Türel</i> | |
| TOWARDS AN AUTHORING TOOL FOR LEARNER MODELING | 1613 |
| <i>Douadi Bourouaie, Tahar Bensebaa</i> | |
| TRANSITION OF HIGH SCHOOL ON-LINE LEARNERS TO TERTIARY EDUCATION: RESULTS OF A MULTI-YEAR INVESTIGATION | 1619 |
| <i>Dale Kirby, Dennis B. Sharpe</i> | |
| TRENDS IN EDUCATIONAL TECHNOLOGY: A DECADE OF IETC | 1623 |
| <i>Yakut Gazi</i> | |
| TURKISH EFL ACADEMICIANS' PROBLEMS CONCERNING TRANSLATION ACTIVITIES AND PRACTICES, THEIR ATTITUDES TOWARDS THE USE OF ONLINE AND PRINTED TRANSLATION TOOLS, AND SUGGESTIONS FOR QUALITY TRANSLATION PRACTICE | 1627 |
| <i>Buğra Zengin, Işıl Günseli Kaçar</i> | |
| TÜRKİYEDE TEKNİK EĞİTİM FAKÜLTELERİNİN DÜNÜ BUGÜNÜ VE YARINI | 1634 |
| <i>Adnan Kakilli</i> | |
| UNDERGRADUATE EDUCATION PERFORMANCE ANALYSIS USING CLUSTERING WITH EM ALGORITHM | 1638 |
| <i>Volkan Çakır, Adrian Gheorghe</i> | |
| USE OF FLICKR FOR LANGUAGE TEACHING | 1643 |
| <i>Yasemin Gülbahar, Filiz Kalelioğlu</i> | |

| | |
|---|------|
| USE OF LEARNING AND STUDY STRATEGIES: DOES GENDER MAKE A DIFFERENCE? <i>Shahida Sohail, Shumaila Shahzad, Hafiz Mohammad Iqbal</i> | 1645 |
| USE OF ONE FACEBOOK APPLICATION - "COURSES": CEIT STUDENTS' PERCEPTION AND EXPERIENCES <i>Zülfü Genç</i> | 1649 |
| USE OF TUTORIAL VIDEOS IN COMPUTER ACTIVITIES <i>C. Roldán López De Hierro, A. Roldán López De Hierro, J. Martínez-Moreno, R. Pascual Fernández</i> | 1653 |
| USING A RELATIONAL EXPRESSIVE PLAY THERAPY APPROACH THERAPY TO ENHANCE PRO-SOCIAL BEHAVIOR IN PRIMARY SCHOOL CHILDREN <i>Diana-Lea Baranovich</i> | 1657 |
| USING DIGITAL EXERCISES TO HELP CHILDREN WITH CEREBRAL PALSY IN PRIMARY MATH TEACHING: A CASE STUDY <i>M. G. A. D. Reis, Luciana C. Pereira, E. Peres, M. Bessa, A. Valente, R. Morais, S. Soares, J. Baptista, A. P. Aires, J. J. Escola, J. A. Bulas-Cruz, M. J. C. S. Reis</i> | 1664 |
| USING INFORMATION AND COMMUNICATION TECHNOLOGIES IN SCHOOL IMPROVEMENT <i>Nilgün Tosun</i> | 1670 |
| USING LSL TO CREATE STUDENT'S ASSIGNMENTS IN SLOODLE COURSE COMPUTER GRAPHICS <i>Maja Božović, Danijela Milošević, Anđelija Mitrović</i> | 1674 |
| USING MOBILE PHONES TO IMPROVE ENGLISH VOCABULARY ACQUISITION <i>Emrah Baki Başoğlu, Ömür Akdemir</i> | 1679 |
| USING MOVIES IN LANGUAGE CLASSROOMS AS MEANS OF UNDERSTANDING CULTURAL DIVERSITY <i>Nafi Yalçın</i> | 1682 |
| USING PARALLEL CORPORA IN DATA-DRIVEN TEACHING OF TURKISH IN SWEDEN <i>Éva Á. Csató, Songül Kilimci, Beáta Megyesi</i> | 1686 |
| USING PODCASTS AS LANGUAGE LEARNING OBJECTS AND ITS EFFECT ON FIRST-YEAR TURKISH UNIVERSITY STUDENTS' LANGUAGE LEARNING BELIEFS <i>Neşe Cabaroğlu, Süleyman Başaran</i> | 1690 |
| UZAKTAN EĞİTİM İLE TEKNİK ÖĞRETMENLERİN BİLGİ İHTİYACININ KARŞILANMASI <i>Cüneyt Birkök, Turan Tolga Vuranok</i> | 1695 |
| UZAKTAN EĞİTİM PROGRAMLARINDA AKREDİTASYON <i>Serpil Koçdar</i> | 1699 |
| UZAKTAN EĞİTİMDE BAŞARIYA ETKİ EDEN FAKTÖRLERİN BELİRLENMESİNDE SAKARYA ÜNİVERSİTESİ E-MBA ÖRNEĞİ <i>Hayrettin Evirgen, Metin Çengel</i> | 1700 |
| UZAKTAN EĞİTİMDE İLETİŞİM TEKNOLOJİLERİNİN KULLANIMI ÜZERİNE YAKLAŞIMLAR VE DEĞERLENDİRMELER <i>Murat Ertan Doğan</i> | 1706 |
| ÜÇ-BOYUTLU ORYANTASYON ORTAMLARINDA YÖNERGE KULLANIMI USE OF DIRECTIONS IN 3D ORIENTATION ENVIRONMENTS <i>Ümmühan Avcı, Mehmet Ali Çinicı, Gülşen Sert, Nazan Sezen, Hakan Tüzün</i> | 1709 |
| ÜNİVERSİTE TARİH VE TÜRKÇE BÖLÜMÜ ÖĞRENCİLERİNİN BİLİŞİM TEKNOLOJİLERİNE YÖNELİK TUTUMLARININ DEĞERLENDİRİLMESİ <i>Mehmet Aksüt, Songül Ateş, Onur Er, Sevgi Balaban</i> | 1713 |
| ÜST DÜZEYDE BİLİŞSEL ETKİNLİK GEREKTİREN SOYUT KAVRAMLARIN , BİLGİSAYAR DESTEKLİ MATEMATİK EĞİTİMİ İLE SOMUTLAŞTIRILMASI VE EĞİTİME KATKISI <i>Nilüfer Doyranlı, Ali Güneş</i> | 1716 |
| VERİ YAPILARI VE ALGORİTMALAR DERSİ İÇİN SANAL LABORATUAR UYGULAMASI <i>Ömer Deperlioğlu, Fatma Topuz</i> | 1721 |
| VİDEO KONFERANS YOLUYLA GERÇEKLEŞTİRİLEN KÜLTÜRLERARASI SANAT EĞİTİMİNİN ETKİLİLİĞİ <i>Suzan Duygu Erişti</i> | 1727 |
| VIEWS OF TEACHER CANDIDATES ON RELATING BASIC PHYSICS PRINCIPLES TO ANIMALS AND ANIMAL BEHAVIORS: DIGITAL MEDIA DEMONSTRATION <i>Dilek Erduran Avcı, Dilek Karaca, Mehmet Karabal</i> | 1732 |
| VİKİ UYGULAMALARININ KULLANIMI HAKKINDA ÖĞRENCİ GÖRÜŞLERİ <i>Nesrin Saç</i> | 1736 |
| VIRTUAL IDENTITIES AND VIRTUAL COMMUNITIES: CONSTRUCTION OF SELF WITHIN CYBER SOCIETIES: | 1740 |

| | |
|--|------|
| THE IMVU CASE <i>Başak Sarıgöllü</i> | |
| WALKING HAND IN HAND WITH YOUR STUDENTS IN LEARNING ROAD (TEACHING STYLES AND LEARNING STYLES CONGRUENCY REVISITED) <i>Zahra Naimie , Rana Ahmed Abuzaid, Saedah Siraj, Reihaneh Shagholi</i> | 1745 |
| WEB AIDED TEACHING OF CIRCUIT ANALYSIS LABORATORY COURSES <i>Murat Köklü, Uğur Taşkıran, Yavuz Ünal</i> | 1749 |
| WEB AIDED TRAINING OF MEASUREMENT DEVICES AND CIRCUIT ELEMENTS USED IN ELECTRONICS LABORATORIES <i>Murat Köklü, Uğur Taşkıran, Yavuz Ünal</i> | 1754 |
| WEB BASED CONTROL SIMULATIONS ENVIRONMENT (WBCSE) FOR CONTROL EDUCATION WITH MATLAB <i>Muhammet Ünal, Kenan Savaş, Vedat Topuz, Hasan Erdal</i> | 1759 |
| WEB DESTEKLİ ÖĞRETİMİN KAYNAŞTIRMA EĞİTİMİNDEKİ İLKÖĞRETİM 7. SINIF ÖĞRENCİLERİNİN PERFORMANS VE MEMNUNİYET DÜZEYLERİ ÜZERİNDEKİ ETKİSİ <i>Sezer Köse Biber, Eralp Altun</i> | 1764 |
| WEB MACERASI ÖĞRETİM YÖNTEMİNİN GAGNE'NİN ÖĞRETİM DURUMLARI MODELİNE UYGUNLUĞU <i>Ahmet Akçay</i> | 1769 |
| WEB SAYFASINA AJAX TEKNİĞİNİN UYGULAMASI <i>Enes Çelik, Ali Buldu</i> | 1772 |
| WEB TABANLI İNTERAKTİF METOTLARLA CİSİMLERİN DAYANIMI EĞİTİMİNE FARKLI BİR YAKLAŞIM <i>Dursun Demir , Abdullah Kurt</i> | 1776 |
| WEB TABANLI ÖĞRENMEDE ÖĞRENCİ MEMNUNİYETİNİN KATILIM KARARINA ETKİSİ <i>Gonca Kızılkaya Cumaoğlu, Petek Aşkar</i> | 1780 |
| WEB TABANLI PROBLEME DAYALI ÖĞRENMENİN ÖĞRENCİLERİN YARATICI DÜŞÜNME BECERİLERİNE ETKİSİ <i>Mustafa Serkan Günbatar, Hayati Çavuş</i> | 1783 |
| WEB-BASED DEMONSTRATION OF PHYSICAL TESTS IN TEXTILE <i>Zehra Yıldız, Kazım Yıldız, Şükrü Erdal</i> | 1787 |
| WEB-BASED INTERACTIVE CHILDBIRTH EDUCATION PROGRAM: OUTCOMES <i>Kerziban Yenal, Ümran Sevil</i> | 1791 |
| WHAT EFFECTS OF PRESERVICE TEACHERS TO BE COMPUTER LITERATE? <i>Ayfer Alper</i> | 1795 |
| WHAT HAPPENS IF THE TEACHING OF "EDEB"İYAT GETS SENSORIAL? <i>Fundagül Apak</i> | 1799 |
| WHERE ARE WE IN THE OPEN WORLD? AN ANALYSES OF EDUCATIONAL TECHNOLOGY IMPLEMENTATIONS IN TURKEY <i>Cengiz Hakan Aydın</i> | 1800 |
| WHY THE PLACE OF LCMS CAN NOT BE FOUND IN THE INSTITUTIONAL COMMUNICATION? <i>Edina Kriskó, Csilla Muhari</i> | 1801 |
| YABANCI DİL DERSİNDE YARATICI ÖĞRENME YÖNTEMİNİN ÖĞRENCİ BAŞARISI VE MEMNUNİYETİ ÜZERİNE ETKİSİ (DİYARBAKIR GAFFAR OKKAN ANADOLU LİSESİ ÖRNEĞİ) <i>Saygın Eylem Yavuz , Murat İbrahim Yavuz</i> | 1805 |
| YAPICI ÖĞRENMEDE TEKNOLOJİNİN ROLÜ <i>Nejdet Karadağ</i> | 1809 |
| YAPILANDIRMACI EĞİTİM YAKLAŞIMI VE BU YAKLAŞIMIN GETİRDİĞİ ALTERNATİF ÖLÇME DEĞERLENDİRME YÖNTEMLERİ HAKKINDA ADAY ÖĞRETMENLERİN GÖRÜŞLERİ <i>Berna Kaya</i> | 1810 |
| YAZILIMA ÖZEL LOG-TABANLI KULLANILABİLİRLİK TESTİ <i>Gökhan Akçapınar, Petek Aşkar</i> | 1815 |
| YENİ İLKÖĞRETİM PROGRAMININ UYGULANMASIYLA EĞİTİM TEKNOLOJİLERİ KULLANIMINA İLİŞKİN ÖĞRETMEN GÖRÜŞLERİ <i>Hatice Aysel Aygün, Özcan Erkan Akgün</i> | 1818 |
| YÜKSEK LİSANS ÖĞRENCİLERİNİN İNTERNET KAYNAKLARINI ARAŞTIRMA VE ÖĞRENME AMAÇLI KULLANIMININ İRDELENMESİ <i>Servet Demir</i> | 1823 |

| | |
|---|-------------|
| DESIGN FOR CHILDREN: PARTICIPATORY APPROACH IN THE DEVELOPMENT OF A WEB-BASED COMIC- STYLE STORYTELLING SYSTEM | 1827 |
| <i>Muhammad Helmi Norman, Siti Salwah Salim</i> | |
| INVESTIGATION OF CRITICAL COMPONENTS IN A WEB-BASED INSTRUCTION ON PROGRAMMING LANGUAGE | 1832 |
| <i>Halil ERSOY, Ömer DELIALIOĞLU, M. Yaşar ÖZDEN</i> | |
| DESIGN OF A BAHASA MELAYU GRAMMAR ONLINE LEARNING PORTAL FOR FORM TWO STUDENTS | 1837 |
| <i>Saedah Siraj, Dr. Chin Hai Leng and Alina Ranee</i> | |

RECREATION AND SPORT MANAGEMENT DEPARTMENTS' STUDENTS' VIEWS ON DISTANCE EDUCATION

Gülten HERGÜNER

Abstract:

The aim of this study is to investigate the viewpoints of students in recreation and sport management departments about distance education, and the effects of gender, having computers at home, having the internet at home, family's monthly income, district of the family, and students' class on these viewpoints. Survey method was used to carry out the study. The sample of the study consisted of the students attending Recreation and Sports Management Departments of Physical Education and Sports High School in Sakarya University. In order to gather data, a questionnaire was developed by the researcher and it was applied to 292 students. Several statistical techniques such as frequency, percentage, t-test and ANOVA were used to analyze the data. The result of the study indicated that the variables like gender, having a computer at home, having internet access at home, students' families' monthly income, the place where students' families live and class levels of the students were effective on their opinions.

Keywords: Physical education, Distance Education, Recreation, Sport Management.

REENGINEERING TECHNOLOGY BASED TEACHING IN PRIMARY SCHOOLS

Ahmad Dalal'ah
JordanUniversity of Science and Technology
dalalal@just.edu.jo

Ruba Al Omary
Ministry of Education
ruba@just.edu.jo

Abstract

The main objective of this research is to examine the rules of using ICT in existing education system in primary schools, and to reengineer the current system to develop a consistent model for effective use of ICT in teaching and learning if needed. The main research questions were "Is the current use of ICT in teaching and learning in primary schools needs to be reengineered?" and "How the education system in primary schools can be reengineered for effective use of ICT in teaching and learning?" A number of research questions and hypotheses have been developed. Different data gathering techniques were used to collect data from various sources. The collected data were analyzed by using different statistical techniques and tests. Finally the analyzed data were discussed.

The study concluded that there is no consistence model for effective use of ICT in teaching and learning in the primary schools and the education system in primary schools needs to be reengineered for effective use of ICT in teaching and learning. A consistent model for ICT integration in educations was developed. The proposed model consists of five dimensions, which are the most important aspects of using ICT in education: policy and planning, ICT infrastructure, teachers and training, pedagogies, and curriculum. The pedagogies are the main subject of this paper.

1. INTRODUCTION

1.1 OVERVIEW

ICT is becoming more and more integrated in society; it transforms many faces of life in countries around the world such as: economic, social, and cultural. Fast developments in ICT sector have placed greater demand on education systems [Anderson J, 2005]; there is a need for a radical change in education system in the society, to prepare all students, for a future that will be different from the present; to live, learn, and work successfully in an increasingly complex and information rich society. Students must be able to use technology effectively within an effective educational setting, because technology can enable students to become problem solvers and decision makers, creative and effective users of productivity tools, communicators, collaborators, publishers, responsible, and contributing citizens. [Kankaanranta Marja, 2005]

"Reengineering triggers changes of many kinds, not just of the business process itself. Job designs, organizational structures, management systems-anything associated with the process-must be refashioned in an integrated way. In other words, reengineering is a tremendous effort that mandates change in many areas of the organization". [Anderson J, 2005] Hence education system deserves the necessary attention to cope with the required changes. Business Process Reengineering (BPR) is being used as a change management strategy to reengineering teaching and learning. ICT has as much potential to reorganize education as well as work. To gain the benefit from ICT, we need to address the primary ways that can be use to reengineer traditional processes to achieve performance improvement. New educational technologies do not mean only tools such as computers or communications, there must also be new ways of using these tools, rather than using the new educational tools to continue doing things the old way; we must deeply change the way we teach and learn in the classroom. [Anderson J, 2005]

1.2 THE MAIN RESEARCH QUESTIONS

- Is the current use of ICT in teaching and learning in primary schools needs to be reengineered?
- Is it possible to reengineer the education system in primary schools for effective use of ICT in teaching and learning?
- How the education system in primary schools can be reengineered for effective use of ICT in teaching and learning?

A number of sub research questions have been developed, such as:

- What is the best reengineering methodology that can be used to reengineer education system in primary schools?
- What are the main factors that influence using ICT in teaching and learning in primary schools?
- What is the main ICT implementation obstacle in primary schools?
- What are the main issues and challenges that need to be considered when formulating policies for ICT usage in primary schools?
- What are the features of the ICT infrastructure that are crucial for smooth and safe using of technology in primary schools?
- What is the main skills do teachers need for dealing with ICT?
- How pedagogies need to be reformed for effective use of ICT in teaching and learning in primary schools?

1.3 THE MAIN RESEARCH HYPOTHESES

- There is a consistence model for effective use of ICT in teaching and learning in the primary schools.
- There is no need to reengineer the education system in primary schools for effective use of ICT in teaching and learning.
- Business process reengineering methodology can be used to reengineer education system in primary schools.
- All primary schools have their own policy and plans for using ICT in teaching and learning.
- All primary schools have sufficient ICT facilities and resources including various types of technological devices and software.
- There is no significant relationship between the ICT usage and pedagogies.
- Teachers in primary schools have the main skills needed for dealing with ICT.

2. RELATED WORK

Many recent researches focused on using ICT to reform schools and education system. A little work has been undertaken to reengineer schools and education system and to develop various types of frameworks that include aspects of the impact of ICT use on dimensions of schooling. [Christopher Tan Yew Gee 2003, Newhouse C.P. 2002, Harrison C. et al 2003, Plante Johanne and Beattie David 2004]

According to education system reform, most countries have their strategies to use ICT in reforming their education systems; there are many researches and works in this field. In the following section an explanation of some strategies in Jordan, Singapore and Finland was conducted. Singapore and Finland are two countries that have invested significantly in education reform and have developed education systems that are among the best in the world.

2.1 SINGAPOR'S EDUCATION REFORM

ICT has been an important component of Singapore's education reform. Singapore had two ICT plans [Kozma R.B. 2005, Cher Ping et al 2002]:

- Master Plan for IT in Education: start in 1997 for 5 years, focused on Installing computers and high bandwidth Internet access in schools and classrooms and training teachers on the use of computers.
- Master Plan 2: start in 2002, adopted a more systemic approach, i.e., holistic approach in which all the key components of the system ICT, curriculum, assessment, instruction, professional development, and school culture were **integrated**. **Changes** in one area were to be matched to changes in others within the Education Ministry.

2.2 FINLAND'S EDUCATION REFORM

Finland's Information Strategy integrates ICT with other components of the system **but the focus is much more on supporting knowledge production and use.**

The Information Society Program has helped schools purchase computers, link them to **the Internet, promote the introduction of ICT as a tool for teaching and learning, and carry out in-service training for teachers.** The purpose of the **in-service training program** is to provide teachers with the knowledge and skills needed to reform the pedagogical practices in their schools, especially with regard to collaborative teaching and learning, networking, and teamwork. [Holmes Glen 2006]

2.3. JORDAN EDUCATION INITIATIVE

The Jordan Education Initiative (JEI) was conceived at the Annual Meeting of the World Economic Forum in Davos, Switzerland in January 2003, when the Governors of IT and Telecommunications agreed to **sponsor an initiative** for education reform in a developing country. Jordan was chosen as the pilot country and was challenged with developing a proposal "of significant scope and size" that would catalyze a process of change and creates value that transcends its borders. The JEI was formally launched at the Extraordinary Meeting of the World Economic Forum at the Dead Sea, Jordan in June 2003. [Newhouse C.P. et al 2002]

The JEI has four main objectives:

- Improving the delivery of education to **Jordan's citizens through public-private partnership**
- Unleashing the innovation of teachers and students **through effective use of ICT**
- Building the capacity of the local **information technology industry**
- Creating a model of reform that **can be used by other countries**

The Jordan Education Initiative focused on developing and deploying new approaches to learning and teaching reform into approximately 100 pilot Discovery Schools in Amman, Jordan. At 2006 the Canadian International Development Agency assesses the use of e-learning material in the classrooms of Discovery schools to **determine if the use of these e-learning materials is as planned or expected.** The results of the study indicate that there are some **concerns with the access to the e-learning materials and the necessary technology.** In particular, the quality of some of the e-learning material, the **structure and organization within schools, and the training received by teachers.** These findings need to be verified and placed in a larger context to **ensure success for students and teachers in the future.**

3. METHODOLOGY

3.1 DATA GATHERING TECHNIQUES

The study involved **collecting data** from various sources about the availability and use of information and communication technologies in primary schools in Irbid. These sources included:

1. Contact schools and **contribute information** from their own knowledge.
2. Gathering information from the Ministry of Education, mainly from the Curricula and Textbooks Managing Directorate (DCT), ICT Directorate, and Training Directorate.
3. Reviewing documents from the Ministry of Education.
4. The questionnaires which were the major source of information.

3.2 RESEARCH SAMPLE AND RESPONSE RATES

The sample used for this research was a random sample of primary schools in Irbid, selected from a list of Irbid Governorate schools provided by the Ministry of Education.

- The total number of schools in Irbid Governorate was 386 in year 2006-2007.
- The sample of 20% of the total number of schools was 78 schools. Questionnaires were sent to 100 principals of primary schools from the education directorates - Irbid Governorate.

However, only 70 school principals were sufficiently completed and useable.

- The total number of teachers in Irbid Governorate was 9418 in year 2006-2007.
- The sample of 10% of the total number of teachers was 941.
- Questionnaires were sent to 1000 teachers of primary schools from the education directorates - Irbid Governorate.
- However, only 498 teachers were sufficiently completed and might be useable.

4. PEDAGOGIES

They are the ways in which teachers and students interact; these pedagogies will necessarily characterize the ways in which ICT is incorporated into a school. [Cox M. et al 2003]

Referring to the survey results and data analysis:

- As shown in the survey results, in most of the schools, teaching is still performed on traditional basis, while not sufficient attention is paid to learning strategies using ICT activities. A low percentage of teachers change their pedagogies to learn best by integrate ICT skills.
- The traditional pedagogy was just focused on presenting content in lecture format; the teacher does most of the talking, writes out knowledge, following to be memorized and reproduced by a student.
- ICT activities change the traditional processes of pedagogy.
- The developments in ICT provide different learning opportunities; teachers will need to be able to modify their pedagogy radically. As new tools and software become available, teachers will need to develop new skills and pedagogical approaches.
- Reengineering pedagogies help to optimize the use of ICT. Many researchers show that effective use of ICT depends on the pedagogical thinking that links teaching methods and the selection of resources, also the activities and the learning objectives.
- New pedagogical concepts needed when ICT is used in teaching and learning. Therefore students will not only learn the traditional learning program, they will obtain a large set of other skills such as: ICT skills, communication skills, and writing skills.
- The teacher's pedagogical beliefs have an important effect on shaping technology based learning. New pedagogies engage the use of various technologies tools, to support teaching and learning needs

5. DISCUSSION

This paper provides a detailed discussion for the results and data gathered through the different methods and techniques which were analyzed. This paper shows that the main hypotheses under consideration were rejected:

- Hypothesis 1: There is a consistence model for effective use of ICT in teaching and learning in the primary schools. Hypothesis 1 was rejected because the result of data analysis and discussion does not support the hypothesis. There is no consistence model for effective use of ICT in teaching and learning in the primary schools
- Hypothesis 2: there is no need to reengineer the education system in primary schools for effective use of ICT in teaching and learning.

Hypothesis 2 was rejected because there is no consistence model for effective use of ICT in teaching and learning in the primary schools. There is a need to reengineer the current education system to develop a consistent model.

- Hypothesis 3: All primary schools have their own policy and plans for using ICT in teaching and learning.

Hypothesis 3 was rejected because the result of data analysis and discussion does not support the hypothesis as shown in section

- Hypothesis 4: All primary schools have sufficient ICT facilities and resources including various types of technological devices and software. Hypothesis 4 was rejected because the result of data analysis and discussion does not support the hypothesis as shown in section
- Hypothesis 5: There is no significant relationship between the ICT usage and pedagogies.

Hypothesis 5 was rejected because the result of data analysis and discussion does not support the hypothesis as shown

- Hypothesis 6: Teachers in primary schools have the main skills needed for dealing with ICT.

Hypothesis 6 was rejected because the result of data analysis and discussion does not support the hypothesis as shown

6. CURRENT PEDAGOGIES

Pedagogy is the process involved in teaching, including knowledge transformation and how this knowledge can be taught and learnt. Most educators consider that pedagogy includes teaching strategies and methods, teacher's practices, learning experiences, and student organization. Pedagogy is one of the most important features of integrating ICT in the education. [New house C.P. et al 2002, Cox M. et al 2003]

6.1 HOW PEDAGOGIES CAN BE REENGINEERED

Referring to many studies and from the teacher's viewpoint, a range of requirements should be available for teachers if they want to integrate ICT effectively into teaching, learning and the curriculum. These include the need for teachers to [13,14]:

- Train on how to integrate ICT activities into the pedagogy of particular subjects, and to understand how to prepare lessons using ICT in order to improve students understanding.
- Know where, when, and how to use technology for classroom activities and presentations.
- Know the opportunities and implications of the uses of ICT for learning and teaching in the curriculum.
- Teachers have to be both experts in their content areas and in a wide range of teaching approaches to provide various learning needs of every student.
- Know how to use ICT and specific types of software to support student's attainment of school subject matter knowledge, and how to use this technology for enhancement classroom teaching.
- Know how to assess and evaluate learning and teaching in flexible learning environments.
- Develop skills in using ICT resources, by using many applications frequently.
- Identify the class organization which will be most effective for using ICT.
- Identify the relationship between ICT resources and the concepts of each subject, in order to select the suitable resources for the learning objectives.

Reengineering pedagogy as a result of integrating ICT in teaching and learning has not happened yet due to several reasons:

- Lack of ICT skills among teachers.
- Limited support infrastructure (i.e. Projector, PCs, etc.).

- Lack of ICT-based learning materials.
- The traditional school organization and fixed timetable lesson periods restrict the pedagogy of the individual or small group of teachers.
-

6.2 THE PROPOSED REENGINEERING PEDAGOGIES

- New pedagogies must focus on teacher's educational practices and knowledge of the curriculum and involves developing new applications that make effective use of ICT to support teaching and learning.
- New pedagogies integrate ICT to support learning, teaching, and curriculum development, including evaluation of learners and teaching.
- New pedagogies are based on the opposite of the traditional classical pedagogy.
- New pedagogies are facilitated through professional development of teachers.
-

7. CONCLUSIONS

The results of these researches shows that around the world, both developed and developing countries are beginning to use their investment in ICT to reform education. However, it is found that:

- There is no consistence model for effective use of ICT in teaching and learning in the primary schools.
- The education system in primary schools needs to be reengineered for effective use of ICT in teaching and learning.

Also it might be informative if we know:

- 48% of teachers strongly agree and 40 agree that new pedagogies are needed to **integrate ICT effectively into education**.
- More than 70% of teachers strongly agree and agree that teachers need to know how to **prepare lessons using ICT**, and to know when and how to use ICT for classroom activities.

REFERENCES

- Anderson J, editor. *Information and Communication Technology in Schools: How ICT Can Create New, Open Learning Environments*, Paris: UNESCO; 2005.
- Anderson J, editor. *Information And Communication Technologies In Schools. A Handbook For Teachers Or How ICT Can Create New, Open Learning Environments*. Paris: UNESCO; 2005
- Cher Ping, Lim, Shanti, Divaharan, Myint Swe, Khine et al. *A Conducive Classroom Environment for IT Integration: A Collective Case Study of Primary Schools in Singapore*. *Proceedings of the IEEE International Conference on Computers in Education (ICCE)*; 2002.
- Christopher Tan Yew Gee. *Best Practices in Management of Information Technology in Schools: A Survey of Schools in Hong Kong*. *Proceedings of the E-Learn Expo*; 2003.
- Cox M., Webb M., Abbott Chris, Blakeley B., **Beauchamp Tony**, Rhodes Valerie. *ICT and pedagogy A review of the research literature*. London: *British Educational Communications and Technology Agency [Becta]*, 2003.
- Hammer M, Champy J. *Reengineering the Corporation*, New York: HarperCollins Publishers; 1993.
- Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., et al. *The impact of information and communication technologies on pupil learning and attainment*. London: *British Educational Communications and Technology Agency [Becta]*; 2003.
- Holmes Glen. *Supporting Jordan's Education Reform For The Knowledge Economy (SJE) Project*. Canadian International Development Agency 2006.
- Kankaanranta Marja, editor. *Special Issue On ICT And Education*. *An Interdisciplinary Journal on Humans in ICT Environments* 2005; 1(2).
- Kozma, R. B. *National policies that connect ICT-based education reform to economic and social development*. *Human Technology* 2005; 1(2), 117-156.
- Newhouse C.P. *A Framework to Articulate the Impact of ICT on Learning in Schools Western Australia: Specialist Educational Services*; 2002.
- Newhouse C.P., Trinidad S., Clarkson, B. D. *Quality Pedagogy and Effective Learning with Information and Communications Technologies (ICT): a review of the literature*. Western Australia: Specialist Educational Services; 2002.
- Plante Johanne, Beattie David. *Connectivity and ICT integration in Canadian elementary and secondary schools: First results from the Information and Communications Technologies in Schools Survey, 2003-2004*. Canada: Minister of Industry; 2004.

RELATION BETWEEN THE RELIGIOUS BELIEFS AND POLITICAL PREFERENCES OF UNIVERSITY STUDENTS

Dr. Meryem BULUT
Ankara Üniversitesi
mbulut@ankara.edu.tr

Abstract

The survey was held involving 249 university students, which consisted of 125 girls and 124 boys, aged between 17 and 26. Almost all the attendants are undergraduate students of Ankara University. It was found that 81,7% of the students identified themselves as Muslims and 63,5% of them expressed themselves as Sunni's. 21% of the students completely fulfil the religious necessities. 33,9% of the students showed affinity to political parties, 61,1% of them only show their support by voting for. 65,1% of the students who fulfill the religious necessities doesn't show any affinity to political formations.

1) INTRODUCTION

Today, the most important institution that effects the rules of social life, is religion. Most of the grown-ups live their life in accordance with the rules of the religion they believe in. The institutional differentiation with respect to the religion is peculiar to the modern societies (Enriksen, 2009). The majority of the people encounters a variety of economical and social problems. The existential problems or the problems related to the meaning of life can be solved by religion. Religion responds to the existential problems to a great extent. One role of the religious rituals and beliefs is to support and maintain the cooperation of the members of that religion. Religious rituals are social actions. The people taking part in those religious rituals rely on their beliefs more than others. People show the signs of anticipation of the social and moral order by taking part in a public actions. Religion, contains a lot of causes, results and meaning for the people who fulfill its requirements. In addition to their psychological and social functions, religious beliefs and practices play an important role on the adaptation of social groups to their environment (Kottak, 2002). Religion is a form of culture. Culture consists of beliefs, rules and thoughts that create a general identity among social groups. The religion shares all these characteristics. All religions contain special activities which show that the people are members of the society which they belong to. Maybe the most important thing is that religion creates the feeling that life is ultimately meaningful (Giddens, 2008).

There is always a close and complicated relationship between religion and politics. Religious beliefs can affect the laws and provide legality to political order. Societies can provide and protect social order with political organisations (Kottak, 2002). Religion, however puts forward the outline of the acceptable behavior in front of everything. On the other hand, it maintains the social cooperation. It has the educational function (Haviland, 2008). Religion and politics exist in all societies. In societies where there is no state, kinship and religion cannot mostly be distinguished from politics. Religion affects most of the aspects of life and plays an active role on making political decisions. In this survey, answers to the following questions were looked for:

- 1) Is there a considerable correlation between the gender of the university students and the affinity to political parties?
- 2) Is there a considerable correlation between the religious beliefs of the university students and the affinity to political parties?
- 3) Is there a considerable correlation between the religious belief of the university students and the political parties to which affinity is shown?
- 4) Is there a considerable correlation between fulfilling the religious practices and the political parties to which affinity is shown?
- 5) Is there a considerable correlation between the religious beliefs of the university students and the reasons to show affinity to political parties?
- 6) Is there a considerable correlation between the religious beliefs of the university students and to take part in political parties?

2) METHOD

The survey was conducted, based on the scanning model. The study was conducted by interviewing the students who came to the Department of Culture of Ankara University, to take part in cultural activities, during 3 months.

3) STUDY GROUP

The study was conducted for 3 months in 2009 (February, March, April) with 249 undergraduate students who came to the Department of Culture, to take part in cultural activities. 50,2% of the students who were interviewed were women and 49,8% were men. It was found that 84,1% of the students introduced themselves as Muslims while 15% introduced themselves as atheists. These ratios are parallel with the findings of another survey (Yıldırım,1999). It was found that 21% of the Muslim students do not fulfill the religious necessities at all, 40,5% of them take part in the religious rituals on special occasions, and 34,5% of them never take part at the religious paractices. 60% of the students read newspapers on a daily basis and 35% of them preferred political news. 60% of them read books, novels and poems. 33,9% showed affinity to existing political parties and 52,25% do not show affinity to any one of them. 75,8% of them showed affinity to parties whose programmes can be useful for the people. 61,1% of them showed their support to their favourite party, only by voting.

Analysis of the data: On the data evaluation stage, the data obtained from open-ended questions were encoded and the comparison tables are given:

4) FINDINGS

Table:1 COMPARING THE GENDER AND THE AFFINITY TO POLITICAL PARTIES

| | SHOWING AFFINITY | NOT SHOWING AFFINITY | CONFUSED | EXCEPT THE EXISTING |
|-------|------------------|----------------------|----------|---------------------|
| TOTAL | | | | |
| GIRLS | 30,1 | 57,7 | 10,6 | 1,6 |
| BOYS | 37,7 | 46,7 | 5,7 | 9,8 |
| TOTAL | 33,9 | 52,2 | 8,2 | 5,7 |

P: ,000<0,5 The differences between the percentages of the groups were considerable.

The fact that female students are showing less affinity to political parties is caused by the behavior that the society is expecting from men and women. The role of manhood or womanhood, is a social conditioning (İlbars, 1987). Besides, cultural prejudice which is shown to women who are interested in politics, is likely to be reflected to female students (McGlen/O'Connor, 1995).

Table:2 COMPARING THE RELIGIOUS BELIEF AND THE AFFINITY TO POLITICAL PARTIES

| | SHOWING AFFINITY | NOT SHOWING AFFINITY | CONFUSED | EXCEPT THE EXISTING |
|---------|------------------|----------------------|----------|---------------------|
| TOTAL | | | | |
| MUSLIM | 32,9 | 55,9 | | 2,9 |
| ATHEIST | 43,2 | 32,4 | 2,7 | 21,6 |
| TOTAL | 33,9 | 52,1 | 8,3 | 100 |

It was found that, most of the students who introduced themselves as Muslims didn't show any affinity to the existing political parties, just a few of them showed affinity to political organisations which weren't considered legal parties. The ones who introduced themselves as atheists showed affinity to political parties more. It can be said that, among the students, the religious beliefs don't affect the affinity to political parties. According to the findings, it was found that the ones who considered themselves as religious were interested in politics less than the ones who considered themselves not religious. According to our findings, an inverse ratio was found between the piety of the students and their interest in politics.

Table:3 COMPARING THE RELIGIOUS BELIEF AND THE POLITICAL PARTIES TO WHICH AFFINITY IS SHOWN

| | JDP | RAP | NAP | FCP | OTHER | TOTAL (%) |
|-----------|------|------|-----|------|-------|-----------|
| MUSLIM | | 24,3 | | 38,6 | 8,6 | 22,9 |
| CHRISTIAN | 100 | | | 0 | 0 | 0 |
| ATHEIST | 21,7 | | | 34,8 | 0 | 43,5 |
| TOTAL | 24,5 | | | 37,2 | 6,4 | 27,7 |

The majority of the people who introduced themselves as Muslims showed affinity to Republican Action Party (CHP) while the rightist Justice and Development Party (AKP) and leftist Freedom and Cooperation Party (ODP) were shown to have similar ratios. The students who considered themselves atheists showed affinity to Freedom and Cooperation Party most, and then to Republican Action Party and Justice and Development Party. From the findings, it was found that the religious beliefs of the students weren't determining factor on their political preferences.

Table 4: COMPARING RELIGIOUS NECESSITIES AND THE POLITICAL PARTIES TO WHICH AFFINITY IS SHOWN

| | JDP | RAP | NAP | FCP | OTHER | TOTAL (%) |
|----------------------|-----|------|-----|------|-------|-----------|
| FULFILLING | | 54,2 | | 18,2 | 18,2 | 9,1 |
| IN SPECIAL OCCASIONS | | 29 | | 38,7 | 3,2 | 22,6 |
| NOT FULFILLING | | 10,7 | | 42,9 | 10,7 | 28,6 |
| TOTAL | | 25,7 | | 37,1 | 8,6 | 22,9 |

The students who considered themselves Muslims and who fulfilled all the religious practices showed affinity to Justice and Development Party (AKP) while the ones who fulfilled the religious necessities during special occasions like holidays or who didn't at all fulfill them showed affinity to Republican Action Party (CHP). While the religious beliefs weren't determinant on the political preferences, living a life pursuant to religious necessities can be determinant on the political preferences. The ones who were living a life pursuant to religious necessities preferred Justice and Development Party (AKP) rather than (Freedom and Cooperation Party (ODP)).

Table 5: COMPARING RELIGIOUS BELIEF AND THE REASONS TO SHOW AFFINITY TO POLITICAL PARTIES

| /TOTAL | DUE TO THE DOCTRINES | INFLUENCE OF FRIENDS | INFLUENCE OF FAMILY |
|------------------|----------------------|----------------------|---------------------|
| MUSLIM 100 | 72,9 | 15,7 | 11,4 |
| CHRISTIAN 100 | 100 | 0 | 0 |
| ATHEIST 100 | 82,6 | 4,3 | 13 |
| TOTAL 100 | 75,5 | 2,8 | 11,7 |

According to the indicators from the table, no matter how they define themselves, most of the students followed the party doctrine(72,5%), they were aware of the fact to show affinity to political parties. They showed affinity according to the doctrine.

Table 6: COMPARING RELIGIOUS BELIEF AND TAKING PART IN POLITICAL PARTIES

| TOTALS %) | BY VOTING | BY PROPAGANDA | BY BEING A MEMBER |
|------------------|-----------|---------------|-------------------|
| MUSLIM 100 | 74,6 | 22,4 | 3 |
| CHRISTIAN 100 | 100 | 0 | 0 |
| ATHEIST 100 | 26,9 | 46,2 | 26,9 |
| TOTAL 100 | 61,7 | 28,7 | 9,6 |

According to the findings, the ones who introduced themselves as atheists were more actively taking part in political establishments. Most of the ones who expressed themselves as Muslims weren't interested in politics. It was noticed from the tables that the ones who introduced themselves as atheists were actively taking part in political parties.

5) RESULT, DISCUSSION AND SUGGESTIONS

The fact that the girls are showing less affinity to political parties is due to the behaviours that the society is expecting from men and women, which are the social conditionings. The ones who define themselves as Muslims mostly didn't show affinity to political parties, only a few of them showed affinity to political organisations which weren't legally parties. The ones who introduced themselves as atheists showed more affinity to political parties. Among the students, religious beliefs aren't effective about the affinity to political parties. The majority of the people who express themselves as Muslims showed affinity to RAP while the rightist JDP and leftist FCP were shown to have similar ratios. The students who considered themselves atheists showed affinity to FCP most, and then to RAP and JDP.

BIBLIOGRAPHY

- Eriksen, T.H.(2009), Küçük Yerler Derin Mevzular (Sosyal ve Kültürel Antropolojiye Giriş), Avesta Yayınları, 1.Baskı, İstanbul
- Giddens, A, (2008), Sosyoloji, (Haz: C.Güzel), Kırmızı Yayınları, 1.Baskı, İstanbul
- Haviland, W.A(2008), Kültürel Antropoloji, (Çev:İ.D.A.Sarıoğlu), Kaknüs Yayınları, 1.Baskı, İstanbul
- İlbars, Z, (1987)“**Kişiliğin Oluşmasındaki Kültürel Etmenler**”, Ankara Üniversitesi, D.T.C.F. Antropoloji Dergisi, Özel Basım
- Kottak, C.P.(2002), Antropoloji(İnsan Çeşitliliğine Bir Bakış), (Çev: S. Altuntek), Ütopya Yayınevi, Ankara
- McGlen, N.E./O'Connor, K.(1995), Woman, Politics and American Society (Englewood Cliffs, NJ: Prentice Hill).
- Yıldırım, İ(1999),”**Some Values Of Turkish University Students From Varying Degrees Of Religiosity**”, Hacettepe Eğitim Fakültesi Dergisi, Sayı 16-17, Ankara

RELIABLE INTERNET RESOURCES USE BY UNIVERSITY STUDENTS IN COURSE PROJECTS

Yasar Guneri SAHIN¹, Sabah BALTA², Tuncay ERCAN³

¹ Izmir University of Economics, Department of Software Engineering, yasar.sahin@ieu.edu.tr

² Yasar University, Department of Tourism Management, sabah.balta@yasar.edu.tr

³ Yasar University, Department of Computer Engineering, tuncay.ercan@yasar.edu.tr

Abstract

This paper presents how the university students obtain their course project requirements in a course project, how they reach and use the Internet and other resources, and their trends in the literature review using the Internet. More, the variety of the resources and the reliability and accessibility of these have also been investigated. In addition, the results gathered from the study have been discussed and evaluated, the academic resources accessibility and usability in universities have been assessed and their importance discussed. The internet resources have been divided into several categories according to their accessibility and reliability. Finally, the effects of reliable and limited accessible internet resources and unreliable and unlimited internet resources on university students' out-of-class works and projects have been presented and discussed.

Keywords: *Course Projects; Internet Resources; Accessibility and Reliability, Educational resources*

INTRODUCTION

The use of the Internet in the educational environment has enabled easy access to many resources, and information sharing has, therefore, significantly increased. Moreover, the prevalence of this sharing has brought additional benefits in that these resources can be used in any location and any time. Although the efficiency of this technology, it is evaluated with use of proportion of the desired results in student achievement does not exactly come out and is difficult to determine. Hence, much research has been conducted over time to understand the reasons for this situation.

Since adolescents, especially some university students sometimes, use the Internet for reasons other than educational (they explore the funny view of the Internet). The effect of the Internet in education is, hence, relatively limited. In this study, efficiency and effectiveness of access to resources on the Internet, rather than examination of Internet use has been investigated. In addition, we have sought to identify the impacts of Internet resources used by university students in their project, and which effects of the internet are observed during project elicitation phase.

Internet use, especially in education, has been investigated for sometime, and many different studies, exist in literature about that subject. In the study of D'Esposito and Gardner (1999), Internet usage trends of the university students, and college student perceptions of the Internet and a traditional library were presented. This study showed that when university students have the opportunity to use internet resources, almost all of them prefer to use these, rather than classical libraries for their studies, but when the information source satisfaction in research needs is considered, the students' trends are in the direction of using both.

Peng et al (2006) in their study of university students' attitudes and self-efficacy towards the Internet, demonstrated the relationship between perceptions of the internet and their internet attitudes and self-efficacy. They showed that there is a positive effect if the students use the Internet as a functional tool or functional technology. In addition to those mentioned, there are many other useful studies which investigate the effects of internet and electronic resources on university students' self-efficacy and performance (Crews & Feinberg, 2002; Wu & Tsai, 2006; Wen & Tsai, 2006; Perry et al 1998; Wainer et al 2008; Odell et al 2000; Crouch, 2001; Mohammed & Al-Karaki, 2008).

Another important study has been conducted to evaluate the skills of freshmen in universities regarding educational technology standards, and to examine the factors that influence these skills (Kurt et al, 2008). In a similar study, Akbulut (2008) has investigated the motivational aspects of computer-assisted instruction in terms of writing and mailing over freshmen of foreign languages using Warschauer survey (Warschauer, 1996). His findings suggest that the learners had positive attitudes towards CALL (Computer Assisted Language Learning). He clarified these positive attitudes an independent learning environment, collaboration, instrumental benefits, empowerment, comfort and communication.

Some studies suggested that students usually prefer to use search engines instead of e-libraries to review the literature regarding their project or home-work elicitation. Brophy & Bawden (2005) compared Google as an internet search engine with academic library resources in their study. Surprisingly, their finding showed that while Google is superior for coverage and accessibility, library systems are superior for quality of results, and that precision is similar for both systems. Finally, they concluded that using them together for a good coverage is important because both have many unique items. Lazonder (2000) investigated the novice users' training needs in searching for information on the www, noting that locating a website is more important than locating the information on a website.

Although many studies emphasize the importance of academic resources, some studies present the accessibility problems of these resources. "Despite huge efforts to position information and communication technology (ICT) as a central tenet of university teaching and learning, the fact remains that many university students and faculty make only limited formal academic use of computer technology" (Selwyn 2007). The author suggests some reasons for this situation, such as operational inadequacies on the part of students, faculty, and universities.

As a result, the findings of most studies showed that use of the internet is useful for education, in that it can supply many beneficial opportunities to find different resources. However, a basic rule should be considered while using the internet for successful research, that is, how the resources should be properly accessed by the students. Furthermore, the students must be disciplined in keeping themselves away from trap sites and entertainment in order to obtain the best achievements in their studies. This study examines both the attitudes of the university student towards the Internet use as a research tool and difference between more reliable-less accessible and less reliable-more accessible resources during their project elicitation.

INTERNET RESOURCES FOR STUDENTS

The most effective communication resources, computers and the Internet, are part of our daily life and have become one of the important tools in the education. The Internet helps transfer information between different points therefore this saturation makes the Internet a very powerful information system. People in different age groups and jobs, students and academicians who do scientific research and prepare projects prefer using the Internet because it is the easiest, fastest, and cheapest ways of accessing necessary information (Cloud, 1989).

Even though the Internet is a very important and indispensable source for students, the issue of whether the referenced source is trustworthy and/or credible, has been raised. This is because there is no control on any particular piece of information published through the Web, in opposition to the scientific and professional journals published by the scientific institutions, business world and the organizations known to the public. Additionally, other journals and books issued by commercial organizations do not have a control unit including editors and referees. Many of the sites on the Internet enable anybody to submit any kind of information without being controlled, and many of the sites known as reliable are restricted to open access for commercial purposes or security requirements (IP restriction, membership). This limits the accessibility for students and deprives them of these sites.

Available Resources for the Term Projects

Methods of using academic resources, especially the ability to scan the articles for information is very important for academic research. The similarities and differences between articles on the same subject can be used to classify them for literature review. Grouping of the articles in detail helps keep the expected originality of the text in order to complete the project successfully. Available resources:

1. Academic Journals Database
2. Search Engines
3. Electronic Libraries
4. Blogs/Forums
5. Distance Learning
6. Related Software

Trustworthy of the Internet resources

Internet network has eliminated the physical limits and the number of existing educational resources has increased so that it is possible to prepare assignments and projects in anyplace where the internet is accessible. Whether Internet resources include updated information related to the subject or not can be evaluated by looking at references of the source used from other. Current academic applications will provide a better understanding and increase the trustworthiness of the resource.

An evaluation can be made on 5 basic issues related with the reliability and accessibility of the Internet sites:

1. Accessibility: Whether the site is available and the required information is reachable
2. Trustworthiness: Whether the contents in the site are current and correct
3. Authorship: Whether the articles and text are well written by a suitably qualified authors
4. External Links: Whether links to/from the site are reachable
5. Legitimacy: Whether everything is in accordance with the law.

Figure 1 offers a graphic showing the correlation between trustworthiness and accessibility of Internet resources.

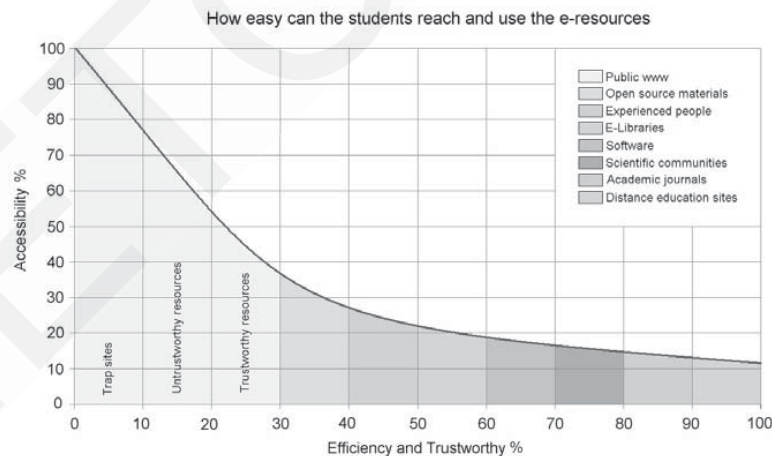


Figure 1. Correlation between accessibility and trustworthiness of resources for student project

By looking at these criteria, a classification, such as that shown in Figure 1, can be made for the trustworthiness and accessibility of available sources that students can use for their project studies. The result obtained here demonstrates that resources which are easily accessible are not those which provide reliable information. Accessibility into highly reliable and credible resources is only possible with some constraints, so that it is very difficult to use these resources efficiently.

METHOD

In this study, a questionnaire was used and the effects of internet usage on students' grades were investigated. For the questionnaire, the Tourism and Hotel Management students of Yasar University (Izmir-TR) were selected, since many studies have been conducted on computer related departments' students, but there are a few studies on inexperienced university students such as Tourism and Hotel Management students.

Population and Sample

The research was conducted in Yasar University with the participation of tourism and hotel management students who took part in 2009 spring semester courses. In terms of the semester, the total number of registered students was 143, while participants of the study numbered 102. Table 1 shows the demographic information of the participants.

Table 1. Demographic Characteristics of the Participants

| Individual Variables | Frequency |
|--|----------------------|
| <i>Students Gender Distribution</i> | |
| Male | 53% |
| Female | 47% |
| <i>Students Age Distribution</i> | |
| 20-23 years | 75% |
| Rest | 25% |
| <i>Students Class</i> | |
| Freshman | 50% |
| Sophomore | 28% |
| Juniors | 16% |
| Seniors | 6% |
| <i>Internet Access Point</i> | |
| From Home | 70% |
| From Dormitory | 5% |
| Other points (School, Internet Cafe etc.) | 25% |
| <i>Internet Access Style</i> | |
| ADSL | 55% |
| Wireless | 40% |
| Cable | 5% |
| <i>University E-Library permission</i> | |
| No | 56% |
| Yes | 44% |
| <i>Academic Resource Access Permission</i> | |
| | 2% (over 3000 studs) |

Data Collection Method & Analysis

Data was collected through a questionnaire presented by Ersoy and Aktay, 2007, with some modifications. The questionnaire includes 27 nominal, dichotomy questions (Yes or No) and 16 socio-demographic questions to assess student's attitudes towards the use of the Internet during homework and term projects elicitation phase. The questionnaire forms were completed by tourism management students during lecture hours. The frequencies were computed and evaluated, and they were presented in the regarding tables.

Data Analysis & Findings

Table 2 demonstrates the frequency of the students' trends in the use of internet resources during their term's projects studies. From these data, the internet resources used in order of priority, in term project studies are:

- Highest (1st Priority) : Search engines (Especially, Google and Yahoo)
 High (2nd Priority) : Online databases and e-magazines
 Moderate (3rd Priority) : Online-libraries, e-encyclopedias, e-books
 Low (4th Priority) : e-journals
 Lowest (5th Priority) : e-mails, forums

One finding of interest obtained from the questionnaire showed that while university students frequently use email and forum/chat-line in their daily-life, they don't use them in their studies. Furthermore, many students claimed that they don't like to collaborate with their friends and interact with experienced persons for information eliciting and sharing during their study.

Table 2. Demographic Characteristics of the Participants

| Using the internet sources | N | Yes(%) | No(%) |
|---|-----|--------|-------|
| I make use of search engines for my term projects. | 102 | 98 | 2 |
| I make use of on-line databases for my term projects. | 101 | 64 | 36 |
| I make use of e-books for my term projects. | 100 | 51 | 49 |
| I make use of web-sites assignments for my term projects. | 101 | 99 | 1 |
| I make use of e-journals for my term projects. | 100 | 37 | 63 |
| I make use of on-line libraries for my term projects. | 101 | 55 | 45 |
| I make use of on-line encyclopedias for my term projects. | 100 | 56 | 44 |
| I make use of e-newspapers for my term projects. | 102 | 68 | 32 |
| I make use of e-mails received the others for my projects. | 100 | 46 | 54 |
| I collaborate with other internet users through the discussion forums on the internet for my term projects. | 102 | 38 | 62 |

Table 3 shows the students' views about the reliability of the sources obtained from the Internet. According to the information gathered from the survey, 70% of students compared information obtained through the Internet with other information resources. Besides, the preferred

rate of reliable sites is about 41%. Many of students take care that these resources are up-to-date, for educational purposes, and free from bias. However these ratios are very limited in order to reflect to the projects as they are.

Table 3. The students' view about reliability of internet sources

| Reliability of the internet sources | N | Yes(%) | No(%) |
|--|-----|--------|-------|
| I crosscheck the accuracy of information that I have accessed through internet sources with other information sources. | 101 | 70 | 30 |
| I believe the confidence of information on the internet. | 99 | 77 | 23 |
| I pay attention to the internet addresses which I have used for my term project as to having "gov" or "edu" domain suffixes. | 102 | 41 | 59 |
| I check the up to date of the sources that I have access through internet. | 102 | 77 | 23 |
| I make sure weather the documents that I have accessed through internet have an author or not. | | | |

The students' response to the different software programs used in the tourism sector (tourism automated systems) were: 1. ODEON, 2. ELECTRA, 3. NETSIS, 4. FIDELIO, 5. GALILEO. None of these computer programs are open-source. This may be because students do not like open-source software or because there is no open-source program in their field.

Result from the information obtained during the assessment process of the students indicates that they show more interest in internet resources than other sources. However, although they have limited access to reliable resources, the majority of the students try to access these resources in order to be more successful in their term projects.

DISCUSSION AND CONCLUSION

Table 4 shows some of the course scores (including the project scores, home-work scores, and final grades), and the evaluation percentages of projects and home-work on final grades.

Table 4. Project scores the effects of them on final grade

| No | Class | Course Name | Code | #of Student | Project-Homework | | Passing Grade |
|----|-------|----------------------------------|----------|-------------|------------------|----|---------------|
| | | | | | Average | % | |
| 1 | 1 | Introduction to Programming | CS 115 | 79 | 31 | 10 | 47 |
| 2 | 1 | Introduction to Programming | CS 115 | 42 | 23 | 10 | 43 |
| 3 | 1 | Introduction to Programming | CS 115 | 37 | 40 | 10 | 52 |
| 4 | 1 | Travel Agency and Tour Operators | VTHM 110 | 73 | 72 | 20 | 55 |
| 5 | 1 | Travel Agency and Tour Operators | VTHM 110 | 34 | 85 | 20 | 67 |
| 6 | 2 | Consumer Behavior | THM 208 | 31 | 31 | 10 | 77 |
| 7 | 3 | Housekeeping Management | THM-302 | 19 | 86 | 25 | 94 |
| 8 | 3 | Research Methods | BUS 362 | 41 | 74 | 40 | 72 |
| 9 | 3 | Tourism Economics | THM 304 | 21 | 75 | 30 | 70 |
| 10 | 4 | International Hotel Management | THM 408 | 7 | 94 | 25 | 92 |
| 11 | 4 | Travel and Tour Operations | THM 402 | 5 | 74 | 20 | 77 |

Lecture grades obtained from the lecturers reveal some significant findings about students' home-work and project studies and their attitudes on these studies during the semester. One important finding is in 1st, 2nd, 3rd and 6th courses which have low effect (10%) on passing grades. Students took low project and home-work scores, this is because students give little importance to these courses in which project and homework marks have little impact on their final course mark. Here, an important fact can be brought out that the students use more accessible and less secure internet sites in such kind of courses because of their careless, and therefore get low marks for term projects and home-works. In most other courses where term projects required detailed investigation, and had a major effect on passing grades, we detected that the students get high marks for project and home-work and passing grades. For the purposes of our study, this was most evident in Research Methods (BUS362), because a detailed academic investigation was required of students for the term project of the course, worth 40% of the passing grade (this situation, therefore, makes the term project very important for passing from the course). This forced students to collect the term project requirements using academic and trustworthy resources. The term project scores show an average of 74%, demonstrating that the students obtained the necessary information (elicited) from less accessible and more reliable resources.

The achievement distribution of the students according to classes shows that seniors and juniors are much more successful than freshmen and sophomores, because they are aware of term projects importance, as a result of their experiences obtained from previous classes in research methodologies.

The main concern of this study is to investigate the diversity, accessibility and reliability of the internet resources used by the inexperienced university students during literature review. Initial results show that the more useful reliable information can be gathered using less accessible and more secure internet resources. Using highly accessible internet sites may give fast results but the reliability of those results can not be ensured. This does not mean that all of these sites give unreliable information, but that these should be carefully reviewed. Less accessible sites have the major disadvantage of difficult access. The negative effects of accessibility can be decreased by using university library databases for academic resources, or by allowing access privileges to students connecting to these sites from their homes.

The use of trustworthy internet resources is of vital importance for academic study, especially in higher class courses which require an academic review of the literature, accessibility problems should, therefore, be solved. University students should be encouraged to use academic and reliable resources in their term project and homework for successful investigations. In addition to this, easy access opportunities for reliable resources should be supplied by university administrators. One solution to access problems is to give permission for connection to academic resources from the students' homes, using specific software and proxy arrangements, thus equipping students with ability to use e-journals, e-libraries, e-books, online-databases as academic resources for related courses.

ACKNOWLEDGEMENT

Authors would specially like to thank students and lecturers of Izmir University of Economics and Yasar University for their participations. Extended version of this study can be found in TOJET 2010 April issue.

REFERENCES

- Akbulut, Y. (2008). Exploration of the attitudes of freshman foreign language students toward using computers at a Turkish state university. *Turkish Online Journal of Educational Technology*, 7, 18-31.
- Brophy, J. & Bawden, D. (2005). Is Google enough? Comparison of an internet search engine with academic library resources. *Aslib Proceedings*, 57, 498-512.
- Cloud, C. C. (1989). *Network Ethics: Access, Consent and Informed Community*. USA: Westview Press.
- Crews, M. & Feinberg, M. (2002). Perceptions of university students regarding the digital divide. *Social Science Computer Review*, 20, 116-123.
- Crouch, M. A. (2001). Using the Internet to facilitate student learning in a large therapeutics course: A three-year perspective. *American Journal of Pharmaceutical Education*, 65, 7-13.
- D'Esposito, J. E. & Gardner, R. M. (1999). University students' perceptions of the Internet: An exploratory study. *Journal of Academic Librarianship*, 25, 456-461.
- Ersoy, A. & Aktay, S. (2007). Prospective elementary school teacher's way of internet use while preparing their projects and homeworks. In *7th International Educational Technology Conference* (pp. 62-67). Near East University.
- Kurt, A. A., Coklar, A. N., Kilicer, K., & Yildirim, Y. (2008). Evaluation of the skills of K-12 students regarding the national educational technology standards for students (NETS*S) in Turkey. *Turkish Online Journal of Educational Technology*, 7, 6-14.
- Lazonder, A. W. (2000). Exploring novice users' training needs in searching information on the WWW. *Journal of Computer Assisted Learning*, 16, 326-335.
- Mohammed, J. & Al-Karaki, J. (2008). Integrating internet into traditional education: A practical study of university students' usage and attitudes. *International Arab Journal of Information Technology*, 5, 241-252.
- Odell, P. M., Korgen, K. O., Schumacher, P., & Delucchi, M. (2000). Internet use among female and male college students. *Cyberpsychology & Behavior*, 3, 855-862.
- Peng, H. Y., Tsai, C. C., & Wu, Y. T. (2006). University students' self-efficacy and their attitudes toward the Internet: the role of students' perceptions of the Internet. *Educational Studies*, 32, 73-86.
- Perry, T. T., Perry, L. A., & Hosack-Curlin, K. (1998). Internet use by university students: an interdisciplinary study on three campuses. *Internet Research-Electronic Networking Applications and Policy*, 8, 136-+.
- Selwyn, N. (2007). The use of computer technology in university teaching and learning: a critical perspective. *Journal of Computer Assisted Learning*, 23, 83-94.
- Wainer, J., Dwyer, T., Dutra, R. S., Covic, A., Magalhaes, V. B., Ferreira, L. R. R. et al. (2008). Too much computer and Internet use is bad for your grades, especially if you are young and poor: Results from the 2001 Brazilian SAEB. *Computers & Education*, 51, 1417-1429.
- Warschauer, M. (1996). Motivational aspects of using computers for writing and communication. In Mark Warschauer (Ed.), In *Telecollaboration in foreign language learning: Proceedings of the Hawai 'I symposium*. (Technical Report #12), (pp. 29-46).
- Wen, M. L. & Tsai, C. C. (2006). University students' perceptions of and attitudes toward (online) peer assessment. *Higher Education*, 51, 27-44.
- Wu, Y. T. & Tsai, C. C. (2006). University students' Internet attitudes and Internet self-efficacy: A study at three universities in Taiwan. *Cyberpsychology & Behavior*, 9, 441-450.

RESEARCH INTO BY ASSESING THE STUDY BEHAVIOURS OF VOCATIONAL HIGH SCHOOL STUDENTS (A SELCUK UNIVERSITY EXAMPLE)

Niğmet Köklü¹, Hatice Güzel²

¹Selçuk University, Technical Science Vocational High School, nkoklu@selcuk.edu.tr

²Selçuk University, Ahmet Keleşoğlu Education Faculty, hguzel@selcuk.edu.tr

Abstract

This research was conducted in the 2008-2009 academic year to examine Study Behaviour of 236 students who were studying at Selcuk University Technical Vocational High School (TSVHS) in Konya province. In this study, "Study Behaviour Assessment Scale" was applied. In this scale, there are 73 questions which are related to students' study behaviour. The right answers have been evaluated as "1" and the wrong answers as "0". The right answers have been evaluated as "1" and the wrong answers as "0". This scale used to examine TSVHS students study behaviours and the obtained data was analysed by the SPSS 15 packet programme.

Keywords: Study behaviours, Assessment scale, Education

1. INTRODUCTION

Today education is seen as a system developing human behaviour. (Baykul, 2000) If the process of the system is successful or not, that is if success to what degree; if it is unsuccessful the reasons for this need finding out. Knowing the degree of success or putting forward the reasons of failure is connected to the students' occurring behavioural changes and the assessments of the scale results. In this situation measurement is used for the purpose of collecting data forming a base for the educational decisions. At this point the measuring and evaluating concepts gain importance. In general use, measuring and evaluating are two concepts differing in meaning from each other.

The most extensive definition of measurement is if a particular object or objects possess a particular specialty or not, if it does possess the degree of possession is observed and the observation results are expressed in numbers and symbols. Measurement which is a must have component of scientific works also holds a special place in pedagogy. Measurement is used for the purpose of obtaining data for forming a base for educational decisions. On the other hand assessment is the comparison of the measurement results with a criteria and the coming to a decision act about the measured quality. According to Baykul (2000), in this evaluation definition measurement results are evaluated as criteria and decisions.

In order to define the features of the objects correctly there is need for valid criteria to compare the measurement results. The most validated measuring in education should be the measurement which is done by the way of observing the behaviours of the individuals under the direct or real life conditions (Kadioğlu, 2002).

If education is considered as a system developing human behaviour then like all other systems, this system also has inputs, a process, outcomes and control mechanisms. Among the education systems input students and the teachers' qualities; the education system holds significant importance. In the process to reach the goals put forward in the education program the educational activity take place. The outputs are the learned outcomes seen on the students at the end of the process. In the education program among the learned outcomes as there is significant behaviours there can be also desired but apparently deficient behaviours. At measuring behaviours when it is looked at fundamental approaches some students behaviours are observable whereas it is seen that some of their behaviours outputs are suitable for measuring. (Turgut, 1995; Kadioğlu, 2002).

It is benefitted from the assessment for defining deficient and unwanted behaviours and determining where the problem is arising. In education the control of the system is done with the help of the assessment unit. Assessment assures to uncover whether the units in the education system work or not if there are points that don't work and repair the system. In the education system there is need for measurement tools to determine if the goals in the education programs are achieved or not.

The purpose of education is to cause a difference in the student's behaviours. The change the school tries to develop in the students' behaviour determines the education goals of that school. At the end of a learning period, education goals, determines what the students didn't do and what they need to do. Therefore, to begin with to plan an education program these goals should be clearly determined.

For the past twenty years determining educational goals has been a modernism indicator. However, it is not the pertaining considered description but the description of the knowledge and the skills that students can skilfully use when it is necessary. If there isn't an assessment mechanism formed to measure how many the goals can be reached it's not possible to educate aimed at the purposes. As well as this for the assessment activities to be the most effective, the assessment mechanisms need to be formed with the best techniques and the goal being measured needs to be used according to the wanted decision type.

This kind of assessment systems core part is the assessment of the students' performance. This assessment requires significant time and input, because human behaviour is too complicated to summarize or easily measure with one observation or one score. For this reason to help the teacher understand the student and their performance beter, it's essential to collect as much valid evidence as possible (Baykul, 2000; Turgut, 1995).

2. PROCEDURE

In this section, the model of the research, the defined research group for the research, the data collecting device and the methods and procedures used to analyze the data has been clarified.

2.1. The Model of the Research

Research can be referred to as, the surroundings they are being done or according to the research environment laboratory and field study; according to the levels theoretical and applicable research; according to their method or time the date, descriptive ve experimental research. (Kaptan, 1993). In this sense, this research is for the purpose of researching into by assessing the study behaviours of Selcuk University

Technical Vocational High School (TSVHS) students; it can be described according to their level it's applicable, according to their environment it's zone, according to it's method it's descriptive.

Descriptive research tries to explain and describe what the events, objects, existence, institution, groups and various fields are. The description researches aim to explain the interactions among the situations by considering the the relationships between the present events and the previous events and conditions (Kaptan, 1993: 59). In another words, scanning models are a reseaching approach which aims to describe a condition present in the past or still present as it is. The incident, individual or objects, which are the subjects of reseach, tries to define in their own condition and as what they are. There is something desired to be known and it exists. What is important is that is able to dermine in a suitable way by observing (Karasar, 2005). This model is more suitable for the behaviour science and disciplines, and it is the characteristics of the method, understanding and describing what the institutions are is able to aply without breaking the present system of the institution and without creating managerial difficulties to the institution stuff (Kaptan, 1993).

2.2. Research Group

The research group consists of 236 students studying in the 2008-2009 academic year at TSVHS located in the Konya state. For this research, the departments which have participated and the student numbers are given in Table 1.

Table 1. Research figures

| Departments | Morning Education | | Evening Education | |
|--------------------------------|------------------------------|-----------------|-------------------|-----------------|
| | Class | Student Numbers | Class | Student Numbers |
| Machine Technology | 2A | 15 | 2A | 14 |
| | 2B | 14 | 2B | 16 |
| | 2C | 16 | 2C | 13 |
| Computer Tech. and Programming | 2A | 23 | 2A | 22 |
| | 2B | 21 | 2B | 23 |
| Electric Technology | 2A | 17 | 2A | 14 |
| | 2B | 16 | 2B | 12 |
| | Total: | 122 | Total: | 114 |
| | Total Student Number: | | | 236 |

2.3. Data Collection Device

The name mentioned in the literature "Study Behaviour Assessment Scale" has been used for researching into by assessing the students of Selcuk University Technical Sciences Vocational Schools study behaviours (<http://psikoweb.com/cddo.html>). In this scale 73 sentences were presented with a true (T) and false (F) option regarding their study behaviours. If the sentences the students read are always or usually acceptable for themselves they have put a (X) mark on the relevant space where the (T) letter means that it is "true" on the answer sheet, if it's not always or usually acceptable they have put a (X) mark on the (F) letter meaning it is "false". The right answers have been evaluated as "1" and the wrong answers as "0".

2.4. Analysis of the Data: The questşons which have been asked and are related with one another have been grouped in this scale which has been used to research into by assessing the study behaviours of TSVHS students. The right and wrong answers numbers and percentages have been defined and the statistical calculation has been done with the help of the SPSS 15 (Statistical Package for Social Scientists) program. Each groups T/F information which was made use of the prepared answer sheets was defined beforehand and taken into consideration. A point is obtained by dividing the number of rights according to the answer sheets to the number of individuals taking the survey and this is shown in equation 1. In this sense this point has been interpreted according to the interpretation key determined beforehand.

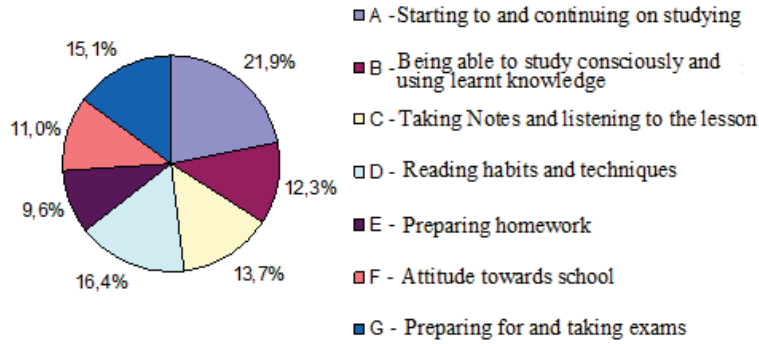
$$\text{Point} = \frac{\text{The Number of Rights According to The Answer Key}}{\text{N(NumberOf Individuals Participating in The Survey)}} \quad (1)$$

- Starting to and continuing on studying
- Being able to study consciously and using learnt knowledge
- Taking Notes and listening to the lesson
- Reading habits and techniques
- Preparing homework
- Attitude towards school
- Preparing for and taking exams

3. FINDINGS and INTERPRETATIONS

The answers fort he 73 questions asked in the assessment survey which was applied to the TSVHS students about study behaviours have been transferred to the SPSS program. With the help of the program the right and wrong answers have been determined and the percentage slice has been revealed. According to the prepared answer key and interpretation key the necessary interpretations have been made.

According to this research graphic 1 has been formed from the obtained data as a result of the evaluation about the students study behaviours. According to our scale the topics which our students experience problems are shown with the percentages according to this graph.



Graphic 1. The students' problem percentages according to the scale

3.1. **Starting to and Continuing on Studying:** With the help of the results obtained from the survey Table 2 was formed.

Table 2. The T/F answers regarding the problem of starting to and continuing on studying.

| A | Starting to and Continuing on Studying | | | | | | | | | | | | | | | | Total True Answers | |
|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|-----|
| | Question No | 13 | 15 | 17 | 18 | 30 | 32 | 37 | 39 | 40 | 43 | 44 | 48 | 49 | 55 | 67 | | 70 |
| | T / F | (F) | (F) | (F) | (F) | (F) | (F) | (F) | (T) | (F) | (F) | (F) | (F) | (F) | (F) | (F) | | (F) |
| Answer | 55 | 58 | 105 | 141 | 85 | 120 | 124 | 74 | 75 | 91 | 101 | 88 | 113 | 159 | 105 | 97 | 1591 | |

Obtained from the answers $Point = \frac{1591}{236} = 6,74$ has been calculated. According to the interpretation key the calculated point has been interpreted. According to the point, it is understood that the students have some difficulties in starting to and continuing on studying. Also to make time for fun and rest they need to benefit efficiently from the time they allocate to study. After the students have learned the method which supervise them, they will both have free time to socialise and improve their success.

3.2. **Being able to study consciously and using learnt knowledge:** With the help of the results obtained from the survey Table 3 was formed.

Table 3. The T/F answers regarding being able to study consciously and using learnt knowledge problem

| B | Being able to study consciously and using learnt knowledge | | | | | | | | | | Total True Answers |
|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|------|--------------------|
| | Question No | 12 | 14 | 16 | 19 | 38 | 42 | 47 | 50 | 51 | |
| | T / F | (F) | (T) | (F) | (T) | (T) | (F) | (T) | (T) | (T) | |
| Answer | 182 | 67 | 64 | 159 | 202 | 189 | 174 | 128 | 164 | 1329 | |

Obtained from the answers $Point = \frac{1329}{236} = 5,63$ has been calculated. According to the interpretation key the calculated point has been interpreted. According to the point, it is seen that regarding the matter of the students to be able to study consciously and using the learned knowledge there are important deficiencies. There is a high possibility that school life is very hard on them because students don't know why they are learning and because there is no regular repetition. There is high importance of regular repetition and efficient study methods to increase their success at school.

3.3. **Taking Notes and listening to the lesson:** With the help of the results obtained from the survey table 4 was formed.

Table 4. The T/F answers regarding taking notes and listening to the lesson problem

| C | Taking Notes and listening to the lesson | | | | | | | | | | Total True Answers | |
|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|-----|
| | Question No | 8 | 10 | 20 | 22 | 24 | 31 | 61 | 62 | 71 | | 72 |
| | T / F | (T) | (F) | (T) | (F) | (T) | (T) | (T) | (F) | (F) | | (F) |
| Answer | 132 | 161 | 167 | 143 | 146 | 55 | 180 | 145 | 151 | 103 | 1383 | |

Obtained from the answers $Point = \frac{1383}{236} = 5,86$ has been calculated. According to the interpretation key the calculated point has been interpreted. According to the point, it is understood that students don't know enough the effect of taking notes and listening to the lesson has on success. It should be explained to them that they will see the results in the shortest time if they spend some effort in improving their note taking techniques.

3.4. **Reading habits and techniques:** With the help of the results obtained from the survey table 5 was formed.

Table 5. The T/F answers regarding reading habits and techniques problem

| D | Reading habits and techniques | | | | | | | | | | | | Total True Answers | |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|------|
| | Question No | 4 | 5 | 7 | 11 | 28 | 29 | 34 | 45 | 46 | 56 | 60 | | 73 |
| | T / F | (F) | (F) | (T) | (T) | (F) | (F) | (T) | (T) | (T) | (T) | (T) | (F) | |
| | Answer | 93 | 185 | 154 | 107 | 148 | 137 | 205 | 197 | 168 | 193 | 131 | 91 | 1809 |

Obtained from the answers $Point = \frac{1809}{236} = 7,66$ has been calculated. According to the interpretation key the calculated point has

been interpreted. According to the point: It is understood that students spend a lot of time reading, however later they are able to remember a little of it. It is seen that they lose a lot of time in the unessential parts of the text and they have difficulty in distinguishing the difference between the important and the unimportant. It should be explained to the students that in order to increase their success at school they need to place importance in developing their reading skills.

3.5 Preparing homework: With the help of the results obtained from the survey table 6 was formed.

Table 6. The T/F answers regarding preparing homework problem

| E | Preparing homework | | | | | | | | Total True Answers |
|---|--------------------|-----|-----|-----|-----|-----|-----|-----|--------------------|
| | Question No | 3 | 23 | 25 | 26 | 52 | 53 | 63 | |
| | T / F | (F) | (T) | (T) | (F) | (F) | (F) | (T) | |
| | Answer | 107 | 173 | 137 | 61 | 191 | 94 | 179 | 942 |

Obtained from the answers $Point = \frac{942}{236} = 3,99$ has been calculated. According to the interpretation key the calculated point has been

interpreted. According to the point, it is understood that students have difficulty upon preparing their homework properly and organizing it from time to time. Their success in school will increase with enough studying and doing their homework on time.

3.6 Attitude towards school: With the help of the results obtained from the survey table 7 was formed.

Table 7. The T/F answers regarding attitude towards school problem

| F | Attitude towards school | | | | | | | | Total True Answers | |
|---|-------------------------|-----|-----|-----|-----|-----|-----|-----|--------------------|------|
| | Question No | 27 | 33 | 35 | 36 | 57 | 64 | 68 | | 69 |
| | T / F | (F) | (T) | (F) | (F) | (T) | (T) | (F) | (F) | |
| | Answer | 50 | 154 | 150 | 91 | 162 | 137 | 145 | 142 | 1031 |

Obtained from the answers $Point = \frac{1031}{236} = 4,36$ has been calculated. According to the interpretation key the calculated point has been

interpreted. According to the point, it is seen that students carry some negative feelings and thoughts against school. It is beneficial for them to deal with and go through these negative attitudes they have against the school from time to time so it does not affect their academic success.

3.7. Preparing for and taking exams: With the help of the results obtained from the survey table 8 was formed.

Table 8. The T/F answers regarding preparing for and taking exams problem

| G | Preparing for and taking exams | | | | | | | | | | | Total True Answers | |
|---|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|------|
| | Question No | 1 | 2 | 6 | 9 | 21 | 41 | 54 | 58 | 59 | 65 | | 66 |
| | T / F | (F) | (F) | (T) | (F) | (F) | (T) | (F) | (F) | (F) | (T) | (F) | |
| | Answer | 63 | 78 | 169 | 146 | 192 | 176 | 79 | 83 | 83 | 184 | 110 | 1363 |

Obtained from the answers $Point = \frac{1363}{236} = 5,77$ has been calculated. According to the interpretation key the calculated point has been

interpreted. According to the point, it is seen that even though students have a great deal of knowledge and experience about preparing and taking exams, there are some deficiencies. The students' success will increase even more when these deficiencies have been overcome.

4. CONCLUSION and SUGGESTIONS

At the end of this study the students study behaviours have been evaluated. A lot of students express their problems frequently about studying. Some of these students complain that they have problems to start studying, some can't continue studying, and some are not successful although they study.

According to the result of the study, it is observed those students:

- Have some problems to start studying and to continue it,
- Have important deficiency to study consciously and to use what they have learned,
- Are not aware enough how effective notetaking and listening to the lesson is on success,
- Spend much of their time on reading but later manage to remember very little,
- Sometimes have difficulty doing and arranging their homework efficiently,
- Are in a negative emotion and thoughts against their school,
- Have some deficiency to study for the exams.

5. REFERENCES

- BAYKUL, Y., (2000), *Eğitimde ve Psikolojide Ölçme: Klasik Test Teorisi ve Uygulanması*, ÖSYM Yayınları, Ankara.
<http://psikoweb.com/cddo.html> (Access date: 10.02.2009)
- KADIOĞLU, B., (2002), *Çoktan Seçmeli Testlerde Test Maddelerini Cevaplama Davranışlarının, Madde ve Öğrenci Özelliklerine Göre Nasıl Bir Değişim Gösterdiğinin İncelenmesi*, Hacettepe University Sosyal Bilimler Enstitüsü Yüksek Lisans Tezi, Ankara.
- KAPTAN, S., (1993), *Bilimsel Araştırma ve İstatistik Teknikleri*, Tekışık Web Ofset Tesisleri, Ankara.
- KARASAR, N., (2005), *Bilimsel Araştırma Yöntemi (-kavramlar-ilkeler-teknikler-)*, Nobel Yayınları, Ankara.
- TURGUT, M. F., (1995), *Eğitimde Ölçme ve Değerlendirme Metotları*, Yargıcı, Matbaası, Ankara.

REUSABLE BLOGS PROPOSAL FOR BLENDED LEARNING

Carlos A. TORRES-GASTELÚ – torresgastelu@gmail.com
Facultad de Administración, Universidad Veracruzana - México

Ana M. ARRAS VOTA – arras53@hotmail.com
Facultad de Ciencias Agrotecnológicas, Universidad Autónoma de Chihuahua - México

Abstract

In Mexican public universities there is a growing interest to consider educative models centered in student learning, this implies a change in professor's traditional roll which involves a transition from explaining contents and knowledge to activities in which professor supports the understanding of the course key concepts. So, two Mexican universities have been working in a research project related with the development of ways to incorporate new technologies in the educational process. One of the purposes is to perform an evaluation of the incorporation of Blended Learning in on-site classes at the university. Blended learning takes the advantages of on-site learning with electronic learning. This document show a prototype of blended learning based in Internet free tools and also in the institutional technological platform of one university located in the South of Mexico (Universidad Veracruzana).

Keywords: Blended Learning, Blogs, Google Docs, EMINUS, Mexican public universities, UV, UACH.

INTRODUCTION

Both universities, Veracruzana and Chihuahua, are public Mexican universities that have adopted an educative flexible model based in the fact that students are responsible of discovering knowledge, this implies a revalorization of the way in which diverse activities were performed by students and professors.

And of course, both universities have made efforts to incorporate information technologies in the process of teaching and learning. Since technology boom, both universities have developed programs and forms of teaching based in the use of these devices, and offer careers and postgraduate programs in the virtual mode. Nevertheless, it is important to pinpoint that in the Veracruzana University in 2003 the EMINUS software is launched as an official platform to support the development of virtual learning environment at the university. This tool is incorporated slowly in postgraduate programs with certain reserve and in bachelor programs with scarce impact. Nevertheless, the efforts that were done in the Information Technology Area (DGTI) prosper in the emission of a new and improved EMINUS 2.

Although efforts were not solely made in internal development, but also evaluation on free tools from the Web 2.0 were done. Specifically the first author of this document has been using blogs in teaching since 2006. Each school period he has created new blogs for the same classes, adding new aspects, with the disadvantage of begging from zero, with practically the same information, until 2009 when the creation of reusable blogs.

With the design and application of reusable blogs the problem mentioned above was solved and enrichment of the function and content of blogs is attained to the point that allows elaboration of a prototype to apply them as a platform in a model of Blended Learning.

Advances presented in this document correspond to a research project that considers the inner informatics development of Universidad Veracruzana - the Public State University of Veracruz - (Eminus 2), as well as free technologic tools such as Blogs from Blogger, with the purpose to evaluate their use and acceptance by students courses in the Management Faculty.

Both technological tools are characterized by the easiness of Access, while EMINUS 2 is consulted through the account given by the university to students and can be consulted inside the university's net, as well as outside of it. And the access to interact by Blogs is made through a free account created in the Blogger site.

Also both tools have been officially adopted. In EMINUS 2 any professor can have access with their account and university access key to their academic assigned load. And Blogs have incorporated to the Academic Training Program (PROFA) of the Academic Development Area (DGDA) as a course, with the purpose of bringing technologies of Web 2.0 closer to teachers. Specifically, since the period of January-February 2008, the Veracruzana University has been offering a course to their teachers with respect to the use of Weblogs in education. This type of courses are also offered in the University of Chihuahua through the University Center of Teachers Development.

At this point the course has been taught in both universities, and can be point out that it has been imparted four times in the diverse regions of the Veracruzana University (Poza Rica – Tuxpan, Xalapa, Veracruz, Orizaba-Córdoba and Coatzacoalcos-Minatitlan). One of the authors has been the professor in these courses. Nevertheless, this study only considers courses in the Management Faculty of the Veracruzana University in the first author's classes, and some students have made contributions in the design of the courses. This model will be replicated at the University of Chihuahua by the second author in the research classes in the Agrotechnological Sciences and Accounting and Business Faculties.

Through this process it has been proved the fact that public Mexican universities face difficulties to appropriate of new learning modalities based in Information and Communication Technologies (ICT). As an example of this, Santos, Galán and Del Olmo (2005) said that it is relevant to define exactly what can we get with ICT in order to make a correct programming and efficient communication with student.

And another two problems arise: limited knowledge of professors in relation to new technologies such as blogs applied in teaching, and the second one is related to the inertia of a system in which students generally runs away from any protagonist adventure that demand too much effort.

Nevertheless, we will concentrate in presenting one of the prototypes done for the course, Evaluation and Management Projects. (See <http://ee-gep.blogspot.com>).

Evidence found indicate that the efforts to incorporate free technological tools are a sign of intangible value that is attained in the process of university formation of students through the courses in the study programs.

BLENDDED LEARNING IN THE UNIVERSITY

Landaeta (2003) affirms that *Blended Learning* is: “a modality of mix teaching that combines the formation of on-site formation with new technologies (e-learning)”. We are agree with this definition, so it is necessary to review the current situation during the incorporation of Blended Learning in the university.

Bartolomé and Aiello (2006:10) consider that Information and Communication Technology (ICT) assimilation could be an opportunity because the students should develop enough competences to play in our society. This society has making a lot of relevant changes around information. But that could happen only if that assimilation of those technologies is performed answering the challenges of the changes and always looking for quality. That quality is related with the research of the optimal conditions in order to the students could develop their critic, professional and academic competences.

In this sense, Cabero (2006) express that the current problems are not technological, but problems are to figure out “what to know”, “how to do it”, and “why we want to do it”. However, this is not an easy task because it is required to develop skills and competences in the professors and also the students. Also Marqués (2006) emphasize in the necessity to acquire also instrumental competences to use the programs and resources available in Internet, but above all it is imperative to acquire didactic competences to use all of the ICT means in their job as a professor. Due that this kind of professor has to play many positions (mediator, advisory, tutor, to coach, source of information, organizer of learning, to motivate, and so on).

So, this becomes in a titanic task if we consider that a lot of our professors in the Mexican Public Universities lack of the skills and technical knowledge to incorporate them as a part of their daily academic work. Nevertheless, this is not happening only in Mexico, for instance Rakes and Casey (2002), affirm that many professors, even the most experienced, have been incapable to use the technology in an effective way in their job.

Besides of the technological and didactic problems we should not forget that the change process involves migrate from an On-site Teaching way to a Blended Learning Teaching way. However, it is imperative that as academics make a constant efforts to valuate new didactic alternatives that offers Internet. We must to follow the instructions proposed by Cabero (2006) to point out that we have to become academic leaders that play with the innovation, the creativity and the risk as our principles, avoiding the fear that every change generates it. In order to do that we as academics need to emphasize in the develop of didactic strategies and competences that we will be creating through study cases, learning circles and of course prototypes that reflects how we can do it step by step.

In this sense, this document explain the way in which the authors have been played with the innovation presenting the advances performed by an academic that began in 2006 with the incorporation of Web 2.0 tools such as blogs. This has been a very slow and progressive process trying to understand and assimilate how to use Blended Learning in the university.

According to our experience Blended Learning modality supported by blogs help students to be a bit more responsible of their own learning. Of course it is necessary a lot of participation of the professor in the planning of the academic activities that must to publish in collaboration with other students and be capable to defend his position during oral validation process when the professor decide to do it. In this way learning evidences are created during the course for the physical and personal interaction, readings and critic of his own individual work, such as his virtual work that perform with their companions in the Teams of the class.

The final goal that we want to get in the future is to develop a tested Blended Learning prototype based in Web 2.0 tools. In order to do that we will analyze the viability of use considering both perspectives students and professors to elaborate a proposal that implies the systematic use of new technologies in Mexican Universities to act as a continuous learning mechanism.

EDUCATIONAL INNOVATION PROJECT

Taking in consideration the Academic Development Plan of the Management Faculty of Veracruzana University (a South Public State University in Veracruz, Mexico) emerge the Educational Innovation Project. One purpose of this project is the habilitation of virtual learning environments. Although this project is defined in the state of Veracruz, due to the strong collaboration with the Chihuahua University (a North Public State University in Chihuahua, Mexico) actually this project has been performed by a group of research academics. The idea is eventually to assimilate Blended Learning designing and testing ways according to Mexican reality. We know that Blended Learning has been accepted in many universities around the world, buy we want to verify if Blended Learning could be a good option to on-site educational spaces for competences evaluation.

Although the main purpose of the Educational Innovation Project is to design and implement virtual courses in all the study programs of the Management Faculty, just one study program – Computer Science - has been selected. Three different technological platforms has been used for this purpose: EMINUS (institutional platform), Blogs (created in Blogger), and Wikis (Wikispaces).

EMINUS is the institutional technological platform used for virtual courses in the Veracruzana University. It is an internal software development with similar functions like MOODLE. EMINUS contains several bachelor and master degree courses of this university. Mean time reusable Blog are located in Blogger and the main characteristic is their capability to be used in later courses. Finally, the incorporation of Wikis has been doing using Wikispaces tool.

In order to implement reusable blogs and EMINUS, a specific project was created and called: Use of teaching – learning technological tools for the study program of Computer Science in the Management Faculty. In that way we could design, test and create a prototype to replicate in other study program and universities.

The goals of this specific Project are:

- Design and implement in four courses of an on-site educational program according to the Blended Learning model.
- Analyze the academics and students perception of Blogs and EMINUS.
- Evaluate the efficiency of the incorporation of technological tools in the teaching – learning process.
- Identify the barriers in the process of formation of technological habits in the students and academics.

This document shows advances in the prototype design developed to be incorporated in reusable blogs for subsequent courses and the correlation with others technological tools. In other to get a better understanding we will take the case of one course (Evaluation and Management of Projects) that belongs to the Computer Science study program.

REUSABLE BLOG PROTOTYPE

The design, develop and implementation of the Blog will be explain answering four basic questions: (A) How is organized the reusable blog?; (B) Which are the support technological tools?; (C) How the design of the course was made?; and (D) How operate the course based in the reusable blog?.

The **organization of the reusable blog (A)** can be seen in the Figure 1. The numbers of the figure 1 show the four sections of the Blog. Section (1) **HEADER** shows the name of the Blog. In this case corresponds to **Evaluation and Management Projects (EE GEP: Experiencia Educativa Gestión y Evaluación de Proyectos)**. The Section (2) **POST** represents the **graphic space** for the visualization of the selected contents. Available sections are: Course Content, Rules, Following the Course and Tags.

Figure 1



The course is composed by several units. Each unit has several sections or themes of concepts or information. So, the course content includes the material of each subject for each unit with the mention of the material source, information for this theme, images, tables, diagrams and links to download all these material. Also, includes the activities tables, where are described the activities of each unit. These tables have details about the description of the activities, their codes, assignation dates and delivery dates, validation dates, who will perform the activity, the state of the activity (if is an optional activity or mandatory activity), and the way to evaluate the activity. Besides each activity have a link that show a full description of the activity and the links to download all the available material to perform it.

The section of rules show general information about the course: Study Program, Competences to Develop, Minimal Description, Booklist, Course Material, Operations Criteria and the Scholar Calendar. It is important to explain that the programming of the themes, units, activities and evaluations of the course is organized taking in consideration the week number of the course instead of an specific date. In that way we could reuse the course in later years.

On the other hand, the section of Following the course contains the support material for the development of the activities. While in the section Tags is responsible to categorize the labels of the Blog.

The section (3) LEFT SIDE BAR shows the links of “Course Content” which is divided by units and themes. Also shows the links to the activities tables for each units. The content of these links can be seen in the section of “Post of the blog”. Finally, the section (4) RIGHT SIDE BAR is used for the links to the “Rules”, “Following the course” and “Tags”.

The **support technological tools (B)** used for the course were Blogger, Google Docs and EMINUS. In Blogger all of the blogs were created. It is the main interface of the course and contains all necessary information to study, themes, activities, booklist, material to download, and so on. Google Docs was used to store support material to study and is also the recommended tool that student could use to publish, browse, upload and download documents. This tool store documents that must be published by each Team Blog. Finally, EMINUS is the institutional technological platform to elaborate and apply on-line theoretical tests, there is at least one by each unit.

For the **design course elaboration (C)** we take in consideration the study program of the course, but it was necessary to elaborate the estimated advance detailing for each unit their purpose taking in consideration how and when the technological tools will be used. It means the “What”, “How” and “Why” about the contents, activities and evaluations. Each unit has a set of contents, so it was necessary to answer the question: What do the students need to learn?. Inherent to the develop of each theme it is associated with a set of competences that is expected to develop in each student. It means, the skills attending to the question: What do the students must know how? Also, was designed the establishment of the activities for each unit as the academic as the students. Answering two questions: What the academic need to do to help the students to learn? And What the students must do to learn?.

Finally, a set of learning products were defined to act as a parameters for the evaluation. The **strategy adopted** was to work with the students in teams. Each team has their own team blog to publish, and only members of the team and the professor can have access to the team blog. In that way the students published learning evidences in their own team blog, and later the professor dedicate an specific session to make an oral evaluation to validate all the material published and have an idea about what have been assimilated by the students.

The way to **carry out the course (D)** was made through the use of three blogs: Course Blog, Student Blog and Team Blog. The management of the Course Blog is made by the professor and contains all necessary elements to incorporate the modality of Blended Learning. Student Blog is also controlled by the professor, but here the students could have communication with the professor using comments in the posts published. For the Team Blog is necessary to follow the instructions published in the Rules section that belongs to the Course Blog. These three blogs are linked in this way: The Course Blog gives access to the Student Blog by a link in the Following Course section located in the RIGHT SIDE BAR. In the other hand, inside Student Blog is possible to have access to the Team Blog using a link in the LEFT SIDE BAR. Of course it is possible in the Student Blog and Team Blog to return directly to Course Blog.

CONCLUSIONS

Mexican universities have a growing demand to attend more students each day, and they need to optimize their resources. In this sense, the incorporation of Information and Communication Technologies could be an acceptable alternative to strength the teaching – learning process, to develop collaboration skills and to promote a critic sense in the students. Because of ICT (Information and Communication Technology) becomes a rational way for different modalities: On-site and Electronic or Virtual.

So, the determination of the efficiency in Blended Learning during lessons at the university could be the way to cover some of the necessities in Mexican universities. In order to consider that as a valid alternative, the design of Blended Learning prototypes becomes in a useful resource to measure the efficiency. Preliminary results in the use of the proposal prototype indicated a moderate acceptance for the professor and the students in the change management process involved

So far the design and implementation of three courses were finished using reusable blogs. Also the perception of the students in two courses has been done. However, several points remain pending for the near future. For instance, the purpose that refers to evaluate the efficiency in the incorporation of technological tools during the teaching-learning process, and the identification of the barriers in technological habits in the students and professors.

REFERENCES

- Bartolomé, A. (2002). Universidades en la Red. ¿Universidad presencial o virtual?. Retrieved March 18, 2010, from www.lmi.ub.es/personal/bartolome/articuloshtml/bartolomeSPcritica02.pdf
- Bartolomé, A., Aiello, M. (2006). Nuevas tecnologías y necesidades formativas. *Blended Learning* y los nuevos perfiles en comunicación audiovisual. Revista TELOS. Nuevas tecnologías y necesidades formativas, abril-junio, 67. Retrieved July 15, 2009 from <http://www.campusred.net/TELOS>
- Cabero, J. (2006). Bases pedagógicas del e-learning. Revista de la Sociedad del Conocimiento (RUSC). Vol. 3, no. 1. UOC. Retrieved July 30, 2009 from <http://www.uoc.edu/rusc/3/1/dt/esp/cabero.pdf>
- Greciet, P. (2003). Los métodos didácticos más eficaces: aprendizaje colaborativo y práctico. Educaweb, N° 69. Monográfico sobre Formación Virtual. Retrieved October 15, 2009 from <http://www.educaweb.com/esp/servicios/monografico/formacionvirtual/1181109.asp>
- Landaeta, A. (2003). Acerca del blended-learning. Educaweb, N° 69. Monográfico sobre Formación Virtual. Retrieved March 15, 2010 from <http://www.educaweb.com/esp/servicios/monografico/formacionvirtual/1181079.asp>
- Marqués G. P. (2006). Buenas prácticas didácticas en el uso de las TIC. Las claves del éxito. Retrieved February 1, 2010 from <http://dewey.uab.es/pmarques/cantabria2006.htm>
- Peña, K., Torres, R. (2007). Edublogs: Apuntando a una didáctica constructivista en la red. Blog sobre los edublogs. Retrieved December 20, 2009 en: <http://metaedublog.wordpress.com/edublogs-apuntando-a-una-didactica-constructivista-en-la-red>
- Rakes, G., Casey, H. (2002). An analysis of teacher concerns toward instructional technology. *International Journal of Educational Technology*, 3 (1).
- Santos M. J., Galán J. M., Del Olmo R. (2005). Nuevas estrategias de enseñanza: experiencia con Weblogs. Retrieved November 18, 2009 from <http://www.adingor.es/Documentacion/CIO/cio2005/items/ponencias/120.pdf>

SAKARYA ÜNİVERSİTESİ BÖTE ÖĞRENCİLERİNİN BİREYSELLEŞTİRİLMİŞ ÖĞRETİM TASARIMI KONUSUNDAKİ GÖRÜŞLERİ VE ÖĞRENCİLERİN BU KONUDAKİ BİLGİ DÜZEYLERİNİN BELİRLENMESİ

DEFININIG SAKARYA UNIVERSITY BÖTE STUDENTS' BELIEFS AND THOUGHTS ABOUT CUSTOMIZED INSTRUCTIONAL DESIGN AND TO DETERMINE THE INFORMATION LEVEL OF STUDENTS ABOUT THE SUBJECT

Sakarya Üniversitesi
Tuğra KARADEMİR
Bilgisayar ve Öğretim Teknolojileri
Ana Bilim Dalı

Özet:

Bilindiği gibi eğitim “ bireyin davranışlarında kendi yaşantısı yoluyla ve kasıtlı olarak istedik değişme meydana getirme sürecidir” (Ertürk, 1972, s.12). Bu süreçte esas olan, bireysel yeteneklerin çeşitli yollardan birey ve toplum için en uygun şekilde geliştirilmesidir.(Alkan, 1979,). Buda bilgi ve teknolojinin eğitim sistemlerinde birey tabanlı nasıl işe koşulacağını tanımak, kullanmak, geliştirmekle olanaklıdır. Bu yüzden eğitilmiş eleman gereksinimi ortaya çıkmaktadır.

Bu gereksinimden yola çıkarak çalışmada Sakarya Üniversitesi BÖTE öğrencilerinin Bireyselleştirilmiş Öğretim Tasarımı hakkındaki görüşleri ve öğrencilerin bu konudaki bilgi düzeylerinin belirlenmesi amaçlanmıştır.

Anahtar Sözcükler: Bireysel öğrenme, Bireyselleştirilmiş Öğretim tasarımı, Böte, öğrenci görüşleri

Abstract:

As we all know, "education is the process which makes difference in person's behavior by his own experience and intentionally (Ertürk, 1972, s.12)". The important thing in this process is to improve individual qualifications properly both for the person and community (Alkan, 1979). This is only possible by recognizing, using and improving how information and technology-based training systems can be run to use by basing on individuals. For this reason educated employees are needed.

Considering these requirements, it is aimed to define Sakarya University BÖte Students' beliefs and thoughts about Customized Instructional Design and to determine their information level about the subject.

Key words: Mobile learning, Education of Computer and Teaching Technologies, Student Beliefs

1)GİRİŞ:

Eğitim; bireyin yaşadığı toplumda pratik, yönelim ve diğer davranış biçimlerini edindiği süreçler toplamı , diğer bir ifadeyle, kişinin toplumsal yeteneklerinin ve optimum kişisel gelişmesinin sağlanması için, seçkin ve kontrollü bir çevreyi ve okul etkinliklerini içine alan bir süreç olarak tanımlanmaktadır. (Varış, 1978:35) İlk insandan beri süregelen ve bu süreç içinde ihtiyaçlara göre geliştirilen bir kavram olagelmıştır. Yüzyıllardan beri var olan eğitim kavramı en baştan beri bir lüks olmaktan çıkarak her zaman yaşamın içinde var olması gereken bir zorunluluk olmuştur. Çağlar boyunca artan nüfusla beraber bilgede de artış olmuş ve bu gibi etmenler eğitimin yönünü değiştirmiştir. İlk zamanlar az kişiye verilen formal eğitim daha sonraki dönemlerde kitle eğitimine kendini bırakmıştır.

Eğitim yaygınlaşmasıyla eğitilmiş birey sayısı artmıştır. Artan eğitim düzeyi ile yeni şeyler üretme , bilgiyi kullanma ve farklı alanlara uyarlama ihtiyacı hissedilmiş, bunlar insan ihtiyaçlarıyla da birleştirilerek çeşitli teknolojiler üretilmiştir. Üretilen her türlü teknoloji beraberinde yenilerini getirmiş ve artan nüfusla birlikte ortaya konan ürün ve elde edilen tecrübelerin artması bilginin hızla üretilmesini ve hızla çoğalması sağlamıştır.

Bugün gerek eğitimde gerekse farklı alanlarda bilgi patlaması yaşanmakta olduğunu görmekteyiz. Eğitim olanakları artan bu bilgiyi öğretme yetersiz kalmıştır. Eğitim olanaklarının yetersizliği sadece bilginin artırılmasından kaynaklanmamıştır. Ayrıca fazlalaşan insan sayısı ile farklı bireylerin ve kültürlerin oluşması, bir meslek grubunda çalışan bireylerin farklı alanlarda bilgi almak istediklerinde zaman ve mekan sorunlarıyla karşılaşmaları, bedensel engelli bireylerin okullara gidemeyişi gibi nedenler eğitim sorunlarını doğurmuştur. Bu eğitim sorunlarına çözüm olarak bireysel öğrenme ortaya konmuştur. Çağımızda insana verilen değerlerin artması, eğitimde demokratikleşme eğilimlerinin yaygınlaşması ve eğitim teknolojisi alanındaki çağdaş gelişmeler ile özel eğitim alanında gerçekleştirilen öğretim uygulamaları vb. etmenlerde öğretimin bireyselleştirilmesinde etkili olmuştur (Yaşar, 1990).

Bireysel öğrenme, araç-gereçlerin her öğrencinin kişisel yetenek ve ilgisine karşılık verecek biçimde hazırlanıp kullanılmasına önem veren öğretim uygulaması olarak tanımlanabilir(Oğuzkan, 1993:20) . Başka bir tanımda şöyledir; öğrencilerin kendi hızları ile bireysel olarak öğrenmelerini sağlayacak, bireyselleştirilmiş öğretim materyalleri ile yapılan bir öğretim yaklaşımıdır (Erden ve Akman,1995:163). Öğrenme Psikolojisi alanında yapılan çalışmalarda bireylerin öğrenme hızlarını aynı olmadığını , herhangi bir konuyu herkesin aynı sürede öğrenemeyeceğini, dolayısıyla bireylerin grup halinde eğitilmelerinin sakıncalı olduğunu göstermiştir (Hızal, 1989: 42). Bireysel öğretim, eğitim teknolojisinde eğitsel ortamlara dayalı olarak geliştirilmiş öğretim sistemleri, eğitim etkililiğini geliştirme ve eğitimin kalite ve etkinliğini artırma yanında programlara hareket, hareket ,esneklik,çeşitlilik ve nitelik kazandırır. Bu amaçla da Bireyselleştirilmiş Öğretim Programları hazırlanmaya ve Bireyselleştirilmiş Öğretim Programları tasarlayan eleman yetiştirilmeye başlanmıştır.

"Bireyselleştirilmiş Öğretim Programı"; öğrenciler arasındaki bireysel farklılıkları göz önünde tutan, her öğrenciyi kendi ilgi, yetenek, hız gibi özellikleri ölçüsünde ilerleme imkanı sağlayan öğretim biçimi, olarak tanımlanmaktadır. (Oğuzkan, 1993:20) Bu sistemle öğrencinin ne öğreneceği, nasıl öğreneceğini, ne zaman ve hangi hızla öğreneceğini, geleneksel eğitim sistemlerindeki kontrole bağlı kalmaksızın öğrenci inisiyatifine göre şekillenir (Alkan, 1997:42). Bilgi parçaları ayrılarak bireysel özelliklere bağlı olarak şekillendirilir. Bu tasarım sürecinde bazı adımlar izlenmektedir. Bu aşamalar tasarımdan tasarıya içerik olarak değişse de ana hatları itibari ile aynıdır. Bu aşamaları şu şekilde gösterebilmekteyiz; öğrencinin performans düzeyini belirlemeye yönelik olarak ölçüt bağımlı testlerin hazırlanması ,öğrencinin performans düzeyinin belirlenmesi, uzun ve kısa dönemli amaçların oluşturulması , performans düzeyine göre öğretim planlarının hazırlanması ve öğretimin değerlendirilmesidir (Varol,1992:15). İlk basamak olan öğrencinin performans düzeyini belirlemeye yönelik olarak ölçüt bağımlı testlerin hazırlanması aşamasında amaç öğretim öncesinde öğrencinin bir kavramda performans düzeyini (Başlama düzeyini) belirlemektir. İkinci basamak olan öğrencinin performans düzeyinin belirlenmesinde amaç öğretime nereden başlanacağını belirlenmesidir. (Varol,1992:16). Üçüncü basamak olan uzun ve kısa dönemli amaçların oluşturulmasında belirlenen düzeylere göre gözlenebilir ve ölçülebilir amaçların yazılması amaçlarıdır. (Varol,1992:16). Performans düzeyine göre öğretim planlarının

hazırlanmasında ; öğrencinin performans düzeyi, öğretim amacı , öğretim amacına ulaşmak için kullanılacak araç-gereçler, öğretim ortamı ,kullanılacak pekiştiriciler ve öğretim yönteminin yer alması gerekir. Son basamak olan öğretimin değerlendirilmesinde de hem öğrencinin belirlenen hedefleri kazanması ve hem de öğretimin sonunda öğrencinin, programın amaçlarını kazanıp kazanmadığını belirlemek için kullanılmaktadır (Varol,1992:17).

Bireysel öğretim tasarımı bireysel öğrenme modellerinin önemi arttıkça teknoloji ile birleştirilerek geliştirilmeye başlanmıştır. 1950'li yıllardan itibaren başlayan kendi kendine öğretim teknolojisi diyebileceğimiz ve "Programlı Öğretim, Otomatik Öğretim, Kendi Kendine Öğretim, Öğretme Makinaları " gibi adlarla ifade edilen, yeni eğitim teknolojilerinin kullanılmaya başlandığı bireysel öğretim metotlarının gelişmekte olduğunu görmekteyiz.. Bu metotlardan bazıları otomatik dil dersliklerinde öğretim, programlı öğretim, modüler öğretim, bilgisayarlarla öğrenme öğretim, Televizyonlu öğretim, uzaktan öğretim, etkinlikleri olmak üzere farklı isimler ve yöntemler halinde uygulanmaktadır (Hızal, 1989:44; Alkan, 1997:176-197). Bu amaçla basılı kaynaklar, uzaktan eğitim programları, simülasyonlar, bilgisayarla çeşitli öğretim programları vb. eğitim amaçlı Bireysel Öğretim Programları geliştirilmektedir. Bu programların tasarlanması sadece birkaç kişinin değil birden fazla uzmanın üzerinde çalışmasıyla mümkün olmaktadır. Bir araya gelen uzmanlar bireyselleştirilmiş öğretim tasarımlarının belirli basamaklarında etkin olarak görev almaktadırlar. Örneğin öğretimin bireyselleştirilmesi amacıyla düzenlenen eğitsel ortamlarda öğrenme-öğretme etkinliklerinin planlanması, uygulanması ve değerlendirilmesi sırasında öğretmen, "planlayıcılık", "düzenleyicilik", "danışmanlık", "güdüleyicilik" ve "değerlendiricilik" olarak adlandırılan rolleri üstlenir. (Güven, 2007:89)

Bu uzmanlar içerisinde Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerini de sayabilmekteyiz. Bilgisayar ve Öğretim Teknolojileri Eğitimi bölümünün temel amacı eğitim kurumlarının gereksinim duyduğu bilgisayar ve diğer öğretim teknolojisi ürünlerinin işlevsel kullanımı için gerekli olan yöntem ve teknikleri geliştirmek, yaymak ve öğretmek, bu kurumlarda öğretmenlik yapmak isteyen bireyleri yetiştirmektir. Bu amaçlardan yola çıkarak ve git gide artan Bireyselleştirilmiş Öğretim Programlarının tasarlanması için Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin bu konularda bilgiye sahip olması gerekmektedir.

Bu çalışmada da Sakarya Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin Bireyselleştirilmiş Öğretim Tasarımı konusundaki görüşleri ve öğrencilerin bu konudaki bilgi düzeylerinin belirlenmesi amaçlanmıştır.

1.2) Amaç:

Bu çalışmada da Sakarya Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin Bireyselleştirilmiş Öğretim Tasarımı konusundaki görüşleri ve öğrencilerin bu konudaki bilgi düzeylerinin belirlenmesi amaçlanmıştır. Bu amaç çerçevesinde çalışmada şu sorulara yanıt aranmıştır.

Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü öğretmen adaylarına göre;

1. Bireyselliği nasıl tanımlarsınız?
2. Tasarım kavramı sizce ne anlama gelmektedir?
3. Öğretim kavramını nasıl tanımlarsınız?
4. Etkili eğitimi nasıl tanımlarsınız?
5. Bireysel yatanek sizce ne anlama gelir?
6. Bireysel farklılık kavramını nasıl tanımlarsınız?
7. Bireyselleştirilmiş Öğretim tasarımı nasıl tanımlarsınız?

2.YÖNTEM

2.1.Araştırmanın Deseni

Bu çalışma olgu bilim araştırması olarak desenlenmiştir. Olgu bilim çalışmalarında genellikle belli bir olguya ilişkin bireysel algıların veya perspektiflerin ortaya çıkarılması ve yorumlanması amaçlanır (Yıldırım & Şimşek, 2005).

2.2. Katılımcılar

Katılımcıların belirlenmesinde amaçlı örnekleme yoluna gidilmiştir. Amaçlı örnekleme, araştırmada daha önceden belirlenmiş ölçütleri karşılayan durumların çalışılmasıdır (Yıldırım ve Şimşek, 2006). Bu tip bir örneklemede araştırmacı araştırmaya en uygun ve istenen özellikleri taşıyan katılımcıları kendi yargısı ile örnekleme olarak belirlemektedir (Balci, 2004).

Araştırmanın katılımcıları, Güz 2009 döneminde Sakarya Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi 4. sınıf öğrencilerinden random seçilmiş 40 öğrenciden oluşmaktadır..

4. sınıf öğrencilerinin seçilmesinin nedeni Bireyselleştirilmiş tasarım konusunda lisans derlerinin almış olduğu düşüncesidir.

Ayrıca katılımcılar araştırmaya gönüllü olarak katılmışlardır.

2.3.Verilerin Toplanması ve Verilerin Analiz Edilmesi

Bu araştırmanın verileri, "açık-uçlu sorulardan oluşan bir anket" vasıtasıyla elde edilmiştir. Ankette 7 açık uçlu soru sorulmuştur. Araştırmadaki bu 7 soru literatür taraması yapılarak konu ile ilgili olan tanımlar ve ortak yönler ortaya çıkarılarak yazılmıştır.

Anket ve belgelerden elde edilen ham veriler "içerik analizi tekniği" (Yıldırım & Şimşek, 2005) kullanılarak analiz edilip yorumlanmıştır. Ayrıca, araştırma bulgularının iç-güvenirliliğini ve geçerliğini artırmak amacıyla öğrenci görüşlerinden sıkça alıntılar yapılmıştır. Bu çerçevede elde edilen veriler indekslenerek kodlanmış, temalar ve ortak yorumlar ortaya çıkarılmıştır. Elde edilen temalar ve yorumlar her soru için ayrı bir tablo haline getirilmiştir. Tabloların yorumları yapılırken bu sorular hakkında daha önceden yapılmış olan bilimsel kavram tanımları bulunmuş ve bu tanımlarla öğrenci görüşleri ortaya konulmuştur. Karşılaştırmalardaki farklı ve benzer yönleri bakılarak yorumlar yapılmıştır.

3. BULGULAR VE YORUM

Bu bölümde araştırmada elde edilen verilere ilişkin bulgulara yer verilmektedir. Bulgular araştırma sorularına temel alınarak sunulmakta ve yorumlanmaktadır.

3.1. " Bireyselliği nasıl tanımlarsınız?" Sorusuna Ait Bulunan Bulgular

Katılımcıların, bireyselliği nasıl tanımlarsınız sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo1: Bireyselliğin tanımı ile ilgili verilen cevaplar

| | f(n: 42) |
|--|-----------|
| Bireyi diğer insanlardan ayıran durumlar | 32 |
| Kendini has özellikleri olan | 27 |
| Kişinin tek başına iş yapabilmesi | 15 |
| Kişisel tavırlar | 13 |
| Kendine özgü karar verebilmesi | 5 |
| Bencillilik | 2 |

Bireysel; bireyle ilgili olan, bireye özgü olan anlamındadır. Bireysellik ; ahlaki tutum, politik felsefe, ideoloji veya sosyal bakış açısıdır.(1) Bu özellikler kişiye (bireye) ait özelliklerdir. Araştırma grubumuzun verdiği cevaplara baktığımızda bireyi diğer insanlardan ayıran durumlar ve kendini has özellikleri olan temaları en çok kullanmışlardır. Bireyselliğin tanımı ile karşılaştırdığımızda ; araştırma grubunun bireysellik tanımını %50 üzerinde doğru cevapladıkları görülmektedir. 42 kişiden 2 kişi bireyselliği “bencilik” olarak tanımlamışlardır. Bencilik kavramı bireysellik ile ilişkisi olmayan bir kavramdır. Bu durumda görülmektedir ki yaklaşık %4,5 kişi bireysellik tanımı yanlış tanımlamışlardır. Diğer tanımlar ise bireyselliğin birebir karşılığı olmasa bile bireysellik kavramı içerisinde geçen tanımlamalardır. Tüm bu bulgulara bakarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri bireysellik kavramını doğru bir şekilde tanımlamışlardır.

3.2. “ Tasarım kavramı sizce ne anlama gelmektedir?” Sorusuna Ait Bulunan Bulgular

Katılımcıların, tasarım kavramı sizce ne anlama gelmektedir sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo2: Tasarım Kavramı tanımı ile ilgili verilen cevaplar

| | f (n: 42) |
|------------------------------|-----------|
| Plan | 31 |
| Yeni şeyler oluşturma | 12 |
| Yeni fikirler | 9 |
| Organize olmak | 3 |

Tasarım;belli bir konuda yapılması gereken faaliyetleri belli bir plan çerçevesinde uygulamaktır. Diğer bir ifade ile tasarım; yeni bir ortam için bilgilerin planlanması ,organize edilmesi ve etkili olarak uygulanmasıdır.(İşman, 2008) Tanımlara baktığımızda organize olmak, plan kavramları göze çarpmaktadır. Araştırma grubunun cevaplarına baktığımızda gruptaki öğrencilerinin çoğunun “Tasarım kavramı nedir? “Sorusuna “plan” cevabını verdiğini görmekteyiz. Ayrıca 3 kişide “organize olmak” cevabını vermiştir. Yüzdelerine baktığımızda ise tüm katılımcıların %75 plan ve gene katılımcıların yaklaşık %7 ‘si “ organize olmak “ cevabını vermişlerdir. Yüzdelerine baktığımızda Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin tasarım kavramını doğru tanımladıkları görülmektedir.

3.3. “ Öğretim kavramı nasıl tanımlarsınız?” Sorusuna Ait Bulunan Bulgular

Katılımcıların, öğretim kavramı sizce ne anlama gelmektedir sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo3: Öğretim Kavramı tanımı ile ilgili verilen cevaplar

| | f (n: 37) |
|---|-----------|
| Kalıcı izli davranış değişikliği | 17 |
| Hedef ve davranış kazandırma | 11 |
| Plan çerçevesinde davranış kazandırma süreci | 7 |
| Bilgiyi öğrenciye aktarma | 2 |

Öğretim ,okullarda gerçekleştirilen planlı, kontrollü ve örgütlenmiş öğretim etkinlikleri olarak tanımlanmaktadır.(Fidan ve Erden, 1993 aktaran: erden ve Akman , 1997:162). Ayrıca öğretimi destekleyen ve sağlayan dışsal olayların planlanması, uygulanması ve değerlendirilmesi sürecidir. (Özdemir, 2006) Öğretim bireyin öğrenmesini sağlama eylemidir.(Özçelik:1987:1). Katılımcılarımızın cevaplarına baktığımızda öğretim kavramı için kalıcı izli davranış değişikliği, hedef ve davranış kazandırma temaları çok kullanılmıştır. Öğrenme kavramına baktığımızda ise; öğrenme tekrar ve yaşantılar sonucu davranışlarda meydana gelen oldukça kalıcı bir değişimdir. Öğrencilerin verdikleri cevaplar öğrenme kavramını tanımlamaktadır. Katılımcıların içinde %45’i “ kalıcı izli davranış değişikliği” derken , %29’u “hedef ve davranış kazandırma” cevabını vermiştir. Öğretim kavramını tam olarak tanımlayanlar ise tüm katılımcıların sadece %24’ünü oluşturmaktadır. Tüm bulgular ışığında Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin öğretim ve öğrenme kavramlarını karıştırdıkları anlaşılmaktadır.

3.4. “Etkili eğitimi nasıl tanımlarsınız?” Sorusuna Ait Bulunan Bulgular

Katılımcıların, etkili eğitim kavramı sizce ne anlama gelmektedir sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo4: Etkili Eğitim Kavramı tanımı ile ilgili verilen cevaplar

| | f (n: 41) |
|--|-----------|
| Hedef ve davranışları eksiksiz öğreten ortam | 15 |
| Materyal ,araç gereçleri öğrenmenin kolaylaştırılması için kullanması | 10 |
| Eğitimin verimli verilmesi | 9 |
| Etkili anlatım | 5 |
| Bilgiyi hayatta da kullanma | 2 |

Eğitimim yerine getirmesi gereken bazı işlevler vardır. Bunları şöyle sıralayabiliriz: (Varış, 1998:15-19)

- 1.Bireyin kendini gerçekleştirme
- 2.Bireyin insani ilişkilerini geliştirmesi
3. Bireyin ekonomik etkinliğini geliştirmesi
4. Bireyin vatandaşlık sorumluluğunu geliştirmesi

İşte etkili bir eğitimde tüm bu amaçları tam anlamıyla gerçekleştiren eğitimidir. Katılımcılarımızın temalarına baktığımızda “Hedef ve davranışları eksiksiz öğreten ortam “ teması etkili bir eğitimi tanımlamaktadır. Katılımcıların çoğu da bu cevabı vermiştir. Ayrıca “Materyal ,araç gereçleri öğrenmenin kolaylaştırılması için kullanması “ ve “eğitimin verimli verilmesi” da tam olarak etkili eğitimi tanımlamasa da etkili bir eğitim kavramı içindeki unsurları belirtmektedir. Katılımcılardan 2 ‘si “Bilgiyi hayatta da kullanma” temasını kullanmıştır. Fakat bu

kavram etkili eğitim değil eğitimin amacıyla ilgili bir temadır. Tüm bu bilgilerin ışığında Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri etkili eğitim kavramını yarı yarıya tam anlamıyla bilmektedirler.

3.5. “Bireysel yetenek Sizce ne anlama gelmektedir?” Sorusuna Ait Bulunan Bulgular

Katılımcıların, bireysel yetenek kavramı sizce ne anlama gelmektedir sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo5: Bireysel yetenek Kavramı tanımı ile ilgili verilen cevaplar

| | f (n: 42) |
|--------------------------------------|-----------|
| Bireyin kendine özgü yeteneği | 32 |
| Doğuştan gelen yetenekler | 12 |
| Kişinin ilgilendiği alanlar | 1 |

Yetenek bir kişinin sürekli yaşadığı duygu, düşünce ve davranışları üretici bir şekilde hayatının her alanına uygulayabilmesidir. (Marcus Buckingham ve Richard M.Vosburgh ,2001) Bu tanımlamaya göre stratejik düşünebilmek ve empati gösterebilmek yetenek olduğu kadar; azim, sabır veya sabırsızlık gösterebilmek ve konsantre olabilmek de bir yetenektir. Bireysel yetenek ise tüm bu durumların kişide birleşmesi, kişiye özgü olmasıdır. Katılımcıların tanımlarına baktığımızda “ Bireyin kendine özgü yeteneği “, “Doğuştan gelen yetenekler “, “Kişinin ilgilendiği alanlar” temaları ortaya çıkmıştır. Bu temalar hepsi bireysel yetenekleri tanımlar niteliktedir. Bu bulgularda yola çıkarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri bireysel yetenek kavramını tam anlamıyla bilmektedirler.

3.6. “Bireysel farklılık kavramını nasıl tanımlarsınız?” Sorusuna Ait Bulunan Bulgular

Katılımcıların, bireysel farklılık kavramı sizce ne anlama gelmektedir sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo6: Bireysel farklılık kavramı tanımı ile ilgili verilen cevaplar

| | f (n: 42) |
|--|-----------|
| Diğer insanlardan farklı olan yönlerdir | 27 |
| Kişisel, kendine ait özellikleri yetenekler | 11 |
| Duygu ve düşüncelerde farklılık | 4 |

Bireysel farklılık; insanların sabit ve değişmeyen yeteneklerindeki farklılıklardan dolayı performanslarında oluşan farklılıktır. Bu farklılık düşüncelerinde, duygularında, davranışlarında değişmelere neden olur. Katılımcıların verdikleri cevaplara baktığımızda da birebir bireysel farklılık tanımıyla uyuşan temalar görmekteyiz. “ Diğer insanlardan farklı olan yönlerdir”, “Kişisel, kendine ait özellikleri yetenekler”, “Duygu ve düşüncelerde farklılık” bireysel farklılıklarda kavramında bulunan özelliklerdir. Bu bulgularda yola çıkarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri bireysel farklılık kavramını tam anlamıyla bildikleri söylenebilir.

3.7. “Bireyselleştirilmiş öğretim tasarımı nasıl tanımlarsınız?” Sorusuna Ait Bulunan Bulgular

Katılımcıların, bireyselleştirilmiş öğretim tasarımı kavramı sizce ne anlama gelmektedir sorusuna vermiş oldukları yanıtlar çerçevesinde elde edilen temalar şu şekilde sıralanmaktadır:

Tablo4: Bireyselleştirilmiş Öğretim Tasarımı Kavramı tanımı ile ilgili verilen cevaplar

| | f (n: 41) |
|---|-----------|
| Öğretimin kişiye göre tasarlanması | 27 |
| Bireyin ilgi ve yeteneklerine göre tasarlanmış öğretim | 9 |
| Kişiyeye özel eğitim | 8 |
| Bireysel ortamları verimli kılabilme | 5 |
| Özel tasarlanmış eğitim programları | 2 |
| Bireyin kendi özelliklerine göre bilgi sahibi etme | 2 |

“Bireyselleştirilmiş Öğretim Programı”; öğrenciler arasındaki bireysel farklılıkları göz önünde tutan, her öğrenciye kendi ilgi, yetenek, hız gibi özellikleri ölçüsünde ilerleme imkanı sağlayan öğretim biçimi, olarak tanımlanmaktadır. (Oğuzkan, 1993:20) Bu sistemle öğrencinin ne öğreneceği, nasıl öğreneceğini, ne zaman ve hangi hızla öğreneceğini, geleneksel eğitim sistemlerindeki kontrole bağlı kalmaksızın öğrenci inisiyatifine göre şekillenir (Alkan, 1997:42).katılımcılarımızın temalar incelendiğinde çoğunluk “Öğretimin kişiye göre tasarlanması” cevabını vermiştir. Alkanın tanımıyla karşılaştığımızda bu temanın doğru bir çıkarım olduğunu görmekteyiz. Ayrıca “Bireyin ilgi ve yeteneklerine göre tasarlanmış öğretim”, “Kişiyeye özel eğitim” temaları da bireyselleştirilmiş öğretim tasarımı kavramı ile ilişkili cevaplardır. Toplamda 9 kişinin “Bireysel ortamları verimli kılabilme”, “Özel tasarlanmış eğitim programları”, “Bireyin kendi özelliklerine göre bilgi sahibi etme” temaları tasarım ile değil tasarımın amacı ile ilgilidir. Fakat genel olarak baktığımızda tüm katılımcılardan % 65 doğru olarak tanımlamıştır.

4.SONUÇ

Bireyselleştirilmiş öğretim tasarımı ve süreci kapsamlı ve bir çok uzmanın bir arada çalışmasını gerektiren bir iştir. Bu süreçte gerekli olan elemanların bireyselleştirilmiş öğretim tasarımı konusunda bilgi sahibi olması gereklidir. Bilgisayar ve öğretim teknolojileri öğretmenliği öğrencileri de bu uzman elemanlar içerisinde yer almaktadır. Yapılan araştırma sonucunda Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin Bireyselleştirilmiş Öğretim Tasarımı konusundaki görüşleri ve öğrencilerin bu konudaki bilgi düzeylerinin belirlenmesine ilişkin yapılan ve testler ve analizler sonucunda şu bilgilere ulaşılmıştır:

- Tüm bu bulgulara bakarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri bireysellik kavramını doğru bir şekilde tanımlamışlardır.
- Yüzdelerle baktığımızda Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin tasarım kavramını doğru tanımladıkları görülmektedir.
- Tüm bulgular ışığında Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin öğretim ve öğrenme kavramlarını karıştırdıkları anlaşılmaktadır.
- Tüm bu bilgilerin ışığında Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri etkili eğitim kavramını yarı yarıya tam anlamıyla bilmektedirler.

- Bu bulgularda yola çıkarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri bireysel yetenek kavramını tam anlamıyla bilmektedirler.
- Bu bulgularda yola çıkarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencileri bireysel farklılık kavramını tam anlamıyla bildikleri söylenebilir.
- Tüm bu bulgulardan yola çıkarak Bilgisayar ve Öğretim Teknolojileri Eğitimi öğrencilerinin bir kısmının Bireyselleştirilmiş öğretim tasarımı konusunda yeterli kavram bilgisini sahip oldukları görülmektedir.

KAYNAKÇA

- 1) <http://www.britannica.com/EBchecked/topic/286303/individualism> "Individualism" on Encyclopedia Britannica Online
- 2) Alkan, Cevat. **Eğitim Teknolojisi**. An Yay. Ankara, 1997.
- 3) Balcı, A. (2004) *Sosyal bilimlerde araştırma yöntem, teknik ve ilkeleri*. Ankara: Pegem A Yayıncılık.
- 4) Buckingham, Marcus and Richard M. Vosburgh. "The 21st Century Human Resources Function: It's the Talent, Stupid!" *Human Resource Planning* 24, no. 4 (2001): 17-23.
- 5) Dr. B. Güven – Dr. M.A.Sözer H. Ü. **Eğitim Fakültesi Dergisi** 32 [2007] 89-99
- 6) Erden, Münire ve Yasemin Akman. **Eğitim Psikolojisi**. Arkada Yay. İstanbul, 1995.
- 7) Hızal, Ali an. **Bilgisayar Eğitimi ve Bilgisayar Destekli Öğretime İlişkin Öğretmen Görüşlerinin Değerlendirilmesi**. A.Ü. A.Ö. Fak. Yay. Eskişehir, 1989.
- 8) İşman, A. (2008). *Uzaktan Eğitim*. PegemA yay, 3. Baskı, Ankara
- 9) Oğuzkan, Ferhan. **Eğitim Terimleri Sözlüğü**. Emel Matbaacılık, Ankara, 1993
- 10) Özçelik, D.A. (1987). **Eğitim Programları ve Öğretim, Genel Öğretim Yöntemi**. Eskişehir: Anadolu Üniversitesi Yayınları, No:2
- 11) Özdemir, O. (2006). *Öğrenme- Öğretme Sürecinde Planlama ve Uygulama*. Natural yay, Ankara.
- 12) Varış, Fatma (1998). **Eğitim Bilimine Giriş**. Alkım Yay., Yeni Basım, İstanbul
- 13) Varol, Nihal. **Zihinsel Engelli Çocuklara Sunulan Bireyselleştirilmiş Öğretim Materyalinin Etkilliliği**. A.Ü.Yay. 637/26, Eskişehir, 1992.
- 14) Yaşar, Ş. (1990). **Öğretimin Bireyselleştirilmesinde Yaklaşımlar**. Ders notları. Anadolu Üniversitesi, Eskişehir.
- 15) Yıldırım, A. & Şimşek, H. (2005). **Sosyal Bilimlerde Nitel Araştırma Yöntemleri**. Ankara: Seçkin Yayıncılık.

SAKARYA ÜNİVERSİTESİ EĞİTİM FAKÜLTESİ 4. SINIF ÖĞRENCİLERİNİN EĞİTİM TEKNOLOJİLERİNE YÖNELİK YETERLİLİK ALGILARI

Mehmet Emin KILINÇ
Sakarya Üniversitesi, Türkiye
emin86@gmail.com

Özet

Bu araştırmanın amacı eğitim fakültelerinde öğrenim gören öğretmen adaylarının eğitim teknolojilerine yönelik yeterlilik algılarını ortaya çıkarmaktır. Genel tarama modeline uygun desenlenen araştırmanın çalışma evrenini 2009–2010 öğretim yılında Sakarya Üniversitesi Eğitim Fakültesi 4. sınıfta öğrenim gören tüm öğrenciler oluşturmaktadır. Bu öğrenciler arasından rastgele seçilen 157 öğrenci bu çalışmanın örneklemini oluşturmaktadır. Araştırma ile ilgili verilerin toplanmasında araştırmacı tarafından geliştirilen bir anket yardımı ile elde edilmiştir. “Öğretmen Adaylarının Eğitim Teknolojilerine Yönelik Yeterlilik Algıları” anketi ile toplanmıştır. Öğrencilerin eğitim teknolojilerine yönelik yeterlilik algılarını ölçmek amacıyla toplanan veriler toplanarak SPSS yazılımı ile yüzdelik ve frekans analizi yapılmış ve yorumlanmıştır. Sakarya Üniversitesi Eğitim Fakültesi 4. sınıfta öğrenim gören öğrenciler yani öğretmen adaylarının eğitim teknolojilerine yönelik yeterlilik algıları betimlenmeye çalışılmıştır. Öğretmen adaylarının eğitim fakültelerinde kullandığı eğitim teknolojileri yönünden kendilerini yeterli hissetmektedirler.

Anahtar sözcükler: Eğitim teknolojileri, Öğretmen adayları.

GİRİŞ

Teknoloji günümüzde inanılmaz bir gelişme göstermiştir. Bu gelişen teknoloji her gün biraz daha yaşamımıza girmektedir. Çağdaş toplum yapı ve işlev yönünden farklılaşmaktadır. Bu oluşum eğitim temel modelini etkilemekte, öğrenme-öğretme süreçlerinde verim ve etkililik için değişim artan bir önem kazanmaktadır (Alkan, 2005, s.1). Teknolojideki gelişmeler artık öğreticiler ve kurumlar için yeni roller gerektirmektedir. Bu gelişmelere baktığımızda şunları görüyoruz; (Odabaşı, 1999)

- “1. Teknoloji ürünleri ve hizmetleri değiştiriyor
2. Teknoloji Öğrencileri değiştiriyor
3. Teknoloji Öğretmenleri değiştiriyor
4. Teknoloji öğretim kurumlarını değiştiriyor
5. Teknoloji bilginin sunulmasını değiştiriyor “

Eğitimin amaçlarından bir tanesi de toplumun gereksinimlerine uygun bireyler yetiştirmektir. Bundan dolayı eğitim anlayışı doğrudan bilgi aktarılan bireyler değil de eğitim teknolojilerini kullanabilen ve bu eğitim teknolojileri sayesinde bilgiye kısa ve verimli şekilde ulaşabilen bireyler yetiştirilmesi gerekmektedir. (Alkan2005),teknoloji ile eğitim arasındaki ilişkiyi teknolojide yaşanan gelişmelerin eğitime etkisi yönünden incelemiştir;

- “1. Teknolojik ortamda yaşayacak bireylere gerekli genel yetenekleri kazandırma,
2. Teknolojik ortamın gerektirdiği niteliklere sahip insan gücünü yetiştirme,
3. Teknolojik olanaklardan yararlanma.”

Bu şekilde bireyler yetiştirmek ve eğitimin kalitesini artırmak için ve eğitime teknolojiyi entegre etmemiz gerekmektedir. Genel anlamda eğitimde kullandığımız teknolojiye eğitim teknolojisi diyoruz. Tam olarak tanımlayacak olursak; “Eğitim Teknolojisi; Davranış Bilimlerinin iletişim ve öğrenme ile ilgili verilerine Dayalı olarak, eğitimle ilgili ulaşılabilir insan gücünü ve insan gücü dışı kaynaklarını uygun yöntem ve tekniklerle akıllıca ve ustaca kullanıp sonuçları değerlendirerek, bireylere eğitimin özel amaçlarına ulaşırma yollarını inceleyen bilim dalıdır” (Çilenti, 1991,s.33).

Bu teknolojileri kullanacak olanlar öğretmenlerimiz olacağı için öğretmenlerimizin yetiştirilmesi çok önemlidir. Eğitimde Teknoloji Uluslararası Derneği (ISTE) bilgi ve teknolojinin kullanımının çok önemli olduğu bu çağda öğretmenlerde bulunması gereken temel bilgi teknolojilerine ait standartlar belirlemiştir bu standartlardan bazıları şunlardır(ISTE, 2001,Akt: Algan,2006);

- “1. Öğretmenler yaşam boyu öğrenim ve sürekli profesyonel gelişim için teknolojik kaynakları kullanmalıdırlar.
2. Öğretmenler profesyonel teknolojik uygulamaları değerlendirmeli ve bunları öğrenmeyi desteklemek teknolojiyi için kullanmalıdırlar.
3. Öğretmenler eğitimde verimliliği artırmak için teknolojiye başvurmalıdırlar.
4. Öğretmenler, öğrencilerin öğrenmesini artırmak için kendi meslektaşları, aileler, toplumsal ve akademik kurumlar ile iletişim ve işbirliği yapmada teknolojiyi kullanmalıdırlar.”

(İşman,2002)“Sakarya İli Öğretmenlerinin Eğitim Teknolojileri Yönündeki Yeterlilikleri” araştırmasında;

“Öğretmenlerimizin öğrenmeleri güdüleyen ve artırıcı eğitim teknolojilerini eğitim-öğretim ortamlarında yeteri kadar kullanmadıklarını ortaya çıkarmıştır. Bu sorunu ortadan kalkması için, Milli Eğitim Bakanlığı, İl Milli Eğitim Müdürlükleri ve İlçe Milli Eğitim Müdürlükleri üniversitelerin ilgili bölümleri ile irtibata geçerek planlı ve etkili olabilecek hizmet içi eğitim seminerlerini ortaklaşa düzenlemelidir.

Eğer öğretmenlerimiz eğitim teknolojisi okuryazarı olmaz ise, hızla gelişen toplumsal değişimlere eğitim sistemimiz ayak uyduramaz. Bunun sonucunda, bilge satan değil bilgi alan toplum haline dönüşürüz. Gelişmiş ve teknoloji yoğun bir toplum olmak istiyorsak mutlaka eğitim sistemimiz içinde eğitim teknolojileri etkin olarak kullanılmalıdır.”

Sonuçlarına ulaşmıştır. Bu çalışmada öğretmenleri yetiştiren eğitim fakültelerinin öğrencilerini yani öğretmen adaylarını eğitim teknolojileri okuryazarı yetiştirip yetiştirmediğini ortaya çıkarmak için yapılmıştır.

Araştırmanın amacı

Bu araştırmanın amacı eğitim fakültelerinde öğrenim gören öğretmen adaylarının eğitim teknolojilerine yönelik yeterlilik algılarını ortaya çıkarmaktır.

YÖNTEM

Evren ve Örneklem

Öğretmen adaylarının eğitim teknolojilerine yönelik yeterlilik algılarını belirlemek amacıyla gerçekleştirilen bu araştırma tarama modeline uygun desenlenmiştir. Araştırmanın çalışma evrenini 2009–2010 öğretim yılında Sakarya Üniversitesi Eğitim Fakültesi 4. sınıfta öğrenim gören tüm öğrenciler oluşturmaktadır. Bu öğrenciler arasından rastgele seçilen 157 öğrenci bu çalışmanın örneklemini oluşturmaktadır. Sakarya Üniversitesi Eğitim Fakültesi 4. Sınıfta okuyan diğer öğrencileri temsil edecek nitelikte olduğu varsayılmıştır.

Veri Toplama Aracı ve Verilerin Analizi

Araştırma verileri araştırmacı tarafından geliştirilen bir anket yardımı ile elde edilmiştir. Veriler, öğrencilerin kişisel bilgilerini elde etmeye yönelik 3 soru, eğitim teknolojilerine yönelik yeterlilik algılarını belirlemeye amaçlayan 38 sorudan oluşan “Öğretmen Adaylarının Eğitim Teknolojilerine Yönelik Yeterlilik Algıları” anketi ile toplanmıştır. Öğrencilerin eğitim teknolojilerine yönelik yeterlilik algılarını ölçmek amacıyla toplanan veriler toplanarak SPSS 15 yazılımı ile yüzdeler ve frekans analizi yapılmış ve yorumlanmıştır. Anketin güvenilirliği 0.90 olarak hesaplanmıştır. Kapsam geçerliliği için ise uzman görüşü alınmıştır. Uzmanlardan alınan görüşler doğrultusunda düzeltmeler yapılmıştır.

BULGULAR VE YORUM

Bu bölümde araştırma verileri kapsamında ortaya çıkan bulgular ve yorumlara yer verilmektedir.

Tablo 1:Araştırmaya katılan öğretmen adaylarının kişisel bilgileri

| | sayı | yüzdeler |
|--|------|----------|
| Bay | 95 | 60,5 |
| Bayan | 62 | 39,5 |
| Toplam | 157 | 100,0 |
| 1. Öğretim | 111 | 70,7 |
| 2. Öğretim | 46 | 29,3 |
| Toplam | 157 | 100,0 |
| Bilgisayar ve Öğretim Teknolojileri Öğretmenliği | 65 | 41,4 |
| Fen Bilgisi Öğretmenliği | 42 | 26,8 |
| Türkçe Öğretmenliği | 31 | 19,7 |
| Sosyal Bilgiler Öğretmenliği | 19 | 12,1 |
| Toplam | 157 | 100,0 |

Tablo 1 incelendiğinde araştırmaya katılan öğretmen adaylarının % 60,5 inin bay %39,5 inin ise bayan ve %70,7 sinin 1.öğretim %29,3 ünün 2.öğretim olduğu görülecektir. Araştırmaya katılan öğrencilerin öğrenim gördüğü bölüme göre dağılımı ise şu şekildedir; araştırma katılımcılarının %41,4 ü bilgisayar ve öğretim teknolojileri öğretmenliği, %26,8 i fen bilgisi öğretmenliği, %19,7 si Türkçe öğretmenliği, %12,1 i sosyal bilgiler öğretmenliği bölümünde öğrenim görmektedir.

Tablo 2: Araştırmaya katılan öğretmen adaylarının eğitim teknolojilerinden bilgisayar, data show, döner levhalar CD, filmler ve grafik kullanımı açısından yeterlilikleri

| Cevaplar | Bilgisayar | | data show | | Döner Levhalar | | CD | | Filmler | | Grafik | |
|--------------------|------------|----------|-----------|----------|----------------|----------|------|----------|---------|----------|--------|----------|
| | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler |
| Yeterli değilim | 1 | ,6 | 5 | 3,2 | 18 | 11,5 | 1 | ,6 | 4 | 2,5 | 4 | 2,5 |
| Biraz yeterliyim | 26 | 16,6 | 32 | 20,4 | 32 | 20,4 | 21 | 13,4 | 24 | 15,3 | 26 | 16,6 |
| Yeterliyim | 62 | 39,5 | 46 | 29,3 | 38 | 24,2 | 54 | 34,4 | 50 | 31,8 | 57 | 36,3 |
| Oldukça yeterliyim | 46 | 29,3 | 51 | 32,5 | 43 | 27,4 | 52 | 33,1 | 48 | 30,6 | 43 | 27,4 |
| Çok yeterliyim | 22 | 14,0 | 22 | 14,0 | 22 | 14,0 | 29 | 18,5 | 31 | 19,7 | 27 | 17,2 |
| Toplam | 157 | 100,0 | 157 | 100,0 | 153 | 97,5 | 157 | 100,0 | 157 | 100,0 | 157 | 100,0 |

Tablo 2 incelendiğinde araştırmaya katılan öğretmenlerin adaylarının yaklaşık %83 ü eğitim teknolojilerinden bilgisayar konusunda yeterli olduğunu ifade etmiştir. Geri kalanı ise biraz yeterli olduğunu ifade etmiştir. Yaklaşık %86 sı ise eğitim teknolojilerinden data show'un konusunda yeterli olduğunu %20si ise biraz yeterli olduğunu ifade etmiştir. Yaklaşık %68 si eğitim teknolojilerinden döner levhalar konusunda yeterli olduğunu %20 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %12 si döner levhalar konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %86 sı eğitim teknolojilerinden eğitim cd'leri konusunda yeterli olduğunu %13 ü ise biraz yeterli olduğunu ifade etmiştir. Yaklaşık %82 si eğitim teknolojilerinden filmler konusunda yeterli olduğunu % 15 i ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %3 ü filmler konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %81 i eğitim teknolojilerinden grafik konusunda yeterli olduğunu % 17 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %3 ü grafik konusunda yetersiz olduğunu ifade etmiştir. öğretmen adaylarımız günlük yaşam ve eğitim öğretim de kullandıkları eğitim teknolojilerinden bilgisayar,cd,flmler ve grafik'ten yeterli oldukları görülmektedir.

Tablo 3: Araştırmaya katılan öğretmen adaylarının eğitim teknolojilerinden internet, kitap, model ve numuneler, multimedya, slayt projektörleri ve radyo kullanımı açısından yeterlilikleri

| Cevaplar | İnternet | | Kitap | | Model ve Numuneler | | Multimedya | | Slayt Projektörleri | | Radyo | |
|--------------------|----------|----------|-------|----------|--------------------|----------|------------|----------|---------------------|----------|-------|----------|
| | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler | Sayı | Yüzdeler |
| Yeterli değilim | 1 | ,6 | 2 | 1,3 | 6 | 3,8 | 1 | ,6 | 3 | 1,9 | 4 | 2,5 |
| Biraz yeterliyim | 4 | 2,5 | 13 | 8,3 | 23 | 14,6 | 21 | 13,4 | 21 | 13,4 | 26 | 16,6 |
| Yeterliyim | 48 | 30,6 | 47 | 29,9 | 54 | 34,4 | 54 | 34,4 | 55 | 35,0 | 57 | 36,3 |
| Oldukça yeterliyim | 57 | 36,3 | 56 | 35,7 | 51 | 32,5 | 52 | 33,1 | 48 | 30,6 | 43 | 27,4 |
| Çok yeterliyim | 46 | 29,3 | 38 | 24,2 | 23 | 14,6 | 29 | 18,5 | 29 | 18,5 | 27 | 17,2 |
| Toplam | 157 | 100,0 | 156 | 99,4 | 157 | 100,0 | 157 | 100,0 | 156 | 99,4 | 157 | 100,0 |

Tablo 3 incelendiğinde araştırmaya katılan öğretmenlerin adaylarının yaklaşık %97 si eğitim teknolojilerinden internet konusunda yeterli olduğunu % 17 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %3 ü internet konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %69 u eğitim teknolojilerinden kitap konusunda yeterli olduğunu % 17 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %14 ü kitap konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %82 si eğitim teknolojilerinden model ve numuneler konusunda yeterli olduğunu % 15 i ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %4 ü model ve numuneler konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %78 i eğitim teknolojilerinden multimedya konusunda yeterli olduğunu % 17 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %6 sı multimedya konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %84 ü eğitim

teknolojilerinden slayt projektörleri konusunda yeterli olduğunu % 13 ü ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %2 si slayt projektörleri konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %81 i eğitim teknolojilerinden radyo konusunda yeterli olduğunu % 15 ü ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %5 si radyo konusunda yetersiz olduğunu ifade etmiştir.

Tablo 4: Araştırmaya katılan öğretmen adaylarının eğitim teknolojilerinden VCD, resimler, ses kasetleri, slaytlar, tepegöz (asetat) ve teyp kullanımı açısından yeterlilikleri

| Cevaplar | VCD | | Resimler | | Ses Kasetleri | | Slaytlar | | Tepegöz (asetat) | | Teyp | |
|--------------------|------|------------|----------|------------|---------------|------------|----------|------------|------------------|------------|------|------------|
| | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik |
| Yeterli değilim | 4 | 2,5 | 6 | 3,8 | 9 | 5,7 | 3 | 1,9 | 6 | 3,8 | 7 | 4,5 |
| Biraz yeterliyim | 18 | 11,5 | 17 | 10,8 | 31 | 19,7 | 10 | 6,4 | 23 | 14,6 | 35 | 22,3 |
| Yeterliyim | 46 | 29,3 | 41 | 26,1 | 54 | 34,4 | 35 | 22,3 | 56 | 35,7 | 53 | 33,8 |
| Oldukça yeterliyim | 45 | 28,7 | 53 | 33,8 | 38 | 24,2 | 55 | 35,0 | 41 | 26,1 | 36 | 22,9 |
| Çok yeterliyim | 44 | 28,0 | 39 | 24,8 | 25 | 15,9 | 52 | 33,1 | 31 | 19,7 | 25 | 15,9 |
| Toplam | 157 | 100,0 | 157 | 100,0 | 157 | 100,0 | 155 | 98,7 | 157 | 100,0 | 156 | 99,4 |

Tablo 4 incelendiğinde araştırmaya katılan öğretmenlerin adaylarının yaklaşık %86 sı eğitim teknolojilerinden VCD konusunda yeterli olduğunu %12 ü biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %3 ü VCD konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %85 i eğitim teknolojilerinden resimler konusunda yeterli olduğunu % 11 i ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %4 ü resimler konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %75 i eğitim teknolojilerinden ses kasetleri konusunda yeterli olduğunu % 20 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %6 sı ses kasetleri konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %91 i eğitim teknolojilerinden slaytlar konusunda yeterli olduğunu %6 sı ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %2 si slaytlar konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %82 si eğitim teknolojilerinden tepegöz konusunda yeterli olduğunu %15 i ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %4 ü tepegöz konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %73 ü eğitim teknolojilerinden teyp konusunda yeterli olduğunu %22 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %5 i teyp konusunda yetersiz olduğunu ifade etmiştir.

Tablo 5: Araştırmaya katılan öğretmen adaylarının eğitim teknolojilerinden televizyon, fotoğraf makineleri, video, video kamera, videokasetlerin ve yazı tahtası kullanımı açısından yeterlilikleri

| Cevaplar | Televizyon | | Fotoğraf Makineleri | | Video | | Video Kamera | | Videokasetlerin | | Yazı tahtası | |
|--------------------|------------|------------|---------------------|------------|-------|------------|--------------|------------|-----------------|------------|--------------|------------|
| | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik |
| Yeterli değilim | 4 | 2,5 | 3 | 1,9 | 3 | 1,9 | 5 | 3,2 | 11 | 7,0 | 7 | 4,5 |
| Biraz yeterliyim | 14 | 8,9 | 14 | 8,9 | 19 | 12,1 | 30 | 19,1 | 29 | 18,5 | 35 | 22,3 |
| Yeterliyim | 50 | 31,8 | 49 | 31,2 | 48 | 30,6 | 47 | 29,9 | 53 | 33,8 | 53 | 33,8 |
| Oldukça yeterliyim | 54 | 34,4 | 45 | 28,7 | 54 | 34,4 | 48 | 30,6 | 38 | 24,2 | 36 | 22,9 |
| Çok yeterliyim | 35 | 22,3 | 46 | 29,3 | 33 | 21,0 | 27 | 17,2 | 25 | 15,9 | 25 | 15,9 |
| Toplam | 157 | 100,0 | 157 | 100,0 | 157 | 100,0 | 157 | 100,0 | 156 | 99,4 | 156 | 99,4 |

Tablo 5 incelendiğinde araştırmaya katılan öğretmenlerin adaylarının yaklaşık %82 si eğitim teknolojilerinden televizyon konusunda yeterli olduğunu %9 u ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %3 ü televizyon konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %89 u eğitim teknolojilerinden fotoğraf makineleri konusunda yeterli olduğunu %9 u biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %2 si fotoğraf makineleri konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %86 sı eğitim teknolojilerinden video konusunda yeterli olduğunu %12 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %2 si video konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %78 i eğitim teknolojilerinden video kamera konusunda yeterli olduğunu %20 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %3 si video kamera konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %74 ü eğitim teknolojilerinden videokasetler konusunda yeterli olduğunu %19 u ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %7 si videokasetler konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %86 sı eğitim teknolojilerinden yazı tahtası konusunda yeterli olduğunu %7 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %6 sı yazı tahtası konusunda yetersiz olduğunu ifade etmiştir.

Tablo 6: Araştırmaya katılan öğretmen adaylarının eğitim teknolojilerinden data projeksiyon, bülten tahtası, opak projektörlerin, film şeridi projektörü, DVD ve videoteks kullanımı açısından yeterlilikleri

| Cevaplar | data projeksiyonu | | Bülten Tahtası | | Opak Projektörlerin | | Film Şeridi Projektörü | | DVD | | Videoteks | |
|--------------------|-------------------|------------|----------------|------------|---------------------|------------|------------------------|------------|------|------------|-----------|------------|
| | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik |
| Yeterli değilim | 12 | 7,6 | 28 | 17,8 | 32 | 20,4 | 30 | 19,1 | 2 | 1,3 | 7 | 4,5 |
| Biraz yeterliyim | 40 | 25,5 | 41 | 26,1 | 40 | 25,5 | 52 | 33,1 | 22 | 14,0 | 35 | 22,3 |
| Yeterliyim | 50 | 31,8 | 50 | 31,8 | 54 | 34,4 | 48 | 30,6 | 43 | 27,4 | 53 | 33,8 |
| Oldukça yeterliyim | 37 | 23,6 | 27 | 17,2 | 19 | 12,1 | 16 | 10,2 | 48 | 30,6 | 36 | 22,9 |
| Çok yeterliyim | 18 | 11,5 | 9 | 5,7 | 9 | 5,7 | 10 | 6,4 | 42 | 26,8 | 25 | 15,9 |
| Toplam | 157 | 100,0 | 155 | 98,7 | 154 | 98,1 | 156 | 99,4 | 157 | 100,0 | 156 | 99,4 |

Tablo 6 incelendiğinde araştırmaya katılan öğretmenlerin adaylarının yaklaşık %66 sı eğitim teknolojilerinden data projeksiyon konusunda yeterli olduğunu %26 sı ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %20 si data projeksiyon konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %56 sı eğitim teknolojilerinden bülten tahtası konusunda yeterli olduğunu %26 sı ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %18 i bülten tahtası konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %52 si eğitim teknolojilerinden opak projektörler konusunda yeterli olduğunu %26 sı ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %20 si opak projektörler konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %47 si eğitim teknolojilerinden film şeridi projektörü konusunda yeterli olduğunu %33 ü biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %19 u film şeridi projektörü konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %85 i eğitim teknolojilerinden DVD konusunda yeterli olduğunu %14 ü biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %1 i DVD konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %43 ü eğitim teknolojilerinden videoteks konusunda yeterli olduğunu %31 i ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %25 i videoteks konusunda yetersiz olduğunu ifade etmiştir.

Tablo 7: Araştırmaya katılan öğretmen adaylarının eğitim teknolojilerinden elektronik tahta, tablet bilgisayar, el bilgisayar, LCD panel, tele toplantılar ve karikatür kullanımı açısından yeterlilikleri

| Cevaplar | Elektronik tahta | Tablet Bilgisayar | El Bilgisayarı | LCD panel | Tele toplantıları | Karikatür |
|----------|------------------|-------------------|----------------|-----------|-------------------|-----------|
|----------|------------------|-------------------|----------------|-----------|-------------------|-----------|

| | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik | Sayı | Yüzdelerik |
|--------------------|------|------------|------|------------|------|------------|------|------------|------|------------|------|------------|
| Yeterli değilim | 38 | 24,2 | 49 | 31,2 | 32 | 20,4 | 32 | 20,4 | 44 | 28,0 | 22 | 14,0 |
| Biraz yeterliyim | 35 | 22,3 | 52 | 33,1 | 40 | 25,5 | 53 | 33,8 | 48 | 30,6 | 27 | 17,2 |
| Yeterliyim | 39 | 24,8 | 34 | 21,7 | 54 | 34,4 | 33 | 21,0 | 30 | 19,1 | 54 | 34,4 |
| Oldukça yeterliyim | 28 | 17,8 | 13 | 8,3 | 19 | 12,1 | 24 | 15,3 | 23 | 14,6 | 31 | 19,7 |
| Çok yeterliyim | 15 | 9,6 | 9 | 5,7 | 9 | 5,7 | 14 | 8,9 | 11 | 7,0 | 23 | 14,6 |
| Toplam | 38 | 24,2 | 157 | 100,0 | 154 | 98,1 | 156 | 99,4 | 156 | 99,4 | 157 | 100,0 |

Tablo 7 incelendiğinde araştırmaya katılan öğretmenlerin adaylarının yaklaşık %52 si eğitim teknolojilerinden elektronik tahta konusunda yeterli olduğunu %22 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %24 ü elektronik tahta konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %36 sı eğitim teknolojilerinden tablet bilgisayar konusunda yeterli olduğunu %33 ü ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %31 i tablet bilgisayar konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %68 u eğitim teknolojilerinden el bilgisayarı konusunda yeterli olduğunu %24 ü biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %9 ü el bilgisayarı konusunda yetersiz olduğunu ifade etmiştir. Bu durum öğretmen adaylarının çoğunluğunun el bilgisayarlarını kullanabildiğini göstermektedir. Yaklaşık %45 i eğitim teknolojilerinden LCD panel konusunda yeterli olduğunu %34 ü biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %20 si LCD panel konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %41 i eğitim teknolojilerinden tele toplantılar konusunda yeterli olduğunu %31 i ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %2 si tele toplantılar konusunda yetersiz olduğunu ifade etmiştir. Yaklaşık %69 u eğitim teknolojilerinden karikatür konusunda yeterli olduğunu %17 si ise biraz yeterli olduğunu ifade etmiştir. Diğer yandan, öğretmenlerin adaylarının yaklaşık olarak %14 ü karikatür konusunda yetersiz olduğunu ifade etmiştir.

SONUÇ VE ÖNERİLER

Öğretmenlerimizin öğrenmeleri güdüleyen ve artıran eğitim teknolojilerini eğitim-öğretim ortamlarında yeteri kadar kullanmadıklarını ortaya çıkarmıştır (İşman,2002). Bu araştırma sonuçlarına göre ise, eğitim fakültesi 4. Sınıf öğrencilerinin yani öğretmen adaylarının büyük bölümünün eğitim teknolojilerini kullanma yönünden yeterli oldukları ortaya çıkmıştır. Eğitim fakültesinde okuyan öğrencilerin eğitim teknolojileri yönünden yeterli eğitimi aldıklarını, atandıkları okullarda eğitim teknolojilerine ulaşabildikleri takdirde kaliteli bir eğitim öğretim için eğitim teknolojilerini kullanabilecek düzeyde olduklarını göstermektedir. Öğretmenlerimiz eğitim teknolojilerini kullanabildiklerine göre okullara ve Millî Eğitim Bakanlığına düşen görev eğitim teknolojilerini tedarik ederek öğretmenlerimizin bunları kullanmasını sağlamaktır.

Elektronik tahta, lcd panel, videoteks, opak projektörler, tele toplantılar ve tablet bilgisayar gibi eğitim fakültelerinde pek kullanılmayan eğitim teknolojilerine öğretmen adaylarından %20 den fazlası yetersiz olduklarını belirtmişlerdir. Öğretmen adayları eğitim kullanamadıkları teknolojiler hakkında kendini yetersiz hissetmektedir. Bu sorunun ortadan kalkması için eğitim fakültelerinde öğretmenlerin kullanması gereken tüm eğitim teknolojileri kullanılmalıdır.

Eğitim teknolojileri durmadan gelişmeye devam ettiği için eğitim fakültesindeki eğitim güncelliğini kaybedebilir. Örneğin elektronik tahta ve tablet bilgisayarda olduğu gibi. Bundan dolayı eğitim fakültelerinin programları sık sık güncellenmeli ve öğretmenler için hizmet içi eğitim seminerleri düzenlenmelidir.

KAYNAKÇA

ALGAN, C.E.(2006).” Özel okullarda görev yapan sınıf öğretmenlerinin eğitimde bilgi teknolojileri kullanımı öz-yeterlilikleri ve derslerinde bilgi teknolojilerinden yararlanma durumları”.Yayınlanmamış Yüksek Lisans Tezi. Marmara Üniversitesi Eğitim Bilimleri Enstitüsü. İstanbul

ALKAN, C. (2005). Eğitim Teknolojisi. Ankara:Anı Yayıncılık.

ÇİLENTİ, K.(1998).” Eğitim Teknolojisi ve Öğretim”. Ankara:Gül Yayınevi.

ISTE (International Society for Technology in Education).(2004). <http://www.cnets.iste.org/currstands/cstands-netst.html> (adrese 16/03/2005 tarihinde erişilmiştir)

İŞMAN, A. “Sakarya İli Öğretmenlerinin Eğitim Teknolojileri Yönündeki Yeterlilikleri”. www.tojet.net, October 2002.ISSN: 1303-6521 vol. 1 Issue 1 Article 10

ODABAŞI, F.(1999) “Öğretim Üyelerinin Eğitim Teknolojisinden Yararlanmaları: Değişime direnç mi, meydan okuma mı?” 4.Ulusal Eğitim Bilimleri Kongresi, Anadolu Üniversitesi, .

SANAL ORTAMDA YER ALAN WEB FORUM SAYFALARININ BİLİŞİM ETİĞİ AÇISINDAN DEĞERLENDİRİLMESİ

EVALUATION OF THE WEB FORUM PAGES IN VIRTUAL ENVIRONMENT IN TERMS OF INFORMATION TECHNOLOGY ETHICS

*Tuncay Sevindik, Fırat Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Bölümü, Elazığ E-mail: ,tsevindik@gmail.com
Korhan Kayışlı, Fırat Üniversitesi, Teknik Eğitim Fakültesi, Bilgisayar Öğretmenliği Bölümü, Elazığ E-mail: ,kkayisli@firat.edu.tr*

Özet

İnternet, elli yıllık tarihsel gelişim sürecini dünyanın her yerine ulaştırarak devam ettirmekte olan ve dünyanın en hızlı gelişim gösteren alt yapısı olarak sürdürmektedir. Tüm bu gelişimlerin paralelinde, internet tabanlı eğitim ortamları, askeri savunma sanayi ya da bankacılık ve ticari alanlarda hızlı bir gelişim göstermektedir. Bu hızlı gelişimin neticesinde teknolojiyle bütünleşmiş birey profilinde de değişimler yaşanmaktadır. Bu değişimlerin neticesinde teknoloji ile iç içe olan bireylerin sürekli olarak kendilerini yenilemeleri, mesleki anlamda güncellemeleri için web forumlarına bilgi paylaşımı ve bilgiye ulaşmada önemli görevler düşmektedir. Bu araştırmanın amacı "Sanal Ortamda Yer Alan Web Forum Sayfalarının Bilişim Etiği Açısından Değerlendirilmesidir" ve bu amaca ulaşmak için on adet tesadüfi yöntemle seçilmiş web forum sayfası belirlenmiştir. Belirlenen bu web forumlarını değerlendirmek amacıyla 40 adet değerlendirme kriteri, web forum sayfalarının içerik gelişim yapısına bağlı olarak geliştirilmiştir. Araştırmanın sonucunda Türkiye'deki web forum sitelerinin genel profili belirlenmiştir.

Anahtar kelimeler: Etik, İnternet, Teknoloji, Web forum Sayfası

Abstract

Internet, a fifty-year history of the development process continues to reach anywhere in the world and it maintains as the world's fastest developing infrastructure. In parallel to all this developments, web-based educational environments show rapid growth in military defense industry or banking and commercial areas. As a result of this rapid development technology, integrated individual profile has also changed. Depending on these changes, individuals intertwined with technology that constantly renew themselves, have an important role on access to information and in terms of professional updates for information sharing in web forums. The purpose of this study, "evaluation of the web forum pages in virtual environment in terms of computer ethics" and to achieve this goal, ten web forum pages were determined with randomly selected. In order to evaluate these determined web forum pages, 40 evaluation criteria were developed depending on the structure of the content developments of web forum pages. As a result, the overall profile of Turkey web forum sites has been identified.

Key Words: Ethic, Internet, Technology, Web forum Page

Giriş

Tarihsel gelişim sürecinde yaşamın pek çok boyutuna önemli yenilikler ve kolaylıklar sağlayan internet kavramı, kendi içerisinde de kavramsal değişimler geçirmiştir. Bu kavramsal değişimler içerisinde çevrim içi ve dışı sohbetler, e-ticaret, e-devlet, blog, sosyal ağ ve web forumlar bulunmaktadır. Bu kavramsal değişimlerden biri olan ve çılgın gibi büyüyen, büyük kitlelere sahip olan web forumlar, farklı kullanım şekilleriyle hayatımız içerisindeki yerini almıştır. Yarım asırlık gelişimsel süreç içerisinde son yirmi yılda büyük bir dönüşüm geçiren internet, bu değişimi anlamsal gelişimlere borçludur. İnternetin anlamsal olarak kabuk değiştirmesi yani semantik web boyutunda gelişimini sürdürmesi, interneti olumlu yönde etkilemiştir. Bu gelişimde web 2.0 ya da web 3.0 olarak kabul gören semantik web uygulamalarının ve madencilik uygulamalarının da (data, web ve text mining) önemli bir rolü vardır.

Bugün internet platformları üzerinde yapılandırılan web sayfalarının çevrim içi-dışı ya da pek çok alt boyutta binlerce insana başlık açmada, başlık düzenlemede ve istemci tarafından gelen verileri düzenlemede olanak sağlayabilmenin yolu, web teknolojilerindeki gelişim olarak görülmektedir. Tüm gelişmelerinin sonucunda da bireylerin, internet ortamında web forum sayfalarını rahatlıkla tasarladıkları, bilgi paylaşma ve- bir çok konuda tartışma olanağı buldukları görülmektedir.

Web forum sayfaları, normal web sayfalarının aksine, genel olarak bağımsız bir yapıya sahip değildir. Web forum sayfaları, ya temel web sayfalarında site yöneticileri tarafından oluşturulan bir linke yapılandırılırlar ya da esas web forum sayfası şeklinde inşa edilirler. Web forumlar önemli bir bilgi kaynağıdır ve dünyada binlerce forum özelliği taşıyan web sayfası vardır. Web forum Sayfalarının (WFS) hepsinin faydalı olduğu söylenemez ve aynı zamanda çok azı ilgi çekmekte ve faydalı olmaktadır.

Sanal dünya içerisinde WFS uygulamaları çok sık kullanılan bir fenomen haline gelmiştir. Forum denilen ve dijital dünyada yer alan bu sayfalar bir web sayfası uygulamasıdır. Günümüz forum siteleri paylaşım amaçlı bir sosyal ağ uygulaması olarak da ifade edilebilir. Bunun nedeni; forum sitelerinin sanal ortamda bireyleri bir araya getiren bir özelliği sahip olmasıdır. Bireylerin bir araya gelme sebepleri ise bilgi, tecrübe, hataları düzeltme, doğruları ifade etme ve dosya paylaşımları olmaktadır. Tüm bu konularda yapılan paylaşımlar genel manada metin tabanlı olarak karşımıza çıkmaktadır.

WFS'de yer alan paylaşım kavramı sosyalleşmenin diğer bir ifade şeklidir. Sanal ortamda, sosyalleşmek gerçek yaşam koşullarına göre farklılıklar gösterse de bu ortamda özellikle forumlarda yapılan sosyal paylaşımların, genel kültür yeterliliklerini ya da mesleki yeterlilikleri de arttırdığı söylenebilir.

Forumlarda paylaşım dışında davranış şekillerine bakıldığında, sadece bilgiyi paylaşan bireyler değil aynı zamanda yöneten ve önde olma noktasında büyük bir rekabet anlayışı içerisinde olan bireylerde bulunmaktadır. Özellikle, WFS'lerde yöneticiler, ilk sırada yer alma noktasında sürekli olarak forumda paylaşımı tercih edenler WFS yapılarının diğer davranış şekilleri olarak görülmektedir.

Forumlar, ülkemiz kültürü içerisinde yer alan imce kavramına da benzetilebilir. WFS'ler yapılanmaları itibarıyla pek çok alt başlıktan oluşmaktadır. Alışverişi, yardımlaşma, tatil, düşünce takipçiliği, eğlence, mesleki paylaşımlar ve güncel konularda etkileşim üst seviyede yaşanmaktadır.

Günümüz uygulamaları açısından bakıldığında sosyal nitelik taşıyan facebook ya da twitter'a kıyasla forum siteleri daha basit nitelikli, daha çok metinsel içerikli bir yapıya sahip uygulamalardır. Bu noktadan bakıldığında sosyal ağ olarak ifade edilen daha zengin bir içerik paylaşımına sahip facebook ve twitter'ın, forumlarla benzerlikler göstermesine rağmen önemli noktalarda da ayrımlar gösterdiği ve daha çok ihtiyaca cevap verdiği aşağıda belirtilen tablo 1'de görülebilir.

Tablo 1. Web forumlar ile sosyal ağların kıyaslanması

| | Web Forum | | | Sosyal Ağlar | | |
|----------------------------------|-----------|--------|-------|--------------|--------|-------|
| | Evett | Kısmen | Hayır | Evett | Kısmen | Hayır |
| Resim | x | | | x | | |
| Anlık İleti | | | x | x | | |
| Offline İleti | x | | | x | | |
| Video | | x | | x | | |
| Ses | | | | x | | |
| Grup Oluşturma | x | x | | x | | |
| Oyun uygulamaları (API) | | | x | x | | |
| Anket uygulamaları (API) | | | x | x | | |
| Dosya transferi | | | x | x | | |
| Sürekli güvenlik kontrolü | | x | | x | | |
| Veri depolama | x | | | x | | |

Web Forum Sayfalarının Yapısal İçeriği

WFS'ler güncel hayatı destekleme noktasında birçok farklı yapıya sahiptir. WFS'lere ait içerik özellikleri de aşağıda verilen yapılanma şeklindedir;

Program paylaşımları, Eğitsel içerikli dersler, Politik amaçlı tartışmalar, Akademik paylaşımlar, Donanımsal sorunlar ve çözümler, Bilim ve Teknolojideki yeni eğilimler, Güncel oyun uygulamaları, Güncel haber içerikleri, Kamu görevlilerine ilişkin paylaşımlar, Yardım amaçlı buluşmalar olarak görülmektedir.

Yukarıda ifade edilen başlıkların dışında bireylerin ihtiyaçlarına göre, forumlarda ifade edilen ihtiyaçların öncelik durumuna bakılarak forum yöneticileri tarafından veya izin verilen kişilerce de alt başlıklar oluşturulmaktadır.

Web Forum nedir?

Öncelikle forum kavramını tanımlamak gerekirse, Türk Dil Kurumu'na göre forum; "Eski Romalılar zamanında, Roma'da ve diğer şehirlerde kamu işlerini konuşmak için halkın toplandığı alan anlamına gelmektedir. Toplu tartışma ya da bazı sorunların görüşülerek karara bağlandığı genel toplantı" olarak tanımlanmaktadır (tdk.org.tr, 2010). Eğitim bilimleri anlamında forum kavramı panel sonrası gerçekleşen soru cevap bölümü ya da uzmanlarca bir konunun düzeyli ve seviyeli bir şekilde tüm yönleriyle tartışılması ve sonuca bağlanmasıdır.

Aslında forum kavramı, çok fazla kendi çekirdek anlamının dışına taşmadan sanal ortam ile ilişkilendirildiğinde web forum platformunun anlamı belirlenebilir. Öyleyse, web forum bireylerin internet ortamında bilgi paylaşımı, tartışma ve sonuç ya da çözüme ulaşmak için bir araya geldikleri genel toplantı yerleridir. Bu toplantı yerlerinin gerçek yapıdan tek farkı, bulunulan ortamın dijital bir ortam olması ve bu ortamda zaman ve mekan boyutu olmaksızın sorunların görüşülmesi ya da bir karara bağlanabilmesidir.

Web forumların geleneksel forumlardan en büyük farklılığı zaman ve mekandan bağımsız olmalarıdır. Bu farklılık, web forumlardaki bireylerin binlerce kilometre uzaklıkta ve birbirini tanımayan bireyleri aynı platformda yan yana getirmektedir. Bu platformlarda fikirlerin sunulmasında yaş sınırı gözetilmez. Yaş sınırı olmaksızın fikirlerin sunulması ve bireylerin yüz yüze gelmemeleri ya da uzak mesafede olmalarının olumlu yönlerinin yanı sıra olumsuz yönleri de olacaktır. Bu tür platformlarda paylaşım ve işbirliğinde empati ya da olumlu bağlılık ve işbirlikli ortamlarda olduğu gibi "birimiz hepimiz ve hepimiz birimiz için" anlayışını göremeyebiliriz. Bu şekilde grup sorumluluğu beklentisi anlamsız bir beklentidir. Web forumlar bireylerin paylaşım ve birlikte iş yapma duygusu anlamında sürekliliği olan yerler değildir. Bireyler sadece çözemedikleri problemlere ilişkin web forumlara mesaj bırakır ve çözüme kavuştuktan sonra bir daha bu platformda da bulunmayabilir. Bu nedenle web forumlar duyuşsal manada yaşam tarzı haline getirilecek yerler değildir (Christopherson, 2007)

Web forumlar, sanal dolandırıcıları da uygun olanaklar sağlamaktadır. Burada, sanal dolandırıcılar sahte kimlik kullanarak ya da yönetici rollerinde birçok kişinin bireysel bilgilerine ulaşabiliyor, bununla ilgili olarak ABD'de 2005 yılından beri şüpheli listesinde yer alan 21 kişi siber suçlar birimi tarafından takip edilmiş ve tutuklanmıştır. Bu siber suçluların yönetici rollerinde ya da sahte kimliklerle bireylerin genel bilgilerine ulaştığı ya da olta virüsler ya da spam içerikli maillerle özel bilgilere ulaşarak kredi kartlarını deşifre ettikleri görülmüştür (Networksecurity, 2006).

Metod

Bu çalışma tarama araştırma modeline göre yapılandırılmıştır. Araştırma içerisinde Türkiye'de faaliyet gösteren web forum sayfalarının üzerinde geliştirilen WFS değerlendirme kriterlerine uygun olarak çalışma analiz edilmiştir. Araştırmada, WFS'lerin aralarında üst düzey bir anlamlı farklılık görülmemekte olmasına rağmen çok az değerlendirme kriterlerinde farklılık görülmüştür. Bu durum, bulgular kısmında da belirtilmiştir. WFS değerlendirme kriterlerinin yerine getirilip getirilmemesi noktasında genel anlamda forum kuralları ve etik kurallara uyulduğu görülmektedir.

Örneklem

Araştırmanın örneklemini Türkiye'de 2010 yılı itibarıyla güncel olan on farklı web forum sayfası oluşturmaktadır. Örneklem seçimi, Google arama motorunun arama motoru optimizasyon tekniklerine uygun olarak üye sayılarına bağlı olarak gerçekleştirilmiştir. Araştırmaya dahil edilen ve örneklemini temsil eden WFS'lerin alan isimleri (Domain Name) ve üye sayıları tablo 2'de gösterilmektedir.

Tablo 2. Çalışmaya İlişkin Örneklem

| | Web Forum Adresleri | Web Forumlarda Üye Sayısı |
|----|---|---------------------------|
| 1 | http://forum.donanimhaber.com/ | 672409 |
| 2 | http://www.donanimtr.com/ | 14.298 |
| 3 | http://www.turkeyforum.com | 519.228 |
| 4 | http://www.hardwaremania.com/forum/ | 93.680 |
| 5 | http://www.hackhell.com/ | 1.218.895 |
| 6 | http://www.frmtr.com/index.php | 3.005.837 |
| 7 | http://www.egitimforum.com/ | 19.145 |
| 8 | http://www.egitim-forum.com/ | 48.802 |
| 9 | http://www.webforumu.org/ | 24.293 |
| 10 | http://www.webturkiyeportal.com/webforum/ | 252.344 |

Verilerin Toplanması ve Analizi

Araştırmaya ilişkin veriler, seçilmiş olan web forum sayfalarının geliştirilen web forum değerlendirme kriterlerine uygun olarak gözlemlenmesi (gözlem metodu) sonucu toplanmıştır. Forum sayfalarında geliştirilen kriterler, kontrol listesi şeklinde kabul edilmiş ve davranışlar var-yok şeklinde kabul edilmiştir. Elde edilen veriler, yüzde, frekans ve aritmetik ortalama şeklinde istatistik teknikleri kullanılarak analiz edilmiştir.

Bulgular ve Yorumlanması

Araştırmaya ait bulgular tablo 4'de belirtilen kriterlerle yorumlanmaktadır.

Tablo 4. Web forumlarının değerlendirme kriterleri

| A) İfade Şekilleri | Yanıt | f | % | \bar{x} |
|---|---------------|----------|----------|-----------------------------|
| 1-Web forum içeriklerinde ahlak dışı, rencide edici ve küfürlü sözlerin kullanımına izin verilmektedir | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 2-Ana dile ilişkin temel kurallara uymayan yazılara yer verilmektedir | Hayır | 6 | 60 | 1,40 |
| | Evet | 4 | 40 | |
| | Toplam | 10 | 100 | |
| 3-İnsanlar için zararlı olabilecek içerik ve materyaller (sigara, alkol, ilaç vb.) eklenmektedir | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 4-Diğer kullanıcılarla veya yorum yapan kişilerle tartışma ortamı yaratmak ve tartışma içerisine girmek | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 5-Kızgınlık ifadesi belirten büyük harf ve kalın harfli yazıları kullanılmaktadır | Hayır | 5 | 50 | 1,50 |
| | Evet | 5 | 50 | |
| | Toplam | 10 | 100 | |
| B) Telif Hakları | | f | % | \bar{x} |
| 1-Ticari amaçla üretilen programların üreticinin izni olmadan yasadışı olarak kullanıma sunmak. | Hayır | 8 | 80 | 1,20 |
| | Evet | 2 | 20 | |
| | Toplam | 10 | 100 | |
| 2-Başka birinin düşüncelerini, yorumlarını izinsiz olarak kullanmak | Hayır | 2 | 20 | 1,80 |
| | Evet | 8 | 80 | |
| | Toplam | 10 | 100 | |
| 3-Telif hakları açısından kişilerin ismini, fotoğrafını, firma logosu, markası ya da patentli tasarımını izinsiz bir biçimde forum içeriklerinde kullanmak ve müzik, film gibi dosyaları yayınlamak | Hayır | 7 | 70 | 1,30 |
| | Evet | 3 | 30 | |
| | Toplam | 10 | 100 | |
| C) Dosya Paylaşımı | | f | % | \bar{x} |
| 1-Site içerisinde bulunan bilgi, doküman ve çalışmalarını kaynak belirtmeksizin yayınlamak. | Hayır | 1 | 10 | 1,90 |
| | Evet | 9 | 90 | |
| | Toplam | 10 | 100 | |
| 2-Spam (kendi reklamlarını yayınlamak) davranışlarda bulunmak, anlamsız iletiler göndermek. | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 3-Virüs taşıyan dosyaları forum da yayınlamak veya yüklemek. | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 4-Tehdit içerikli mail ya da uygun olmayan resim veya mesajları siteye yüklemek | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 5-Kaynakları belirtilmeyen dosyaları paylaşımak | Hayır | 2 | 20 | 1,80 |
| | Evet | 8 | 80 | |
| | Toplam | 10 | 100 | |
| D) Toplumsal Yapı | | f | % | \bar{x} |
| 1-Kasıtlı olarak insanları kışkırtan propaganda amaçlı ya da siyasi içerikli mesajları yayınlamak | Hayır | 8 | 80 | 1,20 |
| | Evet | 2 | 20 | |
| | Toplam | 10 | 100 | |
| 2-Milletler hakkında tahrik edici ve küçük düşürücü yazılar yazmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 3-Kurum/lar hakkında olumsuz tanıtımlar yapılması ve onları yıpratıcı reklamlar yayınlamak | Hayır | 9 | 90 | 1,00 |
| | Evet | 1 | 10 | |
| | Toplam | 10 | 100 | |
| 4-Kültürel değerlerle çelişen ahlak dışı video ve resimleri yayınlamak ya da paylaşımak | Hayır | 9 | 90 | 1,10 |
| | Evet | 1 | 10 | |
| | Toplam | 10 | 100 | |
| 5- Çok sesliliğin ve kültürel çeşitliliğin korunmasına önem vermek | Hayır | 6 | 60 | 1,40 |
| | Evet | 4 | 40 | |
| | Toplam | 10 | 100 | |
| 6-Din, dil, ırk, etnik köken, fikir, cinsiyet, yaş bedensel engel gibi benzer özellikler nedeni ile ayrımcılık küçük düşürücü ve önyargılı konuşma tutum içinde bulunmak | Hayır | 9 | 90 | 1,10 |
| | Evet | 1 | 10 | |
| | Toplam | 10 | 100 | |
| 7-Etnik köken bakımından farklı guruplar hakkında tahrik edici ve küçük düşürücü yazılar yazma ve onların ulusal değerlerine saygısız davranışlar sergilemek. | Hayır | 9 | 90 | 1,10 |
| | Evet | 1 | 10 | |

| | Toplam | f | % | \bar{x} |
|---|--------|----|-----|-----------|
| 8-Topluluklar hakkında tahrik edici ve küçük düşürücü yazılar ve videolar yayınlamak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 9-Toplumda korku oluşturabilecek olaylar karşısında ve kriz zamanlarında sağlıklı davranmak | Hayır | 1 | 10 | 1,90 |
| | Evet | 9 | 90 | |
| | Toplam | 10 | 100 | |
| E) Kişilik Hakları | | | | |
| 1-Forum sitelerine üye olan farklı kullanıcıların kişisel bilgilerini kullanmak, dağıtmak ve paylaşmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 2-Forumlardaki kişisel verileri kullanıma açmak | Hayır | 9 | 90 | 1,10 |
| | Evet | 1 | 10 | |
| | Toplam | 10 | 100 | |
| 3-Kullanıcıların yaş düzeylerine bakılmaksızın her türlü ortama dahil edilmeleri ve bu ortamlarda uygunsuz ve ahlak dışı içeriklerle karşı karşıya bırakılmaları | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 4-Üye kullanıcıların mail adresi kullanılarak yasadışı mesaj, uygun olmayan resim, yazı tehdit içerikli mailleri yollamak. | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 5-Kişilerin hak ve özgürlüklerine saldırıda bulunulabilecek konuların açılması, tartışılması ve paylaşılması | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 6- Kullanıcıların yaş düzeylerine bakılmaksızın onlara zarar verecek türden bilgilere yer verilmesi | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 7-Kişi ve kurumların cevap ve düzeltme haklarına saygılı olmak | Hayır | 1 | 10 | 1,90 |
| | Evet | 9 | 90 | |
| | Toplam | 10 | 100 | |
| 8-Forum içeriği oluşturan yazıların aktarımında saygı çerçevesi içerisinde diğer bireylerin ifadelerinin belirgin bir şekilde anlaşılması için cevap hakkı oluşturulmuş fikir belirtmek | Hayır | 10 | 100 | 2,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 9-Eleştiri yapalım derken rencide edici ağır ithamda bulunmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| F) Konu Başlıkları | | | | |
| 1-İçerikle (alt başlıklarla) bağdaşmayan konulara yer vermek | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 2-Yasa dışı yürütülen çalışmaların propagandasını yapmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 3-İnternet ortamında karşımızda bulunan kişilerin özel yaşamlarına müdahale edecek davranışlarda bulunmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 4-Kullanılan paylaşım, yorum, tartışma ortamını herhangi bir ideolojik fikir yönünde sürekli olarak tekrarlı ısrarlı bir biçimde koşullandırma ve propaganda yapmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 5-Forum veya site kurallarına uymamak ve kuralları ihlal etmeye teşvik etmek | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 6-Haksız kazanç elde etmek için insanları yalan yanlış bilgilerle çıkar amaçlı yönlendirmeler yapmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 7-Anayasa ve devlet bütünlüğü hakkında suç unsuru oluşturacak yazı ve yorumlarda bulunmak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 8-Ticari programların, crackların, seri numaralarını yayınlamak | Hayır | 10 | 100 | 1,00 |
| | Evet | 0 | 0 | |
| | Toplam | 10 | 100 | |
| 9-Başka insanların entelektüel bilgilerini kendimize mal etmek | Hayır | 3 | 30 | 1,70 |
| | Evet | 7 | 70 | |
| | Toplam | 10 | 100 | |

Tablo 4' e göre, ifade şekilleri açısından; Türkiye'de Web forum içeriklerinde ahlak dışı, rencide edici ve küfür sözlerin kullanımına izin verilmemekte, azınlıkta da olsa ana dile ilişkin temel kurallara uymayan yazılara yer verilmekte ($\bar{x}=1,40$), İnsanlar için zararlı olabilecek içerik ve materyaller (sigara, alkol, ilaç vb.) eklenmemektedir, diğer kullanıcılarla veya yorum yapan kişilerle tartışma ortamı oluşturulmamakta ve tartışma içerisine girilmemektedir. Fakat, Kızgınlık ifadesi belirten büyük harf ve kalın harfli yazıları web forum sitelerinin hemen hemen yarısı kullanmaktadır ($\bar{x}=1,50$).

Telif hakları açısından bakıldığında; Ticari amaçla üretilen programların üreticinin izni olmadan yasadışı olarak kullanıma sunma olayının Türkiye'de nadiren görüldüğü, ancak başka birinin düşüncelerini, yorumlarını izinsiz olarak kullanma olayı sıklıkla görülmektedir. Telif hakları açısından kişilerin ismini, fotoğrafını, firma logosu, markası ya da patentli tasarımını izinsiz bir biçimde forum içeriklerinde

kullanmak ve müzik, film gibi dosyaları yayınlanma noktasında web forum sayfalarının çok düşük bir bölümü etik olamayan bu hareketi gerçekleştirmektedir.

Dosya Paylaşım kriterleri açısından, Site içerisinde bulunan bilgi, doküman ve çalışmaları kaynak belirtmeksizin yayımlandığı görülmektedir ($\bar{x}=1,90$), WFS'lerde spam yapısı taşıyan davranışların sergilenmediği, Virüs taşıyan dosyaları forum da yayınlamak veya yüklemek gibi davranışların görülmediği, Tehdit içerikli mail ya da uygun olmayan resim veya mesajların sitelerde yer almadığı, çok fazla düzeyde kaynak belirtilmeden dosya paylaşıldığı görülmektedir ($\bar{x}=1,80$).

Toplumsal yapı açısından; Kasıtlı olarak insanları kışkırtan propaganda amaçlı ya da siyasi içerikli mesajların yayınlanmadığı, Milletler hakkında tahrik edici ve küçük düşürücü yazılar yazılmadığı, Kurum/lar hakkında olumsuz tanıtımlar yapılması ve onları yıpratıcı reklamlar yayınlanmadığı, Kültürel değerlerle çelişen ahlak dışı video ve resimleri yayınlama ya da paylaşma konusunda etik dışı hareketler olmadığı görülmektedir. Çok sesliliğin ve kültürel çeşitliliğin korunmasına önem verme konusunda pek çok WFS'lerde pek çok negatif davranışların olduğu görülmektedir ($\bar{x}=1,40$), Din, dil, ırk, etnik köken, fikir, cinsiyet, yaş ve bedensel engel gibi benzer özellikler nedeni ile ayrımcılık küçük düşürücü ve önyargılı konuşma tutum içinde bulunulmadığı, Etnik köken bakımından farklı guruplar hakkında tahrik edici ve küçük düşürücü yazılar yazma ve onların ulusal değerlerine saygısız davranışlar sergilenmediği, Topluluklar hakkında tahrik edici ve küçük düşürücü yazılar ve videolar yayınlanmadığı ancak, Toplumda korku oluşturabilecek olaylar karşısında ve kriz zamanlarında sağlıklı davranışa yönelik web hareketleri sergilendiğini görmekteyiz.

Kişilik hakları açısından, üyelere ait kişisel verilerin saklandığı, kullanıma açılmadığı, Kullanıcıların yaş düzeylerine bakılmaksızın her türlü ortama dahil edilmeleri ve bu ortamlarda uygunsuz ve ahlak dışı içeriklerle karşı karşıya bırakılmalarına karşı olunduğu, Üye kullanıcıların mail adresi kullanılarak yasadışı mesaj, uygun olmayan resim, yazı tehdit içerikli maillerin yollanmadığı, Kişilerin hak ve özgürlüklerine saldırıda bulunulabilecek konuların açılmadığı, tartışılmadığı ve paylaşılmadığı, Kullanıcıların yaş düzeylerine bakılmaksızın onlara zarar verecek türden bilgilere yer verilmediği, Kişi ve kurumların cevap ve düzeltme hakları göz ardı edilmektedir. Forum içeriği oluşturan yazıların aktarımında saygı çerçevesi içerisinde diğer bireylerin ifadelerinin belirgin bir şekilde anlaşılması için cevap hakkı oluşturulmuş fikir belirtilmemektedir, ağır ithamların kullanılmadığı görülmektedir.

Konu başlıkları açısından, İçerikle (alt başlıklarla) bağdaşmayan konulara yer verilmediği, Yasa dışı yürütülen çalışmaların propagandasının yapılmadığı, İnternet ortamında karşımızda bulunan kişilerin özel yaşamlarına müdahale edecek davranışlarda bulunulmadığı, Kullanılan paylaşım, yorum, tartışma ortamını herhangi bir ideolojik fikir yönünde sürekli olarak tekrarlı ısrarlı bir biçimde koşullandırma ve propaganda yapılmadığı, site kurallarına uygun hareket edildiği, Haksız kazanç elde etmek için insanları yalan yanlış bilgilerle çıkar amaçlı yönlendirmeler yapılmadığı, Ticari programların, crackların, seri numaralarını yayınlamadığı ancak Başka insanların entelektüel bilgilerini kendimize mal etme konusunda etik olmayan hareketlerin yapıldığı görülmektedir.

Tablo 5. Web Forum Sayfaları Arasındaki Korelasyon Değerleri

| | forum.do nanimha ber | donanim tr | turkeyfor um | hardware mania | hackhell | frmtr | egitimfor um | egitim- forum | webforu mu | webturki yeportal |
|--------------------|----------------------------|---------------|-----------------|-------------------|----------|-------|-----------------|------------------|---------------|----------------------|
| forum.donanimhaber | 1,00 | ,844 | ,844 | ,921 | ,491 | ,428 | ,567 | ,577 | ,764 | ,531 |
| donanimtr | ,844 | 1,00 | ,844 | ,921 | ,627 | ,592 | ,378 | ,577 | ,764 | ,688 |
| turkeyforum | ,844 | ,844 | 1,00 | ,757 | ,627 | ,592 | ,567 | ,722 | ,764 | ,688 |
| hardwaremania | ,921 | ,921 | ,757 | 1,00 | ,560 | ,481 | ,423 | ,494 | ,704 | ,592 |
| hackhell | ,491 | ,627 | ,627 | ,560 | 1,00 | ,560 | ,247 | ,504 | ,524 | ,491 |
| frmtr | ,428 | ,592 | ,592 | ,481 | ,560 | 1,00 | ,224 | ,342 | ,416 | ,428 |
| egitimforum | ,567 | ,378* | ,567 | ,423 | ,247 | ,224 | 1,00 | ,480 | ,577 | ,378 |
| egitim-forum | ,577 | ,577 | ,722 | ,494 | ,504 | ,342 | ,480 | 1,00 | ,882 | ,722 |
| webforumu | ,764 | ,764 | ,764 | ,704 | ,524 | ,416 | ,577 | ,882 | 1 | ,627 |
| webturkiyeportal | ,531 | ,688 | ,688 | ,592 | ,491 | ,428 | ,378 | ,722 | ,627 | 1 |

Tablo 5'e göre; egitimforum.com ile donanimtr.com arasında (r: ,378), hackhell.com arasında (r: ,247), frmtr.com arasında (r: ,224) düşük düzeyli bir ilişki görülmektedir. Ayrıca egitim-forum.com ile frmtr.com arasında (r: ,342) düşük düzeyli bir ilişki görülmektedir. Bu korelasyonlar haricinde web forumlar arasında tablo 5'e göre orta düzeyli ve yüksek düzeyli bir ilişki olduğu da görülmektedir.

Sonuç

Araştırmanın neticesinde, 37 maddeden oluşturulan web forum sayfaları değerlendirme kriterleri olarak bir ölçek geliştirilmiştir. Yapılan araştırma, birbirinden farklı ve Türkiye kaynaklı on farklı web forum sayfası bu maddelere göre incelenmiştir. Araştırma neticesinde Türkiye kaynaklı web forum sayfalarının etik açıdan büyük bir gelişim süreci sergilediğini göstermiştir. Web forum sayfaları üyelerinin milyonları bulan büyük kitlelere ulaştığı da görülmektedir. Ancak web forum sayılarında, bilginin kaynak göstermeden alıntılanması, büyük harfle yazı yazma ve Türkçeyi tam olarak ifade edememe gibi davranışların sergilendiği görülmektedir. Bu durumda internetin kendi vatandaşlık sistemini oluşturmasından kaynaklandığı görülmektedir. Tüm bunların ortadan kaldırılması ya da bilgi yığınlarını yok edebilmek amacıyla iyi bir veri tabanı yönetim sistemi veya iyi madencilik uygulamalarına ihtiyaç duyulacaktır.

KAYNAKÇA

Christopherson, K. M. (2007). The positive and negative implications of anonymity in Internet social interactions: "On the Internet, Nobody Knows You're a Dog". *Computers in Human Behavior*, 23, 3038–3056.

Hilley, S. (2006). Secret Service Dismantles Web Forums. *Network Security*, 20.

<http://www.tdk.org.tr>. (2010). 2010 tarihinde Türk Dil Kurumu. adresinden alındı

SANAT TARİHİ DERSİNDE BİR ÖĞRENME MODELİ OLARAK SANAL GERÇEKLIK UYGULAMALARININ ETKİNLİĞİNİN DEĞERLENDİRİLMESİ

ASSESSMENT OF THE EFFECTIVENESS OF VIRTUAL REALITY APPLICATIONS IN ART HISTORY COURSE AS A LEARNING MODEL

Levent ÇORUH – Gazi Üniversitesi – lcoruh@gmail.com
Prof. Dr. Adnan TEPECİK – Başkent Üniversitesi – tepecikadnan@hotmail.com

Özet

Bu araştırmanın amacı, Güzel Sanatlar ve Mimarlık Fakülteleri sanat tarihi derslerinde bir öğrenme modeli olarak sanal gerçeklik uygulamaları kullanımının, öğrenci erişimi ve kalıcılık puanları üzerindeki etkisini belirlemektir. Bu genel amaca ulaşmak için araştırmada öntest, son test, kalıcılık testi, denk olmayan kontrol gruplu deneysel desen kullanılmıştır. Deneysel gruba uygulanan pilot sanal gerçeklik uygulaması, örnek olarak seçilen Süleymaniye Külliyesinin; fotoğrafları, üç boyutlu bilgisayar modeli, panoramik ve etkileşimli görüntü dosyaları ve bu uygulama için hazırlanan üç boyutlu oyun motorundan oluşmaktadır.

Çıkan sonuçlar Sanal Gerçeklik yönteminin başarı puanları ve kalıcılık puanları yönünden geleneksel yöntemle karşı üstün olduğunu göstermektedir. Bu sonuçlar öntest ve son test sınavlarından elde edilen erişim puanlarının ve kalıcılık puanlarının istatistiksel olarak karşılaştırılması ve deney grubuna uygulanan tutum ölçeğinin yorumlanması ile elde edilmiştir. Araştırma gelecekte sanal gerçeklik uygulama ve teknolojilerinin, sanat tarihi ders müfredatına entegrasyonu ile ilgili karşılaşılabilecek olası problemlerin çözümüne katkı sağlayabilir.

Anahtar Kelimeler: Sanal gerçeklik, öğrenme modeli, sanat tarihi eğitimi.

Abstract

This study aims to identify the effect of virtual reality applications used as a learning model in the art history courses of Fine Arts and Architecture faculties on students' achievement and retention scores. To this end, pre-test, post-test, follow-up retention test and non-equivalent control group experimental design were adopted in the research. The piloted virtual reality application included the photographs, three-dimensional computer model, panoramic and interactive image files of Süleymaniye Complex (Külliye- Islamic social complex) which was chosen as a sample and the three-dimensional game motor prepared for this application.

The findings have demonstrated that Virtual Reality method is superior to the traditional method in terms of achievement and retention scores. These results were obtained by the statistical comparison of pre-test/post-test achievement and retention scores and interpretation of the attitude scale given to the experimental group. The research may contribute to the solution of possible problems which might be encountered in the integration of virtual reality applications and technologies to art history curriculum in the future.

Keywords: Virtual reality, learning model, art history course

GİRİŞ

Günümüzde, bilgi teknolojilerinin gelişmesi özellikle görsel ve işitsel alanlarda birçok yeni uygulamaya mümkün kılmaktadır. Bu uygulamaların eğitim alanında kullanılması eğitimin etkililiği ve kalıcılığına katkı sağlayabilir. Eğitim programının bilgi teknolojilerinin sağladığı görsel, işitsel hatta dokunsal öğelerle zenginleştirilmesi, öğrencilerin birden fazla algısına hitap ederek ders konusunun anlaşılmasını kolaylaştırabilir.

Bayraktar ve Kaleli'ye (2007) göre sanal gerçeklik, katılımcılarına gerçekmiş hissi veren, kullanıcıya bilgisayar ortamında yaratılmış dinamik bir ortam ile karşılıklı iletişim olanağı tanıyan, üç boyutlu bir benzetim modelidir. Benzeşim uygulamaları Flake ve Mcclintock (1985 s.265), tarafından, öğrencinin etkin olarak katıldığı veya etkileyebildiği gerçek durum benzeşimlerinin yer aldığı öğretim amaçlı uygulamalar olarak tanımlanır. Bir benzeşim uygulaması olan sanal gerçeklik uygulamaları, bir öğrenme aracı olarak öğrencilerin denemesi imkânsız, tehlikeli ya da pahalı deneyimleri buldukları sınıftan ayrılmaksızın edinme imkânı sunar. Böylece ilgili ders konusunu sadece dinlemek veya izlemenin ötesinde öğrenci sanal bir deneyim olarak konunun içinde bulunacaktır. Bu sayede Daha önce öğrenilenlerin hiçbir ipucu olmaksızın söz, yazı ya da başka bir işaret sistemi ile tekrarlanması durumu olan öğrenmenin kalıcılığına da katkıda bulunmuş olur. (Demirel ve Ün 1987, s88)

Sanal gerçeklik teknolojilerinin bütünlük görüntü, ses ve 3 boyutlu mekânların içinde olma hissi veren uygulamaları özellikle sanat tarihi dersleri gibi mekânsal algılama gerektiren alanlarda verimli olarak kullanılabilir. Öğrenciler bu teknolojiye ait uygulamaları ders içerisinde deneyimleyerek geleneksel yöntemlerde öğretilmesi zor olan mimari yapının ölçek, plan, mekân ilişkileri gibi konuları daha iyi kavrayabilir yapıda kullanılan malzemeleri 3boyutlu mekân içerisinde dolaşırken eş zamanlı olarak görüp öğrenebilir.

Bu araştırmada, Güzel Sanatlar Fakültesi ve Mimarlık Fakültesi sanat tarihi derslerinde bir öğrenme modeli olarak sanal gerçeklik uygulamaları kullanımının öğrenci erişimi ve kalıcılık puanları üzerindeki etkisini belirlenmesi amaçlanmıştır. Bu amaç doğrultusunda, geleneksel yöntem ve sanal gerçeklik ile eğitim yöntemini karşılaştıracak deneysel bir çalışma yapılmıştır.

YÖNTEM

Araştırmanın evreni, Erciyes Üniversitesi Güzel Sanatlar Fakültesi ve Mimarlık Fakültesi öğrencileridir. Çalışmanın örneklemini; 2009 – 2010 eğitim öğretim yılı içerisinde lisans eğitimi alan Resim Bölümü, Resim Anasanat Dalı 15 kişi, Görsel İletişim Tasarımı Bölümü, Grafik

Anasanat Dalı 15 kişi ve Mimarlık Bölümü 20 kişi olmak üzere toplam 50 ikinci sınıf öğrencisi oluşturmaktadır. Çalışmada araştırmacı deney grubu öğrencilerine sanal gerçeklik teknolojisi ile eğitim verirken, kontrol grubuna geleneksel slayt destekli anlatım metodunu kullanarak eğitim vermiştir.

Çalışmada veri toplama aracı olarak alan uzmanları ve araştırmacı tarafından birlikte geliştirilen, mimari yapının strüktür, estetik, fonksiyona yönelik özelliklerini söyleme / yazma / verilenler içinden seçip işaretleme ve genel özelliklerini tanıma durumunu ölçen, 5 seçenekli 46 sorudan oluşan erişti testi kullanılmıştır. Yapılan pilot çalışma sonrasında testin güvenilirlik katsayısı 0,85 bulunmuştur.

Verilerin toplanmasında şu yol izlenmiştir: İlgili iki haftalık müfredatın işlenmesine başlamadan önce deney ve kontrol gruplarına, hazırlanan erişti testi ön test olarak uygulanmış ve her iki grup öğrencilerinin de hazır bulunuşluk seviyeleri tespit edilmiştir. İki hafta sonra uygulama bitiminde son test yaparak öğrencilerin yeni seviyeleri tespit edilmiştir. Son test yapıldıktan sekiz hafta sonra erişti testi tekrar uygulanarak kalıcılık puanları bulunmuştur. Deney deseni Tablo 1 de verilmiştir.

Tablo 1. Araştırmanın Deneysel Deseni

| GRUPLAR | ÖN TEST | ÖĞRETİM YÖNTEMİ | SON TEST | KALICILIK TESTİ |
|---------|---------|-----------------|----------|-----------------|
| GD | TÖ | X1 | TS | TK |
| GK | TÖ | X2 | TS | TK |

GD: Deney grubu, **GK:** Kontrol grubu, **X1:** Sanal gerçeklik modellenli öğretim, **X2:** Geleneksel öğretim, **TÖ:** Ön test, **TS:** Son test, **TK:** Kalıcılık testi

BULGULAR VE YORUM

Bu bölümde deney ve kontrol grubu öğrencilerinin erişti testinden aldıkları ön test, son test ve kalıcılık testi puanları ve bu puanlar ile elde edilen erişti puanlarına ait bulgular verilmiştir. Güzel Sanatlar Fakültesi öğrencilerinin başarı puanları deney grubu için Tablo 2, kontrol grubu için Tablo 3, Mimarlık Fakültesi öğrencilerine ait başarı puanları deney grubu için Tablo 4, kontrol grubu için Tablo 5'de verilmiştir.

Tablo 2. Güzel Sanatlar Fakültesi Deney Grubu Ön Test, Son Test ve Kalıcılık Testi Başarı Puanları

| Öğrenci No | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Ön Test Puanı | 40 | 37 | 35 | 39 | 35 | 41 | 37 | 44 | 33 | 33 | 28 | 30 | 33 | 33 | 41 |
| Son Test Puanı | 78 | 82 | 56 | 61 | 72 | 85 | 70 | 78 | 80 | 82 | 72 | 72 | 80 | 80 | 86 |
| Kalıcılık Puanı | 46 | 69 | 69 | 69 | 63 | 76 | 67 | 63 | 63 | 76 | 74 | 74 | 63 | 76 | 74 |

Tablo 3. Güzel Sanatlar Fakültesi Kontrol Grubu Ön Test, Son Test ve Kalıcılık Testi Başarı Puanları

| Öğrenci No | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Ön Test Puanı | 35 | 35 | 43 | 22 | 35 | 33 | 43 | 54 | 41 | 37 | 39 | 41 | 28 | 37 | 41 |
| Son Test Puanı | 69 | 72 | 61 | 65 | 67 | 52 | 78 | 70 | 78 | 72 | 65 | 54 | 65 | 61 | 72 |
| Kalıcılık Puanı | 50 | 65 | 52 | 33 | 63 | 30 | 52 | 63 | 52 | 52 | 52 | 41 | 33 | 43 | 37 |

Tablo 4. Mimarlık Fakültesi Deney Grubu Ön Test, Son Test ve Kalıcılık Testi Başarı Puanları

| Öğrenci No | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----------------|----|----|----|----|----|----|----|----|----|----|
| Ön Test Puanı | 41 | 35 | 41 | 35 | 33 | 43 | 35 | 39 | 24 | 35 |
| Son Test Puanı | 78 | 76 | 74 | 67 | 69 | 89 | 76 | 72 | 63 | 74 |
| Kalıcılık Puanı | 63 | 76 | 65 | 67 | 69 | 72 | 72 | 63 | 63 | 69 |

Tablo 5. Mimarlık Fakültesi Kontrol Grubu Ön Test, Son Test ve Kalıcılık Testi Başarı Puanları

| Öğrenci No | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----------------|----|----|----|----|----|----|----|----|----|----|
| Ön Test Puanı | 35 | 33 | 33 | 39 | 26 | 37 | 48 | 33 | 24 | 35 |
| Son Test Puanı | 67 | 72 | 54 | 69 | 56 | 67 | 69 | 60 | 54 | 41 |
| Kalıcılık Puanı | 61 | 54 | 56 | 61 | 56 | 56 | 61 | 41 | 54 | 20 |

Ön test verilerinin değerlendirilmesi bağımsız örneklem t-testi kullanılarak yapılmıştır. Deney ve kontrol grubu öğrencilerinin ön test verilerine t testi uygulanmış, Güzel Sanatlar Fakültesi için Tablo 6 ve Mimarlık Fakültesi için Tablo 7'deki sonuçlar elde edilmiştir. Deney ve kontrol gruplarının ön test verileri arasında ($p>0.05$) istatistiksel olarak anlamlı bir fark olmadığı bulunmuştur.

Tablo 6. Deney ve Kontrol Grubu Ön Test Puanları Bağımsız Örneklem t-testi Sonuçları (Güzel Sanatlar Fakültesi Öğrencileri)

| Öğrenci Grupları | Denek Sayısı (N) | Aritmetik Ortalama (X) | Standart Sapma (SS) | Serbestlik Derecesi (Sd) | t Değeri | Anlamlılık Düzeyi (p) |
|------------------|------------------|------------------------|---------------------|--------------------------|----------|-----------------------|
| Deney | 15 | 35.93 | 4.46 | 28 | -.756 | .46 |
| Kontrol | 15 | 37.60 | 7.27 | | | |

$P < .05$

Tablo 7. Deney ve Kontrol Grubu Ön Test Puanları Bağımsız Örneklem t-testi Sonuçları (Mimarlık Fakültesi Öğrencileri)

| Öğrenci Grupları | Denek Sayısı (N) | Aritmetik Ortalama (X) | Standart Sapma (SS) | Serbestlik Derecesi (Sd) | t Değeri | Anlamlılık Düzeyi (p) |
|------------------|------------------|------------------------|---------------------|--------------------------|----------|-----------------------|
| Deney | 15 | 36.10 | 5.42 | | | |
| Kontrol | 15 | 34.30 | 6.65 | 18 | -.663 | .51 |

P < .05

Sanat tarihi dersinde örnek konu olarak seçilen Süleymaniye Külliyesi mimari özellikleri deney grubuna sanal gerçeklik yöntemi ile kontrol grubuna geleneksel yöntem ile öğretimiştir. Uygulama sonrasında deney ve kontrol gruplarına son test uygulanmış ve Tablo 8'de verilen erişim puanları aritmetik ortalamaları bulunmuştur.

Tablo 8. Fakültelelere Göre Deney ve Kontrol Grupları Erişim Puanları Aritmetik Ortalaması

| Öğrenci Grupları | Deney Grubu Erişim Puanları Aritmetik Ortalama | Kontrol Grubu Erişim Puanları Aritmetik Ortalama |
|--------------------------|--|--|
| Güzel Sanatlar Fakültesi | 39,6 | 29,1 |
| Mimarlık Fakültesi | 37,7 | 26,6 |

Verilerinin değerlendirilmesi bağımsız örneklem t-testi kullanılarak yapılmıştır. Deney ve kontrol grubu öğrencilerinin erişim puanı verilerine t testi uygulanmış ve gruplar arasındaki bu puan farkı (p > .01) istatistiksel olarak deney grubu lehine anlamlı bulunmuştur. Bu sonuca göre, her iki fakülte için de deney grubu öğrenci başarısının kontrol grubuna göre daha yüksek olduğu söylenebilir. Güzel Sanatlar Fakültesi için Tablo 9 ve Mimarlık Fakültesi için Tablo 10'daki sonuçlar elde edilmiştir.

Tablo 9. Deney ve Kontrol Grubu Erişim Puanları Bağımsız Örneklem t-testi Sonuçları (Güzel Sanatlar Fakültesi Öğrencileri)

| Öğrenci Grupları | Denek Sayısı (N) | Aritmetik Ortalama (X) | Standart Sapma (SS) | Serbestlik Derecesi (Sd) | t Değeri | Anlamlılık Düzeyi (p) |
|------------------|------------------|------------------------|---------------------|--------------------------|----------|-----------------------|
| Deney | 15 | 39,66 | 8,84 | | | |
| Kontrol | 15 | 29,13 | 9,17 | 28 | 3,202 | .003 |

P < .01

Tablo 10. Deney ve Kontrol Grubu Erişim Puanları Bağımsız Örneklem t-testi Sonuçları (Mimarlık Fakültesi Öğrencileri)

| Öğrenci Grupları | Denek Sayısı (N) | Aritmetik Ortalama (X) | Standart Sapma (SS) | Serbestlik Derecesi (Sd) | t Değeri | Anlamlılık Düzeyi (p) |
|------------------|------------------|------------------------|---------------------|--------------------------|----------|-----------------------|
| Deney | 10 | 37,70 | 4,39 | | | |
| Kontrol | 10 | 26,60 | 8,92 | 18 | 3,529 | .002 |

P < .01

Son testin yapılmasından 8 hafta sonra deney ve kontrol grubuna kalıcılık testi uygulanmıştır. Kalıcılık puanını belirlemek için, son test ve kalıcılık testi puanlarının farkı alınmış ve elde edilen bu verilerin değerlendirilmesi deney ve kontrol grubu için bağımsız örneklem t testi ile yapılmıştır. Bu verilere dayanarak gruplar arasındaki bu puan farkı Güzel Sanatlar Fakültesi öğrencileri için (p > .01) ve Mimarlık Fakültesi Öğrencileri (p > .05) düzeyinde istatistiksel olarak deney grubu lehine anlamlı bulunmuştur. Bu sonuca göre, her iki fakülte için de deney grubu öğrencilerinde öğrenmenin kalıcılığı kontrol grubuna göre daha yüksek bulunmuştur. Güzel Sanatlar Fakültesi için Tablo 11 ve Mimarlık Fakültesi için Tablo 12'de t testi sonuçları verilmiştir.

Tablo 11. Deney ve Kontrol Grupları Kalıcılık Puanı Bağımsız Örneklem t-testi Sonuçları (Güzel Sanatlar Fakültesi Öğrencileri)

| Testler | Denek Sayısı (N) | Aritmetik Ortalama (X) | Standart Sapma (SS) | Serbestlik Derecesi (Sd) | t Değeri | Anlamlılık Düzeyi (p) |
|---------|------------------|------------------------|---------------------|--------------------------|----------|-----------------------|
| Deney | 15 | 7,33 | 11,36 | | | |
| Kontrol | 15 | 18,86 | 9,95 | 28 | -2,95 | .006 |

P < .01

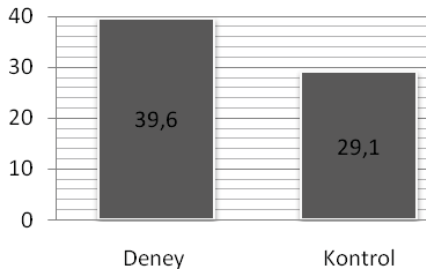
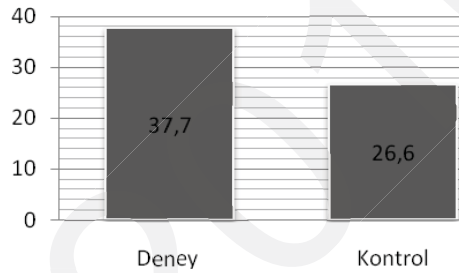
Tablo 12. Deney ve Kontrol Grupları Kalıcılık Puanı Bağımsız Örneklem t-testi Sonuçları
(Mimarlık Fakültesi Öğrencileri)

| Testler | Denek Sayısı (N) | Aritmetik Ortalama (X) | Standart Sapma (SS) | Serbestlik Derecesi (Sd) | t Değeri | Anlamlılık Düzeyi (p) |
|---------|------------------|------------------------|---------------------|--------------------------|----------|-----------------------|
| Deney | 10 | 5,9 | 6,40 | 18 | -.904 | .378 |
| Kontrol | 10 | 8,9 | 8,31 | | | |

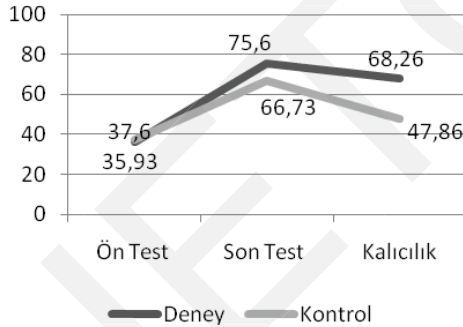
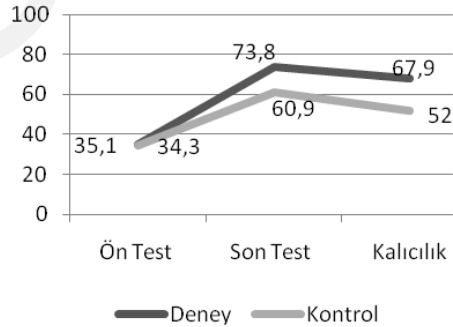
P < .05

SONUÇ VE ÖNERİLER

Araştırmaya Güzel Sanatlar Fakültesi 30 kişi ve Mimarlık Fakültesi 20 kişi olmak üzere iki fakülteden toplam 50 öğrenci deney ve kontrol grupları olarak ikiye grup şeklinde katılmışlardır. Araştırmaya dâhil olan dört grubun da araştırmanın başlangıcında yapılan ön test verilerine göre istatistiksel olarak birbirine denk hazır bulunuşluk seviyesinde oldukları tespit edilmiştir. Başlangıç seviyeleri denk olan bu grupların ön test ve son test başarı puanları farkı yani erişim puanları değerlendirildiğinde Grafik 1 ve Grafik 2 de puan grafikleri verilen, deney ve kontrol gruplarının puan farkı P < .01 anlamlılık düzeyinde istatistiksel olarak deney gruplarının lehine anlamlı bulunmuştur.

Grafik 1. Güzel Sanatlar Fakültesi Erişim Puanları**Grafik 2. Mimarlık Fakültesi Erişim Puanları**

Güzel Sanatlar Fakültesi öğrencileri deney ve kontrol gruplarının ön test puanları aritmetik ortalamasına bakıldığında istatistiksel olarak denk durumdayken son test puan ortalamaları arasında 8,87, kalıcılık testi puan ortalamaları arasında 20,4 puanlık bir fark oluşmuştur. Benzer şekilde Mimarlık Fakültesi öğrencileri deney ve kontrol gruplarının ön test puanları aritmetik ortalamasına bakıldığında istatistiksel olarak denk durumdayken son test puan ortalamaları arasında 12,9, kalıcılık testi puan ortalamaları arasında 15,9 puanlık bir fark oluşmuştur. Bu değerler grafik gösterim olarak Grafik 3 ve Grafik 4'de verilmiştir.

Grafik 3. Güzel Sanatlar Fakültesi Başarı Puanları**Grafik 4. Mimarlık Fakültesi Başarı Puanları**

Elde edilen verilere göre iki fakültenin başarı puan ortalaması, sanal gerçeklik yöntemi ile öğrenmenin geleneksel yöntemle oranla yaklaşık %15 daha başarılı olduğu göstermektedir. Benzer şekilde öğrenmenin kalıcılığına ait veriler sanal gerçeklik yöntemi lehine yaklaşık %27' lik bir fark olduğunu göstermektedir. Bu sonuçlar deneysel çalışmanın yapıldığı her iki fakültede sanat tarihi dersini sanal gerçeklik yöntemi ile işleyen deney gruplarının, geleneksel yöntemle ders işleyen kontrol gruplarına nazaran gerek erişim puanı gerek kalıcılık puanı açısından daha başarılı olduğunu göstermektedir.

Bu araştırma sanal gerçeklik teknolojisinin görsel, işitsel, dokunsal imkânlarının sanat tarihi eğitiminde aktif bir şekilde kullanılmasının, eğitimin etkililiği ve kalıcılığını artırarak eğitim kalitesine katkı sağlayabileceğini göstermektedir. Bu çok yönlü teknoloji ile zenginleştirilmiş bir sanat tarihi dersi, öğretim elemanının doğru yönlendirilmesi ve öğrencilerin etkili kullanımı ile dersin verimini artırabilir. Carleer ve Doornekamp (1990, s.4). bilgisayar destekli öğretimde bilgisayar ders yazılımının yanı sıra öğretmenin de rolü olduğunu belirtmektedirler. Sanal gerçeklik ile zenginleştirilmiş bilgisayar destekli öğretimin hedeflerine ulaşması için öğretmen de eğitim yazılımı kadar önemli bir faktördür. "Öğretmenler bilgisayar destekli öğretimin hem planlayıcısı, hem uygulayıcısı, hem de öğrencinin bir numaralı başvuru kaynağıdır." (Carleer ve Doornekamp, 1990, s.4). Ayrıca dersin işlenmesi sırasında ifade edilmesi güç konuların gerçeğe çok yakın şekilde canlandırılması ve öğrencinin sanal ortamda konunun içindeymiş gibi deneyimlemesi sağlanarak bu tarz problemlerin aşılmasında da kolaylık sağlayabilir. Teknolojinin gelişmesiyle paralel olarak sanal gerçeklik uygulamaları için gerekli donanımlar da ucuzlamaktadır. Böylece, sanal gerçeklik ekipman ve uygulamalarının yakın gelecekte eğitim kurumlarında yaygınlaşması mümkün olacaktır.

KAYNAKLAR

BAYRAKTAR E. ve KALELİ F. (2007), Sanal gerçeklik ve uygulama alanları, *Akademik Bilisim 2007*. Kütahya: 31 Ocak - 02Şubat

CARLEER, G.J. ve DOORNEKAMP. (1990), *A Teacher-Centered Implementation Strategy for Computer Integration*, International Technology on Education. Brussels.

DEMİREL, Ö. ve K. ÜN. (1987). *Eğitim Terimleri*. Ankara: Şafak Matbaası.

FLAKE, J.L., MCCLINTOCK C.A. ve S.V. TURNER. (1985), *Fundamentals of Computer Education*. Belmont, CA: Wadsworth.

IETC 2010

SAYISAL UÇURUMUN BOYUTLARI VE TEKNOLOJİ POLİTİKALARI

DIMENSIONS OF DIGITAL DIVIDE, AND TECHNOLOGY POLICIES

Uzm. Hale ILGAZ

Ankara Üniversitesi, Uzaktan Eğitim Merkezi

e-Posta: hilgaz@ankara.edu.tr

Doç. Dr. Süleyman Sadi SEFEROĞLU

Hacettepe Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

e-Posta: sadi@hacettepe.edu.tr

Özet

Sayısal uçurum; bireyler, ev halkı, iş çevreleri ve farklı sosyo-ekonomik koşullardaki coğrafi bölgeler arasındaki Bilgi-İletişim Teknolojilerine (BİT) ulaşabilme ve interneti kullanım boşluğu olarak tanımlanabilir. Sayısal uçurumun belirlenmesinde genel olarak bilgisayar oranları, TV, taşınabilir telefonlar ve diğer teknolojiler üzerinden sağlanabilen erişim yöntemleri ile internet erişimi temel alınmaktadır. Ev kullanıcılarıyla ilgili değerlendirmelerde, gelir ve eğitim düzeyleri, hane halkı büyüklüğü, yaş, cinsiyet, ırk, lisan ve konum gibi ölçütler söz konusu olabilmektedir. Bu çalışma çerçevesinde Türkiye'deki sayısal uçurumun göstergesi olabilecek araçların kullanım oranlarına ait veriler incelenmiş ve sayısal uçurumun önlenmesi amacıyla geliştirilmesi gereken politikalara değinilmiştir. Teknoloji sahiplik oranlarında her geçen yıl bir takım artışlar gözlemlenmektedir. Bu artışlar donanım eksiklerinden dolayı ortaya çıkan uçurumu azaltacaktır. Ancak, asıl önemli olan ve değişimi gerçekleştirecek olan amaca uygun kullanımın sağlanması ve bu konuyla ilgili politikaların gereğince uygulanması gerektirir.

Anahtar Kelimeler: sayısal uçurum, teknoloji politikaları, sayısal uçurumun boyutları

Abstract

Digital divide or digital gap can be defined as the usage and access gap of Information and Communication Technologies among households, professional areas and different regions. Digital divide has often been measured with indicators such as the rate of individuals that use computers, TV, mobile phones, internet, and other means which let people access information. The digital divide among households appears to depend primarily on two variables, income and education. Other variables, such as household size and type, age, gender, linguistic backgrounds and location also play an important role. This paper examines the digital divide in Turkey, as well as policy options for combating that divide. The rate in technology ownership increases every year. This increment can be considered very important in decreasing the gap. It should be noted that, however, effective and appropriate use of technology has crucial importance in closing the gap. In addition, applicable technology policies should be adopted and necessary arrangements need to be put in effect in overcoming digital divide.

Keywords: digital divide, technology policies, dimensions of digital divide

Sayısal Uçurum Nedir?

Sayısal uçurum; bireyler, ev halkı, iş çevreleri ve farklı sosyo-ekonomik koşullardaki coğrafi bölgeler arasındaki Bilgi-İletişim Teknolojilerine (BİT) ulaşabilme ve interneti kullanım boşluğu olarak tanımlanabilir. Sayısal uçurum hem politik hem yönetsel uygulamaları içermekle birlikte bu uygulamaları anlamak sayısal uçurumla ilgili araştırmalarda vazgeçilmez bir unsur olmuştur. Politik cephede, anahtar soru bölgesel ve küresel sahnede teknolojiye sahip olanlarla olmayanlar arasındaki boşluk nasıl giderilmelidir şeklinde belirlenmiştir. Günlük hayatta karşılaşılan vergiler, gümrük vergileri, ticari yönetmelikler, fonlar gibi birçok faktör BİT'e ve internete erişimi etkilemekte, dolayısıyla sayısal uçurumun şekillenmesine etki etmektedirler (Riggins & Dewan, 2005).

Sayısal uçurum kavramı bilgi iletişim teknolojileriyle birlikte ülkeler arasındaki farklılıkları yeni bir boyuta taşımıştır. Sanayi ve ticaret alanlarındaki firmalar arasında da sayısal uçurum olabilmektedir. Bireyler arasındaki yaş, cinsiyet, gelir durumu gibi değişkenlerden kaynaklı farklılıklar da bilgi teknolojilerine sahip olma ve bu teknolojilerin kullanımıyla birlikte daha da çarpıcı hale gelebilmektedir (Özçivelek, Aşkar, Geray, Tüfekçi, Zontul ve Küçükçınar, 2000).

Riggins ve Dewan (2005) sayısal uçurumun üç seviyede incelenebileceğini belirtmektedirler. Bu seviyeler aşağıdaki şekilde özetlenebilir:

1. *Bireysel seviye:* Bu seviyede bireyler bilgi teknolojilerine erişim açısından teknolojik, sosyolojik ya da ekonomik olarak dezavantaja sahiptirler ve bu durum BİT'i günlük yaşamlarının bir parçası haline getiren insanlarla aralarında boşluklar oluşmasına yol açmaktadır.
2. *Kurumsal seviye:* Bazı kurumlar BİT'i rakiplerine karşı avantaj elde etmek için kullanmakta ve işleriyle ilgili ortaklıklarda kuralları yeniden tanımlayabilmek amacıyla kullanırken, diğer kurumlar geride kalarak kendilerini stratejik olarak zayıf bir durumda bırakıp diğerlerini takip etme konumuna getirmektedir.
3. *Küresel seviye:* Bazı ülkeler BİT'e önemli yatırımlar yaparken, bireysel ve tüzel benimsemeyi destekleyen politikaları benimserken diğer ülkeler kaçınılmaz olarak teknolojinin gerisinde kalmaktadırlar.

Öte yandan sayısal uçurumun belirlenmesinde genel olarak bilgisayar sayısı, TV, taşınabilir telefonlar ve diğer teknolojiler üzerinden sağlanabilen erişim yöntemleri ile internet erişimi miktarı temel ölçütler olarak değerlendirilmektedir. Ev kullanıcıları açısından sayısal uçurumun belirlenmesindeki en önemli iki ölçüt, gelir ve eğitim düzeyi olmaktadır. Bu iki ölçütün yanı sıra hane halkı büyüklüğü, yaş, cinsiyet, ırk, lisan ve coğrafi konum gibi değişkenler de sayısal uçurumun boyutlarının belirlenmesinde önemli bir etkiye sahiptirler (OECD, 2001).

Bilgi ve iletişim teknolojilerinde özellikle günümüzde oldukça büyük ve giderek artan bir hızla yaşanan bir gelişim gözlenmektedir. Bu açıdan bakıldığında BİT'deki yenilikleri takip edebiliyor olmanın hem ekonomik güç, hem büyüme ve hem de demokratikleşme süreci açısından bir takım fırsatları da beraberinde getirdiği söylenebilir. Ulusal ve uluslararası bazda bakıldığında ise bu teknolojilere erişim olanağı bulanların yanında bu teknolojilere hiç erişim olanağı olmayan bireylerin de yer aldığı anlaşılır. Telekomünikasyon alanında son yıllarda yapılan atılımlar sayesinde birçok kişi artık bu olanaklara rahatça erişebilirken toplumun belli kesimlerinde hala bu teknolojilere erişim olanağı bulunmayan birçok kişi bulunmaktadır.

Sayısal uçuruma sıklıkla ekonomik farklılıkların yoğun olduğu bölgelerde rastlanmaktadır. Bu bölgelerdeki bireylerin bilgi iletişim teknolojileri sahipliği daha zor olacağı için zincirleme bir yoksunluk devam etmekte ve var olan eşitsizliklerden kaynaklanan eşitsizlikler giderek artmaktadır.

Cinsiyet, yaş, eğitim durumu sayısal uçurumda etkisi olan unsurların başında gelmektedirler. Ancak bilgisayar kullanım bilgisi, internet kullanım bilgisi, amaçlara uygun kullanım gibi sayısal uçurumu dolaylı olarak etkileyen faktörlerin de sayısal uçurum çalışmalarında yer alıyor olmaları önem taşımaktadır.

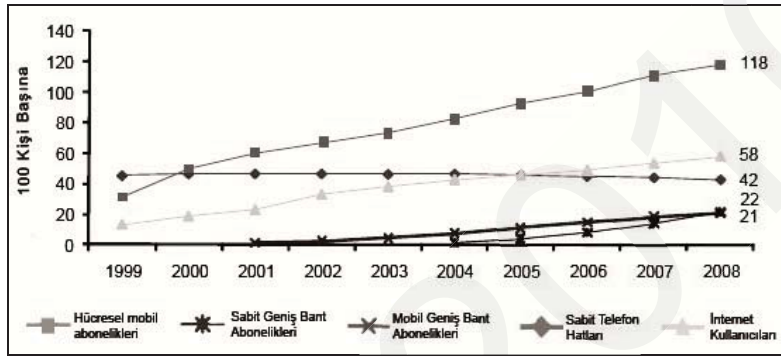
Sayısal uçurum sadece gelişmiş ülkelerde değil, tüm dünyada endişe ile karşılanmakta ve bu durumla mücadele amaçlı çeşitli çalışmalar yürütülmektedir. Bu mücadelenin doğru ve etkili yapılabilmesi için öncelikle mevcut durumun belirlenmesi önem arz etmektedir (Seferoğlu, Avcı ve Kalaycı, 2008).

Sayısal Uçurumun Boyutları

Avrupa, yenilikleri en çok uygulayan ve teknolojik gelişmeleri takip eden ve genellikle taşınabilir teknolojilerin benimsenmesini ilk gerçekleştiren bölge olarak da bilinmektedir. Buna paralel olarak Avrupa'ya geçen on yılda internet kullanıcıları açısından en fazla artış gösteren ve dolayısıyla sabit ve mobil geniş bant anlayışının en fazla olduğu bölge de denilebilir (ITU-D, 2009). Genişletilmiş Avrupa ülkeleri (AB-42) olarak gruplandırılan ve Türkiye'nin içerisinde yer aldığı bu grubun 1999-2008 yılları arasında BİT gelişimini inceleyen ve yıllara göre değişimini gösteren çalışmaya ilişkin grafik Şekil 1'de yer almaktadır.

Bu grafik incelendiğinde 1999 yılından 2008 yılına kadar hücresel mobil abonelikleri, sabit geniş bant abonelikleri, mobil geniş bant abonelikleri ve internet kullanıcılarındaki belirgin artışın yanında sabit telefon hatlarının kullanımındaki düşüş dikkat çekicidir. En fazla artışın ise hücresel mobil aboneliklerde olduğu görülmektedir.

Şekil 1. 1999-2008 arası AB-42 ülkelerindeki BİT gelişimi (ITU-D, 2009).



Sayısal Uçurumun Türkiye'deki Boyutları

Gelişmekte olan ülkeler kategorisine giren Türkiye'de sayısal uçurumun durumu çeşitli araştırmalarda ortaya konmuştur. Örneğin BİT gelişimi araştırmalarında 2002 yılında 63. sırada yer alan Türkiye 2007 yılı itibarıyla 59. sıraya yükselmiştir (ITU-D, 2009).

Türkiye İstatistik Kurumu (TÜİK)'nin 2009 yılında 16-74 yaş arasındaki bireyleri kapsayan ve "Hanehalkı Bilişim Teknolojileri Kullanım Araştırması" başlığını taşıyan araştırmanın sonuçları aşağıdaki tablolarda verilmektedir (Bkz. Tablo 1 ve Tablo 2).

Tablo 1. 2009 yılı bilgisayar ve internet kullanımının yaş ve cinsiyete göre dağılımı

| Yaş grubu | Bilgisayar (%) | | İnternet (%) | |
|-----------|----------------|-------|--------------|-------|
| | Erkek | Kadın | Erkek | Kadın |
| 16 - 24 | 76,4 | 49,1 | 74,1 | 46,0 |
| 25 - 34 | 58,6 | 34,5 | 57,2 | 32,9 |
| 35 - 44 | 42,1 | 21,3 | 40,3 | 19,9 |
| 45 - 54 | 28,9 | 11,6 | 26,7 | 10,5 |
| 55 - 64 | 10,6 | 3,1 | 9,5 | 3,1 |
| 65 - 74 | 3,2 | 1,4 | 3,1 | 1,2 |

Tablo 1'deki verilere göre bilgisayar ve internet kullanım oranlarında yaş yükseldikçe düşüşler gözlenmektedir. Cinsiyetler karşılaştırıldığında ise erkeklerin kadınlara göre her yaş grubunda daha üst düzeyde erişimini olduğu anlaşılmaktadır.

Tablo 2. 2009 yılı bilgisayar ve internet kullanımının eğitim durumuna göre dağılımı

| Eğitim Durumu | Bilgisayar (%) | | İnternet (%) | |
|----------------------------------|----------------|-------|--------------|-------|
| | Erkek | Kadın | Erkek | Kadın |
| Bir okul bitirmede | 7,0 | 1,3 | 5,6 | 1,1 |
| İlkokul | 16,3 | 9,3 | 14,5 | 7,7 |
| İlköğretim/Ortaokul ve dengi | 61,1 | 47,1 | 58,6 | 43,5 |
| Lise ve dengi | 77,5 | 64,6 | 76,0 | 62,4 |
| Yüksekokul, fakülte ve daha üstü | 89,8 | 86,7 | 89,0 | 85,8 |

Tablo 2'deki verilere göre bilgisayar ve internet kullanım oranlarının cinsiyetten bağımsız olarak eğitim düzeyi yükseldikçe arttığı görülmektedir. Yine cinsiyetler arasındaki bilgisayar ve internet kullanımına ilişkin neredeyse %100'lük farkın eğitim düzeyi yükseldikçe kapandığı görülmektedir. Ancak kadınların her eğitim düzeyinde erkeklerden daha az kullanım oranına sahip oldukları da göze çarpmaktadır.

TÜİK'in hazırladığı raporda yer alan hanelerde bilişim teknolojileri sahiplik durumuna (%) bakıldığında kırsal kesimle şehirdeki bireyler arasında büyük fark olduğu görülmektedir. Tablo 3'te de görüldüğü gibi bilgisayar sahiplik oranlarında neredeyse %100'lük bir fark olması uçurumun büyüklüğünü göstermektedir. Öte yandan cep telefonu sahiplik oranlarındaki yakınlık, bireylerin bu teknolojiyi kullanım amaçları

ve cep telefonlarının maliyetleri ile açıklanabilir. Hanelerde en sık kullanılan teknolojiler ise cep telefonu, sabit telefon, DVD, VCD, DivX oynatıcı gelirken bunları masaüstü bilgisayarlar takip etmektedir.

Tablo 3. Hanehalkı bilişim teknolojileri sahiplik durumları

| Teknolojiler | Türkiye (%) | Kent (%) | Kırsal (%) |
|--|-------------|----------|------------|
| Masaüstü bilgisayar (PC) | 30,7 | 37,1 | 15,2 |
| Taşınabilir bilgisayar | 11,2 | 14,3 | 3,6 |
| Cep telefonu | 87,6 | 89,6 | 82,9 |
| Oyun konsolu (Playstation, vb.) | 3,7 | 4,5 | 1,6 |
| El bilgisayarı (Palm) | 0,6 | 0,8 | 0,3 |
| Sabit telefon | 61,9 | 63,1 | 58,9 |
| Dijital fotoğraf makinesi / kamera | 20,4 | 24,6 | 10,2 |
| DVD, VCD, DivX oynatıcı | 42,7 | 49,6 | 25,9 |
| Yazıcı | 12,4 | 15,1 | 6,0 |
| Tarayıcı | 3,4 | 4,2 | 1,3 |
| Faks | 1,1 | 1,3 | 0,4 |
| Çok işlevli cihaz (yazıcı, tarayıcı, belgegeçer vb.nin iki veya daha fazlasını içeren) | 1,6 | 2,0 | 0,6 |
| Yukarıdakilerden hiç birine sahip olmayan hane oranı | 3,6 | 2,6 | 6,1 |

Tablo 4 yer alan hanehalkı bilişim teknolojisi kullanım amaçlarına bakıldığında en fazla kullanım şeklinin mesaj gönderme/alma, çevrim-içi haber, gazete ya da dergi okuma, haber indirme ve sohbet odalarına, haber gruplarına veya çevrim-içi tartışma forumlarına mesaj gönderme olduğu görülmektedir. Tablo 3 ve Tablo 4'den elde edilen veriler ışığında teknolojilerin genel kullanımında birincil amacının iletişim olduğu sonucuna varılmaktadır.

Tablo 4. Hanehalkı bilişim teknolojisi kullanım amaçları

| Amaçlar | Türkiye (%) | Kent (%) | Kırsal (%) |
|---|-------------|----------|------------|
| Mal ve hizmetler hakkında bilgi bulma | 52,9 | 55,0 | 41,6 |
| Seyahat ve konaklama ile ilgili hizmetlerin kullanımı | 22,5 | 24,2 | 13,0 |
| İnternet üzerinden web radyo dinlemek ya da web tv izlemek | 43,3 | 44,0 | 39,8 |
| Kendi oluşturduğunuz metin, görüntü, fotoğraf, video, müzik vb. içerikleri herhangi bir web sitesine paylaşmak üzere yüklemek | 24,1 | 25,0 | 19,3 |
| Yazılım indirme | 15,2 | 16,1 | 10,0 |
| Oyun, müzik, film, görüntü indirmek veya oynatmak | 56,3 | 55,9 | 58,2 |
| Online haber, gazete ya da dergi okuma, haber indirme | 70,0 | 70,1 | 69,4 |
| İş arama ya da iş başvurusu yapma | 13,2 | 13,2 | 13,2 |
| Sağlıkla ilgili bilgi araştırma | 45,1 | 47,3 | 33,3 |
| İnternet bankacılığı | 14,0 | 14,9 | 8,9 |
| Mal ve hizmet satışı (örn: müzayede ile satış gibi) | 2,0 | 2,2 | 0,9 |
| Mesaj gönderme/alma | 72,4 | 73,7 | 64,9 |
| İnternet üzerinden telefonla görüşme | 49,8 | 50,7 | 45,2 |
| Sohbet odalarına, haber gruplarına veya çevrim-içi tartışma forumlarına mesaj gönderme | 57,8 | 58,3 | 55,3 |
| Okul, üniversite, mesleki kurslar ile ilgili faaliyetler için bilgi arama | 25,7 | 25,7 | 25,3 |
| Herhangi bir konuda çevrim-içi eğitim alma (yabancı dil, bilgisayar vb.) | 5,8 | 6,3 | 3,0 |
| Öğrenme amacıyla İnternete başvurma | 31,7 | 33,4 | 22,0 |

Sayısal Uçurumun ve Bu Nedenle Doğan Eşitsizliklerin Önlenmesi İçin Geliştirilebilecek Politikalar

Sayısal uçurumu tanımlarken sahip olma ya da olmama durumu aslında bir başlangıç noktası oluşturmaktadır. Bilgisayar ya da teknolojilere sahipliğin ötesinde ikinci düzey sayısal uçurum olarak da adlandırılabilir olan soruna; eski model bilgisayarlar, internet bağlantısı, çevrimiçi ortamları kullanabilme becerileri, özerklik, erişilebilirlik ve bilgisayar kullanım desteğini içeren yapıların sebep olduğu düşünülmektedir. Bu nedenle sayısal uçurum kavramı incelenirken bu unsurların tamamı göz önünde bulundurulmalıdır (Hawkins & Oblinger, 2006). Bilgi iletişim teknolojilerinin varlığı başlı başına oldukça önemli bir konu iken, bunların etkili ve verimli bir biçimde kullanılabilmesi de sayısal uçurum için önemli bir boyuttur.

Sayısal uçurumun önlenmesinin neden önemli olduğuna ilişkin çeşitli görüşler bulunmaktadır. ICFA-SCIC (2004) bu görüşleri aşağıdaki şekilde sıralamaktadır:

- *Ekonomik Eşitlik:* Gelişmiş ülkeler, günlük yaşamın ayrılmaz bir bileşeni olarak gördükleri internet erişimini vatandaşlarına sunmayı bir amaç haline getirmişlerdir. Telefon genellikle bireylerin güvenlik ihtiyaçlarını karşılamada önemlidir. Tıbbi, polise ya da diğer acil durumlarda bireylerin ihtiyaçlarını karşılamada kolaylık sunmaktadır. Bunun yanı sıra kariyer, sivil hayat, güvenlik ve benzeri konularda hayati önem taşıyan bilgiler artan ölçüde internet üzerinde kullanılabilir. Sosyal hizmetlere ait işlemler de artık elektronik ortamda sunulmaktadır.
- *Sosyal Değişkenlik:* Bilgisayar ve bilgisayar ağları insanların eğitim ve iş hayatlarında önemli bir yer almaktadır. Bu nedenle eğitimde bilgisayarın ve internetin kullanımı gerekli görülmektedir. Bunun olmaması durumunda sosyo-ekonomik konumu düşük olan çocukların içinde buldukları sayısal uçurum ortamında eşitsizlik artmaktadır. Fırsat eşitliği sağlamak amacı ile devlet bu kişilere destek sağlamalıdır.

- **Demokrasi:** İnternetin kullanımı ile demokrasinin daha sağlıklı bir yol izlediği düşünülmektedir. Seçim ve karar verme süreçlerinde internetin halk katılımını arttırdığı düşünülmektedir. Doğrudan katılım (Athenian Democracy) modelinden bazen bu bağlamda söz edilmektedir.
- **Ekonomik Büyüme:** Bilgi iletişim altyapısının gelişimi ve bunun aktif olarak kullanımının ekonomik büyüme için bir hızlandırıcı olduğu düşünülmektedir. Bilgi iletişim teknolojileri genel olarak üretkenlik artışları ile birlikte anılmaktadırlar. Yeni teknolojilerin elde edeceği büyük bir başarı ülke endüstrisine rekabet avantajı sağlayabilmektedir. Bu endüstrilerin gelişmesi ülkenin gelişimine katkı sağlamaktadır. Büyük bir hedef olarak bilgi iletişim teknolojileri ekonomisinin gelişimi, sayısal uçurumu hedef alan politikalarla mümkün olmaktadır. Bilgi iletişim teknolojisi endüstrilerinde çalışabilecek daha büyük çaplı ulusal emek gücü, bu politikalara bağlı bulunmaktadır.

Öte yandan OECD sayısal uçurum konusundaki çalışmaları geliştirmek amacıyla envanter çalışmaları başlatmış olup kuruluşa üye olan ülkelere sayısal uçurumun ölçülmesi için saha araştırmaları yapmalarını önermiştir. Bu çalışmalar kapsamında şu sorulara yanıt aranmaya çalışılmaktadır:

- Farklı sosyokültürel ve sosyoekonomik yapılarda sayısal uçurumun boyutu nedir?
- Sayısal uçurum büyük ve küçük şirketleri nasıl etkileyecektir, ekonomik dengelere etkisi nasıl olacaktır?
- Sayısal uçurum nasıl bir hızda ve ne yönde değişmektedir, bu durum ne kadar önemlidir?
- Yeni teknolojilerin hızlı yayılımı bu bölünmüşlüğü nasıl ve ne kadar etkilemektedir?
- Hükümetlerden ve firmalardan gelen tepkiler ve alınan önlemler nelerdir? (Özçivelek, Aşkar, Geray, Tüfekçi, Zontul ve Küçükçınar, 2000).

Gelişmekte olan ya da gelişmemiş ülkeler dışında gelişmiş ülkelerde de görülen sayısal uçurum, **ülkeleri bu duruma karşı önlemler almaya zorlamaktadır.** Ülkeler, araştırmalardan elde edilen verilerden yola çıkarak sayısal uçuruma karşı **önlemlere almakta ve bu amaçla çeşitli politikalar geliştirmektedirler.**

Birleşmiş Milletler 1997 yılında yaptığı araştırmada sayısal uçurumun etkilerini yeni oluşan bir tür **yoksulluğa benzetmiştir.** Fırsat eşitsizliklerinin bir sonucu olarak doğan ve bilgi yoksulluğu da denebilecek bu yeni **yoksulluk kavramının en az diğer yoksulluklar kadar önemli olduğu ve önlenmesi için acil tedbirler alınması gerekliliği** üzerinde durulmuştur (ACC, 1997).

Sonuç ve Sayısal Uçurumun Önlenmesi Amacıyla Politika Önerileri

İstatistiklere bakıldığında yıldan yıla teknoloji sahiplik oranlarında artışlar **gözlemlenmektedir.** Bu artışlarla belki de donanım eksiklerinden dolayı oluşan uçurum bir ölçüde azalacaktır. Ancak, asıl önemli olan ve değişimi **gerçekleştirecek olan amaca uygun kullanımın sağlanması** konusunda giderilmesi gereken uçurum olduğunun da üzerinde durulmalıdır.

Araştırmalar gelir düzeyi düşük olan bölgelerde yaşayan çocukların **gelir düzeyi daha yüksek olan bölgelerdeki çocuklara göre bilgisayar ve internet kullanımında daha az karmaşık işlemlere yönelindiklerini göstermektedir.** Sıradan görevleri gerçekleştirmek için bilgisayar ve internet kullananlar, bilgi toplumu olmanın avantajlarından daha yüksek seviyelerdeki işlemler için kullananlara göre daha az faydalanmaktadırlar (Servon, 2002).

Bu gibi eşitsizliklerin giderilmesi için eğitim programları, bireylerin bilgi iletişim teknolojilerini günlük yaşamlarına uyarlamalarına kolaylık sağlayacak şekilde düzenlenmelidir. Müfredat geliştirilirken uygulamalara ağırlık veren ve günlük yaşamla ilişkilendirilebilir olmasına dikkat edilmelidir.

Sayısal uçurum nedeniyle ortaya çıkan eşitsizliklerin **önlenmesine yönelik olarak geliştirilebilecek bir politika olarak ülke genelinde –sadece büyükşehirlerde değil- altyapı geliştirme çalışmalarının yapılması önerilebilir.** Bu politika sayesinde bölgeler arası eşitsizlikler ortadan kaldırılabilir. Örneğin, İnternet erişim ücretleri **düşürülmeli ve herkesin internete erişebilmesi için etkili kampanyalar düzenlenmelidir.** Bu nedenle, geleceğin “bilgi toplumu”nun geniş kesimleri **dışlamaması için alım gücünü yükseltecek uygun sosyo-ekonomik politikalar geliştirilmelidir.**

Bir başka politika girişimi olarak **temel bilgisayar ve internet kullanımı eğitimleri** verilebilir. Bu eğitimler sadece belirli bölgelerde değil de kapsamı genişletilerek **ülke çapında uygulanmaya konulmalı ve bu amaç doğrultusunda gerekli politikalar geliştirilmelidir.**

Sayısal uçurumu **önmeye yönelik politikaların geliştirilebileceği bir başka alan öğretmenlere yönelik düzenlenecek hizmet-içi eğitim etkinlikleridir.** Eğitimde bilgisayar ve internetin etkili ve verimli kullanımının sağlanması için öğretmenler için uzun süreli hizmet içi eğitimler düzenlenmelidir. Bu şekilde **gelir düzeyi düşük bölgelerdeki öğrenci-bilgisayar oranları gelir düzeyi yüksek olan bölgelerdekiyle aynı olursa eşitlik sağlanmış olur düşüncesinin bir getirisi olan her yere yüksek donanımlı ürünler olarak eğitimde de aynı oranda iyileşme beklentisinin önüne geçilmiş olur.**

Hizmet-içi eğitimlerle **ilişkilendirilebilecek başka bir konu da teknik destek konusudur.** Bilgisayar ve internet kullanımı konusunda ön yargıları ya da **bu teknolojilere temkinli yaklaşan bireyler için teknik destek sağlanmalıdır.** Doğru ve amaca uygun bilgisayar ve internet kullanımı konusunda **bireyler bilgilendirilmelidir.**

Son olarak, üzerinde **durulması önerilebilecek bir başka politika düzenleme alanı olarak bilişim hukuku konusu olabilir.** Kullanıcıların bilişim hukuku ve bilişim suçları konusunda düzenli ve sistemli bir şekilde bilgilendirilmeleri önemlidir. Bireyler bilişim suçları ile ilgili bilgilendirilerek bu ortamlarda başlarına gelebilecek sorunlar karşısında uyarılmış olurlar ve böylece bilgisayarı ve interneti daha bilinçli ve sorumluluk hissederek kullanabilmiş olurlar.

Kaynakça

- ACC (1997). *Statement on universal access to basic communication and information services.* [Çevrim-içi: <http://www.itu.int/acc/rtc/accprep.htm>] (Erişim tarihi: 13.01.2010).
- Hawkins, B. L., & Oblinger, D. G (2006). The myth about the digital divide. *EDUCAUSE Review*, 41(4), 12–13. [Çevrim-içi: <http://net.educause.edu/ir/library/pdf/ERM0647.pdf>] (Erişim tarihi: 08.01.2010).
- ICFA-SCIC (2004). *Digital divide and measures taken by government of Pakistan.* [Çevrim-içi: http://icfa-scic.web.cern.ch/ICFA-SCIC/docs/WorkDocs/PakistanReport_ArshadAli010603.doc] (Erişim tarihi: 10.01.2010).
- ITU (2009). *Measuring the Information Society, The ICT Development Index.* International Telecommunication Union Publications, Genova. [Çevrim-içi: <http://www.itu.int/ITU-D/ict/publications/idi/2009/index.html>] (Erişim tarihi: 11.01.2010).

- OECD (2001). *Understanding the Digital Divide*. OECD Publications, Paris. [Çevrim-içi: <http://www.oecd.org/dataoecd/38/57/1888451.pdf>] (Erişim tarihi: 11.12.2009).
- Özcivelek, R., Aşkar, M., Geray, H., Tüfekçi, T., Zontul, H. ve Küçükçınar, A. (2000). *Sayısal uçurum: Dünya ve Türkiye'de durum*. VI. Türkiye'de İnternet Konferansı, 9-11 Kasım 2000, İstanbul.
- Riggins, F. J., & Dewan, S. (2005). The digital divide: Current and future research directions. *Journal of the Association for Information Systems*, 6(12), 298-336.
- Ryder, M. (2003). *The digital divide*. [Çevrim-içi: http://132.194.10.4/~mryder/dig_div_este.html] (Erişim tarihi: 10.01.2010).
- Seferoğlu, S. S., Avcı, Ü. ve Kalaycı, E. (2008). Sayısal uçurum: Türkiye'deki durum ve mücadelede uygulanabilecek politikalar. 25. *Ulusal Bilişim Kurultayı, Bilişim'08 Bildiriler Kitabı*, 17-21, Ankara: Türkiye Bilişim Derneği.
- Servon, L. (2002). Four myths about the digital divide. *Planning Theory & Practice*, 3(2), 222 - 227.
- Türkiye İstatistik Kurumu (2009). *Hanelerde bilişim teknolojileri kullanımı (Türkiye, Kır, Kent) (2009)*. [Çevrim-içi: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=60&ust_id=2] (Erişim tarihi: 20.12.2009).

IETC 2010

SCHOOL - INDUSTRY COOPERATION AT ŞİŞLİ TECHNICAL AND VOCATIONAL HIGH SCHOOL AND ITS EVALUATION

Ferdi Boynak
Marmara University
Technical Education Faculty
fboynak@marmara.edu.tr

Mustafa Özcan
Şişli Technical and Vocational High
School
ozcanm2000@yahoo.com

Murat Tamer
Şişli Technical and Vocational High
School
muratadnantamer@gmail.com

Abstract

With the progressively increasing need to qualified work force, firms seek the solution by cooperation with the schools. This research study investigates the extent of the existing relationship between Vocational and technical schools and the industry and its effects. For this purpose, the survey methodology was used and it has been observed industry supported educational projects that are being worked on at Şişli Technical and Vocational High School as an exemplary application. The views and opinions of Şişli Technical and Vocational High School students, teachers, and school administrators and firms involved in projects, are collected and analyzed. The problem questions of the research are what is the coverage and effects of school-industry cooperation in vocational schools? What are the coverage and effects of the cooperation between Şişli Technical and Vocational High School and Project partner firms including the effects on students, teachers, administrators and partner firms?

The results of statistical evaluation of the collected data shows that school, students and companies benefit from this cooperation.

Key Words: Vocational and Technical Education, School-Industry cooperation, Educational Project,

Introduction

During last few years' discussions, it has been observed that the majority believes in the education of the workforce for the improvement of the society's production capacity and workforce productivity. Fast-paced developments in science and technology make adults' knowledge and experiences lose their novelty and become incompetent. Despite differences among suggested training sources (e.g., schools, market, work places), especially industry based production type necessitates education so that it can add high standards to manpower. This situation leads to the necessity of continuous learning (Aksoy, 2001). Turkey is an advantageous country in terms of the young population it has. Its population of 74 million will reach 84 million in 2020. Although the ratio of those who join the workforce decreases, the ratio of the workforce remains steady at 46%. The ratio of participation in high school is 64% among the students who start going to high school, while the ratio of participation in Vocational schools is around 36%. In relation to the increase in the young population, there will be an accumulation in the job market and higher education areas. Disinterest in Vocational higher education requires divisions of universities to differentiate in terms of the needs of the industry. This change in universities will increase the level of interest shown in Vocational schools. Another way of increasing the interest in Vocational and technical education is increasing the quality of Vocational and technical education. With this aim, projects that increase social dialogue need to be done (The European Training Foundation Country Plan, 2009).

Since education is an open system, it needs to establish regular relationships with the environment. Education associations will not only secure their existence, but also make their programs more functional with the healthy relationships they establish with their environment. The condition of the school and environment affecting one another, their working towards the same goal, their showing unity and mutual responsibility are basic and indispensable rules. In today's society, population is among the important factors that affect education and it is reflected in the increase in the number of students. In order for the educational system to meet the needs of the increasing student population, it needs to use the resources of its environment in the most efficient way (Sahinkesen, 1992). One can gain the skills needed to acquire an occupation in many ways. Apprenticeship, on the job training and formal Vocational education are among the first on this list. Widespread Vocational educational activities that take place outside of schools and that aim at having individuals gain professions before acquiring jobs can also be thought of as another group. Developments in the world keep school-skill, school-job relationships alive. In almost all countries, skills have been tried to be taught to individuals in formal or private Vocational schools with the aim to lead them to work or facilitate their getting jobs. In addition to this, openness and different understandings of cooperation have started taking the place of the direct and indirect relationship between school and skill teaching, with the influence of variables such as on the job learning, school run enterprises, etc. The process of educating students without them leaving the school framework in line with a program prepared centrally turns into to establishing relationships with enterprises and gaining skills through various programs with flexible contents, on the job training and the evaluation of other acquisitions as opposed to the diploma being the only criteria, and going from work to school as much as from school to work. Without any suspicion, this development takes place in many different countries in many different ways at a very different pace. However, the closed relationship between school and Vocational skill exposure which is directly defined by the government leaves way to arrangements that consist of educational relationships that are more open to their environment with multi representatives. In Turkey improvement has been made in this respect with apprenticeship and Vocational education law (law number 3308). This change in education has been realized with the change in the level of influence the government has on the economy, the change in production in sectors, and the change in the business world's expectations and demands about this subject (Aksoy, 1996).

1.2. Vocational Education Law number 3308

School industry cooperation based education model in Turkey was established through the apprenticeship and Vocational education law number 3308, which was passed on June 5, 1986. Later on, on June 29, 2001, the name of this law has been changed to Vocational education law (Ozcan & Boynak, 2008).

The goal of this law is to establish the education of apprentices and masters and the fundamentals of the Vocational education which will take place in schools and enterprises. Its scope is established to cover the education in public and private associations and enterprises as well as the Vocational and technical schools and associations in professions determined by the Vocational education association (MNE, 1986). As a requirement of the 30th term of the law, the obligation to provide work for the ones who certify that they have received the necessary education will be emphasized. The points outlined in the circular number 2007/30 and 2009/25 will need to be met with an aim to introduce the Vocational and technical schools and the professions they teach along with the employment opportunities that lie ahead of them. Also, the workforce research and planning which will be conducted in accordance with the province employment and Vocational education rules will enable the qualified workforce needed by the industry and the region to be brought up and Vocational and technical school education will become more widespread (MNE, 2009).

1.3. School-Industry Cooperation

Once we examine the Vocational education in Turkey, it can be seen that the school model and market model have been executed separately, independent from one another for long years. More than 90% of the enterprises in production industry are small enterprises and they employ a considerable amount of the workforce. These enterprises have been educating their employees with the educational model within their structure for centuries, thus acting as a resource to the industry in terms of qualified employees (Saran & Akkayan 1988). The main goal in the school-industry cooperation is to reduce the gap between the skills needed today and in the future in the industry and the skills acquired

in schools and to increase the efficiency and productivity of the current system. In other words, to bring up a qualified workforce this will be able to compete internationally (Erhun, 2003). Moreover, the increase in the interest in Vocational and technical education is possible with the improvement in the quality of education and strengthening of the relationship between the education association and the industry (Vos, 2008).

Applications supporting school-industry cooperation and various regulatory projects have been carried out at the present day and in the recent past. The dual system (school-work place cooperation), which is supported by law number 3308 holds an important place among these projects (MNE, 2002).

Nowadays, we see that there is cooperation between the surrounding enterprises and Vocational education schools within formal education. Apart from the student's internship, workshop and laboratory arrangements are organized and executed by the industry and surrounding enterprises in cooperation with the education associations. Such activities are carried out through various protocols between the association and industry. The coverage of students' internship and educational activities at schools are formed by these protocols.

Vocational education of students who attend associations that provide education in accordance with protocols made between the ministry and public and private associations or cooperation project agreements are carried out in line with protocols or regulations based on project agreements (MNE, 2002).

An education cooperation protocol with 102 associations has now been realized by the Male Technical Education head office. The number of current realized protocols is 151 (ETOGM, 2009). It can be seen that the desired level has not been reached when the number of schools that provide Vocational education and their distribution is considered. In developed countries, industry and trade organizations can allocate a part of their budgets to contribute to Vocational education. These organizations in developed countries also participate in Vocational education through apprenticeship workshops, education centres and seminars. In Turkey, such organizations can show limited participation in these aspects. Because school industry cooperation cannot be developed as a part of Vocational education, the education in schools remains to be theoretical and successful results cannot be reached in practice (Donmez & Polat, 2003). New programs should be planned in the light of new ideas, new inventions and new expectations in the areas that need to be developed. These programs should involve multi partner cooperation agreements so that they can unite their resources and form new opportunities (Balci&Ari, 2003).

1.4. School-Industry Cooperation at Şişli Technical and Vocational High School

Various education cooperation projects are being carried out by the Şişli Industrial Vocational School in an attempt to bring up a technical workforce that enables the new technologies that the industry needs. These cooperation projects are executed through protocols which mostly orient towards technical education program. They are executed based on the regulations of Ministry of National Education fundamental law number 1739, Ministry of National Education organization and responsibilities law number 3797 and Vocational education law number 3308. The school's first education cooperation protocol is the Toyotosa Technical Education Program Laboratory (T-TEP) project, which has started during the 1992-93 education year at Şişli Technical and Vocational High School and has been executed successfully. Toyotosa's 'Toyotosa Technical Education Program' aims to meet the need of 'Qualified Technical Employee,' which is something the car industry needs as a part of services after sales.

Protocols aiming to arrange technical education programs in regards to the motor vehicle technology have been given with 8 different well known automotive firms. Mercedes-Benz Turk A.S., Dogus Automotive Service and Trade A.S., ToyotaSa Marketing and Service A.S., Automobile Industry Türkiye A.S., Efsane Motor Service and Trade A.S., Honda Türkiye A.S., Mengerler Trade A.S., DENTUR and TOFAŞ Turkish Automobile Factory A.S. The endeavours within the scope of the protocols that are made are carried out in laboratories and the protocol that has been made with Efsane Motor Service and Trade A.S. has been finalized. School students can benefit from the laboratories that are set up at schools through education cooperation protocols, starting at grade 10.

Enrolment of students to motor vehicle laboratories within technical education programs is done every year through an exam given to students who have completed their 1st year in Vocational school successfully. Only a limited number of students enrolled to laboratories and they are given the opportunity to do internships at firms. The laboratory teachers' training and the yearly supply needs of laboratories are supported by the firms.

Protocols related to personnel training have also been made apart from education cooperation protocols. In this respect, protocols have been made with TÜVTurk Kuzey Vehicle Examination Stations Company and Istanbul Electrical Technicians Chamber. Due to the protocol made with Bahçesehir University, the facilities of Şişli Technical and Vocational High School were allowed to use for the execution of Bahçesehir University's education programs (associate degree, bachelor's degree, master's degree, Vocational courses and certificate programs). Bahçesehir University has cooperated to increase the knowledge and skills of students in conformity with international standards by providing them technical support in parallel to their desires and talents for future employment.

Apart from these education cooperation protocols, laboratories in the areas of electricity and electronics technology have been established with Buga Otis Elevator Industry and Trade A.S., Schneider Electric Industry and Trade A.S., Communication Service A.S, Pronet Security Systems, Oki System and Printer Solutions Ltd. and Turkish Telecom A.S. School students can benefit from these laboratories starting at grade 11.

2. PURPOSE

The purpose of this study is to express the extent and effects of the current cooperation between vocational and technical schools and the industry. Industry supported educational projects that are being worked on at Şişli Technical and Vocational High School as an exemplary application have been observed under the base of questions: "what is the coverage and effects of school-industry cooperation in Şişli Technical and Vocational High School?" and "What is the coverage and effects of the cooperation between Vocational School and Project partner firms including the effects on students, teachers, administrators and partner firms?"

3. METHODS

As an exemplary application within the scope of this study, industry supported educational projects that are being worked on at Şişli Technical and Vocational High School have been observed. The working sphere of this Project and the choice of examples have been formed within the scope of Şişli Technical and Vocational High School. The research has been conducted on three main groups namely the students, teachers and administrative personnel, and educational Project partners. Survey methodology has been used and three different questionnaires have been prepared addressing these three different groups. 148 students have from the students group, 28 teachers (technical teachers) and administrators from the teachers and administrative personnel group have randomly selected. For the industrial group, 8 of 10 firms that are education partners with the Şişli Technical and Vocational High School have been chosen and data has been gathered using survey and interview methods. The results extracted from the collected data have been obtained using non-parametric tests. Data results have been interpreted through non parametric statistics methods and Cronbach's Alpha Reliability coefficient for teachers' test $\alpha=0.6213$ and for students' test $\alpha=0.5675$ have been found.

4. RESULTS

4.1. Student Survey Findings

12.2% of the 148 students who have participated in the research are made up of female students and 87.8% of them are made up of male students. 25% of the students are from grade 10, 37.2% are from grade 11 and 37.8% are from grade 12. According to the subject area of students, 58.1% of them are in Electrical-Electronic technology and 41.9% of them are in automotive technology. The student participants used a five-point likert-type scale (i.e. 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree and 1=Strongly Disagree) to rate their level of agreement on 8 statements which are summarized in Table1.

Table.1. Perceptions of students on their education in industry supported laboratories

| Statement | Strongly Agree (%) | Agree (%) | Neutral (%) | Disagree (%) | Strongly Disagree (%) |
|--|--------------------|-----------|-------------|--------------|-----------------------|
| I don't face shortage of supplies at the laboratories where I receive training | 43.2 | 27.7 | 12.8 | 10.8 | 5.4 |
| Supplies at the laboratories where I receive training are up-to-date with the new technology | 33.8 | 39.9 | 13.5 | 7.4 | 5.4 |
| Supplies at the laboratories where I am trained are like the ones used in the industry | 37.9 | 42.1 | 6.2 | 8.3 | 5.5 |
| Workshops and laboratories are very crowded | 29.1 | 12.8 | 13.5 | 22.3 | 22.3 |
| Applications I make at workshops and laboratories are productive and educative | 40.8 | 34.0 | 12.9 | 4.8 | 7.5 |
| Security precautions in workshop studies are sufficient' | 36.5 | 33.1 | 20.3 | 6.8 | 3.4 |
| I feel comfortable and secure about my internship | 41.8 | 21.8 | 9.1 | 12.7 | 14.5 |
| I don't think I will face with any difficulties to find a job after graduating from school | 33.3 | 24.5 | 21.1 | 11.6 | 9.5 |

Followings can be come out from students' responses for their study in cooperated labs;

- Students expressed positive opinion saying that they don't face with supply shortages at laboratories.
- Supplies at the laboratories where students are trained were found up-to-dated with the new technology.
- Students also found in majority that the supplies at the laboratories were similar to the ones used in the industry as they were there as interns.
- Students responses show that they find workshops and laboratories are crowded.
- Students have evaluated the applications they performed at workshops and laboratories as productive and educative.
- Students feel that security precautions in workshop studies were sufficient.
- Students feel comfortable and secure about their internship' statement of students
- Students are confident not facing with any difficulties to find a job after graduating from school.

4.2. Teacher and Administrator Survey Findings

28 of the 28 teachers who have participated in the research are men. The reason why no female teachers have participated in the research is that there is only one female Vocational teacher who works at the Şişli Industrial Vocational School. Results are summarized in Table 2 shown below.

Table.2. Teachers' opinions on effects of educational projects on students and school

| Statement | I agree % | I don't agree% |
|---|-----------|----------------|
| It has contributed to the students' cognitive and vocational developments | 92,6 | 7,4 |
| It has contributed to the students' cultural and social developments | 51,9 | 48,1 |
| It has contributed to the students' ability to find jobs more easily after graduation | 70,4 | 29,6 |
| It has contributed to the school's infrastructure (buildings, environmental arrangements, etc.) | 81,5 | 18,5 |
| It has contributed to the development of laboratory and classes' technological infrastructure. | 96,3 | 3,7 |
| It has contributed to the relationship of the school with environment-industry. | 88,9 | 11,1 |
| Firms do not provide sufficient employment opportunities to students after graduation | 33,3 | 66,7 |

Followings can be come out from teachers' responses for the cooperation projects with the industry partners;

- Projects contribute students' cognitive and vocational developments.
- Projects don't contribute enough to cultural and social developments of students.
- Teachers believe that students may easily find job after graduation.
- Projects improved school's infrastructure, laboratory and other facilities.
- Projects improved educational and technical resources.
- Projects contribute developing relationship with environment and industry.
- Teachers state that the partners firms do not offer sufficient employment opportunities for the project graduates.

In summary teachers affirm that cooperation with companies were beneficial both for school and students.

4.3. Findings from the responses of partner companies

There are 10 educational projects that are being carried out in partnership with firms at Şişli Industrial Vocational. The research has been conducted by talking to 8 of these 10 firms. Data about the firms and their views in relation to the projects were included in the questions which were prepared in the survey format. The sectors in which the firms that participated in the research take place are as follows: 4 firms are from the automotive sector, 1 firm is from the electronics sector, 1 firm is from information technologies (IT) sector, 1 firm is from the electronics-security sector, and 1 firm is from AV audio visual systems sector.

In Table 3 and Table 4 show from evaluation of company executives on deficiencies of Vocational and Technical school graduates and why they support schools.

Table.3. Deficiencies the firms saw in the VT school graduates they have employed

| Statement | I agree % | I don't agree% |
|---|-----------|----------------|
| The deficiencies brought by the young age of new graduate employees | 12.5 | 87.5 |
| The fact that they don't give enough importance to work discipline | 0 | 100 |
| The fact that they don't have enough knowledge about the sector | 62.5 | 37.5 |
| The fact that they are not at the expected level in the fields they have graduated from | 75.0 | 25.0 |

Table.4. The reasons why the firms that participated in the project needed the educational projects they carried out in cooperation with schools

| Statement | I agree % | I don't agree% |
|--|-----------|----------------|
| The theoretical insufficiency of Vocational and technical secondary schools | 37.5 | 62.5 |
| The practical insufficiency of Vocational and technical secondary schools | 75.0 | 25.0 |
| The graduates of Vocational and technical secondary schools face problems adapting to the sector | 87.5 | 12.5 |
| Employment in congruence with the sector goals and needs | 100 | 0 |

From the Table 3 and Table 4 the followings can be deduced;

- Deficiencies of young workforce Vocational and Technical School graduates is derived primarily not form their young age.
- Graduates of these schools are not well educated to meet to the jobs they are prepared to.
- Companies tend to cooperate with schools, to form the practical training of students for their needs.
- Companies also want to cooperate with the schools for easier transition of students from school to work.

5. CONCLUSION

Students being trained under the scope of the education project found the workshop and laboratory classes productive and educative and that the security measures that were taken were sufficient. The fact that students are so optimistic about finding a job after graduation is a positive development and students have such a positive view about the education projects shows the importance of such projects once again.

Teachers who have participated in the research think that the educational projects are productive and that such projects should be continued. One of the findings was that teachers think educational projects have a positive effect on students in terms of maintaining students' cognitive and technical development and finding a job after graduation. However, it was seen that they don't contribute as much to the students' social development. It is believed that project partner firms should support activities which will contribute to the social development of children. The findings and results this far give us the impression that the projects that are carried out at Şişli Industrial Vocational School are successful and beneficial both for the students and teachers. Accordingly, it is believed that such industry supported educational projects should be carried out in other Vocational schools in our country, taking the project process at Şişli Technical and Vocational High School as an example. It is believed that project partner firms should arrange their budgets to provide for the needs of the projects, provide more internship opportunities for students, provide more employment opportunities for students after graduation, and focus on the social and cultural development of students. It is believed that Vocational and Technical Education Association graduates should have more knowledge and expertise in their specialty areas and sectors and this issue should be focused on in the educational process. Finally, it is believed that Vocational and Technical Education Associations should improve their current infrastructure, workshop and laboratory supplies. Collaboration between schools and firms provide advantages for improving schools' education facilities and these type collaborations should be continued.

6. REFERENCES

- Aksoy, H.H. Ankara Üniversitesi, Eğitim Bilimleri Fakültesi, Mesleki ve Teknik Eğitim Planlaması ve İstihdam, Lecture Notes, Retrieved August 28, 2009, from <http://80.251.40.59/education.ankara.edu.tr/aksoy/model.htm>.
- Aksoy, H. H. (1996). Ekonomik Getirisi, İstihdam ve Piyasaya Dönük Etkileri Açısından Mesleki Teknik Eğitim, *Eğitim Bilimleri Fakültesi Dergisi*, 1, 73-105.
- Balcı S., Arı, M. (2003). *Küresel Ekonomi İçinde Mesleki ve Teknik Eğitimin Önemi*, Ankara University 2003 IVETA Regional Conference, Retrieved September 10, 2009, from <http://myo.karatekin.edu.tr/iveta/iveta.htm>.
- Donmez, D., Polat, V. (2003). "Meslek Yükseköğretiminde Kaliteli Eğitimin Koşulları", Ankara University 2003 IVETA Regional Conference, Retrieved September 10, 2009, from <http://myo.karatekin.edu.tr/iveta/iveta.htm>.
- Erhun, G. (2003). *Mesleki ve Teknik Eğitimde Planlı Okul Gelişim Modeli*, Ankara University 2003 IVETA Regional Conference, Retrieved September 10, 2009, from <http://myo.karatekin.edu.tr/iveta/iveta.htm>.
- ETF Country Plan : TURKEY, Retrieved September 10, 2009, from European Training Foundation web site: http://www.etf.europa.eu/web.nsf/pages/Publications_catalogue_EN?OpenDocument
- ETOGM, Erkek Teknik Öğretim Genel Müdürlüğüne yapılan protokoller, Retrieved September 5, 2009 from <http://etogm.meb.gov.tr>.
- MNE, Ortaöğretimde Okullaşma konulu 2009/52 sayılı genelge, MEB Stratejik Daire Başkanlığı, Retrieved September 5, 2009 from <http://sgb.meb.gov.tr>.
- Ozcan, M. and Boynak F.(2008). İşletmelerde Meslek Eğitimi Uygulamasına Yönelik Bir Değerlendirme, *Milli Eğitim Dergisi*, 178, 321-333, Ankara.
- Sahinkesen, A. (1996). Eğitimde İkili Sistem, *Eğitim Bilimleri Fakültesi Dergisi*, 2, 687-701, Ankara.
- Saran, N.& Akkayan, T. (1988). *Çalışan Gençliğin İşbaşında Eğitimi Çıraklık, Kalfalık, Mesleğe Yönelme Sorunları*. Ankara: MEGSB, Gençlik Hizmetleri Genel Müdürlüğü Yayını.
- Vos, A. (2008) Sustainable Competitiveness: Supportive Business Environment for Industry, Istanbul Chamber of Industry (7th Industry Congress).

SINIF ÖĞRETMENLERİNİN BİLİŞİM TEKNOLOJİLERİ FORMATÖR ÖĞRETMENLERİNİN UYGULAMALARI HAKKINDAKİ GÖRÜŞLERİ

THE VIEWS OF CLASS TEACHERS ABOUT THE APPLICATIONS OF FORMATOR TEACHERS

Esra KELEŞ¹, Aslı KARAKOÇ², Pınar DEMİREL³

¹Yrd.Doç.Dr. KTÜ Fatih Eğitim Fakültesi, Bilgisayar ve Öğretim Tek. Eğitimi Bölümü, esrakeles@ktu.edu.tr

²Bilişim Teknolojileri Formatör Öğretmeni, Çayırbağı İlköğretim Okulu, asli-karakoc@hotmail.com

³Bilişim Teknolojileri Formatör Öğretmeni, Şinik İlköğretim Okulu, pinardemirel.34@hotmail.com

Özet

Bu çalışmanın amacı, sınıf öğretmenlerinin eğitimde bilişim teknolojileri kullanımına uyum süreçlerinde, okullarında destek alabilecekleri BİTEFO'ların görevleri hakkındaki düşüncelerini ve BİTEFO rehberliğinden ne kadar yararlandıklarını belirlemektir. Çalışmada nicel ve nitel veri toplama teknikleri kullanılmıştır. Araştırmanın nicel kısmında sınıf öğretmenlerinin; BİTEFO'lar ve onlardan alabildikleri destek hakkındaki görüşlerini irdeleyen bir anket kullanılmıştır. Anket Trabzon ilindeki okullarda çalışan 104 sınıf öğretmenine uygulanmış, elde edilen veriler SPSS paket programı ile analiz edilmiştir. Araştırmanın nitel kısmında konuyla ilgili derinlemesine bilgi almak amacıyla, 6 sınıf öğretmeni ile yarı yapılandırılmış mülakatlar gerçekleştirilmiştir. Anket sonuçlarına göre sınıf öğretmenlerinin %33'ü okulda bilgi teknolojileri alanında sadece formatör öğretmenlerden yardım almaktadır. Öğretmenlerin %48'inin bilişim alanında aldıkları yardımın yazılımsal boyutu vardır. Mülakatlarda öğretmenlerin, formatörlük kavramından haberdar oldukları ve onlardan yararlanabildikleri tespit edilmiş ancak; aldıkları bu yardımın niteliğinin formatörlüğün amacını karşılamadığı belirlenmiştir.

Anahtar Kelimeler: Sınıf Öğretmeni, BİTEFO, Bilişim Teknolojileri.

Abstract

The aim of this study is to determine the views of the class teachers about the applications of formator teachers who they can get support from in the orientation period of using information technology in education. It also aims to determine how they benefit from the guidance of formator teachers. Both the qualitative and quantitative data collection techniques were used in the study. In the quantitative part of the study, a questionnaire that examines the views of class teachers about formator teachers and the support they take from them was used. The questionnaire was applied to 104 class teachers working in the schools in Trabzon, and the data were evaluated using SPSS package program. In the qualitative part of the study semi-structured interview carried out with 6 class teachers to obtain detailed information about the subject. According to the results of the questionnaires, 33% of the class teachers take support only form formator teachers in the field of information technology. The assistance, 48% of the teachers take in the field of informatics include soft dimension. In the interviews, it is founded that the teachers know about formator teachers, and they benefit from them. However, it is also founded that the qualification of this assistance does not match the aim of formator teachers.

Key words: Class teacher, formator teachers, information technologies.

GİRİŞ

Çağın gereklerine uygun eğitim verebilmek için okullarda teknolojiyi kullanmak bir zorunluluk haline gelmiştir. “Teknolojinin okulla bütünleştirilmesi gerekli midir?” sorusu günümüzde “Teknolojinin okulla bütünleştirilmesi nasıl gerçekleştirilebilir?” şeklinde değişmiştir (Bracci, 1999). Ancak teknolojinin okullara bir “ürün” olarak girmesi, öğretmenlerin bu ürünü kolaylıkla benimseyip eğitime uyarlayabilecekleri anlamına gelmemektedir (Balki & Şaban, 2009). Var olan teknolojiyi eğitim amaçlı kullanabilmek için belli şartların sağlanması gerekir. Bu şartlar ise; kurumsal ve bireysel olarak ikiye ayrılabilir. Kurumsal şartlarla kastedilen teknik alt yapı iken, bireysel şartlarla kastedilen teknoloji kullanımının faydalarına ilişkin algı ve teknolojiyi kullanma yeterliliğidir (Çağiltay, Çakıroğlu, Çağiltay & Çakıroğlu, 2001).

Okullarda Bilgi Teknolojileri sınıfları kurulmaya başlanmasıyla, teknik alt yapı ve donanım sağlanmaya başlamıştır. Bireysel şartların yerine getirilmesi ise teknolojiye karşı olumlu tutum sergileyen ve onu kullanabilen idareci ve öğretmen ihtiyacının karşılanmasına bağlıdır. Ancak ilköğretim okullarında çalışan öğretmen profillerine bakıldığında; çalışma süresi 5 yılın üzerinde olan öğretmenlerin, bilgisayar öz yeterliliklerinin 0-5 yıl arasında kıdemi olan öğretmenlere göre daha düşük düzeyde olduğu görülmektedir (Özçelik & Kurt, 2007). Akkoyunlu (2002) ise bilgisayar laboratuvarı olan okullarda görev yapan 682 öğretmen üzerinde yürüttüğü çalışmada; katılımcıların yalnızca %9'unun interneti kullandığını, 40 yaş üzerindekiilerin ise interneti hiç kullanmadıklarını saptayarak benzer sonuçlara ulaşmıştır. Yılmaz (2007) da çalışmada, sınıf öğretmenlerinin eğitimde teknolojik araç-gereç kullanımalarını inceleyen araştırmaları derleyerek öğretmenlerin eğitimde teknoloji kullanımında yeterli olmadıkları sonucuna ulaşmıştır. Oysaki gelişen çağa ayak uydurabilmek amacıyla öğretmenlerin en azından teknoloji okur-yazarlığına sahip olmaları gerekmektedir (Ely, Blair, Lichvar, Tyksinski ve Martinez, 1996; Norton ve Gonzales, 1998).

Milli Eğitim Bakanlığı'nın da 2590 sayılı Tebliğler Dergisi'nde belirttiği gibi "Öğretmenlik Mesleği Genel Yeterlikleri" içinde bilişim teknolojileri alanıyla ilgili yetenekler de bulunmaktadır (MEB, 2006). Teknolojinin eğitimde kullanılması üzerine çalışmalar yapan Uluslararası Eğitimde Teknoloji Birliği (ISTE) ise öğretmen standartlarını, "Teknoloji okuryazarı olmak, derslerinde teknolojiyi kullanabilmek, öğrencilerini teknolojiyi kullanmaya yöneltebilmek, öğrenme çevresini öğrencilerin teknolojiyi kullanabilecekleri biçimde düzenleyebilmek, meslektaşları ile İnternet üzerinden iş birliği yapabilmek" olarak belirlemiştir (ISTE, 2000).

Öğretmen adaylarının eğitiminden ve gelişiminden sorumlu olan Yüksek Öğretim Kurumu eğitim fakültelerindeki lisans eğitimine "Bilgisayar" dersini ilave ederek, öğretmenlerin bilişim teknolojileri alanında sahip olması gereken standart yeterlikleri karşılamayı amaç edinmiştir. Bu sayede gündün güne gelişen imkânlar ve eğitim programlarında yapılan düzenlemeler sayesinde geleceğin öğretmenleri teknoloji okur-yazarlığını kazanarak görevlerine başlayacaklardır. Öğretmen adayları üzerinde yapılan çalışmalar ise bu anlamda umut vericidir. Seferoğlu, Akbıyık ve Bulut (2008) öğretmen adaylarıyla yürüttükleri çalışmada, onların bilgisayar programlarını kullanım düzeylerini ilköğretim öğretmenlerine oranla daha yüksek bulmuştur.

Görev başındaki öğretmenlerin, teknoloji okur-yazarlığı daha çok hizmet içi eğitimlerle sağlanmaktadır (Seferoğlu, Akbıyık & Bulut, 2008). Ancak hizmet içi eğitimler kurs niteliğinde yürütüldüğü için okullarda teknoloji alanında, öğretmenlere sürekli destek sağlamamaktadır. Okullarda görev yapan Bilişim Teknolojileri öğretmenlerinin görevi ise sadece girmektir (MEB, 1993). Bu aşamada teknoloji okur-yazarlığı konusunda yetersiz kalan öğretmen ve idarecilere sürekli rehberlik hizmeti sağlamaları için Milli Eğitim Bakanlığı 2006 yılında "Bilişim Teknolojileri Formatör Öğretmeni (BİTEFO) Görevlendirmesi" adıyla bir uygulama başlatmış ve okullarda bulunan Bilişim Teknolojileri sınıflarının yönetim ve sorumluluğunu bu öğretmenlere devretmiştir. Görevlendirilen BİTEFO'lar bilgisayar öğretmenlerinden seçilebildiği gibi okulda formatörlük kursu almış diğer branş öğretmenlerinden de seçilebilmektedir. Öğretmen ve idarecilere bilişim teknolojilerini hayatlarına dâhil etme ve dersleriyle bütünleştirme konularında rehber olması amacıyla görevlendirilmiş BİTEFO'ların yapmakla yükümlü oldukları görevlerden bazıları şunlardır:

- Görevli olduğu okulda, bilgisayar derslerine girmek ve bilgisayar destekli eğitimin verimli bir şekilde yürütmesini sağlamak,
- Bilgisayar laboratuvarını mesai saatlerinde ve gerektiğinde mesai saatleri dışında öğrenci ve öğretmenlerin kullanımına açmak,
- Görevli olduğu okulda öğretmenlere Bilgisayar Destekli Eğitim konusunda kısa süreli kurs veya seminer düzenlemek,
- Müdür yardımcıları veya müdür başyardımcıları başkanlığında, eğitim yazılımı kullanılan derslerin öğretmenleri ile bir araya gelerek laboratuvar kullanım programını hazırlamak,
- Bilgisayar laboratuvarının devamlı kullanılabilmesi için, öğretimi yapılacak ders yazılımlarının sabit diske (Hard disk) yüklenmelerini sağlamak (MEB, 2007).

Öğretmenlere yönelik yazılımsal ve donanımsal her türlü destek BİTEFO'nun görevi olarak tanımlanmıştır. Sözü geçen tüm bu çalışmalar ışığında; sınıf öğretmenlerinin, BİTEFO'ların okullardaki görev ve sorumlulukları hakkında sahip oldukları bilgi ve BİTEFO'lardan yararlanma düzeyleri araştırılmaya değer bulunmuştur.

AMAÇ

Bu çalışmanın amacı; sınıf öğretmenlerinin eğitimde bilişim teknolojileri kullanımına uyum süreçlerinde, okullarında destek alabilecekleri ilk kişi olan BİTEFO'ların görevleri hakkındaki düşüncelerini ve BİTEFO rehberliğinden ne kadar yararlandıklarını belirlemektir. Bu nedenle çalışmada "İlköğretim sınıf öğretmenlerinin BİTEFO'lar ve uygulamaları hakkındaki bilgi, görüş ve beklentileri nelerdir?" sorusuna yanıt aranmıştır.

YÖNTEM

Araştırmanın örneklemini Trabzon ilinin çeşitli ilçe, belde ve köylerinde görev yapan ve okullarında BİTEFO bulunan 104 ilköğretim sınıf öğretmeni oluşturmaktadır. Öğretmenlerin cinsiyet ve kıdem yıllarına göre dağılımı Tablo 1'de gösterildiği gibidir.

Tablo 1. Sınıf öğretmenlerinin cinsiyet ve kıdem yıllarına göre dağılımı

| Sınıf Öğretmeni Sayısı | Cinsiyet | | | |
|------------------------|------------|----------|-----------|-----------------|
| | Bay | Bayan | | |
| 104 | 53 | 51 | | |
| | Kıdem Yılı | | | |
| | 0-5 yıl | 6-11 yıl | 12-18 yıl | 19 yıl ve üzeri |
| | 15 | 16 | 20 | 53 |

Çalışmanın veri toplama süreci iki aşamadan oluşmaktadır. İlk aşamada, sınıf öğretmenlerinin; BİTEFO'lar ve onlardan alabildikleri destek hakkındaki görüşlerini irdeleyen bir anket kullanılmıştır. Sınıf öğretmenlerinin BİTEFO'lar hakkındaki değerlendirmelerinin yanı sıra okullarındaki bilgisayar öğretmenleri hakkındaki görüşleri de alınmış, böylece BİTEFO'ların üstlendikleri roller daha iyi analiz edilmeye çalışılmıştır. Anket yöntemi, insanların bir konudaki tutumlarını, davranışlarını, duygularını, düşüncelerini ve tercihlerini öğrenmeye olanak sağlayan bir yöntemdir (Çepni, 2007). Uygulanan anket, alınan görüşlerin cinsiyet ve kıdem yıllarına göre değerlendirilmesine imkân veren 9 sorudan oluşmaktadır. Anket sorularının hangi konuları kapsayacağı belirlendikten sonra alanyazın taramasından faydalanılarak sorular hazırlanmıştır. Dört haftalık süreç içinde 104 ilköğretim sınıf öğretmenine uygulanan anketten elde edilen verilerin, SPSS paket programında frekans ölçümleri yapılmıştır. Veri toplama sürecinin ikinci aşamasında ise; derinlemesine bilgi almak amacıyla, örneklem içinden seçilen 6 ilköğretim sınıf öğretmeni ile yarı yapılandırılmış mülakatlar gerçekleştirilmiştir. Bu öğretmenler 3 farklı okuldan 2'şer kişi olarak seçilmişlerdir. Öğretmenlerin seçimi, okullarında görev yapan BİTEFO 'ların görüşleri doğrultusunda yapılmıştır ve bu görüş doğrultusunda, seçilen öğretmenlerden birinin teknoloji ile ilgili diğerinin ise ilgisiz olması dikkate alınmıştır. Ayrıca mülakat yapılan 6 sınıf öğretmenin 4'ü diğer 2'sine göre daha kalabalık okullarda çalışmaktadırlar. Mülakatlar 2 hafta içinde tamamlanmıştır. Farklı sınıfları okutan öğretmenlerin farklı sonuçlarını yakalayabilmek amacıyla 2 tane 1. sınıf, 1'er tane de 2, 3, 4 ve 5. sınıf öğretmeniyle görüşülmüştür. Bu öğretmenler analiz işleminde A, B, C, D, E ve F öğretmeni olarak adlandırılmıştır. Yarı yapılandırılmış mülakat yönteminin seçilme nedeni ise araştırmacıya, mülakatın gidişatına göre sorularda esneklik yapabilme imkânı vermesidir (Çepni, 2007). Yarı yapılandırılmış mülakat için, 5 açık uçlu soru hazırlanmış ve ayrıca gelebilecek cevaplara uygun ek sorular da belirlenmiştir. Bant kaydına alınan mülakatlar önce yazılı metne dönüştürülüp kodlanmıştır. Ardından kodların temalar altında toplanıp matrislerin oluşturulmasıyla nitel veri analizi gerçekleştirilmiştir. Anket ve mülakatlar uygulanmadan önce okul idarelerinden izinler alınmış ve katılımcılara verdikleri bilgilerin gizliliği hakkında güvence verilmiştir.

BULGULAR

Araştırmada veri toplama aracı olarak kullanılan anketler ve yarı yapılandırılmış mülakatların verileri bu bölümde açıklanmıştır. Anket sonuçlarına göre; araştırmaya katılan 104 sınıf öğretmeninden, 98'inin okulunda BİTEFO vardır. Bu 98 öğretmenin 53'ünün okulunda görev yapan BİTEFO, aynı zamanda Bilişim Teknolojileri Öğretmenliği görevini de sürdürmektedir.

Öğretmenlerin BİTEFO 'lardan yardım alma sıklıkları incelendiğinde soruyu cevaplayan 104 öğretmenden 11'inin "her zaman", 34'ünün "çoğunlukla" ve 50'sinin nadiren BİTEFO'lerden yardım aldığı tespit edilmiştir. Öğretmenlerden 9 kişi ise okulunda BİTEFO'dan "hiç" destek almadığını belirtmiştir. Araştırmada ulaşılan başka bir bulgu ise; öğretmenlerin okullarında görev yapan bir BİTEFO varken BTÖ'lerden ne sıklıkta yardım aldıklarıdır (Tablo 2). Elde edilen bulgulara göre; okulunda BİTEFO bulunan 98 sınıf öğretmenin 96'sı BTÖ'lerden de yardım istemektedirler.

Tablo 2. Sınıf öğretmenlerinin BİTEFO ve BTÖ'den yardım alma sıklıkları

| | Her zaman (f) | Çoğunlukla (f) | Nadiren (f) | Hiç (f) |
|---|---------------|----------------|-------------|---------|
| Sınıf Öğretmenlerinin BİTEFO'dan yardım alma sıklıkları (n=104) | 11 | 34 | 50 | 9 |
| Okulunda BİTEFO bulunan sınıf öğretmenlerinin BTÖ'den yardım alma sıklıkları (n=98) | 11 | 29 | 54 | 4 |

Ankette cevabı aranan bir diğer soru ise; sınıf öğretmenlerinin teknoloji alanında bir problemle karşılaştıklarında kimlerden yardım almayı tercih ettikleridir. Bu anket sorusunda çoklu seçim yapılabilmektedir. Analiz sonuçlarına göre; 104 sınıf öğretmeninden 61'i BİTEFO'dan, 57'si BTÖ'den, 11'i teknik servisten, 16'sı okul dışında bir tanıdıktan yardım alabildiğini belirtmiştir. Öğretmenlerin 17'si de aldıkları yardımın yanı sıra kendilerinin de sorunlarını çözmek için uğraştıklarını belirtmişlerdir.

Sınıf öğretmenlerinin BİTEFO'lerden aldıkları yardımın çeşitleri, çoklu seçim yapılabilen bir soruyla ölçülmüştür. Sonuçlara göre; 104 öğretmenin 38'i yazılımla ilgili konularda, 39'u donanımla ilgili konularda, 56'sı bilgisayar dışındaki elektronik araç-gereçlerle ilgili konularda ve 40'ı da eğitimi yazılımı hazırlama ile ilgili konularda yardım almaktadır. Öğretmenlerden 9 kişi ise BİTEFO'lardan hiç yardım almamaktadırlar.

Sınıf öğretmenlerinin okullarında görev yapan BİTEFO'ların mesleki yeterlikleri hakkındaki görüşlerine bakıldığında ulaşılan sonuçlar şöyledir; okullarında çalışan BİTEFO'ları sınıf öğretmenlerinin 39'u "tamamen yeterli", 41'i "yeterli", 8'i "kısmen yeterli" bulmaktadır. 16 kişi ise bu konuda fikir belirtmemiştir.

Anket sonuçlarından edinilen son bilgi ise sınıf öğretmenlerinin BİTEFO'ların mesai saatleri hakkındaki görüşleridir. Sınıf öğretmenlerinin 83'ü BİTEFO'ların okulda "tam gün" kalması gerektiğini düşünürken; 12 kişi tüm gün kalmasını gerekli görmemektedir. 9 kişi ise bu konuda fikir belirtmemiştir.

Araştırma bulgularının ikinci bölümünü, ankette elde edilen bir takım bilgilerin derinlemesine incelenmesini sağlamak amacıyla gerçekleştirilen yarı yapılandırılmış mülakatların analizlerin verileri oluşturmaktadır. Yapılan mülakatta örneklemdeki sınıf öğretmenlerinin, BİTEFO'lar hakkındaki bilgi, görüş ve beklentilerini belirlemek amacıyla sorulan ilk soru "Sizce ilköğretim okullarında BİTEFO'ların bulunma gereklilikleri nelerdir?" olmuştur. Sınıf öğretmenlerinin bu soruya verdikleri cevaplar Tablo 3'te açıklanmıştır. Bu verilerin yola çıkılarak ilköğretim sınıf öğretmenlerinin BİTEFO'ları okullarda gerekli gördükleri anlaşılmaktadır.

Tablo 3. Sınıf öğretmenlerine göre BİTEFO'ların okulda bulunma gerekliliği

| Öğretmenler | Tematik Kodlar | Teknik Arıza | Teknik Altyapı | Teknoloji Rehberliği |
|-------------|----------------|---------------------------------|---|---|
| A | | Bilgisayar arızası | Müziklerin Ayarlanması Projeksiyon kurma | - |
| B | | İnternet CD Problemi | Projeksiyon kurma Araç tedarik Film | BDÖ ile Fen ve Teknoloji TTnet Vitamin Sunu |
| C | | Projeksiyon arızası | Projeksiyon kurma | Ms Word Çıktı alma Sunu |
| D | | - | Projeksiyon kurma | Not Girme Sunu |
| E | | İnternet | Resimlerin düzenlenmesi Müziklerin ayarlanması Araç tedarik Film | Not Girme Sunu |
| F | | İnternet Projeksiyon Arızası | - | - |

Sınıf öğretmenlerin BİTEFO'ları okullarda gerekli görmelerinin sebepleri, “teknik işler”, “öğretmen için gereklilik” ve “öğrenci için gereklilik” temaları altında toplanmıştır. Bu temalardan “teknik işler” ile alakalı olarak A öğretmeni, okuldaki teknik alt yapıyı oluşturmak ve teknik arızaları gidermekle görevli olan ayrı bir teknik eleman kadrosuna ihtiyaç olduğunu şu sözleriyle vurgulamaktadır: “*Bazen bilgisayarlar kilitleniyor, CD sürücü çalışmıyor, projeksiyon kurmak gerekiyor. Bu sorunla ilgili ayrı bir kişinin olması gerekiyor*”. Kalabalık okulda çalışan C ve D katılımcıları ise sözü geçen teknik işler için bir BİTEFO'nun yeterli olmadığı, okuldaki öğrenci sayısına göre bu kadronun artırılması gerektiğini vurgulamışlardır. Öğretmenler bilgi teknolojileri kullanımı konusunda yetersiz olduklarını ve birçok öğretmenin de bu konuda kendini geliştirmek için isteksiz olduğunu ifade etmişlerdir. Bu nedenle Tablo 3'te “öğretmen için gereklilik” teması altına “yetersizlik” kodu girilmiştir. Sınıf öğretmenlerinden 2'si ise BİTEFO'nun gereklilikleri hakkında bilgi sahibi olmadığından söz etmiştir. B öğretmenin “*Öğretmenler tam olarak formatörün ne olduğunu da bilmiyor. Ben başta şey düşünüyordum, formatör öğretmen bilgisayar bozulduğunda onu yapacak, bu kadar*” şeklindeki sözleri BİTEFO gerekliliği hakkında bilgisi olmayan öğretmenlerden biri olduğunu göstermektedir.

İkinci mülakat sorusu olan, “*Okulumuzdaki BİTEFO'dan hangi konularda yardım istiyorsunuz? BİTEFO eşliğinde yapmış olduğunuz çalışmalara örnek verebilir misiniz?*” sorusuna ait veriler Tablo 4'te açıklanmıştır. Tablo 4'e göre; öğretmenlerin BİTEFO'dan yardım aldıkları konuların başında “teknik arızalar” gelmektedir. Sınıf öğretmenlerinin ifadelerinden ise; “teknik arıza” temasının altında, bilgisayar arızası, internet bağlantısının kopması, CD sürücünün çalışmaması, projeksiyon arızası gibi teknik sorunlar olduğu anlaşılmaktadır.

Tablo 4. Sınıf öğretmenlerinin BİTEFO'lardan yardım aldıkları konular

| Öğretmenler | Tematik Kodlar | Teknik İşler | Öğretmen için Gereklilik | Öğrenci için Gereklilik | Bilinmiyor |
|-------------|----------------|---|---|--|------------|
| A | | Teknik arıza Teknik eleman ihtiyacı | Yetersizlik BDÖ'ye Katkı | - | - |
| B | | - | Yetersizlik Okul programları BDÖ'ye katkı | Verimli BTS Kullanımı Okul dışı BTS | Bilinmiyor |
| C | | Formatör sayısı Teknik eleman ihtiyacı | Yetersizlik BDÖ'ye Katkı Öğrenmede isteksizlik Pratiklik | - | - |
| D | | Formatör sayısı | Yetersizlik | - | - |
| E | | Teknik arıza Teknik eleman ihtiyacı | Okul Programları | - | Bilinmiyor |
| F | | Teknik altyapı | Gereksiz | - | - |

Sınıf öğretmenlerinin BİTEFO'lardan yardım aldıkları bir diğer konu da okuldaki teknik alt yapının oluşturulmasıdır. Okul programlarının yani önemli gün ve haftaların kutlanması için hazırlanan programların gerçekleştirilebilmesi teknik alt yapıyı gerektirmektedir. Bu programlar için müziklerin ayarlanması, resimlerin düzenlenmesi, projeksiyonun kurulması gibi teknik alt yapı işleri BİTEFO'lar tarafından yapılmaktadır. Ayrıca Tablo 4'te görülen “projeksiyon kurma” ve “araç tedarik” gibi kodlar, öğretmenlerin derslerinde ihtiyaç duydukları teknolojiyi sağlarken BİTEFO'lardan yardım istediklerini gösterir. B katılımcısının; “*... verilmesi çok zor olan daha soyut kavramlar var. Biz bunları ne yapabiliriz dedik, çizgi filmlerle çocuklara anlatabiliriz... Burada mesela projeksiyonu kurmak konusunda hocam bana çok yardımcı oluyordu..... Ayrıca S... hocam bana bu filmleri tedarik etme konusunda da yardımcı oluyordu, internette indiriyordu, kaydediyordu, cd şeklinde çoğaltıyordu. İstersek çocuklara da dağıtıyorduk*” şeklindeki sözleri sınıf öğretmenlerinin teknik alt yapı konusunda BİTEFO'lardan aldıkları desteğe bir kanıt niteliği taşımaktadır. BİTEFO'ların öğretmenlere yardımcı olduğu bir diğer konu da teknoloji kullanımınıdır. Özellikle; sunu hazırlama, MEB vitamin kullanma gibi bilgisayar destekli öğretim kapsamındaki uygulamaların gerçekleştirilmesine, öğretmenlerin çıktı alma, not girme gibi temel eğitim gereksinimlerini yapabilmelerine BİTEFO'lar yardımcı olmaktadır. E öğretmenin; “*...program hazırlıyoruz, onun sunumunda kendisi yardım etti, hazırladık, tüm bilgisayarla ilgili faaliyetlerde başında durdu. Görevini yaptı. Görevi mi değil mi bilmiyorum ama bize bu yardımlarda bulundu*” şeklindeki sözleri onun BİTEFO'dan yazılım kullanımı alanında faydalandığını göstermektedir.

Üçüncü mülakat sorusu olan “*BİTEFO'lar öğrencilere yönelik ne gibi çalışmalar yapmalıdır?*” sorusuna ait veriler Tablo 5'te açıklanmıştır. Bu verilere göre sınıf öğretmenlerinin öğrencilere yönelik olarak BİTEFO'lardan bekledikleri çalışmalar, Bilgi Teknoloji Sınıfının kullanımı ve öğrencilere bilgi teknolojileri konusunda rehber olunması ile ilgilidir.

Tablo 5. Sınıf öğretmenlerinin BİTEFO'lardan öğrencilere yönelik beklentileri

| Öğretmenler | Tematik Kodlar | Yardım Alanı | Hizmet Alanı |
|-------------|----------------|-------------------------------------|----------------------------|
| A | | Teknik sorun Teknoloji kullanımı | Bireysel Kurs |
| B | | Teknoloji Kullanımı | Kurs Teknolojiye Teşvik |
| C | | Teknoloji Kullanımı | Kurs |
| D | | Teknoloji Kullanımı | Kurs |
| E | | Teknoloji Kullanımı | Kurs |
| F | | - | Kurs (-) |

Sınıf öğretmenlerinin BİTEFO'lardan öğrencilere yönelik beklendiği çalışmaların başında Bilgi Teknolojileri sınıfının etkin kullanımının sağlanması gelmektedir. A öğretmeni bu konuda şunları söylemektedir: *“Ben her zaman, formatör öğretmenden şunu bekliyorum. Okul çıkışında da laboratuvarı kesinlikle açmalı. Sadece laboratuvarı açmakla yetinmeyip, onlara bilgisayarı nasıl kullanacakları konusunda da yardımcı olmalı”*. Bu sınıfın kurulması, okul saati içinde ve dışında açık tutulması, öğrencilerin bu sınıf içindeki zamanlarını etkili kullanmalarının sağlanması, öğretmenlerin BİTEFO'lardan öğrencilere yönelik beklentileri arasındadır. Tablo 5'e göre; öğrencilere bilgi teknolojileri konusunda yardımcı olunması ile ilgili öğretmen beklentileri; BİTEFO'ların öğrencilere ödevlerini hazırlarken, bilgisayar ve internet kullanırken, internette bilgi ararken ve bulduğu bilgileri ayıklarken yardımcı olmasıdır. B öğretmenin bu konudaki görüşleri şöyledir: *“...internette olanların hepsi doğru değil. Yalnız bilgiler de var. Bunların hangisi doğru, hangisi yanlış bu konularda formatör öğretmenler çocuklara yardımcı olabilirler... Ama buna ulaşmayı çocuğa öğretmeli formatör öğretmen kesinlikle.”* A öğretmeni bunlardan farklı olarak öğrencilerin yararlanabileceği ders arşivlerinin oluşturulması gerektiğinden bahsetmiştir.

Dördüncü mülakat sorusu olan, *“BİTEFO'lar öğretmenlere yönelik ne gibi çalışmalar yapmalıdır?”* sorusuna ait veriler Tablo 6'da açıklanmıştır. Buna göre altı sınıf öğretmeninden elde edilen veriler “yardım alanı” ve “hizmet alanı” olarak temalara dönüştürülmüştür.

Tablo 6. Sınıf öğretmenlerinin BİTEFO'lardan beklentileri

| Öğretmenler | Tematik Kodlar | BTS Kullanımı | Bilgi Teknoloji Desteği |
|-------------|----------------|--|--|
| A | | - | Ödev Ders arşivi |
| B | | Verimli BTS Kullanımı Okul dışı BTS | Bilgi Ayıklama Ödev Bilgisayar Kullanımı |
| C | | - | Ödev |
| D | | - | Ödev Sınıf Sitesi |
| E | | Verimli BTS Kullanımı BTS'yi açma | - |
| F | | BTS'yi kurma | Bilgisayar Kullanımı |

Öğretmenlerin BİTEFO'lardan beklentileri Tablo 6'ya göre; teknoloji kullanımına yardım (sunu hazırlama, internet kullanımı), bireysel ve toplu kurslar ve teknolojiye teşvik çalışmaları gibi hizmetlerdir. F öğretmeni bu soruya; *“Bilgisayarla ilgili, teknolojiyle ilgili yaşadığım sorunlarda bana yardımcı olmasını isterim. Bana destek vermesini isterim, bilgi vermesini isterim. Uygulamalı, teorik.”* şeklinde cevap vermiştir. Öğretmenlerin çoğunun BİTEFO'dan beklentileri teknoloji kullanımı ve kurs konularındadır. Sınıf öğretmenlerinin içinden sadece F katılımcısı; öğretmenler için bilgisayar kursunun gereksiz olduğunu söylemiş, kendisini yeterli hissetmese de bu kurslara katılmayacağını ifade etmiştir.

Sınıf öğretmenlerinin beşinci mülakat sorusu olan *“Bilgi teknolojileriyle alakalı danışacağımız her konuda, okulumuzdaki BİTEFO'ya rahatlıkla ulaşabiliyor musunuz, onunla ne şekilde iletişim kuruyorsunuz?”* sorusuna ait veriler Tablo 7'de görülmektedir.

Tablo 7. Sınıf öğretmenlerinin “BİTEFO'lar öğretmenlere yönelik ne gibi çalışmalar yapmalıdır?” sorusuna verdikleri cevaplar.

| Öğretmenler | A | B | C | D | E | F |
|-------------|--------------------------------|--|--------------------------------|--|---|--|
| İletişim | Yüzyüze Telefonla Okulda | Yüzyüze Telefonla Okulda Okul dışında | Yüzyüze Telefonla Okulda | Yüzyüze Telefonla Okulda Okul dışında | Yüzyüze Telefonla Okulda Randevu | Yüzyüze Telefonla Okulda Okul dışında |

Mülakata katılan sınıf öğretmenleri, BİTEFO ile iletişim konusunda her hangi bir sıkıntı yaşamamaktadır ve istedikleri her an BİTEFO'ya ulaşabilmektedirler (Tablo 7). Öğretmenlerin BİTEFO ile yüz yüze, telefonla, okul içinde ve dışında iletişim kurabildikleri belirlenmiştir.

TARTIŞMA

Araştırmaya katılan öğretmenlerin çoğunun okulunda BİTEFO bulunuyor olması, MEB'in BİTEFO görevlendirmesinde gereken hassasiyeti sergilediğini göstermektedir. Buna karşılık sınıf öğretmenlerinin yarından fazlasının BİTEFO'lardan yardım almıyor olmaları ise öğretmenlerin teknolojik konularla çok fazla ilgilenmediklerinden veya BİTEFO'ların okullarda bulunma sebeplerini tam olarak kavrayamamış olmalarından kaynaklanabilir.

Araştırmada edinilen bir diğer bilgi ise; okulunda BİTEFO bulunan sınıf öğretmenlerinin büyük bir çoğunluğunun çeşitli teknolojik konularda BTÖ'den de yardım aldığıdır (Tablo 2). Oysaki BTÖ'ler sadece derse girmekle yükümlüdür (MEB, 1993). BİTEFO görevlendirmesinin amacı ise; okul içinde bilgi ve teknoloji alanında öğrenci, öğretmen ve idarecilere rehberlik sağlanmasıdır (MEB, 2007). Bu nedenle araştırmadan edinilen bilgi, sınıf öğretmenlerinin BTÖ ve BİTEFO arasındaki farkı bilmediklerini göstermektedir. Topu ve Gökteş (2009) da çalışmalarında BTÖ ve BİTEFO'ların birbirlerine karıştırdığı sonucunu bulmuşlardır. Balki ve Şaban (2009) da çalışmaları sonucunda öğretmenlerin bilişim teknolojileriyle alakalı sorularını BTÖ'ye danıştıklarını görmüşlerdir. BİTEFO görevlendirmeleri hakkında öğretmenlere geniş çaplı bilgilendirme yapılmamış olması bu durumun bir nedeni olabilir.

Sınıf öğretmenlerinin bilgi teknolojileri alanında yardım istedikleri kişilere bakıldığında öğretmenlerin yaklaşık yarısı BİTEFO'dan yardım almaktadır. Okuldan veya dışarıdan başka kişilerin yardımıyla sorunlarını halleden öğretmen sayısı da oldukça fazladır. Bu sonuç dikkat çekicidir. BİTEFO'ların amacı okuldaki teknolojiyi eğitime entegre etme sürecinde diğer öğretmenlere rehber olmak ve sorunlarında onlara yardımcı olmaktır. Ama bulgular; sınıf öğretmenlerinin bu durumdan yeterince faydalanmadığını göstermektedir. Bu durumun nedeni öğretmenlerin bilgisayar destekli eğitimi uygulamaktan kaçınmaları olabileceği gibi okuldaki BİTEFO'nun, kendilerinin teknoloji ile alakalı her şeyi danışabilecekleri bir kişi olduğunun farkında olmamaları da olabilir.

Araştırmada edinilen bilgiye göre; sınıf öğretmenlerinin genel kanısı BİTEFO'ların mesleki olarak yeterli olduklarıdır. Ancak; öğretmenlerin küçük bir kısmı, bu konu hakkında fikir belirtmemiştir ki bu tavır onların, okullarındaki BİTEFO ile yeterli kadar iletişim kurmadıklarını, teknolojik konuları BİTEFO'lara danışmadıklarını göstermektedir.

Araştırmadan edinilen başka bir bilgiye göre ise; sınıf öğretmenlerinin büyük bir çoğunluğu BİTEFO'ların tüm gün okulda kalması gerektiğini düşünmektedir. Bu bilgi, öğretmenlerin BİTEFO mesai saati hakkında doğru bilgiye sahip olduklarını göstermektedir. Farklı bir açıdan bakılırsa ise sınıf öğretmenleri BİTEFO'ların her zaman okulda bulunmasını, kendi açılarından daha uygun buluyor olabilirler. Bu saptama ise öğretmenlerin akıllarında "BİTEFO'ya her zaman ihtiyaç duyabilirim" gibi bir düşünce olduğunu desteklemektedir.

Anketten edinilen verileri daha geniş çaplı inceleyebilmek için yapılan mülakatlardan anlaşılıyor ki; sınıf öğretmenleri BİTEFO'ları okullarda gerekli görmekte ve onlardan çeşitli konularda yardım almaktadır. Ancak öğretmenlere göre; BİTEFO'ların gerekliliği daha çok teknik alt yapı ve teknik arıza gibi konulardan kaynaklanmaktadır. Öğretmenlerin, bilgisayar destekli eğitimin azami düzeyde uygulanmasını sağlamak amacıyla görevlendirilmiş BİTEFO'lardan bir öğretmen gibi değil de teknik eleman gibi yararlanmaları, öğretmenlerde BİTEFO'larla ilgili önemli bir algı yanlışlığı olduğunu ortaya koymaktadır. Bu yanlışlık nedeniyle de BİTEFO'nun, teknolojinin eğitime entegrasyon amacı teknisyenlik görevinin gölgesinde kalmaktadır.

Az sayıda sınıf öğretmeni, eğitimle alakalı olarak sadece sunu hazırlama programı ve kelime-işlemci programı ile ilgili BİTEFO'dan yardım almaktadır. Seferoğlu, Akbıyık ve Bulut (2008) da çalışmalarında öğretmenlerin sunu programını %29 oranında kullanabildikleri, üst düzey programları ise kullanmadıkları sonucuna ulaşmışlardır. Başaran (2005) da sınıf öğretmenlerinin % 22,9'unun sunu programlarını kullanabildiğini tespit etmiştir. Öğretmenlerin, ofis programlarını kullanabilme düzeyleri ve oranlarının, onların eğitimleri boyunca aldıkları ya da alamadıkları bilgisayar eğitiminden kaynaklandığı düşünülebilir. Öğretmenlerin önemli bir bölümü için bu eksiklik söz konusu olduğundan, BİTEFO görevlendirmesinin yerinde bir uygulama olduğu anlaşılmaktadır.

Sınıf öğretmenlerinin BİTEFO'lardan beklentileri incelediğinde; bilgisayarla alakalı zorlandıkları konularda BİTEFO'ların kendilerine kurs vermelerini ve teknik konularda yardıma bulunmalarını istedikleri görülmüştür. Bu bilgi, öğretmenlerin teknoloji kullanımına karşı ilgisiz olmadıkları şeklinde yorumlanabilir.

Çalışmada sınıf öğretmenlerinin BİTEFO'larla iletişimleri incelenmiş ve yardım isteyeceklerinde BİTEFO'ya rahatlıkla ulaşabildikleri görülmüştür. Sınıf öğretmenleri, yüz yüze ve gerektiğinde telefonla BİTEFO ile iletişim kurabilmektedirler. Bu durum hem öğretmenlerin, BİTEFO'nun desteğinden faydalandığını, hem de BİTEFO'nun öğretmenlerin yardım taleplerini geri çevirmediğini gösterir niteliktedir.

SONUÇ VE ÖNERİLER

Yapılan bu araştırma ile sınıf öğretmenlerinin; BİTEFO'lar hakkında genel bir bilgiye sahip oldukları; buna karşılık onlardan yardım alma durumlarının, MEB'in belirlediği nitelikte olmadığı sonucuna ulaşılmıştır. Sınıf öğretmenleri BİTEFO'ları okullarda gerekli bulmakta ancak bu gerekliliği daha çok teknik arıza ve teknik alt yapı ile ilgili sorunlara bağlamaktadır. Öğretmenler BİTEFO'yu daha çok teknik elaman olarak görmektedirler. Bunların yanı sıra Bilgi Teknoloji sınıfının açık tutulması, kendi teknoloji bilgilerinin yetersiz olması, bilgisayar destekli eğitime destek olunması ve önemli gün ve haftaların kutlanması da okulda BİTEFO bulunmasının gerekliliğinin başka nedenleridir.

Sınıf öğretmenlerinin BİTEFO'lardan aldıkları yardımlar; çoğunlukla bilgisayar arızası, projeksiyon arızası, cd problemi, araç tedarik gibi konulardır; daha az oranlarda ise müzik-resim düzenleme, kelime işlemci ve sunu programı, not girme ve film indirme ile alakalı problemlerdir.

Sınıf öğretmenlerinin BİTEFO'lardan öğrencilere yönelik beklediği çalışmalar ise; bilgi teknoloji sınıflarının okul saati ve mesai saatlerinde öğrencilere açık tutulması, ödev araştırmalarında yardımcı olması, bir sınıf sitesi kurulması gibi çalışmaların yapılmasıdır. Sınıf öğretmenlerinin kendilerine yönelik beklentileri nelerdir sorusuna ise gelen cevaplar; teknoloji kullanımına yardım edilmesi, kurs verilmesi ve teknoloji kullanmaya öğretmenlerin teşvik edilmesi şeklindedir.

Son olarak sınıf öğretmenlerinin BİTEFO'lar ile iletişim kurma problemlerinin olmadığı tespit edilmiştir. Öğretmenler okul içinde ve dışında BİTEFO'ya ulaşıp ondan destek alabilmektedirler. Öğretmenlerin çoğu BİTEFO'ları okullarda tam gün çalışmasını istemektedir. Araştırma sonucu edinilen bilgiler ışığında problem durumu ve ileriki çalışmalar için aşağıdaki öneriler getirilebilir:

- BİTEFO'ların teknolojiyi eğitimle bütünleştirerek eğitim seviyesini yukarıya taşıma görevini en iyi şekilde yapabilmeleri öncelikle öğretmenlerin isteklerine bağlıdır. Düzenlenecek hizmet içi eğitimle sınıf öğretmenleri bilgisayar destekli eğitim ve önemi hakkında bilgilendirilip bu yöntemi kullanmaya teşvik edilebilirler.
- BİTEFO 'ların görev ve sorumluluklarının tam olarak öğrenilebilmesi için MEB tarafından sınıf öğretmenlerine yönelik 1 saatlik seminer düzenlenebilir.
- BİTEFO önce aylık bir çalışma programı daha sonra da haftalık bir çalışma programı hazırlayarak diğer öğretmenlerin bilgi teknolojileri sınıfını kullanmalarını düzenleyebilir. Haftalık çalışma programının hazırlanması zaten BİTEFO'nun görevlerinden biridir ancak program içine öğretmenlerin o hafta içinde neler yapacakları da yazılıp öğretmenler odası gibi herkesin görebileceği bir yere asılırsa bilgi teknolojileri sınıfının kullanımı bir düzene oturtulmuş olabilir.
- BİTEFO diğer branş öğretmenlerinden, onların bir dönem içinde uygulamak isteyecekleri bilgisayar destekli eğitim uygulamalarını öğrenir ve bu etkinlikleri gerçekleştirebilmek adına öğrenilmesi ve yapılması gerekenleri planlayarak öğretmen arkadaşlarına birkaç ders içinde bunları anlatabilir.
- BİTEFO'lar okullarındaki diğer öğretmenler için belli zaman aralıklarında "Herhangi bir konu hakkında almak istedikleri kurslar var mıdır?" sorusunun cevabını aramalıdır. Kurs verilebilecek bir ders ya da içerik ortaya çıktığında ise bunu tüm öğretmenlere uyabilecek bir plan yaparak öğretmen arkadaşlarına sunmalıdır.
- Sınıf öğretmenleri BİTEFO ve BTÖ 'lerin görevlerinin farklılığı hakkında yeterli bilgiye sahip olmadıkları için okul idarecileri tarafından onları bu konuda bilgilendirmek amacıyla okul bünyesinde sınıf öğretmenlerine yönelik bilgilendirme yapılabilir.
- BİTEFO bilgi teknolojileri sınıfının daha verimli kullanılabilmesi için her sınıfa haftalık bir plan yapar. Bu planın amacı öğrencilerin diğer derslerle ilgili araştırmalarını gelişi güzel vakitlerde değil de düzenli zaman aralıklarıyla yapmalarını sağlamak ve sınıfta kargaşa çıkmasını önlemektir. Örneğin; öğrenciler bir dersle ilgili yapacağı araştırmayı o dersin ertesi günü yapmalıdır. Böyle bir düzen oturtulabilirse öğrencilerin çalışmalarına da bir düzen gelecek ve dolayısıyla başarıları artacaktır.
- BİTEFO öğrencilere ders konusunu kavratmak ve onlara sorumluluk vermek adına onlardan bir sınıf sitesi yapmalarını isteyebilir.
- Benzer çalışma farklı branş öğretmenlerine uygulanarak onların BİTEFO algıları tespit edilip ona göre bir düzenleme yapılabilir.
- Yapılacak benzer çalışmalarda örneklem sayısı daha geniş tutularak genel bir bakış açısına ve yeni fikirlere ulaşılabilir.

KAYNAKLAR

- Akkoyunlu, B. (2002). Öğretmenlerin İnternet Kullanımı ve Bu Konudaki Öğretmen Görüşleri. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi 22, 1-8.
- Balki, E. , Şaban, A. (2009) . Öğretmenlerin Bilişim Teknolojilerine İlişkin Algıları ve Uygulamaları: Özel Esentepe İlköğretim Okulu Örneği. İlköğretim Online, 8(3), 771-781.
- Başaran, M. (2005). Sınıf Öğretmeni Adaylarının Bilgi Okuryazarlıklarının Değerlendirilmesi. Gazi Eğitim Fakültesi Dergisi, Cilt 25, Sayı: 163-177.
- Bracci, R. (1999). It's in the plan. American School & University, 71(11), 36-38.
- Çağiltay, K. , Çakıroğlu, J. , Çağiltay, N. , Çakıroğlu, E. (2001). Öğretimde Bilgisayar Kullanımına İlişkin Öğretmen Görüşleri. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 21, 19-28.
- Çepni, S. (2007). Araştırma ve Proje Çalışmalarına Giriş. Celepler Matbaacılık, TRABZON. Sayfa: 108, 131.
- Ely, D., Blair, P., Lichvar, P., Tyksinski, D., ve Martinez, M. (1996). Trends in educational technology 1995 (ED396717). Syracuse, NY: ERIC Clearinghouse on Information and Technology.
- International Society for Technology Education. (ISTE). (2000). National educational technology standards for teachers. Eugene: ISTE Publications.
- Milli Eğitim Bakanlığı. (1993). "Milli Eğitim Bakanlığı 'na bağlı Örgün ve Yaygın Eğitim kurumlarında bilgisayar laboratuvarları nın düzenlenmesi ve işletilmesi ile bilgisayar ve bilgisayar koordinatör öğretmenlerin görevleri hakkında yönerge." Tebliğler Dergisi, Sayı. 2378, 212-219.
- Milli Eğitim Bakanlığı (MEB). (2006). Temel eğitime destek projesi "öğretmen eğitimi bileşeni" öğretmenlik mesleği genel yeterlikleri. Tebliğler Dergisi, 2590, 1491-1540.
- Milli Eğitim Bakanlığı (MEB). (2007). Bilişim Teknolojileri Formatör Öğretmen Görevlendirme Yazısı. B.08.0.ETG.0.21.01.04.00-209.0/12089
- Norton, P. ve Gonzales, C. (1998). Regional Educational Technology Assistance Initiative--Phase II: Evaluating a Model for Statewide Professional Development. Journal of Research on Computing in Education, 31(1), 25-48.
- Özçelik, H. , Kurt, A. A. (2007). İlköğretim Öğretmenlerinin Bilgisayar Özyeterlikleri: Balıkesir İli Örneği. İlköğretim Online, 6(3), 441-451.
- Seferoğlu, S. S., Akbıyık, C., Bulut, M. (2008). İlköğretim Öğretmenlerinin ve Öğretmen Adaylarının Bilgisayarların Öğrenme/ Öğretme Sürecinde Kullanımı İle İlgili Görüşleri. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi (H. U. Journal of Education) 35: 273-283.
- Topu, F. B. , Göktaş, Y. (2009). İlköğretim Bilişim Teknolojileri (BT) Öğretmenlerinin Aldıkları Eğitimle Görev Yaptıkları Okullarda Onlara Yüklenen Görev ve Sorumlulukların Karşılaştırılması. 3th ICITS, 393-399.
- Yılmaz, M. (2007). Sınıf Öğretmeni Yetiştirmede Teknoloji Eğitimi. Gazi Eğitim Fakültesi Dergisi, Cilt 27, Sayı 1: 155-167.

SINIF ÖĞRETMENLİĞİ 1. SINIF ÖĞRENCİLERİNİN HAZIRLADIKLARI MATEMATİK GAZETELERİNİN YARATICILIĞI

CREATIVITY OF MATHEMATICS NEWSPAPERS THAT PREPARED BY STUDENTS OF PRIMARY SCHOOL EDUCATION

Arş. Gör. Güliz ŞAHİN*, Öğr. Gör. Denizhan KARACA ECE**, Arş. Gör. Burcu SEZGİNSOY*

*Balıkesir Üniversitesi, Necatibey Eğitim Fakültesi, Sınıf Öğretmenliği ABD,
guliz.sahin@hotmail.com

**Balıkesir Üniversitesi, Necatibey Eğitim Fakültesi, OFMA Matematik Eğitimi ABD, denizhan78@hotmail.com

*Balıkesir Üniversitesi, Necatibey Eğitim Fakültesi, Sınıf Öğretmenliği ABD,
burcusezginsoy@hotmail.com

Özet

Balıkesir Üniversitesi Necatibey Eğitim Fakültesi Sınıf Öğretmenliği 1.Sınıf, 2008-2009 eğitim-öğretim yılı I. döneminde Temel Matematik I dersini alan toplam 104 öğrenci 3-4 kişilik gruplar oluşturarak "Matematik Gazetesi" adlı proje ile gazeteler oluşturmuşlardır. Oluşturulan gazeteler; Tezci ve arkadaşları (2008) tarafından öğretim materyallerinin "yaratıcılık" açısından değerlendirilmesine ilişkin hazırlanmış olan dereceli puanlama anahtarı ile değerlendirilmiştir. Cronbach's Alpha değeri 0,92 olan dereceli puanlama anahtarı, görsel-işitsel öğeler, içerik, dil ve anlatım, işleyiş ve mekanizma, biçim ve renk olmak üzere 6 alt boyuttan oluşmaktadır. Değerlendirme sonucunda sınıf öğretmenliği öğrencilerinin hazırladıkları gazetelerin genel olarak orta ve düşük düzeyde yaratıcı olduğu görülmüştür.

Anahtar Sözcükler: yaratıcılık, sınıf öğretmenliği, matematik gazetesi, proje.

Abstract:

The 104 students who take Basic Mathematics I at Department of Primary School Education at Necatibey Faculty of Education in Balıkesir University at 2008-2009 fall semester formed groups of three or four and they prepared the "Mathematics Newspaper" project. Prepared newspapers were evaluated by using rubric prepared in order to be used in the evaluation of the students' materials in terms of creativity developed by Tezci and et.al(2008).The guideline that the Cronbach's Alpha value is as 0.92, is composed of 6 sub-dimensions that audio-visual elements, content, language and expression, processing and mechanism, form and colors with 5 different levels and 5 depict the most creative material, 4 creative materials, 3 mid-level creative material, 2 low-level creative materials and 1 uncreative material. As a result of evaluation prepared newspapers by students of primary school education are mid-level and low-level creative materials in general.

Key words: creativity, primary school education, mathematics newspaper, project.

GİRİŞ

Geleneksel eğitim anlayışında öğretmenler bilginin kaynağı konumundadır. Bilgi, öğrencilere çoğunlukla sözlü olarak aktarılır. Bu yolla öğrenme daha çok ezbere dayalı olarak gerçekleşmektedir. Bu süreçte birey çoğu zaman bilgiyi üretip sentezlemek yerine hazır olanı kullanmayı tercih etmektedir. Bu durum bireyi düşünen insan profilinden ziyade var olanla yetinen birey haline getirmektedir. Oysaki eğitim sürecinin en önemli amacı; problem çözüme yeteneğine sahip, araştıran ve sorgulayan, eleştirel düşünebilen, bilgiyi üretebilen, esnek, teknolojiye faydalanabilen, işbirlikli öğrenmeye açık yaratıcı bireyler yetiştirmektir.

Yaratıcılık; insanda açığa çıkmış ve gizli kalmış tüm yetenekleri geliştirme gücü, aynı zamanda yeni fikirleri biçimlendirme, icat etme ve keşfetme gücüdür. Bunun yanı sıra yaratıcılık yoğun bir merak dürtüsü, sürprizli ve şaşırtıcı olabilme ve farklı tepkiler verebilme yeteneklerinin yanında, daha önceden kullanılmamış ilişkiler arasındaki ilişkileri kurmadır. Böylece yeni bir düşünce şeması içinde yeni yaşantı, deneyim, fikir ve ürünler ortaya koymayı da içerir (Eyiol, 2005).

Kavram olarak Latince "yapmak" ve Yunanca "yerine getirmek" ifadelerinden türetilmiştir. Yaratıcılık farklı şekillerde tanımlanmaktadır. Örneğin Torrance'e (aktaran: Sungur, 1997: 20) göre yaratıcılık; "Sorunlara, bozukluklara, bilgi eksikliğine, kayıp öğelere, uyumsuzluğa karşı duyarlı olma, güçlüğü tanımlama, çözüm arama, kestirmelerde bulunma ya da eksikliklere ilişkin denenceler geliştirme, daha sonra da sonucu ortaya koymadır." Demirel (2003: 226) ise yaratıcılığı; "Yeni, özgün ürünler ortaya koyma, yeni çözüm yolları bulma ve bir senteze ulaşmak" olarak ifade etmiştir.

Yaratıcılık, yaratıcı bir insanın yeni ve değerli bazı şeyleri yaparken hayal gücünü kullanarak onu daha iyi yapabilmek için onu değiştirmesidir. Yaratıcılık kavramı ile bir bireyin var olan kalıplardan kurtulması veya farklı olmaktan korkmaması kastedilir (Emir ve Kanlı, 2007).

Yaratıcılık kavramı, kişiden kişiye çeşitlilik göstermekle birlikte yaratıcılığı belirleyen ortak özellikler vardır. Bunlar; akıcılık, esneklik, orijinallik ve ayrıntılılıktır. Akıcılık; kişinin zihnini sürekli meşgul eden probleme yönelik çeşitli fikirler ve hipotezler üretebilme, esneklik; değişen durumlara uyum sağlayabilme, süregelen düşünceden bağımsız düşünebilme, özgünlük-orijinallik; sıra dışı cevaplar üretebilme, düşünce ve eylemde özgün olabilme, ayrıntılılık (zenginlik); ortaya konulan bir fikri detaylandırabilmedir (Guilford, 1950:1980; Torrance, 1968; Kincaid ve Duffus, 2004; Gartenhaus, 2000; Akbulut 2004; Yanpar ve ark., 2006, Tezci ve ark., 2008).

Tüm bu özellikler göz önünde bulundurulduğunda yaratıcı bireylerin diğerlerinden ayrıldığı gözlenmiştir. Bu farklılıklar; alışılmamış düşünceleri, alışılmamış tarzda anlatmaları; olaylara getirdikleri yeni bakış açıları ile özgünlüklerini ortaya koymaları; sadece merak etmekle kalmayıp, merakının peşinden araştırmaya koyulmaları; algılarının her zaman açık olması; diğerleri gibi olmak yerine onlardan ayrı olmayı seçme ve bu durumdan mutluluk duymaları; yeni düşünceler üretebilecek kadar bilgi birikimine sahip olmaları; sözlü, yazılı ve bedensel olarak kendilerini açık, özgün ve doğru biçimde ifade edebilmeleri şeklinde sıralamak mümkündür (Özden, 2003: 174-175; Üstündağ, 2003: 32).

Görüldüğü üzere yaratıcılık her bireyde ifade ediliş biçimi olarak farklılık göstermektedir. Ancak bireyin içinde bulunduğu bu yaratıcılık sürecinin aşamaları ortaktır. Bazen "buldum!!!" denilen anda, bazen de sıkı çalışma arası verilen molada kendini fark ettirebilir. Yaratıcılık içsel bir süreçtir ve bu süreç aşağıdaki dört aşama sonucu ortaya çıkabilmektedir (Wallas,1926; aktaran: Özden, 2003: 179-180).

1. Hazırlık Aşaması

Bu aşamada sorun, gereksinim ya da gerçekleştirilmek istenen şey saptanır, tanımlanır. Gerekli olan bilgi, materyal, malzeme toplanır. Eldeki mevcut olan veriler yeniden gözden geçirilir. Çözüm için gerekenler incelenir. Daha önce ortaya atılmış olan çözüm önerileri ayrıntılarıyla anlaşılmasına çalışılır.

2. Kuluçka Aşaması

Kuluçka aşamasında sorun; zihnin irdelemesine, incelemesine bırakılır. Bu dönem hazırlık aşamasındaki gibi dakikalarca sürebileceği gibi haftalarca ya da yıllarca da sürebilir. Bu aşamada, birey görevini yapmış olmanın güveni içinde ve bilinçaltının hummalı bir biçimde çalıştığı bilincinde olarak başka işlere döner. Gazete okur, televizyon seyredir. Kısaca gündelik yaşantısını devam ettirir. Bu süreç bilinçli olarak mola vermek amacı ile de gerçekleşebilir.

3. Aydınlanma

Aydınlanma; bireyin aniden “buldum!!!” dediği zamandır. Bu aşama çoğunlukla anlıktır. Müthiş bir içgörüler zenginliği içinde gelişir. Birkaç dakika ya da birkaç saat sürebilir. Günlerce aranan fikir bireyin zihninde birdenbire oluşmuştur.

4. Doğrulama

Doğrulama aşaması; bulunan çözümün işe koşullabilirliğinin, uygulanabilirliğinin veya kabul edilebilirliğinin denenmesidir. Yaratıcı ürün yukarıda yer alan aşamalar sonucu içsel bir süreçle gerçekleşmektedir.

Yaratıcı ürün, gündelik hayatta insanların kullandıklarına sunulan her ihtiyaçta, görsel sanatların her alanında ortaya çıkabileceği gibi eğitim-öğretim sürecinde yer alan bir dersin işlenişinde, konunun ifade ediliş biçiminde, materyalin tasarım ve sunum sürecinde de kendini gösterebilir.

Öğretme değil de öğrenme etkin olduğunda, öğrenciler beyinlerini kullanırlar, fikirlerini sunarlar, problemlerini çözmeye çalışırlar ve ne öğrendiler ise uygularlar. Bunlar da öğrencinin sınırsız yaratıcılığının ortaya çıkarılması ile mümkündür (Günay, 2007). Proje çalışmaları da öğrencilere hazır bilgi vermekten çok onların problem çözme, araştırma ve inceleme becerilerini geliştirecekleri ve yaratıcılıklarını ortaya koymalarını sağlayacak yöntemlerden biridir. Bu çalışmada sınıf öğretmenliği birinci sınıf öğrencilerinin Matematik Gazetesi projesi ile ortaya koydukları ürünlerin yaratıcılığını belirlemek amaçlanmıştır.

YÖNTEM

Nicel araştırma yöntemlerinin kullanıldığı çalışmada Tezci ve arkadaşları (2008) tarafından öğretim materyallerinin “yaratıcılık” açısından değerlendirilmesine ilişkin hazırlanmış olan dereceli puanlama anahtarı ile değerlendirmeler gerçekleştirilmiştir. En yüksek korelasyon “görsel ve işitsel öğeler” ile “işleyiş ve mekanizma” alt boyutlarında (0,89), en düşük korelasyon ise içerik ve renk alt boyutlarında (0,77) ve Cronbach’s Alpha değeri 0,92 olan dereceli puanlama anahtarı, görsel-işitsel öğeler, içerik, dil ve anlatım, işleyiş ve mekanizma, biçim ve renk olmak üzere 6 alt boyuttan ve 5 düzeyden oluşmaktadır. 5= en yaratıcı materyali, 4= yaratıcı materyali, 3= orta düzeyde yaratıcı materyali, 2= düşük düzeyde yaratıcı materyali ve 1= yaratıcı olmayan materyali tanımlamaktadır.

Çalışma Grubu:

Çalışma grubunu 2008-2009 eğitim-öğretim yılı I. döneminde Balıkesir Üniversitesi Necatibey Eğitim Fakültesi Sınıf Öğretmenliği 1.Sınıf, Temel Matematik I dersini alan birinci ve ikinci öğretim olmak üzere toplam 104 öğrenci oluşturmuştur. 104 öğrenci 3 veya 4 lü gruplar halinde toplamda 26 gazete hazırlamışlardır. Hazırlanan 26 gazete üç araştırmacı tarafından değerlendirilmiş ve elde edilen bulgulara aşağıda yer verilmiştir.

BULGULAR VE YORUM

Aşağıdaki tabloda üç araştırmacının her bir gazete için değerlendirmelerinin ortalamaları alınarak boyutlara göre elde edilen değerlere yer verilmiştir.

| Gazete Adları | Görsel ve İşitsel Öğeler | İçerik | Dil ve Anlatım | İşleyiş – Mekanizma | Biçim | Renk |
|------------------------|--------------------------|--------|----------------|---------------------|-------|------|
| 45200 | 1 | 2 | 2 | 2 | 2 | 1 |
| Yolcu | 2 | 2 | 2 | 3 | 2 | 2 |
| İstisnalar | 1 | 2 | 2 | 2 | 2 | 1 |
| Cebir | 2 | 3 | 2 | 3 | 3 | 3 |
| Fonksiyon | 2 | 3 | 2 | 2 | 2 | 1 |
| Paradoks | 4 | 3 | 3 | 3 | 4 | 3 |
| Matara | 1 | 1 | 1 | 1 | 2 | 3 |
| Fonkmat | 1 | 1 | 1 | 1 | 1 | 1 |
| Riyaziye | 2 | 2 | 2 | 2 | 2 | 2 |
| Detay | 2 | 2 | 2 | 3 | 2 | 1 |
| Boş Küme | 1 | 3 | 3 | 2 | 2 | 1 |
| Nokta | 4 | 4 | 3 | 4 | 4 | 3 |
| Evrensel Gençlik Grubu | 2 | 2 | 2 | 2 | 3 | 2 |
| Matamor | 3 | 3 | 3 | 3 | 3 | 3 |
| KYK | 1 | 1 | 1 | 2 | 2 | 1 |
| Üçgen | 2 | 3 | 3 | 3 | 3 | 3 |
| Öğretmat | 3 | 2 | 3 | 3 | 3 | 3 |
| Cuma Ertesi | 3 | 2 | 2 | 2 | 3 | 3 |
| Bizden | 1 | 2 | 2 | 2 | 2 | 2 |
| Fonksiyon10 | 2 | 2 | 3 | 3 | 3 | 3 |

| | | | | | | |
|-------------------|---|---|---|---|---|---|
| Matematik Postası | 3 | 4 | 4 | 3 | 3 | 4 |
| Bal-Mat | 2 | 3 | 2 | 3 | 2 | 2 |
| Teğet | 2 | 2 | 3 | 2 | 3 | 1 |
| Nefciler | 2 | 3 | 2 | 3 | 3 | 3 |
| Tetra | 3 | 3 | 2 | 3 | 3 | 3 |
| Dört İşlem | 3 | 3 | 3 | 3 | 3 | 3 |

Tablo1. Gazetelerin ortalama puanları

Tablo 1'e göre görsel ve işitsel öğeler boyutunda Paradoks ve Nokta gazeteleri yaratıcı materyal olarak, içerik boyutunda yine Nokta adlı gazete ve Matematik Postası gazetesi yaratıcı materyal olarak nitelendirilmiştir. Biçimde Paradoks ve Nokta gazeteleri yaratıcı olarak değerlendirilirken, dil ve anlatım ile renk boyutlarında ise yalnızca Matematik Postası adlı gazetenin yaratıcı olduğu görülmüştür. Paradoks, Nokta ve Matematik Postası gazeteleri yaratıcı oldukları boyutlar dışındaki boyutlarda da orta düzeyde yaratıcı olarak kalmışlardır. Ancak herhangi bir boyutta 5. düzeye ulaşabilen gazete görülmemiştir.

Tüm gazeteler düzeylere göre sınıflandırılarak frekansları ve yüzdeler elde edildiğinde ortaya aşağıda belirtildiği gibi bir tablo ortaya çıkmaktadır.

| Boyutlar | Görsel ve İşitsel Öğeler | | İçerik | | Dil ve Anlatım | | İşleyiş - Mekanizma | | Biçim | | Renk | |
|--------------------------|--------------------------|-----|--------|-----|----------------|-----|---------------------|-----|-------|-----|------|-----|
| | f | % | f | % | f | % | f | % | f | % | f | % |
| 5-En yaratıcı | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4-Yaratıcı | 2 | 8 | 2 | 8 | 1 | 4 | 1 | 4 | 2 | 8 | 1 | 4 |
| 3-Orta düzeyde yaratıcı | 6 | 23 | 10 | 38 | 9 | 34 | 13 | 50 | 12 | 46 | 12 | 46 |
| 2-Düşük düzeyde yaratıcı | 11 | 42 | 11 | 42 | 13 | 50 | 10 | 38 | 11 | 42 | 5 | 19 |
| 1-Yaratıcı olmayan | 7 | 27 | 3 | 12 | 3 | 12 | 2 | 8 | 1 | 4 | 8 | 31 |
| Toplam | 26 | 100 | 26 | 100 | 26 | 100 | 26 | 100 | 26 | 100 | 26 | 100 |

Tablo2. Düzeylere ve Boyutlara göre Toplam Frekans ve Yüzde Değerleri

Tabloya bakıldığında görsel ve işitsel öğeler boyutu ile içerik boyutunda matematik gazetelerinin ancak %8'i yaratıcı iken, %42'sinin düşük düzeyde yaratıcı olduğu görülmüştür. Bu bağlamda görsel ve işitsel öğeler boyutunda yaratıcı olarak ifade edilen gazetelerde; düşük düzeyde yer alan yaratıcı gazetelere oranla hazır öğelerin kullanıldığı, fakat kullanım amaç ve işlevi açısından diğerlerine göre yeterli, farklı, yeni ve faydalı olduğu gözlenmiştir. İçerik boyutunda düşük düzeyde yaratıcı olarak ifade edilen gazetelerde ise içeriğin zengin, otantik ve yeni fikirler içermediği görülmüştür.

Dil ve anlatım boyutunda ele alındığında gazetelerin %4'ü yaratıcı iken %50'sinin düşük düzeyde yaratıcı olduğu görülmüştür. Düşük düzeyde yaratıcı olan gazetelerde sadece bazı önemli noktalar vurgulanırken, yaratıcı gazetelerde önemli noktaların zengin kavramlarla ve farklı olarak vurgulandığı görülmüştür.

Gazetelerin %4'ü işleyiş ve mekanizma boyutunda yaratıcı iken, % 50'sinin orta düzeyde yaratıcı olduğu belirlenmiştir. Yaratıcı gazetelerin, öğrenmeyi sağlayacak kullanışlılığa sahip olduğu fakat orta düzeyde yaratıcı gazetelerin öğrenenin ihtiyaç ve beklentilerini dikkate almadığı görülmüştür.

Biçim boyutunda gazetelerin % 8'i yaratıcı iken, % 46'sı orta düzeyde yaratıcı olarak görülmüştür. Yaratıcı materyaller izlenip anlaşılabilir çeşitli tasarım biçimine sahip, sayfalar zaman zaman birbirinin tekrarı niteliğindedir. Konular ve elemanlar çeşitli yaklaşımlarla sunulmuştur. Diğer materyallerle benzer tarz ve stile sahiptir. Orta düzeyde yaratıcı olanlarda ise çoğu sayfa diğer sayfaların tekrarı niteliğindedir.

Gazetelerin % 4'ü renk boyutunda yaratıcı iken, % 46'sı orta düzeyde yaratıcıdır. Yaratıcı gazetelerde kullanılan renkler bir arada etkili ve diğer gazetelerden farklı bir kullanıma sahiptir. Figür ve zemin renkleri genelde alışık olunanın dışında bir kullanıma sahiptir. Orta düzeyde yaratıcı gazetelerde ise renkler etkili ama zaman zaman diğerlerinde kullanılanlara benzerdir.

SONUÇ VE ÖNERİLER

Hazırlanan gazetelerin yaratıcılığı 6 farklı boyutta incelenmiştir. Değerlendirmelere göre hiç bir boyutta en yaratıcı düzeye ulaşılmadığı görülmüştür. Genel olarak bakıldığında öğrenciler orta ve düşük düzeyde yaratıcı gazeteler ortaya koymuşlardır. Bu durum, öğrencilerin üniversite birinci sınıf olmaları, ilk kez böyle bir proje çalışmasında yer almaları, grupla çalışma becerilerine sahip olmamaları veya yaratıcı düşünme becerilerinin yeterli düzeyde olmamasından kaynaklanabilir.

Uzun ve can sıkıcı ödevler yerine yaratıcılıklarını ortaya çıkararak, fikirlerini özgürce ifade edebilecekleri, kendilerinden birşeyler katarak özgün bir ürün tasarlayabilecekleri proje çalışmalarına yer verilmelidir. Farklı derslerde ve farklı projelerle tasarladıkları materyaller bu çalışmada kullanılan dereceli puanlama anahtarı ile değerlendirilerek yaratıcılık boyutu da incelenebilir.

KAYNAKÇA

- Akbulut, G. (2004). Coğrafya Öğretimi ve Yaratıcı Düşünce, *C.Ü. Sosyal Bilimler Dergisi*, Aralık 28 (2), 215-223.
- Demirel, Ö. (2003). *Kuramdan Uygulamaya Eğitimde Program Geliştirme*. PegemA Yayıncılık, 5. baskı.
- Emir, S. ve Kanlı, E. (2007). Üstün Zekâlı Olan ve Olmayan Öğrencilerin Yaratıcılık Düzeylerinin Karşılaştırılması. *1. Ulusal İlköğretim Kongresi Bildiri Özetleri Kitabı*. S. 178. 15-16-17 Kasım 2007. Ankara. Hacettepe Üniversitesi.
- Eyiol, P. (2005). Oyun ve Oyuncakların Sanat eğitimi Yoluyla Yaratıcılığa Etkisi. Eğitimde Yeni Yönelimler II. Eğitimde Oyun Sempozyumu Bildiri Kitabı. (s:192). (14 Mayıs 2005). Ankara. Özel Tevfik Fikret Okulları.
- Gartenhaus, A.R., (2000). Yaratıcı Düşünme ve Müzeler, (Çev.:Ruhisler Mergenci ve Bekir Onur), Ankara Üniversitesi Basımevi, Ankara.
- Guilford, J. P. (1950). Creativity. *American Psychologist*, 5, 444-454.
- Günay, Hatice. (2007). Görsel Materyaller ve Beş Duyuyla Türkçe Dersinde Sınırsız Yaratıcılık. VI. *Ulusal Sınıf Öğretmenliği Eğitimi Sempozyumu*. (S:230). (27-28-29 Nisan 2007).Eskişehir. Anadolu Üniversitesi.
- Kincaid, M. ve Duffus, L. (2004), *Learning, Thinking and Creativity*, Published by IDES, Scotland.
- Özden, Y. (2003) *Öğrenme ve Öğretme*. Ankara: PegemA Yayıncılık., 5. baskı.
- Sungur, N. (1997). *Yaratıcı Düşünce*. İstanbul: Evrim Yayınevi.

- Tezci ve ark.(2008). The Study of Reliability and Validity of Creative Materials. *TOJET*, volume 7, issue 1, article 5.
- Torrance, E. P. (1968). *Education and The Creative Potential*. Minneapolis: University of Minnesota Press.
- Üstündağ, T.(2003). *Yaratıcılığa Yolculuk*. Ankara: PegemA Yayıncılık., 2. Baskı.
- Wallas, G. (1926). *The Art of Thought*. New York: Harcourt, Brace & World.
- Yanpar ve ark. (2006). İlköğretim Öğretmen Adayları Tarafından Hazırlanan El Yapımı ve Teknoloji Temelli Materyallerin Yaratıcılık Boyutları Açısından İncelenmesi, *Kuram ve Uygulamada Eğitim Yönetimi*, Kış, 45, 129-148.

IETC 2010

SMART LEARNING IN LAW ENFORCEMENT CONTEXTS: USING E-LEARNING EFFECTIVELY

Elizabeth R. Graham, UNT*

Selcuk Zengin, TNP*

Abstract

The education and training of law enforcement personnel is frequently carried out in a face-to-face or traditional classroom format. Because of the increasing numbers of employees, spread further and further around the globe, difficulties arise with scheduling, with budgets, and with facility availability to provide appropriate and effective information via the old format. E-learning has great potential to offer many advantages for law enforcement education and training, not only with savings of time and money, but also with staying up-to-date with current technology and with connecting colleagues across local and international borders. However, care must be taken with hardware and software choices as well as in preparing and supporting the users of the system. To make the most efficient and effective use of this “smart” educational technology, an “intelligent” process is suggested.

“Learning can be hard. Not learning can be even harder” (Shank & Sitze, 2004, p. xxxiv). This is true for both learners and the organizations that are responsible for their training. It is clear that technology, at some level, has now become a reality in the workplace and in education. However, as practitioners remind us, (Waterhouse, 2005; Allen, 2006; Zengin, 2007) it is not enough to have a computer budget and a training materials syllabus; groundwork must be laid for learning to take place. Approaching e-learning may initially require considerable effort to get it up and running and to have the teachers and learners up to speed and on the same page; however, the outcome can be very effective. All decisions must be made with the following caveat: “When technology is used improperly, for the wrong reasons, or without the proper resources in place, it’s likely to be slow, expensive, and inefficient” (Shank & Sitze, 2004, p. 5).

In fact, several things must be considered: while e-learning is not the right answer for every learning need, “one of its biggest advantages is the ability to easily update materials that change frequently. . . such as government regulations” (Shank & Sitze, 1994, p. xvii) or law-enforcement training procedures. In a law enforcement context, without in-service training, it is almost impossible to continually assure competent policing for society. This training is very essential not only in the transformation of the police organization, but also in creating a peaceful society (O’Rawe, 2005). In-service training in police contexts is a process of learning about the latest changes and improvements in all policing-related subjects to maintain high quality service; although in-service training is necessary for every profession, for the police, in-service training is vitally important (Kazu & Gumus, 2000).

The organization may still be debating traditional vs. e-learning formats: is one better than the other? Perhaps more useful/comprehensive questions to contemplate are what instructional methods will work best in which organizational and training contexts and which technologies will support them. From this perspective, even law-enforcement organizations that have limited access to technology can consider adding some e-learning component to its in-service training curriculum. Agencies that already incorporate e-learning can add organizational mentoring to the curriculum and employ the use of cross-organization training approaches to facilitate informed and appropriate technological exploitation by fellow agencies.

Software that is used to structure the training course, a learning management system (LMS) can be developed in-house, out sourced, or even open-sourced (i.e., free). Some examples of the latter are the OKI (Open Knowledge Initiative) within the United States, or KEWL (Knowledge Environment for Web-Based Learning), appropriate for organizations in developing nations (Waterhouse, 2005). For actual assignments and activities that can be found and used freely, the US Department of Defense (DoD), collaborating with the Advanced Distributive Learning Project (ADL) and other organizations, has created Shared Courseware Object Reference Model (SCORM) which sets guidelines for finding and accessing learning activities to be shared across diverse organizations and diverse software platforms (Shank & Sitze, 2004; Waterhouse, 2005). Other organizations that have developed on-line learning standards include are the Alliance of Remote Instructional

* Ph.D. Faculty, Department of Linguistics and Technical Communication
University of North Texas

* Ph.D. Turkish National Police, Erzurum Police Research Center

Authoring and Distribution Networks in Europe (ARIADNE), an EU group that focuses on computer-based technologies and telematics-supported learning tools and methods, the Japanese-based Advanced Learning Infrastructure Consortium (ALIC), the International Standards Organization (ISO), and the Global Learning Consortium (AIMS-IMS) a global group with members from educational, commercial, and government organizations (Shank & Sitze, 2004). These organizations and others have worked to eliminate global and organizational boundaries through virtual cooperation within learning paradigms.

In general, *e-learning* is defined as delivering learning materials and experiences using technology such as the Internet, intranets, CD-ROMs and satellite-transmitted video (Schafter, 2001). It assumes, at a minimum, access to computer technology by both the learners and the instructors, although not necessarily at the same time. Law enforcement agencies should keep in mind that training course delivery occurs on a spectrum; aside from traditional classroom training that uses no technology and tends to be very teacher-centered, a course can be solely technology based, or can be blended with some on-line and some on-site (either in one location or in several locations linked by satellite video) components. Shank and Sitze (2004) argue that organizations find that this hybrid e-learning approach may be a better choice than all or no technology; this may be in part because it allows for both instructor-and learner-centered elements and a variety of teaching and learning styles.

Within the e-learning context, because it is challenging to always coordinate the instructor and the distance learners at a set, determined time, three styles of e-learning are possible. The first e-learning style is *synchronous* e-learning, which provides interaction between the learners and the instructors at a specified time over the Internet. Because everyone is using the same time interval, though not necessarily the same geographical location, students can communicate with their instructors and other students in real-time (Waterhouse, 2005; Allen, 2006). This style is most similar to traditional teaching methods, but does not demand a common physical space. However, when trainees are spread across time zones and have scheduled work duties, this type of format can be difficult to manage. It lends itself to team experiences such as role plays, models, simulations and experiential learning activities.

The second e-learning style is *self-directed* e-learning. Learners complete training materials by themselves without time constraints. Self-directed learning does not necessarily provide interaction among learners or with an instructor; in its strictest form, students essentially “teach” and assess themselves. Because there is no schedule, learning is available whenever the student wants it (Henderson, 2003) which is the least disruptive to organizational schedules, but it also requires considerable self-motivation and discipline. Additionally, because some in-service law enforcement training focuses specifically on team issues, this format may not always be appropriate, but works for case studies and models.

The last e-learning style is *asynchronous* or *collaborative* e-learning, which blends the first two e-learning styles. The students can interact with the instructor and other students by using e-mail, posting their messages in discussion Webs, and can exchange their electronic documents. In this e-learning style, students do not need to be on-line at the same time. Students can share their ideas while they are working; and if they have questions, students can ask by sending e-mail or postings to the instructors or the other students (Henderson, 2003; Waterhouse, 2005). This style allows for more time to reflect on material than synchronous e-learning, but includes the feedback and collaborative components that strict self-directed learning lacks.

Currently, many law enforcement agencies use e-learning for training and education of their personnel, for example, the United Nations (UN), the Federal Bureau of Investigation (FBI), The Royal Canadian Mounted Police (RCMP), the Australian DoD, Singapore Armed Forces (SAF), the State of California’s Peace Officer Standards and Training (POST), and US Navy all have training modules on-line. E-learning affords the UN an efficient way of ensuring a base of shared, highly relevant background knowledge for the disparate people involved in issues of peace keeping. At the same time, it also allows easy access to informational modules that provide prerequisite foundational information necessary for further courses (Chan, 2002; Persons, 2004; Zengin, 2007).

The US FBI has created the Law Enforcement On-line (LEO) system, “a national interactive computer communications system and information service, an Intranet exclusively for the law enforcement community. LEO is also used as a vehicle to educate officers on the best technologies and practices in all areas of law enforcement” (LEO, 2005). The FBI Training Network (FBITN) provides e-learning environments for FBI members and officers from other police agencies (LEO, 2005). As of 2004, the US Navy offered approximately 4000 courses, including simulations, which allow personnel to assess their proficiencies and track their progress (Persons, 2004). The SAF implemented their e-learning component as a way to augment “operational readiness and improve training efficiency” while reducing the amount of time needed for national service and active servicemen to participate (Chan, 2002). California chose to have an outside organization, Allen Interactions, create the e-learning component of the senate mandated anti-terrorism training; it includes simulations and recursive components (Allen, 2007). Many other agencies, such as the Turkish National Police (TNP) are considering the implementation of such, for it is generally agreed that e-learning is a feasible and appropriate alternative or adjunct to traditional classroom education.

For a law-enforcement agency to incorporate e-learning in in-service training, the e-learning must be a good fit from three perspectives. It must fit the users; that is, trainers and trainees should be comfortable with teaching and learning with technology. It must also be a good fit, or an appropriate approach, for the need or material for which it is being implemented. And, it should allow for learning access to be improved and for the training content and goals to be accomplished (Waterhouse, 2005). Practitioners advocate conducting a needs analysis to determine the response of the organization's culture to e-learning (Shank & Sitze, 2004; Waterhouse, 2005; Allen, 2006; Zengin, 2007). Without this, efforts at incorporating technology for training will result in wasted time, money, and ineffective learner outcomes, as well as jeopardizing future attempts. Zengin (2007) recounts an example of a failed attempt at mandating technology without the technological or administrative support necessary; a needs analysis and open communication channels might have averted the negative results.

In regard to potential implementation of e-learning in-service training for a national police force, Zengin (2007) found that the current TNP trainers and trainees believed that essential for successful on-line learning would be continued support by the administration for the integration of e-learning and continuous up-to-date technology, tools, and specialists to facilitate and maintain the process. As Chan (2002) noted, "three key players are needed to develop e-learning: subject matter experts (SME), instructional designers, and the technical support group. . . . [A] critical success factor is a stable network infrastructure with a responsive first-line technical support team" (p.2).

When law-enforcement agencies are considering implementation, four advantages of using e-learning are readily apparent:

1. Flexibility—people can learn at any time of the day or night if the training is a-synchronous, and they can participate across geographical boundaries.
2. Consistency—everyone receives the same quality of training, regardless of where they are located, as long as they have access to computers.
3. Quick dissemination of critical knowledge—organizations can rapidly create and offer new training without having to consider issues of mobilization of trainers/trainees into one geographical location.
4. Enhanced communication and collaboration—many communication channels can be created within and across organizations and geographical boundaries (Shank & Sitze, 2004).

From a law-enforcement agency perspective, these advantages lead to a clear savings in time and money, as deployment of personnel and disruptive organization of facilities and schedules for in-service trainings are minimized. Zengin (2007) also found that the TNP trainers and trainees believed that e-learning would facilitate in-service training material, would provide greater opportunities for professional development, and would benefit the TNP as a whole. Both the US Navy curricula as well as the SAF training experiences support these beliefs.

The implementation of an e-learning training course involves, in addition to computers and the willingness of trainers and trainees, other factors to be in place. It requires tech teams (graphic designer, programmers, or multimedia developers). Hierarchical organizations such as law-enforcement agencies also need to establish and maintain both top-down and bottom-up communication channels to facilitate two-way communication for e-training to be implemented and maintained effectively (Zengin, 2007), but this can be integrated into the e-learning component.

As previously mentioned, an e-learning training course does not have to happen exclusively on-line, and can use both intra and internet. An e-learning framework can stress conceptual interrelatedness and provide multiple representations or perspectives on the content. To be effective, the course should have instructional interactions; that is, a good feedback loop that influences the activity and the learner is established. The training should allow the users to apply their skills in real-life, not just hear a lecture or read about the material. Simulations that involve a multiplicity of information and multi-sensory engagement are one such possibility (Allen, 2007).

This is especially pertinent to contexts such as training in cyber crime tracking, tracing illegal organizations' networks, and updating law enforcement terrorism responses. By engaging with the material, it becomes meaningful, and an interaction occurs when the learners have to do something and get feedback in return, so that expertise is gained, rather than facts just being memorized. Thus, e-learning can incorporate discussions, debates and collaborative activities that lead to learning the material because they are themselves the content. As Waterhouse adds, "e-learning adds a worldwide dimension to courses" as heretofore unreachable resources and guest speakers from all geographical locations are possible. She offers the example of Teaching Human Rights Online (THRO), a free website that provides exercises for individuals, teams, or transnational conferences related to issues in human rights (2005, p. 16). Time Equals Knowledge (TEK) is a website devoted to opening developing nations' access to information available on the internet. Other sites offer organizations and educators examples of real-life effective course material organization exemplars, such as the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) and the World Lecture Hall (Waterhouse, 2005).

Law-enforcement agencies intent on adding e-learning to in-service training must also consider how to incorporate a framework for a systematic, on-going feedback loop regarding the course. Some practitioners recommend the ADDIE paradigm, which involves Analysis, Design and Development, Implementation and Evaluation components and outlines each aspect, but others (Shank & Sitze, 2004; Waterhouse, 2005; Allen, 2006) argue that e-learning requires a new paradigm when considering instructional design since traditional models are not applicable because they are not comprehensive. Most agree that the linear approaches are limiting and that organizations need to have designers who can exploit the interactive multi-dimensionality of technology to ensure constant assessment and easy, effective, successful instructional materials and learning outcomes.

It is recommended that organizations comprehensively consider all these aspects before implementing e-learning. Shank and Sitze (2004) offer a checklist for organizations to determine if they are ready for technology in educational contexts. Organizations should be able to either respond positively or have a plan to facilitate changes that would result in affirmative answers to the following 17 concepts:

1. the agency and personnel will benefit from using e-technology to learn;
2. the agency has a plan for overall organizational learning, and on-line learning is an integral not separate component;
3. the agency places value on long-term development of personnel, and prioritizes learning in the budget;
4. support from all personnel is sought when changes are introduced agency wide;
5. the agency makes investments for needed change that may not show short-term positive effects;
6. the agency is prepared to deal with the complexities and constant change in learning technologies;
7. the agency has allocated personnel, budget and time for long-term e-learning success;
8. the agency is willing to integrate and maintain the requisite infrastructure to support e-learning;
9. the agency has IT personnel who are capable of providing necessary support for success;
10. the agency has the appropriate skills to provide for e-learning design, development, and execution;
11. the agency has or can get the knowledge to choose learning strategies and media appropriate for ensuring success;
12. the agency has access to in-house or outside resources and consultants for help to provide for long-term success;
13. agency trainers and trainees will have learning interactions and support needs met;
14. agency trainees are comfortable using computer technology to access and share information;
15. e-learning instructional materials are easily accessible to agency trainees;
16. agency trainees have the time necessary to use e-learning instructional materials;
17. agency trainees are willing to learn this way (p.9).

Zengin's research indicated that TNP trainers and trainees realize the need for agency-provided resources for e-learning to be a successful context for in-service training, expect administrative support for e-learning, believe in the inevitability of e-learning, and have the willingness to take on the challenge (2007). Thus, the most important considerations for law-enforcement agencies to consider are how people learn, how comfortable people are with technology, and how compatible the organizational philosophy/context is or is willing to be with e-learning.

To assess these considerations, program implementers need to know who will use the technology, how it will be used, and who will keep it going. As technology education specialists warn (Waterhouse, 2005; Allen, 2006; Zengin, 2007), e-learning is not a feasible option if the agency and personnel support and resources are not in place and the interest and motivation are not assured in both trainers and trainees. However, given its clear potential, e-learning is a most effective, intelligent instructional choice for smart law-enforcement organizations.

REFERENCES

- Allen, M. (2006). *Creating successful e-learning: A rapid system for getting it right first time, every time*. San Francisco, CA: Pfeiffer.
- Allen, M. (2007) *Anti-terrorism case study*. Retrieved February 22, 2008, from http://www.alleni.com/uploadedFiles/News?Commission_on_POST_Case_Study_Final.pdf
- Chan, A. (2002). *CDTLink: The SAFTI experience in using e-learning to complement military training*. Retrieved February 22, 2008 from <http://www.cdftl.nus.edu.sg/link/Mar2002/tech3.htm>
- Henderson, A. J. (2003). *The e-learning question and answer book: A survival guide for trainers and business managers*. New York: AMACOM Books.
- Kazu, I.Y., & Gumus, C. (2000). Polis egitiminde hizmetici egitimin yeri ve onemi. *1.Polis Sempozyumu*, 25-27 Ekim.
- LEO. (2005). *Law Enforcement OnLine*. Retrieved April 18, 2005, from <http://www.fbi.gov/hq/cjisd/leo.htm>
- O'Rawe, M. (2005). Human rights and police training in transnational societies: Exploring the lessons of Northern Ireland. *Human Rights Quarterly*, 27, 943-968.
- Persons, D. (2004). *Navy e-learning migrates to Navy Knowledge Online*. Retrieved February 22, 2008, from http://www.navy.mil/search/display.asp?story_id=15816
- Schafter, A. (2001). *E-learning survey, learning circuits*. Retrieved March 30, 2005, from <http://www.learningcircuits.org/2001/oct2001/survey.html>
- Shank, P. & Sitze, A. (2004). *Making sense of online learning: A guide for beginners and the truly skeptical*. San Francisco, CA: Pfeiffer
- Waterhouse, S.A. (2005). *The power of e-learning: The essential guide for teaching in the digital age*. Boston: Pearson.
- Zengin, S. (2007). *E-learning and in-service training: An exploration of the beliefs and practices of trainers and trainees in the Turkish National Police*. Unpublished Dissertation. University of North Texas, Denton.

SMART SCHOOL: TOWARD BETTER PERFORMANCE

Mohammad Attaran, PhD^a

Tarbiat Moallem University, Tehran, Iran

attaran_m@yahoo.com

Saedah Siraj, PhD^b

University of Malaya, Kuala Lumpur, Malaysia

saedah@um.edu.my

Abstract

Inspired by the Malaysian experience, the smart school project was initiated in four high schools of Tehran in 2004. The main objective of the project was to prepare students for life in the information age. The present research selected one of these educational centers, the Absal High School, to examine the implementation of smart school. The aim of the research was to assess to what extent the objectives had been realized, how teachers and students perceived their new role, how course presentation models had changed and what the (material and human) problems were according to teachers and students. Ninety-five students and thirteen teachers constituted the statistical population of this study. Data were collected via researcher-developed questionnaire, interviews and observation. Findings of the research showed that teachers and students do not have a positive assessment of the inquired fields. Also, the results revealed that to increase the efficiency of smart schools, educational centers should be provided with further equipment, teachers should attend IT courses and undergo further training. Teachers should receive bonuses for participation in IT courses. Meanwhile, school courses should be presented using diverse models that adapt to students' diverse talents. Traditional routines in class should be abandoned and each class should be equipped with computers and peripheral devices.

Keywords: assessment, smart school, information and communications technology (ICT)

Introduction and Statement of the Problem

Frequent efforts have been made during recent years to restructure schools and implement innovative plans in order to prepare teachers and students for the 21st century. One of these initiatives has been the integration of information and communication technology (ICT) with education. More than a technological advance, this has been an educational innovation (Akbaba-Altun, 2006). The quality of integrating ICT with the educational system varies according to each country. The integration program has been carried out under titles such as development of infrastructure, upgrading equipment, development of human resources, formulation of ICT development policies in education, ICT and content development, and development of ICT-based educational institutions and so forth (Montazer, 2002).

Since 2000, the Iranian Ministry of Education has adopted the ICT development policy in Iranian schools as part of its plan to reform the educational system. The key foci of this project were formulating the ICT development document, supplying 6000 high schools with hardware equipment, holding ICDL classes for high school teachers, automation of the bureaucratic system, designing educational multimedia for schools, holding the Roshd Educational Multimedia Festival, founding the Roshd information and educational network, integrating computer courses with the general education material, publishing an expert magazine on ICT and education (the Roshd-e Madrese-ye Farda monthly), equipping schools with educational software, designing ICT-based curricula, founding smart schools and so forth. The present research was based on a case study of one of these smart schools.

The Prospect and Mission of Smart Schools

The smart school project in Iran has been inspired by a similar project undertaken by the Malaysian Ministry of Education. Following its Vision 2020 document, the Malaysian government developed projects titled Multimedia Super Corridor (MSC) and Intelligent City (Cyberberjaya) to prepare the country for the information age (Bajunid, 2008). Smart school was one of the seven grand projects of the MSC and an indicator of Malaysia's determination to transform its educational system. The 1997 statement of the government reads that in order to shift from an industrial country into a progressive state in the information age, Malaysia should acquire deep technological literacy. The statement stressed the need for a reflective workforce that had the capability to compete in the global economy and acquire skills to use information age tools. The educational system should thus undergo radical changes (Malaysian Ministry of Education 1997, p. 2 in Bajunid, 2008). As Puteh and Vicziany (2004), assert, the smart school plan attracted the attention of several Asian states. For instance, they refer to an article authored by Jen and Haung on "the Application of the Malaysian concept of smart schools in technology education in Taiwan".

The idea of 'smart school' was proposed in 1997 and became operational in 1999 in Malaysia. Seventy-eight million dollars were allocated to the project. The largest portion of the budget -38%- was spent on purchasing educational material (Puteh & Vicziany, 2004). The project was at first intended to be implemented at five levels. However, the late 1990s financial crisis forced the Malaysian government to decrease the levels to three. These levels consisted of A (full class model), B+ (limited class model) and B (lab model). Ninety schools from across the country were selected for the project (Malaysian Ministry of Education, 1998, in Wan Ali, Mohd Nor, Hamzah & Alwi, 2009).

At the initial step, four courses of English, Malay, Science and Mathematics were instructed via this 'smart' method (Yaacob, Mohd Nor, & Azman, 2005). After the project was carried out it was discussed that the following elements should be taken into consideration in development of smart schools:

- Browser-based Teaching-Learning Materials (and related print materials) for Bahasa Melayu, English Language, Science and Mathematics
- A computerized Smart School Management System
- A Smart School Technology Infrastructure involving the use of IT and non-IT equipment, Local Area Networks for the pilot schools, and a

virtual private network that connects the pilot schools, the Ministry's Data Centre and the Ministry's Help Desk

- Support services in the form of a centralized Help Desk, and service centres throughout the country to provide maintenance and support
- Specialised services such as systems integration, project management, business process reengineering, and change management. (Foong-Mae, 2002, p. 3).

To prepare Malaysia for the information age, these are the objectives for the students and the educational system:

- fostering problem solution skills for innovative interaction with new situations;
- courage to the make decisions and face their consequences;
- ability to process and manage information;
- critical thinking;
- transferring the learned material and their application from one discipline to another and to real life;
- self-navigated learning (Bajunid, 2008)

The Malaysian government hopes to turn all its schools into smart schools by 2010 (Yaacob et al., 2005).

The key objective of smart schools is to produce 'knowledge workers'. To achieve this goal, optimum use of ICT in schools in order to facilitate learning, teaching and management processes is stressed. The pedagogical principles of smart school are devised such that each student is personally prepared for access to data, independent learning, change and self-assessment. A personalized approach gives students the motive to access effective teaching. The teacher is no more a provider of knowledge but a facilitator.

Based on Mahathir bin Mohamad's report, progressivism has been adopted as Malaysia's educational philosophy since 1979. The educational system has set aside the teacher-based approach and taken up a student-based method instead. Another innovation apparent in the smart school project was the introduction of ICT as a tool that reinforces the student-based, learning-centered approach (Bajunid, 2008). The Malaysian Ministry of Education (1998) recounts the five characteristics of smart school curricula as such:

- Holistic education that highlights reflection, effective communicative skills and emotional, cognitive and social development;
- Integration of knowledge, real-life skills, language and moral values;
- Integration of the vertical assessment method;
- Integration of multidisciplinary and interdisciplinary curricula;
- Integration of technology as a learning and teaching tool (In Yaacob et al., 2005)

Implementation of a smart school project entails a paradigm shift in the learning and teaching process. Elements of this paradigm are presented below:

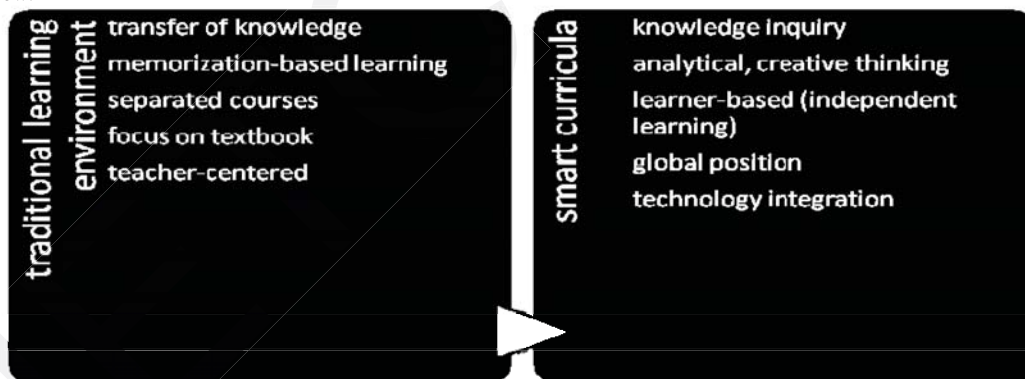


Fig1. Paradigm Shift in the Smart School. (Malaysian Ministry of Education 1998, in Yaacob, Yaacob et al., 2005)

Introduction of ICT to classes forces students to revise their learning culture and urges them to attain the skill and knowledge required for survival in the information age. Within this framework, the class will follow a constructivist approach (Dunlap & Grabinger, 1996 cited in Zain, Atan, & Idrus, 2004). The new learning environment requires students' collaboration, active learning, student-oriented environment, exploration and research (Idrus & Atan, 2002 in Zain et al., 2004).

As individuality is highlighted in the smart school, the teachers should not follow a monotonous teaching routine; rather they should take students' differences into consideration. Consequently, assessment of students' performance should be individualized, not following pre-designed content. In fact, the assessment should move from norm-referenced to criterion-referenced. In these schools, multiple-option questions are not the appropriate assessment tool anymore. Open-ended questions appear to be a better choice. Moreover, the constructivist approach on which these schools have been based regards emotional and psychokinetic factors besides cognitive aspect. In the cognitive dimension, all levels, not only the lower ones, should be considered. In addition, in this dimension the required tools for constructivist education such as communicative skills,

study skills, IT skills and the link between them should be taken into consideration. Assessment of these dimensions could be carried out through diverse means such as oral exam, project, essay writing and portfolio.

Review of the Literature

Along with the development of smart schools in Iran, researches have been carried out to study the various aspects of these schools:

The research carried out by Qassabpour (2007) titled "A study of strength, weakness, threats and opportunities of Iranian smart school and solutions to overcome the existing challenges" among third grade physics-mathematics high school students, teachers and principals of smart schools in Iran shows that the strength of smart schools is above average according to the teachers, threats are above average according to teachers and below average according to students. Opportunities are above average according to both students and teachers. A comparison of teachers and students' opinions based on their gender and school shows that there are differences between students and teachers in some fields of inquiry.

In their research, Mahmoudi, Nalchigar and Ebrahimi (2008) recount the basic challenges of smart school development as follows:

- Lack of required rules and regulations in the ministry: considering that in smart schools, control, supervision and assessment is based on computer technology, the legal procedures should be different from traditional schools. Lack of the required regulations has created several problems for smart schools. For example, the teacher does not feel obliged to develop multimedia content material. If a teacher carries out this task however, there are no legal openings to pay them financially.
- Lack of the required infrastructure: this lack of infrastructure (local network, Internet connection, personal computer, server, laser or inkjet printer, scanner, etc.) must be overcome because technology is the key prerequisite to development of smart schools. Smart school experts believe that lack of enough resources for schools has turned this factor into one of the most challenging problems.
- Incompatibility of school structure: unfortunately, Iranian schools suffer a fully traditional structure in which information technology has no significant position. Considering that IT serves a central role in smart schools, there is a necessity to adapt school structure to information technology.

The study of Dorrani and Rashidi (2007) also shows that three factors, namely receiving ICT use as simple, regarding it as useful and decision to use it have a significant effect on teachers' use of ICT in smart schools.

Significance of the Research

Success of a project in one country does not necessarily determine its success in other countries. In addition to differences between educational systems, culture is also a key factor which should be taken into consideration. There are many doubts about the success of the smart school project in Malaysia which make it necessary to rethink launching this project in Iran. In 2003, Telecom Smart School (TSS), in charge of the smart school project in Malaysia, released a report announcing its success. The indices of success according to this corporation included:

Production of 1500 educational CDs, founding a smart management system in Malaysian schools, equipping 87 schools with ICT infrastructure, employing 1000 IT experts for development of the infrastructure and training 678 staffs of the Malaysian Ministry of Education. Puteh and Vicziany(2004) believe that these are technical indices and TSS has totally ignored educational criteria in its assessment. The only thing that can be relied on is that ICT infrastructure has been founded in 87 schools; however, it is not clear to what extent the educational goals of smart schools have been achieved. Moreover, assessment of the project success should be done by an independent group, not the contractor. Another defect addressed by Puteh and Vicziany (2004) is that education experts and the main body of Malaysian Ministry of Education staff have not participated in design and implementation of the project. As the researchers claim, only private companies and higher-rank officers of the ministry were involved in the project. Meanwhile, the teachers resisted the smart school project. A study carried out by Mei and Kin (2000) showed that teachers were not prepared to teach in smart schools. They believed that ICT would not relieve them from their burdens, but also add to it. Their idea was that familiarity with new technologies entails acquaintance with new teaching methods and that needed time.

Objectives of the Research

The general objective of the research was to find out how teachers and students assess the performance of smart schools in Tehran. The case selected for this goal was Absal High School. The particular objectives of this research included: assessing the level of realization of objectives in the smart school, assessing the role of teachers in smart school, assessing the role of students in the smart school, studying the presentation models of courses in smart school and identifying the material and human problems according to teachers and students.

Research Questions

This study was guided by the following research questions:

1. To what extent has the smart school achieved its goals according to students and teachers?
2. What is the role of teachers in the smart school according to students and teachers?
3. What is the role of students in the smart school according to students and teachers?
4. How are course presentation models according to students and teachers?
5. What material and human problems does the smart school face in realization of its goals according to students and teachers?
- 6.

Statistical Population

From the four schools hosting the smart school project, Absal High School was selected for this research. This high school is located in Tehran's 'Shemiran-e No' district, an underprivileged neighborhood with high population density. Absal High School has 22 classrooms, 3 labs, 2 computer workshops, 2680 square meters for education and 215 square meters for extracurricular activities. At the time of research, the high school had bought 18 computers for students' education and official proceedings. Forty-two computers were also given to the high school by the

Ministry of Education, Tehran Department. A library, two 'connected' computers, conference hall and three well-equipped laboratories (for physics, chemistry and biology courses) and e-content production workshop were other facilities of the high school. Absal is a public school and enrolls students from its covered district (Arbabian, 2005).

Methodology

In assessment of the smart school project, this research applies a descriptive approach. The statistical population of this study includes all students and teachers of the Absal High School in the academic year of 1384-1385 (September 2001-June 2002). Due to the size of the statistical community there was no need for sampling. Data collection tools in this research included questionnaire, interview and observation. The research-developed questionnaire was of two types: one for the students and one for the teachers. Options ranged from very low to very high based on the Likert scale. Experts were consulted in identifying the validity of the questionnaire. To determine the reliability of the teachers' questionnaire, the Cronbach's alpha coefficient was applied to a sample of eleven which resulted in 95.3% reliability. The percentage shows the acceptable reliability of the questionnaire. The same procedure was carried out for students' questionnaire, resulting in a 92.1% reliability which is also adequate. Also, in this research teachers who participated in the smart school project were interviewed and classes were observed during teachers' presentations. Observations were carried out to a checklist designed.

Data analysis

In this research, descriptive statistics techniques such as frequency distribution, percentage and column charts were used to collect, categorize, describe and analyze data. The χ^2 test was also conducted to examine the difference between students and teachers' opinion. A checklist had been designed to use the findings of observations.

Findings of the Study

Based on research questions, the findings of the study are as follows:

The achievement level for smart school objectives: to respond to this question, smart school objectives as recounted by Iranian and Malaysian ministries of education documents were divided and presented via different options. Students and teachers' responses have been presented in Table 1. and table 2.

Table 1

Frequency distribution of *students and teachers' assessment of smart school project achievement* (S: students, T: teachers)

| Objectives | Very high | High | Average | Low | Very low |
|---|-----------|-------|---------|------|----------|
| Cultivation of individual capabilities and talents (S) | 8.4 | 24.2 | 40 | 20 | 7.4 |
| Cultivation of individual capabilities and talents (T) | 0 | 6.7 | 76.9 | 7.7 | 7.7 |
| Parents' participation in education (S) | 5.3 | 10.4 | 25.3 | 31.6 | 27.4 |
| Parents' participation in education (T) | 15.4 | 7.7 | 61.5 | 15.4 | 0 |
| Mental, physical, emotional and psychological cultivation (S) | 8.4 | 25.3 | 29.5 | 22.1 | 14.7 |
| Mental, physical, emotional and psychological cultivation(T) | 0 | 7.7 | 76.9 | 7.7 | 7.7 |
| Training computer literate workforce (S) | 35.8 | 34.7 | 24.2 | 3.2 | 2.1 |
| Training computer literate workforce (T) | 15.4 | 15.4 | 30.8 | 15.3 | 23.1 |
| Cultivation of creativity in the individual (S) | 16.8 | 27.4 | 32.6 | 16.8 | 6.3 |
| Cultivation of creativity in the individual (T) | 0 | 53.8 | 38.5 | 7.7 | 0 |
| Possibility of discussion inside the class (S) | 15.8 | 21.1. | 38.9 | 13.7 | 10.5 |
| Possibility of discussion inside the class (T) | 0 | 53.8 | 46.2 | 0 | 0 |
| Relevance of content material with students' talents (S) | 5.3 | 29.4 | 42.1 | 11.6 | 11.6 |
| Relevance of content material with students' talents (T) | 0 | 30.8 | 46.2 | 15.3 | 7.7 |
| Focus on research (S) | 15.8 | 9.5 | 38.9 | 14.7 | 21.1 |
| Focus on research(T) | 0 | 7.7 | 69.2 | 7.7 | 15.4 |
| Student-centeredness of classes (S) | 3.2 | 17.9 | 34.7 | 27.4 | 15.8 |
| Student-centeredness of classes (T) | 7.7 | 38.5 | 46.2 | 7.6 | 0 |
| Improving literacy (T) | 0 | 46.2 | 30.8 | 15.3 | 7.7 |
| Contact with other schools though network (T) | 0 | 7.7 | 15.4 | 23.1 | 53.8 |

Results

With regard to **achievement of objectives**, 34.9% of the students believed that the school has managed to attain its goals. While 34% believed that this achievement has been at an average level, 30.8% saw the level of attainment as low. Thus, the majority of the student respondents believed that the school has achieved the smart school objectives to a large extent.

A look at teachers' responses on the same topic showed that 48.9% of the teachers believed that the school has failed to achieve its goals, while 22.2% believed that the level of achievement has been low and only a 28.5% of the teachers believed that the school has succeeded in attaining the objectives (Table 1).

In total, with regard to the answers, we come to the conclusion that smart school is at the beginning of a long road and despite all the efforts, it has hardly been successful in attaining its objectives.

Considering the χ^2 result (24.69) and sig value (0.78) which exceeds the meaningful 0.05, it can be said with a 95% confidence that there is no meaningful difference between students and teachers on the level of achievement of smart school goals.

The extent of change of teachers' role in smart schools: in classes which have integrated technology and teaching, the instructor assumes a new role that has been worded in different ways by experts: turning from a 'sage on stage' to a 'guide by side', turning from instructor to 'co-learner', becoming a 'facilitator' who responds to students' demands, serving the role of students aide in learning how to ask the right questions

and being the designer of content material. Based on these concepts, in this research options were defined to assess teachers' ability to use computers in the classroom in various ways, and to assess the extent of their role change from content presenter to director and facilitator.

Table 2
Frequency Percent of *Students and Teachers' Responses on Teachers' Role*

| Teachers' role | Very high | High | Average | Low | Very low |
|---|-----------|------|---------|------|----------|
| Teacher's use of speech as a teaching tool (S) | 17.9 | 31.6 | 32.6 | 9.5 | 8.4 |
| Teacher's use of speech as a teaching tool (T) | 46.2 | 0 | 0 | 15.4 | 30.8 |
| Serving the role of director and facilitator in the class (S) | 15.8 | 45.3 | 25.3 | 4.2 | 7.4 |
| Serving the role of director and facilitator in the class (T) | 0 | 30.8 | 53.8 | 0 | 15.4 |
| Teacher's technology knowledge (S) | 14.7 | 35.8 | 34.7 | 7.4 | 7.4 |
| Ability to develop e-content (T) | 0 | 7.7 | 30.8 | 23.1 | 38.4 |
| Teacher's ability to use the computer (T) | 17.9 | 26.3 | 31.6 | 16.8 | 7.4 |
| Response to students and parents' emails (S) | 9.47 | 6.3 | 25.3 | 20 | 38.9 |
| Response to students and parents' emails (T) | 0 | 15.4 | 7.7 | 30.7 | 46.2 |
| Computer use in teaching (S) | 7.4 | 28.4 | 31.6 | 15.8 | 15.8 |
| Computer use in teaching (T) | 7.7 | 7.7 | 30.8 | 15.3 | 38.5 |
| Controlling user's activity with computer (S) | 3.2 | 14.7 | 22.1 | 23.2 | 35.8 |
| Controlling user's activity with computer (T) | 0 | 0 | 23.1 | 15.4 | 61.5 |
| Evaluation through computer (S) | 1.1 | 0 | 16.8 | 18.9 | 63.2 |
| Evaluation through computer (T) | 0 | 7.7 | 15.4 | 15.4 | 61.5 |

On the role of teachers in smart schools, 37.4% percent of the teachers believed that teachers' new role is not fulfilled well. Also, only 34.4% of the students had regarded the teachers' role change positively. Overall, students' perception of the role defined for teachers in smart schools was not positive.

Meanwhile, table 2 reveals, on the second question the teachers believed that their new role in smart schools is not fulfilled to an adequate level. Considering the X² result (16.39) and sig value (0.79) which exceeds the meaningful 0.05, with 95% confidence it can be said that there is no significant difference between students and teachers' opinion on the new role of teachers in smart schools.

Students' role in smart schools: students should prepare to enter the information age in smart schools. For this, they need to acquire knowledge on information and communication technology. In addition, in smart schools students are not merely learners, they play an active role in the learning process and turns into the teacher's assistant. Just as in the new context the teacher is sometimes called 'teacher learner', the learner can be called 'learner teacher'. In a smart school, while considering each individual's talents, group activities should be taught. The results of students and teachers' assessment of their own roles have been presented in Table 3.

Table 3
Frequency percent of *students and teachers' responses on students' role*

| Student role | Very high | High | Average | Low | Very low |
|--|-----------|------|---------|------|----------|
| Student's use of speech (S) | 11.6 | 16.8 | 26.3 | 15.8 | 29.5 |
| Student's use of speech (T) | 0 | 0 | 23.1 | 23.1 | 53.8 |
| Student's activeness in class (S) | 5.3 | 18.9 | 41.1 | 22.1 | 12.6 |
| Student's activeness in class (T) | 0 | 38.5 | 38.5 | 15.3 | 7.7 |
| Student's use of Internet (S) | 21.1 | 32.6 | 17.9 | 17.9 | 9.5 |
| Student's use of Internet (T) | 0 | 7.7 | 15.4 | 46.1 | 30.8 |
| Contact with other students via email (S) | 8.4 | 16.8 | 20 | 17.9 | 36.8 |
| Contact with other students via email (T) | 0 | 0 | 23.1 | 15.4 | 53.8 |
| Contact with teacher via email (S) | 2.1 | 8.4 | 13.7 | 28.4 | 47.4 |
| Contact with teacher via email (T) | 0 | 0 | 15.4 | 15.4 | 61.5 |
| Possibility of checking email (S) | 16.8 | 11.6 | 14.7 | 16.8 | 40 |
| Possibility of checking email (T) | 0 | 0 | 15.4 | 30.8 | 46.2 |
| Assisting the teacher in content development (S) | 12.6 | 17.9 | 31.6 | 17.9 | 20 |
| Assisting the teacher in content development (T) | 0 | 0 | 30.8 | 30.8 | 30.8 |
| Group activity on homework (S) | 10.5 | 28.4 | 27.4 | 14.7 | 18.9 |
| Group activity on homework (T) | 0 | 15.4 | 30.8 | 30.8 | 15.4 |

On the role of students in smart schools, 29.9% of the students believed that their role has changed, while 45.7% believed the opposite. Overall, the majority of students believed that their new role in smart schools is fulfilled at a low level.

Meanwhile, the results reveal that 63.2% of the teachers do not believe that students' role has changed, while only 7.7% believed the opposite. Overall, the teachers believed that students' new role in smart schools is fulfilled at a low level (Table 3).

Considering the χ^2 result (32.78) and sig value (0.11) which exceeds the meaningful 0.05, it can be said with a 95% confidence that there is no meaningful difference between students and teachers on students' role in smart schools.

Course presentation model in smart schools: in the traditional system, the dominant model is the one-way communication between the teacher and the student through speech. For two reasons, this model is rarely used in smart schools. First of all, the new context has transformed each participant's role. Secondly, in the information age, the teacher is not the sole source of knowledge. Students have the chance to access other sources of knowledge with the facilities technology has provided them. Thus, teachers should use these technologies in a way that suits the

necessities of the Information age and consider the diversity factor in teaching. Absal High School students and teachers' response to questions on the course presentation model are given in Table 4.

Table 4

Frequency percent of *students and teachers' responses on course presentation model*

| Course presentation model | Very high | High | Average | Low | Very low |
|-------------------------------------|-----------|------|---------|------|----------|
| Use of diverse teaching methods (S) | 15.8 | 24.2 | 42.1 | 9.5 | 8.4 |
| Use of diverse teaching methods (T) | 7.7 | 15.4 | 6.2 | 23.1 | 7.7 |
| Use of computer in teaching (S) | 16.8 | 15.8 | 42.1 | 12.6 | 11.6 |
| Use of computer in teaching (T) | 7.7 | 7.7 | 30.8 | 23.1 | 30.7 |
| Use of extracurricular content (S) | 7.4 | 15.8 | 34.7 | 24.2 | 17.9 |
| Use of extracurricular content (T) | 0 | 23.1 | 61.5 | 7.7 | 7.7 |
| Use of educational software (S) | 10.5 | 11.6 | 41.1 | 21.1 | 15.7 |
| Use of educational software (T) | 0 | 15.4 | 30.8 | 15.4 | 38.4 |

On the quality of course presentation in smart schools, 30.2% of students believe that diversity of presentation models stands at a low level, while 29.4% are satisfied with the diversity. Overall, the students believed that diversity of course presentation models stands at a low level. On the same subject, only 19.2% of teachers believed that there is diversity in course presentation models, while 38.4% believed the opposite. Overall, the teachers believed that diversity of course presentation models is at a low level (Table 4).

Considering the χ^2 result (11.5) and sig value (0.65) which exceeds the meaningful 0.05, it can be said with 95% confidence that there is no meaningful difference between students and teachers on perception of course presentation models in smart schools.

Problems of smart schools (material and human): promotion of ICT in the educational system with the intention of transforming objectives, roles, presentation models and assessment methods is not an overnight task. The problems are generally of two types: material and human. Low number of computers, inadequate peripherals, insufficient numbers of application software, low number of computers connected to the Internet, teachers' inadequate IT knowledge and skills, difficulties in integrating IT and education, insufficient computer time in the curriculum, teacher's inadequate opportunity and lack of support by technical and maintenance staff are some instances of these problems. In our research, the problems with smart schools boiled down to six categories on which students and teachers' opinion was inquired. Their responses are detailed in table 5.

Table 5

Frequency percent of *students and teachers' responses on material and human problems*

| Questions | Very high | High | Average | Low | Very low |
|---|-----------|------|---------|------|----------|
| Enough number of computers in classroom (S) | 13.7 | 31.6 | 31.6 | 16.8 | 6.3 |
| Enough number of computers in classroom (T) | 38.4 | 15.4 | 30.8 | 15.4 | 0 |
| Access to computer (S) | 22.1 | 28.4 | 26.3 | 11.6 | 11.6 |
| Possession of diverse educational software for teaching (T) | 15.4 | 38.4 | 30.8 | 15.4 | 0 |
| Easy access to Internet inside the classroom (S) | 30.5 | 29.5 | 21.1 | 8.4 | 10.5 |
| Easy access to Internet inside the classroom (T) | 15.4 | 46.2 | 23.1 | 15.4 | 0 |
| Familiarity of school staff with IT (S) | 17.9 | 33.7 | 29.5 | 12.6 | 6.3 |
| Adequate number of IT experts (T) | 3.8 | 23.1 | 23.1 | 15.4 | 7.7 |
| Students access to Internet | 38.4 | 30.8 | 15.4 | 15.4 | 0 |

Material and human problems were considered to be ample according to 51.8% of the students while only 20.9% of students believed there were few problems. Overall, they believed that the school suffered many problems. Among the teachers, only 16.9% believed that the school had few problems while 52.9% believed that there were many problems. Overall, the teachers' opinion was that the problems were at a high level (Table 5).

Considering the χ^2 result (53.4) and sig value (0.00) which is within the meaningful 0.05, it can be said with 95% confidence that there is a meaningful difference between students and teachers' opinion on material and human problems.

Conclusion

Findings of the present research show that high school teachers have a positive attitude towards smart school strategies and methods. The positive attitude was also seen during class observation when teachers showed their commitment to application of new learning methods. Research by Dorrani and Rashidi (2007) also shows that three factors, perceiving IT use as simple, and regarding it as useful and decision to use IT have a significant effect on teachers' use of IT in smart schools. In our observations and interviews with the teachers two variables, namely 'usefulness of IT' and 'intention to use IT', were quite conspicuous. According to the teachers the advantages of applying information technology in school included:

- Making the difficult courses attractive. According to the physics teacher the new mode was appropriate for teaching physics, since the course used to be tedious.
- Gradual simplification of complicated concepts with the use of simulation technology. The chemistry teacher believed that while in such a course, some phenomena, for example real atom, could not be shown to the student, animations could do that for the student.

- The possibility of using various media in teaching. The physics teacher believed using ICT reinforces students' senses of hearing and sight. It also "helped students to learn better" according to the chemistry teacher.

According to the teachers, the students were encouraged towards research in smart schools but this was possible only to the extent allowed by the class time and the content which has to be covered in a course. A study by Wan Ali et al. (2009) on the conditions and level of ICT integration in smart schools of Malaysia indicates that time is the biggest challenge for teachers. Becoming prepared for ICT integration with the course, Internet search to find relevant data, study and selection of information occupy considerable time according to the teachers. However, as the findings of the research showed, teachers with more advanced skills complained less. Considering Absal High School's limited facilities, the courses were taught in a basic way and mainly in the form of PowerPoint presentations (and inside the school's Internet center, not the class). Meanwhile, students' motivation for learning has increased. In a similar research which focused on Malaysian smart schools, Cloke, Sharif, and Ambotang (2006) found the majority of teachers emphasized that students' learning motivation had increased. Cloke et al. add that during the interviews, there was only one teacher who linked students' education improvement to ICT integration. That teacher was more skilled in using ICT compared with colleagues. Other teachers meanwhile stressed the motivation of students as the result of using ICT.

The basic organizational challenge for these schools is the lack of an appropriate strategy and non-formulation of a document for development of smart schools. It was after the establishment of such schools that Tehran Province Department of Education signed a contract with San'ati Sharif (Sharif Industrial) University for preparation of the document. Surprisingly, an engineer was in charge of formulating this document. The English language teacher of Absal High School says: "at first we moved on without any plans and any familiarity with the issue. Many of us did not know what we wanted".

Mahmudi, Nalchigar, and Ebrahimi (2008) have also addressed the issue in their research and maintain that Iran's school structure is completely traditional. Within this structure, there is no place for information technology. If we consider that IT has a central role in smart schools, we will appreciate the necessity of adapting our school structure to ICT requisities. Along with formulation of the smart school development document, our school structures should also undergo reform. Since such a document does not exist in the Iranian Ministry of Education, projects initiated without prior coordination; therefore face several challenges.

According to teachers, these challenges on material and human levels are as follows: material challenges include lack of appropriate educational software, computer/student ratio, overcrowded classes, lack of a decent Internet centers in schools, lack of adequate time to prepare e-content. Main human challenges are lack of experts to direct teachers, lack of skilled and trained teachers, lack of a motivation system to encourage teachers.

In their study, Mahmudi, Nalchigar, and Ebrahimi (2008) mention lack of required infrastructure such as local network, Internet connection, hardware (personal computer, server, inkjet and laser printer, scanner and other peripherals) and maintain that one of the prerequisites smart schools development is the presence of aforementioned infrastructure. According to smart school experts, lack of adequate resources in schools has turned this issue into one of the most serious challenges.

Based on the results of the assessment carried out in Absal High school it can be said that in order to launch smart school projects, three basic issues should be taken into consideration:

1. A strategy of smart school development should be formulated within the macro-framework of ICT development prepared by the Iranian government;
2. Expert human force who are familiar with the objectives of smart schools should be trained;
3. Smart schools should be provided with infrastructure and equipment.

Suggestions

With regard to the findings of the present research, the following are suggested in order to develop smart schools in Iran:

- Assessment of the performance of other smart schools in Iran;
- Comparative study of smart schools in Iran and Malaysia;

A number of suggestions which may be adopted by the Iranian Ministry of Education are as follows:

- Forming a group of technical and educational experts to support and assess the activities of smart schools;
- Connection between Iranian smart schools via a network;
- Connection with other countries' smart schools via network;
- Improving computer literacy of teachers and students through computer training courses;
- Decreasing the number of smart school students in comparison with traditional schools;
- Equipping classes with computer facilities and not limiting computers to the school's Internet center;
- Modifying the arrangement of chairs and desks inside classes to facilitate student interaction;
- Launching the smart school project in lower educational stages;
- Motivating teachers for training courses by setting bonuses etc.;
- Providing students with adequate number of computers (at least one computer for every two individuals);
- Less focus on printed material.

REFERENCES

- Akbaba-Altun, S. (2006). Complexity of integrating computer technologies into education in Turkey. *Educational Technology & Society*, 9(1), 176-187.
- Arbabian, Z. (2005). A Report of Absal high school (smart school). *Journal of Educational Technology*, Ministry of Education of Iran: 30(2), 23-27
- Bajunid, I. A. (Ed.). (2008). *Malaysia – From traditional to Smart Schools: The Malaysian educational odyssey*. Kuala Lumpur, Malaysia: Oxford Fajar.
- Cloke, C., Sharif, S., & Ambotang, A. S. (2006). A qualitative study of pedagogical issues arising from the introduction of the Malaysian-Smart School Initiative; *Jurnal Pendidik dan Pendidikan*, 21, 129–147, 2006
- Dorrani, K., Rashidi, Z. (2007). Study of influential factors on acceptance of ICT by school smart teachers of Tehran regarding ICT acceptance model. *Journal of Research in Educational Systems*, 1(1), 23-46.
- Foong-Mae, C. (2002). ICT in Malaysian Schools: Policy and Strategies. Educational Technology Division, Ministry of Education, Malaysia. Retrieved from: <http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan011288.pdf>
- Mahmudi, J., Nalchigar, S., & Ebrahimi, S. B. (2008). Challenges of Smart Schools in Iran. *Quarterly Journal of Educational Innovation*, 7(27): 78-61
- Mei, H. J., & Kin, C. C. (2000). Smart School Implementation in the State of Johore: An Observation. Proc. 13th Educational Technology Convention, Ipoh, Perak, Malaysia. 19-21 September, 209-216.
- Montazer, G. (2002 Jun 11). Strategies of Information Development in Iranian Higher Education, Presentation at *Knowledge Based Development Conference*, Tehran, Iran.
- Puteh M. & Vicziany A.M. (2004). How smart are Malaysia's Smart Schools? *4th Global Congress on Engineering Education*. UICEE, Bangkok, Thailand, 5 - 9 July.
- Qassabpour, B. (2007). *A study on strengths, weaknesses, threats and opportunities of Iranian smart school and solutions to overcome the existing challenges*. Unpublished Master thesis, Isfahan University, Iran.
- Wan Ali, W.Z, Mohd Nor, H., Hamzah, A. & Alwi, H. (2009), The conditions and level of ICT integration in Malaysian Smart Schools; *International Journal of Education and Development using ICT*, 5(2).
- Yaacob, A., Mohd Nor, N.F., & Azman, H. (2005). Implementation of the Malaysian Smart School: An investigation of teaching-learning practices and teacher-student readiness. *Internet Journal of e-Language & Teaching*, 2, 16-25.
- Zain M.Z. M., Atan H., & Idrus, R. M. (2004). The Impact of Information and Communication Technology (ICT) on the Management Practices of Malaysian Smart Schools. *International Journal of Educational Development*, 24 (2), pp. 201-211

SOCIAL NETWORKING SITES: REFLECTIONS ON USAGE AND POLICY ISSUES FOR COMMUNICATION EDUCATORS

Authors: Aysu Arsoy, Baruck Opiyo.

Eastern Mediterranean University, North Cyprus
Faculty of Communication and Media Studies
Visual Arts and Visual Communication Design Department
aysu.arsoy@emu.edu.tr

Eastern Mediterranean University, North Cyprus
Faculty of Communication and Media Studies
Public Relations and Advertising Department
baruck.opiyo@emu.edu.tr

Abstract

Judging by their rapid development and widespread use throughout the world today, Social Networking Sites (SNS) are arguably among the most visible forms of web-based virtual communication technologies to evolve over the past decade. As at the beginning of April 2010, the combined user membership of just six of the most popular SNS stood at close to a billion people around the world – meaning close to 17% of the World's 6 billion people are users of one or more social networking sites users of these six alone. And there are others! Although the true extent and nature of this new trend in human communication is only beginning to be documented, the focus of much of the literature that have examined SNS use in the context of educational institutions appear to emphasize either the effects and implications of SNS on human interaction between teachers and students or among students - especially in Universities and colleges (Hewitt & Forte, 2006; Mazer, Murphy, & Simonds, 2007); or critical appraisals of motivations behind their use, in addition to investigations of personal benefits accruing to those who use them – which Ellison et al. (2007) have referred to as social capital. In this paper, while we acknowledge the potential benefits of these sites in creating or enhancing social relations, we mostly pose questions in the areas of policy and ethics regarding their use, and make specific suggest policy initiatives that we believe could increase their benefits and reduce the risks currently prevalent to which no sufficient attention has been paid. We argue that it is preferable to cultivate the spirit of ethical and professional usage of the internet in the formative years of learners, and propose inclusion of these inclusions of safe usage of the internet in the curriculum of primary schools. Although we specifically use the case of social networking sites to advance the argument, it is important to note that our arguments are not intended to be confined to the use and policy for these sites alone, but for a more generalized use and reflection for all areas involving new communication technologies.

Key words: social networking sites, education, communication, new media, policy, cyber ethics

1. Introduction

Although the phenomenon of web-based social networking is relatively recent, it is not altogether very new. Many of the most popular SNS came into existence within a span of less than decade (Facebook™ launched in February 2004; Orkut™ January 2004; Myspace™ August 2003; Friendster™ March 2002; Twitter™ in March 2006 and later launched publicly in July 2006, and Hi5™ in June 2003). What's new about these SNS is the rapid trend in their growth and usage all around the world. With the rapid growth have also concerns about potential and scope for abuse by section of users – ranging from milder issues of protection of privacy of users to more complex usages of the sites by a few with intention of committing crime sometimes targeting minors and under age children, among many others. We will examine a few of these problems in detail shortly. While describing social networking sites, Boyd & Ellison (2007) have observed that they (SNS) allow members to create public, semi-public or private profiles, and offer a variety of tools and applications through which those who create such profiles communicate with other users across cyberspace (Dwyer, Hiltz, & Passerini, 2007).

As recently as 2007, MySpace™ was the membership leader among social networking sites, but with Facebook™ has had a steadily growing and loyal membership which has caused it to outstrip MySpace and other competing SNS and outstrip them with a membership which stood at 400 million (5 and a half times the population of Turkey) are active Facebook™ users globally today (Cain, 2008; Wikipedia, 2010). Wikipedia also lists nine other top ten SNS' besides Facebook™ in the following order as of April 7, 2010 (these are SNS excluding dating websites): 1) Facebook™ with 400 million users; 2) Orkut™ with 180 million; 3) MySpace™ with 130 million; 4) Friendster™ with 115 million; 5) Twitter™ 100 with million; 6) Hi5™ 80 million; 7) LinkedIn™ with 60 million; 8) Flixter™ with 63 million; 9) Netlog™ with 61 million, and 10) Classmates.com™ with 50 million.

Although the argument and that we make here applies to all SNS' we focus more closely on the fastest growing one with most users – Facebook™ to make our case.

The main characteristic of SNS is profiles that display information and list of friends (boyd & Ellison, 2007). Applications of SNS include, blogs, games, photo albums, groups to join and support, and news feed that highlights information regarding profile changes, upcoming events, and birthdays, sharing videos, web pages. Most SNS also provide an application allowing members to chat and send-receive emails.

Nearly all social networking sites require users to register themselves – giving personal information about them: A process which almost always requires an individual to read and accept an SNS Service provider's "Usage" or "Membership" policies. Typically, much of the

needed information here would ordinarily be considered “Personal,” or “Private,” although the SNS often and commendably give members a menu of “Privacy settings” to help them select which information to make publicly available – including, in the case of Facebook™, those who would have access one’s profile online. Even with these, there still remain pertinent policy questions which are not only confined to the privacy of an individual user and his or her own network of friends. For example, in a recent case in the UK, a person convicted of murder in the UK used his Facebook™ posting to taunt relatives of his victim, saying he would “Soon be back,” prompting the UK justice Minister Jack Straw to publicly push for development or change in policy and Laws regarding criminal and unethical use of social networking sites. In April 2010 in Cyprus, two men, aged 42 and 38 were caught by Law enforcement authorities and remanded on suspicion of molestation (separately) of at least nine underage – some of whom they first “met” on Facebook™ before pet dogs were used to lure them (Evripidou, 2010). Ironically, almost all the victims who were met on Facebook™ were between ages 11-13 and were not eligible by virtue of their age to be members or have profiles on Facebook™. Facebook™ policy stipulates that members must be above 13 years.

In the first week of April in Kenya, a celebrated TV Presenter sensationally made national news when she quit her job, called off her engagement to a fiancé and soon announced that she had decided to marry another man whom met through a social networking site while they were both students in Australia (Saturday Nation, 2010 April 9). We recognize the positive contributions these sites are making to the lives of many as is clear from the rapid increase in the number of those joining them. But we also feel and suggest the need for better organized growth with policy guidelines that would render usage and users safe. This need is what forms the focus of the present paper.

Social networking sites are mediated public sites – meaning places in which mediating technology allow people to gather publicly. While writing on social networking sites’ mediated public, Boyd (2007) noted that they are characterized by persistence, searchability, replicability, and invisible audiences as their unique properties. Social networking sites which one scholar described as “relationship facilitators,” allow individuals to remain in relatively close social contact with others through these web sites (Cain, 2007). Among other things, social networking sites allow members to share personal information and photos, communicate with each other, in addition to linking up with others with similar interests within the online environment.

Literature shows that SNS are mainly used for communication among friends, and for information sharing (e.g., Acquisti & Gross, 2006; Dwyer et al., 2008; Lampe et al., 2006). With regards of policy and policing, we will use Facebook™ social networking site as a case and show some Facebook™ -related events that we believe justify policy decisions and initiatives by educators and governments. As we do so guided by the following research questions:

1. Why are an increasingly large number of people using SNS such as Facebook, and what is their profile?
2. What risks or dangers might exist alongside the phenomenal growth of social networking sites?
3. What policy (and policing) challenges might arise from the growth of SNS?
4. What regulatory or other policy options are available to contain the situation by: a) SNS service providers and, b) governments?
5. How should communication and media educators respond?

2. Registration and membership to SNS

Virtually all SNS require users to register themselves and become members creating a personal profile. Technically, all that is required to create a profile is access to the internet via computer or a mobile phone devise with internet access accessories. The only other requirement is that users have a valid e-mail address through which message notifications eventually get to be sent and, in the case of Facebook™, and that one be at least 13 years old to register as user. A newly-registered user receives a confirmation message to validate email address after which system allows one to start building up his or her profile. Once a member, one is able to “publish” and “share” a wide range of personal information ranging from a description of self, to statement of one’s religious and political affiliations and beliefs – in addition to the date and year of birth, marital status and declaration of the types of friendship they are looking for and with which gender. This is in addition to provision for one to “publish” names of their siblings or children, education and information about where a user works - to which many users respond by giving not only names of organizations where they work but also their job designations or job title. Many users of Facebook™ especially take advantage of these facilities and often choose to make much or all of the information about available for the wider public who care to search for them in the net. Also, users can create photo albums and tag other people on the photo which means provision of a possibility to “publish” information about others, who may not always know this is happening, and could have objected if their prior consent were to be sought. Profile owners on Facebook™ have four options for their privacy setting. Accordingly, a user can by using these privacy settings, allow: 1) everyone; 2) friends of friend; 3) only friends; or 4) custom setting to share their information. Privacy setting are applicable almost every taking action like albums, friends, or other shared information. Most of SNS allows users to use text base information on the main profile page, namely on their “Wall” or their friends’ Wall. There are many games applications integrated into the SNS services. Members can play these games in multiple players and alone. Also they shares videos, podcast and web pages. Members able to like, comment or rank shared information.

While we applaud what new technologies in have enabled us achieve in human communication, the theoretical possibility of so much personal information about individuals by themselves, and about others, raise some important policy issues which should not be left to governments and SNS providers themselves alone to grapple with. Such issues include, but are not limited to, privacy rights of the individual profile holders themselves; rights of minors with access to computers and internet to be enlightened and ‘protected’ from potential harmful information; ethical and responsible usage of the sites themselves by both members and owners and, the general need for general societal vigilance to guard against the sites being turned into or turning into anything other than what they were intended to be. And we have in mind here corporate greed as well as convenient use by criminal gangs also meeting their unsuspecting “victims” through social networking sites by turning them into anti-social instruments of terror and crime.

3. Brief History of Facebook™ from school network to global networking site

In February 2004, Mark Zuckerberg and co-founders Dustin Moskovitz, Chris Hughes and Eduardo Saverin launched Facebook™ from Harvard University dorm room (Facebook™ Company Timeline, 2010). After it's lunch, "within 24 hours, 1,200 Harvard students had signed up, and after one month, over half of the undergraduate population had a profile" in thefacebook.com (Philips, 2007). March 2004, popularity of the site expands from "Harvard to Stanford, Columbia and Yale" then all "US universities" (Facebook™ Company Timeline, 2010; Philips, 2007). End of 2004, "Thefacebook.com" reached 1 million active users. August 2005, "the company officially changes its name to Facebook™ from thefacebook.com". September 2005, Facebook™ added high school networks, and October 2005, added international school networks. End 2005, Facebook™ reached more than 5.5 million active users. Its sixth birthday, February 2010, Facebook™ has over 400 million active users (Facebook™ Company Timeline, 2010). At present, Facebook™ have 163822 high schools and 12294 college networks (Facebook™ College Networks, 2010; Facebook™ High Schools Networks, 2010).

3.1 HarvardConnections.com Social Networking Site for Harvard University

Harvard University senior students Cameron Winklevoss, Tyler Winklevoss, and Divya Narendra had an idea for a social networking site for Harvard University students and alumni (Carlson, 2010). The site was entitled as a HarvardConnections.com and 1) Harvard students only, by requiring Harvard.edu email addresses, and 2) expand Harvard Connection beyond Harvard to schools around the country" (Carlson, 2010). 30 November 2003, they met with Mark Zuckerberg, Harvard sophomore student, and had an agreement on work as a web developer for HarvardConnections.com (Carlson, 2010). However, Mark Zuckerberg left the HarvardConnections.com project just before he launched thefacebook.com (Carlson, 2010).

Divya Narendra, Cameron Winklevoss and Tyler Winklevoss, founder of HarvardConnections.com, **lunched the HarvardConnections.com** in May 2004. September 2004, they changed the social networking site name to ConnectU and **accused Mark Zuckerberg** of copying their ideas and coding (Philips, 2007; Criticism of Facebook, 2010).

Mark Zuckerberg borrowed the concept of Facebook™ from his prep school Phillips Exeter **Academy printed manual** of all students and staff, unofficially called the "face book™" (Facebook, 2010).

Mark Zuckerberg kept social networking idea for connecting classmates and **took it one step further** by blended it with his previous project "Facemash- Hot or Not", dating site. Facemash.com let's users compare pictures of two Harvard students and vote for which one you like best, and gives a list of Harvard students, ranked by attractiveness (Carlson, 2010).

3.2 Privacy Profile in Facebook

In a recent study, computer security company, Sophos (2009) found that **46%** of Facebook™ users accepted friend requests from strangers, 89% of users in their 20s divulged their full birthday, nearly 100% of users post their email address, and between 30-40% of users list data about their family and friends and 50% give information where they live. According to Graham Cluley, senior technology consultant for Sophos, "Ten years ago it would have taken several weeks for con artists and identity thieves to gather this kind of information about a single person".

3.3 Attitudes toward Policy Changes

Another Sophos (2010) survey shows that Facebook™'s proposed changes to their privacy policy are 2% Good, I support the changes Facebook™ is proposing to make to their privacy policy (16 votes). Bad, I don't support the changes Facebook is proposing 95% (647 votes) and I don't understand what they're changing 3% (17 votes) (2010).

3.4 Panic button

March 2010, 17 years old British girl had been attracted by a picture of a young man that real name Chapman - calling himself Peter Cartwright - had posted on Facebook™. She was raped and suffocated after agreeing to meet Chapman (Ward, 2010).

Increasing of similar cases in UK, The Child Exploitation and Online Protection Centre (Ceop) collaborated with UK government and they demanded "panic button" on every page in Facebook™. The panic button takes people to a site that gives information how to handle cyberbullying, hacking, viruses, distressing material and inappropriate sexual behavior. It is using by other SNSs, i.e., Bebo (Ward, 2010).

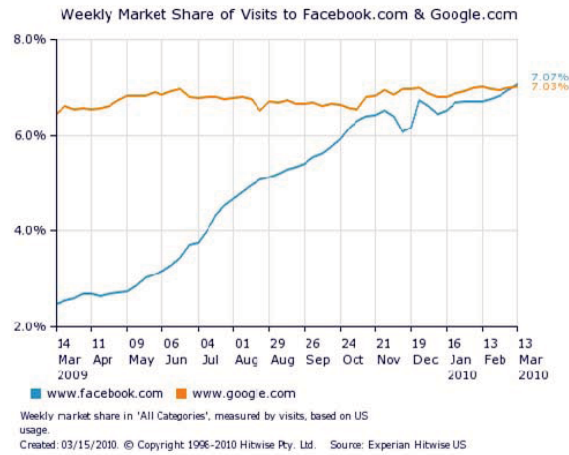
Ceop (Ward, 2010) argued that currently children make about 500 reports a month by clicking on the button and that in January 2010 about 75% of reports it received were about incidents on Facebook™.

Facebook™ announced that they will not install a "panic button" on its main pages, but its will develop in existing system (Ward, 2010).

3.5 Usage of SNS

Alexa (2010) click stream show that user of Facebook™ visits Google™ immediately preceding facebook.com and then go Google™ after leaving Facebook™. The research firm Hitwise Intelligence announced that "Facebook reached an important milestone at March 13, 2010 and surpassed Google™ in the US to become the most visited website". Facebook.com recorded 7.07 per cent of traffic and Google.com 7.03 per cent. Also Facebook.com reached the first ranking on Christmas Eve, Christmas Day, and New Year's Day, and the weekend of March 6th and 7th 2010 (Hitwise Intelligence, 2010 March 15)

Table 1. Hitwise Intelligence, Weekly Market Share of Visits to Facebook.com and Google.com (Hitwise Intelligence, 2010 March15)



4. Categories of Usage

4.1 Propaganda - Collective Actions against Policy and Regulation

6 April 2010 Turkish Facebook™ users established a public group called “10 Nisan - 13 Nisan arasında profilleri kapatıyoruz” (in English, deactivate your profile between 6 – 10 April) (Facebook Group “10 Nisan - 13 Nisan arasında profilleri kapatıyoruz”, 2010). They claim that there are many groups in Facebook, publishing photos and videos which are insulting Allah and Muhammed. They argued that they reported those groups many times however Facebook administration ignore reports and complains. They published an animated image that shows how to deactivate Facebook profile to support the aim of the campaign. They generated bilingual text in Turkish “ALLAH'a Peygamberimize Saygı Gösterilmeyen Bu Ortamdan Ayrılıyorum!” and in English “Insult To The Prophet of God And The Close The GROUP AND PAGE!” as a cause of deactivations, to deliver collective messages to the Facebook administration. They reached 55000 fans in second day, and 80845 third day(2:00am), 109158 fourth day (12:23 am). They were targeting 250000 fans.

4.2 Negative usages

We can categorize negative usages in two stages: 1) Personal level - resulting with psychological and physical destruction such as addiction, depression or harassment, abuse or cyberbullying; 2) Criminal level - cybercrimes such as identity thief or crime activities moving from virtual to real world such as stalking, suicide, and murder.

Social networking site MySpace™, announced that they have deleted 90,000 users it has identified as sex offenders in Myspace™. Also Facebook™ stated that they disabled more than 4,000 accounts with user IDs associated with those sex offenders list. However Myspace™ argued that 8,000 potential match identified in Facebook™ (Sex offenders booted off MySpace, 2010).

4.3 Social-Sharing Cases

A debate on Facebook™ turned students clash in Palestine. After clashing on the website, students took out iron chains and rods and started fighting one another. Many were hospitalized and the campus was evacuated (Students Clash Over Debate On Facebook, 2010).

The ethic tension came out from sharing on Facebook™ in Tire-Turkey ('Sosyal Paylaşım'la Gelen Etnik Gerilim, 2010). High School teenagers shared a message “They burned a Turkish flag in the dorms” in Facebook™, and in half hour later 50th young people who leave in the same town occupied the dorms garden for revenge. Police force used tear gas to keep away trackers from the dorms.

In Israel army, one soldier shared the details of operation and secret plans in Facebook™ just before an operation. Operation aborted and he was sentenced 10 days jail penalty (Operasyon Facebook'ta, 2010).

14th years old high school girl, opened a page “I hate school principals” in Facebook™. The page attracted 100 students from same schools. She dismissed from the school in Greece (Facebook Yüzünden Okuldan Atıldı, 2010).

Two girl students from same Lyceum in Turkey discussed on Facebook™. Later on they appointed somewhere outside to punch each other. They used knife and stab each other during the fight and both were injured (Facebook'ta kavga eden kızların bıçaklı düellosu, 2010).

24 years old British girl suicide when she realized her old-boyfriend published her naked photos in Facebook (Facebook'taki Fotoğraflar Ölüm Getirdi, 2010).

5. Policy Suggestions

Social sharing is the most common purposes by SNS users. For instance, most photo album that uploaded by the members represents their happy moments. Members do not only upload personal content, they also upload photos of others. However, the consent of photos is a privacy issue. Also it is a crime issues, comparable to others like fraud, false identity and robbery. Sex offenders, burglars, even governments follow individuals and identify their 'targets' from photographs. Safety policy and regulation is not equally and it creates

inequalities in the curriculum. SNS providers must fulfill the safety policy for their users. There is need for more explicit information about their policy. A feature of prompts that remind a user more than once about implications of an action they are about to take would, for example, help reduce incidents of privacy violations through widespread distribution of photos of other people without adequately reflecting on the consequences of such an action. This would in any case be more consistent with the Law of Libel or defamation which prohibits publication of a document and sharing its content with those for which the content was not intended. Provision of such information would particularly be helpful in addressing concerns which arise from users publishing information through posting or tagging. Policy information, and taken risks ought to be made known by members as they share information and images online.

It is against this background of scope and potential for abusive usage that we strongly urge that Internet ethics be taught as a requirement in the school curriculums in primary school or whatever appropriate early age is deemed right in different countries.

SUMMARY AND CONCLUSIONS

In this paper, we have traced the phenomenal growth which has characterized social networking sites have witnessed worldwide since they came into the scene less than ten years ago. While doing so, we have cited research evidence showing that usage of these sites has rapidly increased from just a few million users in 2006 to a combined global total of over a billion people. The paper has highlighted the enormous potential and benefits that the field of communication as users get to gather publicly through these new technology-based virtual network sites. As its main point of departure, the paper has concentrated on the need for policy framework to help guard against possible abuse that would accompany the use of anything which grows this fast. That such abuse is already taking place is evident from the equally increasing and not isolated incidents of crimes being traced to “meetings” which first started on social networking sites. The incident in Cyprus in particular, where one male sex offender molested up to eight young girls - many of them met through Facebook™, and all of them under the age stipulated as minimum for users, together with other crimes cited in the paper, help to underscore the central thesis of the paper in calling for reflections on and need for action on policy guidelines for usage of social networking sites. On our part, we propose the following non-country specific recommendations:

- Public and Private Sector Educational Institutions and Government departments consider introduction of a mandatory course on cyber awareness, usage and safety in Primary Schools.
- Government and Educational Institutions could inform parents and mentors about cyber risk, dangers and ethical issues by sending letters also they can provide support with training kits and workshops.
- Non-governmental organizations, civil society groups take initiative and play greater roles to both create awareness and prompt policy makers to act on the subject of internet safety.
- Parents be encouraged and sensitized to play greater role in monitoring and controlling access by young users and minors to the internet, computers and mobile technology in order for these gadgets not to be seen as and equated with instruments of entertainment such as television.
- Use of mobile and Internet technology use be required to incorporate encourage ethical usage tips and info even as parents and educators are encouraged and assisted to lead youngsters to develop awareness that virtual communities are reflection of real communities.
- Individual users, civil society organizations, governments and educators should all make efforts to impress SNS providers to progressively fit their sites with features that provide for safer and ethical usage – and render criminal use of the sites more difficult. These could include, without being limited to, developing more informative systems, providing audio, visual, and textual versions of risks and dangers that may exist.

References

95% of Facebook Users Oppose Privacy Policy Changes: Sophos Poll Reveals Are Social Networks Eroding Privacy? (2010, April 7). Retrieved April 9, 2010, from Sophos Facebook Poll : <http://www.sophos.com/pressoffice/news/articles/2010/04/facebook-poll.html>

Alexa. (2008). Retrieved April 2010, 7, from Site Stats for facebook.com: <http://www.alexa.com/data/details/main/facebook.com>

boyd, d. m., & Ellison, N. B. (2007). Social network sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication* , 13 (1).

Carlson, N. (2010, March 5). *Business Insider*. Retrieved April 6, 2010, from At Last-- The Full Story Of How Facebook Was Founded: <http://www.businessinsider.com/how-facebook-was-founded-2010-3#im-going-to-fuck-them-4>.

Criticism of Facebook. (2010). Retrieved April 2010, 2010, from Wikipedia™ : http://en.wikipedia.org/wiki/Criticism_of_Facebook

Dwyer, C., Hiltz, S., & Passerini, K. (2007). Trust and Privacy Concern Within Social Networking Sites: A Comparison of Facebook and MySpace. *Proceedings of The Thirteenth Americas Conference on Information Systems*. Keystone, Colorado, USA.

Evrpidou, S. (2010, April 9). Sex Predators on the Prowl. *Cyprus Mail* , pp. 1-3.

Facebook. (2010). Retrieved April 9, 2010, from Wikipedia: <http://en.wikipedia.org/wiki/Facebook>

Facebook Group "10 Nisan - 13 Nisan arasında profilleri kapatıyoruz". (2010, April 7). Retrieved April 9, 2010, from http://www.facebook.com/Protesto10Nisan?v=info&ref=hf#!/Protesto10Nisan?v=app_4949752878&ref=hf

Facebook users at risk of "rubber duck" identity attack. (7, December 2009). Retrieved April 9, 2010, from Sophos : <http://www.sophos.com/pressoffice/news/articles/2009/12/facebook.html>

Facebook Yüzünden Okuldan Atıldı. (2010, February 11). Retrieved April 7, 2010, from NTVMSNBC : <http://www.ntvmsnbc.com/id/25056484>

Facebook'taki Fotoğraflar Ölüm Getirdi. (2010, February 25). Retrieved April 8, 2010, from NTVMSNBC: <http://www.ntvmsnbc.com/id/25062133>

Facebook'a Büyük Protesto. (2010, April 8). Retrieved April 8, 2010, from Hürriyet News Paper: <http://www.hurriyet.com.tr/teknoloji/14358642.asp?gid=373>

Facebook'ta kavga eden kızların bıçaklı düellosu. (2010, March 14). Retrieved April 7, 2010, from Radikal News Paper: <http://www.radikal.com.tr/Radikal.aspx?aType=RadikalHaberDetay&ArticleID=985512&Date=07.04.2010&CategoryID=97>

Facebook™ Company Timeline. (2010). Retrieved April 6, 2010, from <http://www.facebook.com/press/info.php?timeline>

Facebook™ College Networks. (2010). Retrieved April 7, 2010, from <http://www.facebook.com/networks/networks.php#!/networks/networks.php?view=college>

Facebook™ High Schools Networks. (2010). Retrieved April 7, 2010, from <http://www.facebook.com/networks/networks.php#!/networks/networks.php?view=hs>

Facebook™ Networks. (2010). Retrieved April 7, 2010, from <http://www.facebook.com/networks/networks.php>

Facebook™ The Privacy Challenge. (2009). Retrieved April 9, 2010, from Sophos: <http://www.sophos.com/security/topic/facebook.html>

Hewitt, A., & Forte, A. (2006). Crossing Boundaries: Identity Management and Student/Faculty Relationships on the Facebook. *Computer Supported Cooperative Work Conference, November 4-8, 2.* Banff, Alberta, Canada.

List of Social Networking Websites. (2010). Retrieved April 7, 2010, from Wikipedia™: http://en.wikipedia.org/wiki/List_of_social_networking_websites

Mazer, J. P., Murphy, R. E., & Simonds, C. J. (2007). 'I'll See You On "Facebook": The Effects of Computer-Mediated Teacher Self-Disclosure on Student Motivation, Affective Learning, and Classroom Climate'. *Communication Education*, 56, 1-17.

Operasyon Facebook'ta. (2010, March 5). Retrieved April 7, 2010, from Radikal News Paper: <http://www.radikal.com.tr/Radikal.aspx?aType=RadikalHaberDetay&ArticleID=983768&Date=07.04.2010&CategoryID=96>

Philips, S. (2007, July 25). *A Brief History of Facebook.* Retrieved April 6, 2010, from Guardian News: <http://www.guardian.co.uk/technology/2007/jul/25/media.newmedia>

Reports Sparsk Mixed Reaction . (2010, April 7). *Cyprus Today*, p. 4.

Sex offenders booted off MySpace. (2010, February 4). Retrieved April 2010, 7, from BBC News: <http://news.bbc.co.uk/2/hi/technology/7869491.stm>

Social Networking Websites Review Comparisons. (2010). Retrieved April 2010, 2010, from TopTenREVIEWS : <http://social-networking-websites-review.toptenreviews.com>

'Sosyal Paylaşım'la Gelen Etnik Gerilim. (2010, April 7). Retrieved April 7, 2010, from Radikal News Paper: <http://www.radikal.com.tr/Radikal.aspx?aType=RadikalHaberDetay&ArticleID=990061&Date=07.04.2010&CategoryID=98>

Students Clash Over Debate On Facebook. (2010, April 5). Retrieved April 9, 2010, from Sify News: <http://sify.com/news/students-clash-over-debate-on-facebook-news-international-kefn6xhcdge.html?tag=facebook>

Ward, M. (2010, March 8). *Facebook rules out installing 'panic button.* Retrieved April 9, 2010, from BBC News: http://news.bbc.co.uk/2/hi/uk_news/8574727.stm

SOCIAL NETWORKING THROUGH ONLINE COMMUNICATION IN WORKPLACE: DEVELOPING COLLEGIALITY

Prof. Dr. Aytekin İŞMAN

Department of Computer Education and Instructional Technology, Faculty of Education Sakarya University

Email: isman@sakarya.edu.tr

Dr. Zehra A. GAZI

Department of Computer and Instructional Technology Teacher Education, Faculty of Education, Eastern Mediterranean University, Email:

zehra.altinay@emu.edu.tr

Dr. Fahriye A. AKSAL

Department of Computer and Instructional Technology Teacher Education, Faculty of Education, Eastern Mediterranean University Email:

fahriye.altinay@emu.edu.tr

Sibel DİNÇYÜREK

Educational Sciences Department, Faculty of Education, Eastern Mediterranean University

Email: sibel.dincyurek@emu.edu.tr

Abstract

Online communication tools become popular to enhance social networking among people in order to improve productivity and motivation within the workplaces. In this respect, case study approach employed in this research within the nature of qualitative research in order to examine the impact communication tools for developing social networking to enhance motivation in better working practice. In order words, the research aimed to investigate the role of social network through online communication for enhancing productivity in workplace. In this respect, this study examined how communication tools affect establishment of social networking and productivity in specific workplace. Self-reports were employed as data collection technique to gather large amount of data from the volunteer faculty members. The data were analyzed through content analysis regarding themes about social networking, online communication. The results revealed that online communication tools have positive impact on developing socialisation and communication, networking skills thus provide motivation and productivity.

Keywords: case study, collegiality, online communication, social networking

INTRODUCTION

Social networking refers the online community which group of people meet people near them and around the world, invest in their network of personal and professional contacts, become invited to exciting parties and networking events. In order to have productive social networking, there is very significant to have specific purpose. Social networking through online communication tools provides productivity, intellectual flexibility, sharing and negotiation, personal growth, accountability, emotional support, having activity partners for the group of people with a specific purpose. Although there are contributions to our life, social networking can cause some drawbacks to the people such as loss of privacy, social resistance to change, emotional dependency.

Social networking can be established through web 2.0 technologies such as Facebook, Myspace, Twitter, Linkeln, Skype, MSN, etc. These communication tools need to be used with a specific reason and purpose in order to have productive social networking. There are some reasonable tips how to use social networking productively (Cohen, 2008). In this respect, it is significant to know what people expect from social networking before involved in communication and negotiation with group of people. In other words, people need to clarify the purpose of being in social network with others. In addition, it is very significant to create communication channel through one of the web 2.0 technologies with people who could be activity partner for specific purposes. Overall, social networking is the bridge for building conscious communication and negotiation with compatible people in order to work for specific purposes in enhancing work performance, personal and professional development (Gouveia, 2008).

In this respect, this study focus on revealing the role of social networking in proposing better working practice and developing personal and professional experiences for the staff within specific work context whose have specific purpose to communicate and negotiate based on online communication tools. Social networking wheel became a framework for this research as it is online community platform that covers profile, messaging, user generated video, search, comments, media databases, friends, agents, think map, groups, favourites which those links activate properly to communicate and negotiate with others. In following, there is social networking wheel which helped researchers to investigate the impact of social networking for better working practices within specific work context and this framework reveals the role of social networking for personal and professional developments.

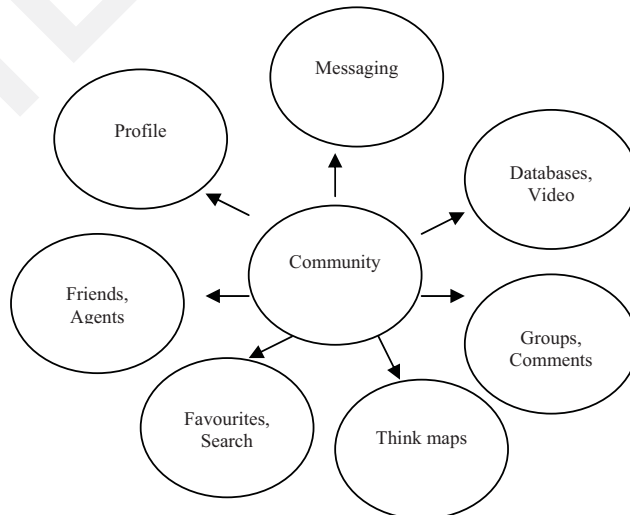


Figure 1. Social Networking Wheel (adapted from mediabistro.com)

As figure 1 underlined that online community covers profile of the user, friends and agents, groups and comments, favourites of the users and easy search process, media databases and videos which user can create, think maps that user actively and critically work for the specific purposes. In relation to these components of the online community, users can easily interact with each others and attempt to share, negotiate the task in order to complete in a productive way within workplace.

Aim of the Research

Social networking is the community that group of individual at least two people come together and work together through online communication in order to propose or complete the task. Although social networking can exist in person, especially universities, high school, private sectors as workplaces, it is preferred online. People within the workplaces are looking to meet other people, to gather and share information immediately, develop friendship and professional experiences through online community. In this respect, social networking websites function online community which people are granted with socialisation in order to develop personal and professional experiences. Therefore, workplaces such as non profit organisations, faculties in higher education institutions turned attention to use online communication tools in order to furnish productivity and mutual understanding among the staff for better working practice. In this respect, this research encapsulates the impact of social networking through online communication tools in enhancing work performance and collegial activities for both personal and organisational development. Regarding to this perspective, research aims to reach out following objectives;

- To examine the role of online communication tools for social networking within workplace
- To create the awareness of the role of online communication tools for social networking in work place
- To elaborate online social networking which it is bridge for personal achievement and professional achievement through collegial activities
- To contribute personal and organisational development regarding to creating awareness of social networking

Research Focus and Questions

In respect to personal and organisational development through collegial activities based on online social networking, research focus covers creating awareness of online social networking for collegiality in better working practice and personal growth within the workplace. The following research questions were answered throughout the inductive process:

Q1. To what extent, colleagues attempt to use online communication tools for social networking in work context?

Q2. How online communication tools foster/limit knowledge sharing of colleagues?

Q3. To what extent, using communication tools for social networking increase collegial activities?

Research Context

The research was taken place in one of Education Faculty in higher education institution in order to examine the role of online social networking in developing better working practice. Description of the context is not identified in this research to reveal the sensitivity on ethics within the research. Significantly, data could not be generalized for all Education Faculties. As the faculty aims train independent, cooperative educators and teachers who value critical thinking, believe in lifelong education, in relation to these quality aims, the faculty is the most appropriate research context to carry out research in order to investigate the role of online communication tools in developing social networking for better working practice which participation is based on voluntarism.

Limitations

Although the research had credible outcomes, there are following limitations that are successfully managed within inductive process.

- The research was conducted to specific context which research context may be extended in further study. In addition, the research was conducted to specific context in 2009.
- There were eight people as participants involved in research process based on voluntarism.
- Case study approach was employed in the research.
- Self-report used as data collection technique within qualitative research process.
- Participants had prior knowledge and experience on the role of social networking and its impact to productivity and motivation.

METHOD

Research Design

Qualitative research design is fundamentally interpretive and emergent in natural world by considering socially constructed meanings through human experiences (Bogdan, Biklen, 1992; Marshall, Rosmann, 1999; Cohen, Morrison, Manion, 2000). Experiences of human concerning a phenomenon as described by participants in specific study, understanding the experiences marks phenomenology as a framework and the procedure involves studying a small number of subjects through extensive and prolonged engagement provide understanding of patterns and relationships of meaning within inductive process (Creswell, 1994). Qualitative research is pragmatic, interpretive and grounded in the lived experiences of people. In this respect, qualitative researcher engages in systematic reflection with considering experiences, understanding how and what meanings people socially construct about the issue which is about investigating the role of social networking in developing collegial activities for productivity in workplace within this research.

In relation to the nature of qualitative research, researchers attempt to use inductive process which process has mutual simultaneous shaping of the factors; categories were used while collection and analysis of primary data; patterns, theories were developed for understanding the research focus. As qualitative research aims to reflect on what is happening in particular context, it is interpretive, naturalistic approach to study things in natural setting and interpret phenomena based on socially constructed meanings (Denzin, Lincoln, 2003).

Research Approach

Case study approach was employed in this research. It is the appropriate research approach as case studies focus on one particular instance of educational experience and attempt to gain theoretical and professional insights from a full documentation of that instance (Yin, 1994; Freebody, 2003). Case study approach aims to describe phenomenon in its own context based on examining, exploring and reflecting the issue within a well documented study.

It is an approach to investigate and report the complex dynamic and unfolding interactions of events, human relationships and experiences for the singular setting involved (Yin, 1994). Case study generated from the qualitative research. It presents concrete narrative detail of actual, realistic events under the understanding of case (Freebody, 2003). Within the process of case study; researchers attempt to select a case, conduct field work, analyzes data, triangulate different perspective, select alternative interpretation, develop generalization about the case in relation to research focus. The research encapsulates single case study approach which is a technique for analyzing the structure and behavioural dynamics of a phenomenon investigated. In this respect, one Education Faculty members who are interior members and have prior knowledge on the importance of social networking in different higher education institution was chosen as case in order to examine the role of social networking through online communication tools for developing productivity within workplace for better working practice.

Participants

Eight volunteer participants became part of this research study. Purposive sampling strategy was employed within the study in relation to voluntarism and enthusiasm to be part of the research process. Participants became involved to the study in relation to voluntarism, prior knowledge in importance of social networking for better working practice. Although the number of the participants is less, huge amount of

data from self-reports of the participants helped reveal the online community practices within specific work context. However, findings can be generalised.

Data Collection Techniques and Analysis

As research has qualitative nature and grounded on case study approach, self-report was used as data collection technique. Self-report is the type of open-ended questionnaire to obtain qualitative data in relation to experiences, reflection and interpretation of the participants in relation to research focus.

Self reports are the documents and material culture that provide primary data for qualitative researcher; it provided in-depth, large amount of data that participants reported on their experiences, thoughts and perceptions in relation to specific focus. In this inductive process, self-reports are used to gain insights from participants about their experiences and reflections on the role of social networking through online communication tools in developing productivity in workplace (See Appendix A).

Conceptual analysis was implemented in this research. Researchers attempted to set categories and themes in terms of thematic analysis based on classification and categorization of the significant themes within the framework of the research (Altinay, Paraskevas, 2008; Saunders, Lewis, Thornhill, 2000).

Ethics

Ethics is significantly considered as fundamental part of this research process. Confidentiality of the participants, trustworthy was carefully undertaken in the research in order to prevent possible challenges in research process (Marshall, Rosmann, 1999; Saunders, Lewis, Thornhill, 2000). Therefore, informed consent forms provided mutual agreement between researchers and the participants to prevent possible dilemma in the research (See Appendix B).

Researchers considered ethical issues to prevent pitfalls in this research which are time to implement research, establishing warm contacts with stakeholders based on negotiations to access research site, preparing informed consent form to inform participants about purpose of research and its potential benefits and have mutual agreement for the process, sensitivity on data collection and analysis.

RESULTS

In relation to research objectives and the questions, inductive process was implemented to reach out specific objectives and find out the answers of research questions. As research objectives are to examine the role of online communication tools for social networking within workplace; to create the awareness of the role of online communication tools for social networking in work place; to elaborate online social networking which it is bridge for personal achievement and professional achievement through collegial activities; to contribute personal and organisational development regarding to creating awareness of social networking; research findings revealed that research context practiced online social networking for personal and professional development through collegial activities. Significantly, this research study contributed to create awareness of the role of online social networking for better working practice.

Social Networking Wheel

Eight volunteer participants became part of this research in this work context which they also reported huge amount of information about the research focus through their self-report. Eight participants involved in this inductive process from Computer & Instructional Technology Teacher Education Department in Education Faculty. In this respect, they are from educational technology field. They reported that they have at least fifteen colleagues in order to keep online contacts within workplace in order to communicate, negotiate and discuss academic and daily work issues through e-mail, facebook and msn.

Participants defined social networking as “communication bridge to have social link with others to complete academic tasks within workplace”, “community for completing projects in workplace”, “sharing, communicating and exchanging update news in the field”. In addition to these, participants reported that online social networking provides easy and fast way of collaboration with colleagues, at the same time, time and money saving negotiation path for personal and professional developments. Participants agreed that it is an effective way to gain new perspective and ideas about work and project issues, help establishing mutual understanding between colleagues, solve problems and share knowledge. Although participants believed that online communication is best way for better working practice, they have curiosity on the impact of social networking in productivity when communication tools are not used properly for specific work purposes. Further to this, participants reported that online social networking provides gaining new ideas, exchanging knowledge and experiences, establishing mutual understanding as contributions to personal and professional development within working practice.

Participants strongly agreed that online social networking is a kind of community which helps collaboratively work for better working practice and collegial activities include collaborative learning, negotiation and mutuality to solve problems, complete tasks. In addition to these, participants agreed that online social networking provides social support and immediate information to complete tasks; online social networking enhances mutual understanding to solve the problems and online social networking is bridge for personal achievement and professional achievement through collegial activities. Although participants stated that they agreed on those statements, two of the participants reported that people attempt to use social networking for entertainment which limits the completion of task on time.

According to social networking wheel (See Figure 1, p. 2), eight participants involved in online community practice which they attempt to use profile, messaging, user generated video, search, comments, media databases, friends, agents, think map, groups, favourites in order to communicate properly with colleagues for sharing knowledge and experience within workplace. Especially, participants attempted to use think map and groups to complete collaborative projects in a short period of time.

CONCLUSION

As social networking provides people come together and work together through online communication for accomplishing tasks, this became crucial in universities, high schools in order to enhance knowledge sharing. In this study, the impact of social networking through online communication tools in enhancing work performance and collegial activities for both personal and organisational development were examined by stressing the importance of gaining awareness among participants. Although this inductive research process created awareness on the role of social networking to have better working practice, at the end of this research study, researchers attempted to prepare and distribute guideline to the research participants included the extended knowledge about social networking on the role of online communication tools within workplace and its contributions to personal and organisational development based on research findings and in-depth investigation on literature (See Appendix C).

In summary, it is significant to internalize that online social networking is a kind of community which helps collaboratively work for better working practice; online social networking provides social support and immediate information to complete tasks; online social networking enhances mutual understanding to solve the problems; collegial activities include collaborative learning, negotiation and mutuality to solve problems, complete tasks; online social networking is bridge for personal achievement and professional achievement through collegial activities. The research revealed following conclusions:

- ✓ The importance of online communication and socialisation: Online communication tools provide opportunity to have socialisation, motivation and enthusiasm to involve in collaborative projects with colleagues. In this respect, collective effort and mutual understanding, shared vision helps people have satisfaction and confidence within their job.
- ✓ Personal development: Involving in collaborative projects through being in online community within work context provides having immediate contacts, negotiations, thereby enhances personal abilities such as team work, communication and intellectual flexibility.
- ✓ Professional development: Online communication tools help people sharing, negotiating, exchanging ideas with others for a specific purpose. In this respect, this platform provides learning together. Therefore, professional experiences are enriched.

This inductive research based on case study approach revealed that having positive, conscious relationship with others through online communication tools provide motivation, enthusiasm, collaborative effort, mutual understanding, learning together. In this respect, people who involved in social networking can develop personal and professional experiences besides proposing better working practice.

Implications

The research investigated the role of the social networking through online communication tools in enhancing collegial activities in terms of collaboration, negotiation and sharing for better working practice. This research study is significant which underlines the impact of socialisation and negotiation in productivity. The research puts forward to internalizing collaborative efforts of the colleagues in workplace with the support of online communication tools in order to create productive outcomes in a work setting. In addition, the research filled the gap on the literature regarding to the impact of social networking within academic workplaces. It opens an academic debate on discussions about the role of social networking in developing personal and professional developments within workplaces.

Implications for Practice

- Case study approach employed in this research to examine the role of social networking in work setting which contributes socialization, communication, negotiation and knowledge sharing among colleagues.
- The research provided participants to have deeper understanding on online socialization and its impact to organizational knowledge.
- The research revealed consciousness on the importance of using online communication tools for specific purposes in order to have productive outcomes in working practice.
- Participants as professional staff gained in-depth insights on online community in enhancing personal and professional developments.
- Participants extended their knowledge and experience on using online communication tools.

Implications for Further Researches

- For further studies, more than one case can be compared to examine the role of social networking in productivity.
- More than one data collection techniques can be employed in the study to enrich validity and reliability of the research findings.
- Mixed approach can be used for further research studies.

ACKNOWLEDGEMENTS

This research is collaborative efforts of the researchers. As researchers, we would like to thank to volunteer participants of the research in order to reveal the impact of social networking for better working practices.

REREFENCES

- Altinay, L., Parakevas, A. (2008). *Planning research in hospitality and tourism*. Oxford: Elsevier.
- Bogdan, R., C., Biklen, S., K. (1992). *Qualitative research for education*. Boston: Allyn and Bacon.
- Bryman, A. (2004). *Social research methods*. Oxford University Press.
- Cohen, L., Manion, L. & Morrison, K. (2000). *Research methods in education*. London: RoutledgeFalmer.
- Cohen, S. (2008). *Using social networking in university emergency communications*. UCLA School of Public Affairs, Department of Public Policy.
- Denzin, N. K., Lincoln, Y. S. (2003). *Collecting and interpreting qualitative materials*. London: SAGE.
- Freebody, P. (2003). *Qualitative research in education: interaction and practice*. London: SAGE.
- Gouveia, P. (2008). *The four most popular social networking sites*. Bizcommunity.com, available at <http://www.bizcommunity.com/Article/196/16/20623.html>.
- Marshall, C., Rossman, G. B. (1999). *Designing qualitative research*. Thousand Oaks: SAGE.
- Saunders, M., Lewis, P., Thornhill, A. (2000). *Research methods for business students*. London: Prentice Hall.
- Social Networking Wheel, mediabistro.com.

SOME ASPECTS OF MANAGING INFORMATION TECHNOLOGY SERVICES

Zuzana Hnatova - Iveta Kremenova – Juraj Fabus

Department of Communications, Faculty of Operation and Economics of Transport and Communications, University of Zilina, 010 26 Zilina, Slovak republic,
Zuzana.Hnatova@fpedas.uniza.sk, Iveta.Kremenova@fpedas.uniza.sk

Abstract

The article primary deals with IT Service Management. Providing IT services with better, guaranteed quality has been the aim of many diverse efforts, undertaken under the common denominator "IT Service Management". Based on published surveys, the article focuses on Information Technology Infrastructure Library (ITIL), as a process based approach for managing IT services. Management of IT services is the subject of PhD thesis, which is addressed in the University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Communications. Title of PhD thesis is: "IT Service Management and its influence on postal services".

1. INTRODUCTION

Information Technology Service Management (ITSM) is a process-based practice intended to align the delivery of information technology services with needs of the enterprise, emphasizing benefits to customers. IT service management is concerned with delivering and supporting IT services that are appropriate to the business requirements of the organization. ITSM involves a paradigm shift from managing IT as stacks of individual components to focusing on the delivery of end-to-end services using best practice process models.

Hewlet Packard company defines IT Service Management as a proven and effective framework for helping IT organizations become more adaptive, flexible, cost-effective, and service-oriented. It does this by driving fundamental change within the IT organization, from how it manages its processes, technology assets, vendors and deploys personnel, to how IT staff view their organizational roles.

Implementing ITSM is therefore as much an educational and change management task as a technology task; to ensure its success, IT executives must obtain executive and broad organizational support, engage IT staff responsible for both managing and executing ITSM processes, and overcome resistance to change. It's also critical that the organization address its competencies, rather than merely skills, and ensure that the changes it implements are internalized.

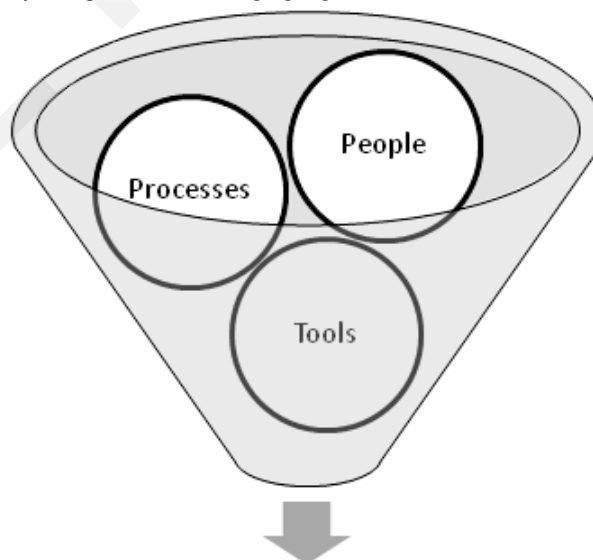
1.1. Service management benefits

It is important to consider the benefits for the organization of having a clear definition of the service management function. Some of the benefits that could be cited include:

- improved quality of service - more reliable business support,
- IT service continuity procedures more focused, more confidence in the ability to follow them when required,
- clearer view of current IT capability,
- better information on current services (and possibly on where changes would bring most benefits),
- greater flexibility for the business through improved understanding of IT support,
- more motivated staff; improved job satisfaction through better understanding of capability and better management of expectations,
- enhanced customer satisfaction as service providers know and deliver what is expected of them,
- increased flexibility and adaptability is likely to exist within the services,
- system-led benefits, e.g. improvements in security, accuracy, speed, availability as required for the required level of service,
- improved cycle time for changes and greater success rate. (*Office of Government Commerce, 2000, 2005*).

The importance and level of these will vary between organizations. An issue comes in defining these benefits for any organization in a way that will be measurable later on.

Successful ITSM projects are driven by the right combination of people, processes and tools, how the following figure illustrates.



IT Service Management

Figure 1 Components of successful ITSM project

1.2. Approaches to IT Service Management

There is no single approach that covers all areas of IT and therefore is very useful to include in the corporate governance several approaches. There are many approaches to managing information technology services. The best known include:

- ITIL – The Information Technology Infrastructure Library - ITIL is a framework of best practice guidance in Information Technology Service Management. It describes processes, functions and structures that support most areas of IT Service Management, mostly from the viewpoint of the Service Provider. ITIL provides a proven method for planning and implementing common processes, roles and activities with appropriate reference to each other that defines the lines of communication between these processes.
- COBIT – Control Objectives for Information and related Technology - The framework is built with reference to existing standards and practices. This framework shows how IT Processes and resources, including application systems, information, infrastructure and people are used to provide the business with information that has the essential characteristics to be of value in satisfying quality, fiduciary and security.
- eTOM – enhanced Telecoms Operations Map – is widely used throughout the telecommunications business as the prime industry standard.
- IT Balanced Scorecard – is a performance management system that enables businesses to drive strategies based on measurement and follow-up.
- MOF – Microsoft Operations Framework.
- HP ITSM RF – Hewlett Packard IT Service Management Reference Model.
- Others. (*IT Service Management Forum, 2006*)

International consultant group such as Gartner, IDC (International Data Consulting, USA), INS (International Network Services, USA) and others conducted surveys around the globe focused on IT Service Management approaches. Results of realized surveys found that ITIL is the most used existed ITSM framework. For this reason, the article devoted to ITIL.

Methods used to manage IT services (2004, 2007, 2009)

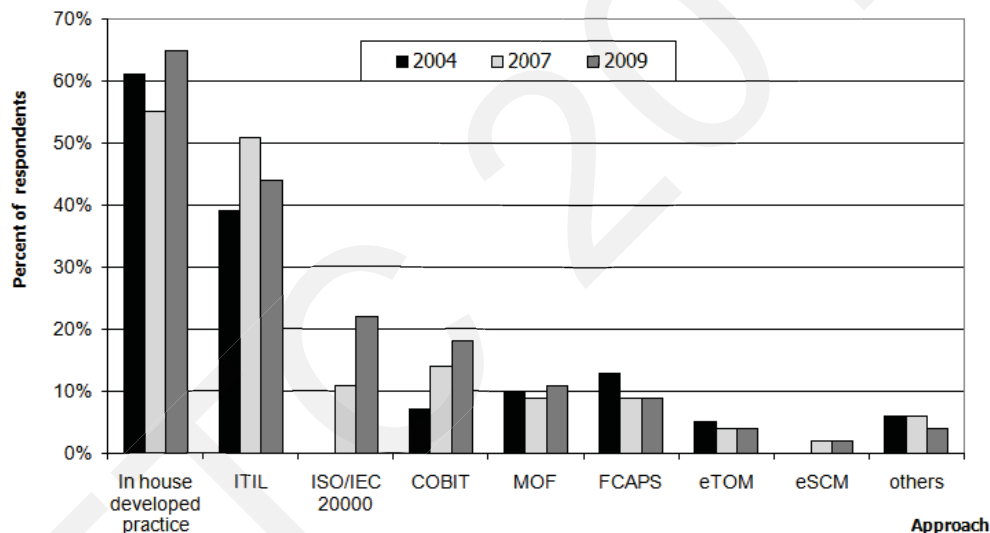


Figure 2 Methods used to manage IT services according to BT group (2009) survey and INS survey (2004, 2007)

2. ITIL AS THE IT SERVICE MANAGEMENT APPROACH

Information Technology Infrastructure Library is a globally recognized collection of best practices for information technology service management. ITIL provides a comprehensive, consistent and coherent set of best practices for IT service management and related processes, promoting a quality approach for achieving business effectiveness and efficiency in the use of information systems. (*Office of Government Commerce, 2000*).

ITIL is developed by the Office of Government Commerce in United Kingdom and it is not about IT management tools, but about:

- What people can do for service quality improvement.
- Control Mechanisms for coping with imperfect infrastructures and tools.
- Coordinating actions for not predetermined events and tasks.
- IT Service Management „business“ processes.

ITIL was drawn from both public and private sectors, it is the backbone to structuring IT organizations that optimize service quality, improve service levels and reduce costs - and it's becoming increasingly important to today's corporations.

ITIL is based on defining best practice processes for IT service management and support, rather than on defining a broad-based control framework. It focuses on the method and defines a more comprehensive set of processes.

This IT service management framework has four main objectives:

1. Increase customer focus within the IT organization.
2. Increase quality of IT services.
3. Reduce IT service cost.
4. Improve "process thinking" within the IT organization.

ITIL tries to achieve these goals through the introduction of a common service management language and standardized processes. These processes do not explain "HOW" to manage the IT organization, but rather intend to provide descriptions of "WHAT" needs to be in place to establish a systematic IT service management. Any organization needs to work out the "how to" by itself. This is where ITIL makes reference to "best industry practices".

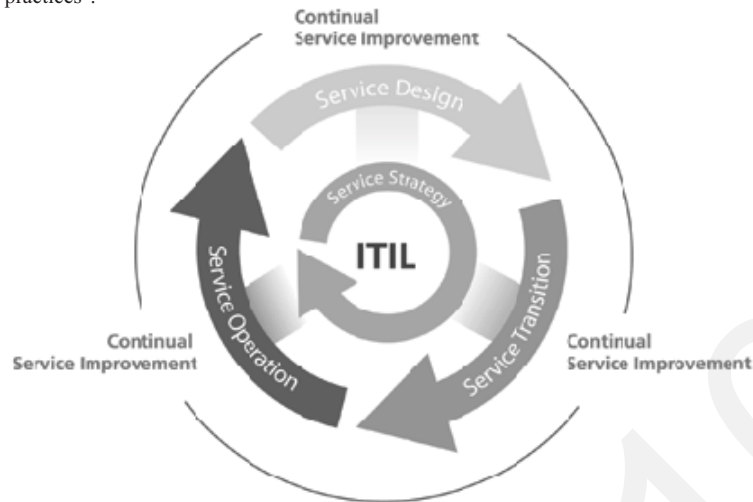


Figure 3 ITIL Service Lifecycle

The main 5 processes of ITIL are illustrated on the figure 3 and include: service strategy in its core, then service design, service operation and service transition. All these processes are enveloped by continual service improvement process. The approach underpins the "plan-do-check-act" Deming's cycle. Plan the purpose of process in such a way that that the process action can be audited for successful achievement and, if necessary, improved.

CONCLUSION

This paper addresses basic issues of managing IT services and provides information about IT service management frameworks. Main aim of the article was to highlight the importance of ITSM, determine its benefits and highlight the importance of the most widely used IT service management framework – ITIL.

The article is meant to support the goal of partial solutions of dissertation thesis named as "IT Service Management and its Influence on Postal Services". It is the basis for further analysis in the field of IT Service Management.

ACKNOWLEDGEMENT

This article was created to support project KEGA 036-017ŽU-4/2010 "Data modeling in the educational process in the computer laboratory of the Department of Communications" and to support institutional project "IT Service Management and its influence on postal services".

We would like to thank assoc. prof. Jana Sujanová, CSc. from Institute of Industrial Engineering, Management and Quality, MTF STU Trnava, who support our research with providing necessary materials for studying.

REFERENCES

- Arora, R., 2007. *Learn ITIL and Cobit to Manage it Based on Business Priorities*. Articlebase Free online articles directory, May 24th, 2007, [cited 10.september 2009]. Available on: <http://www.articlebase.com/information-technology-articles/learn-til-and-cobit-to-manage-it-based-on-business-priorities-153136.html>
- Bon, J., Pieper, M., & Veen, A. (2005). *Foundations of IT Service Management Based on ITIL*. Wilco Amersfoort, Netherland: Van Haren publishing.
- Brooks, P., 2006. *Metrics for IT Service Management*. Van Haren Publishing, Norwich, United Kingdom.
- Catlin, J., Silkey, S., & Simons, T. (2005). *ITIL Process Management*. University of Kansas. Retrieved October, 14, 2007, from: <http://www2.ku.edu/~psmo/itil/index.shtml>
- IT Service Management Forum, 2006. *Frameworks for IT Management*. Van Haren Publishing, Zaltbommel, Netherlands.
- Kolarovszki, P. – Michalek, I.: *Part economy of postal web services*. In: Future Role of Postal Services in the Face of New Market Conditions and Communication Technologies. University of Pardubice, 2008, ISBN 978-80-7395-144-3.
- Marquis, H., 2006. *ITIL and COBIT*. ITSM solutions DITY newsletter reprint [online] May 2006, Volume 2.20 [cited 21.november 2007]. Available on: <http://www.itsmsolutions.com/newsletters/DITYvol1iss1.htm>
- Office of Government Commerce, 2005. *Introduction to ITIL*. The Stationery Office, London, United Kingdom.
- Office of Government Commerce, 2001. *Service Delivery*. The Stationery Office, London, United Kingdom.
- Office of Government Commerce, 2000. *Service Support*. The Stationery Office, London, United Kingdom.
- Office of Government Commerce, 2007. *The official introduction to the ITIL service lifecycle*. The Stationery Office, London, United Kingdom.
- Sujanova, Jana - Vyboch, Jozef: *Knowledge management - way towards effective project management*. In: Management, Economics and Business Development in the New European Conditions : IV. International Scientific Conference. Brno, 26.-27.5.2006. - Brno : Brno University of Technology, 2006 ; Brno : CERM, 2006. - ISBN 80-7204-454-0
- Van Bon J. et al, 2009. *Foundations of IT Service Management Based on ITIL® V3*. Van Haren Publishing, Zaltbommel, Netherlands.

SOME RESULTS FROM THE SURVEY ON TURKISH STATISTICS EDUCATION II

Assist. Prof. Dr. Atif Evren Assist. Prof. Dr. Doğan Yıldız
Yildiz Technical University , The Faculty of Sciences and Literature ,
The Department of Statistics
Davutpaşa-Esenler, 34210 ISTANBUL TURKEY
aevren@yildiz.edu.tr dyildiz@yildiz.edu.tr

Abstract

We tried to investigate some aspects of Turkish statistics education at university level by the valuable supports of TUBITAK (The Scientific and Technological Research Council of Turkey) in 2007-8. Questionnaire forms of students from 19 different statistics departments of Turkish universities were analysed. We also studied on some questionnaire forms of Turkish academic statisticians. In this exposition we intend to share some of the findings on the performance of Turkish education system on statistics. At the end of this paper ,we propose some means which will probably be useful in statistics education.

Keywords: *Some problems of Turkish statistics education , Students' evaluations on Turkish statistics education*

1.INTRODUCTION

The discussions on the performance of statistics education were intensified especially at the end of nineteen nineties in United States of America. A review of this process can be found in Bryce (2002).

Minton (1983) , in his article "The Visibility of Statistics as a Discipline" emphasizes that any systematic way of research is called as a "discipline" if it satisfies the following requirements:

(i)A theory and body of literature, (ii)a significant number of professionals working essentially in the field; (iii) more than a few professional journals regularly publishing new advances in the subject, and , (iv)a significant market demand for its services.

It is sure that statistics satisfied these requirements totally at the beginning of 20th century. For more than 20 years, ASA (American Statisticians Association) has been organising meetings and symposiums to evaluate the quality of statistics education throughout the world and nowadays there is a vast literature on statistics education .

Despite these facts, many students still view statistics as a difficult topic to learn. Researchers from many fields have emphasized that students and adults still make consistent errors when reasoning about data and chance in real world problems and contexts. (Garfield & Dani Ben-Zvi, 2007)

Butler (1998) on his study , "On the failure of the widespread use of statistics" shows that although more and more people take introductory statistics courses, these people don't have the skill to use statistical methods in their jobs properly.

2. STATISTICAL REASONING, STATISTICAL THINKING AND STATISTICAL LITERACY

These debates on the performance of statistics programs inevitably focus on concepts like statistical reasoning, statistical thinking and statistical literacy. Garfield (2002) defines statistical reasoning as the way people reason with statistical ideas and make sense of statistical information. Rumsey (2002) emphasizes that for the students to be good "statistical citizens" they need a certain level of competence, or understanding of the basic ideas, terms, and language of statistics . Besides, the students are required to be able to explain, decide, judge, evaluate, and make decisions about the information. Snee(1990) describes statistical thinking as the speculated process in which variability is taken into account.

3. THE PAST & PRESENT SITUATION OF TURKISH STATISTICS EDUCATION

Statistics is a young discipline in Turkey as far as the establishment years of statistics departments are taken into account. In Turkey , the oldest statistics departments were established in 1960's . Using the figures of 2006, there were 25 statistics departments in which about 4300 students were being educated. For the last 4-5 years, at least 3-5 new statistics departments have been established. In addition, an increasing demand for statistical studies from business life is a fact. On the other hand; as a by-product of this rapid growth process ; there are some serious educational problems that cannot be vanished easily.

4.GENERAL FIGURES OF STUDENTS PARTICIPATING THIS SURVEY

This paper discusses some of the results of the project on the evaluation of Turkish statistics education (Yildiz D. et all ,2007) . The project which was supported by TUBITAK was submitted in 2007. Some aspects and some problems of Turkish statistics education at university level were discussed in Yildiz,D.& Evren A., (2008, 2009a and 2009 b) , in Evren A.& Yildiz (2009) and, Yildiz , N.Ç. et all(2009).

The number of participating students in this survey was 1794. On the average, there were 94 participating students coming from each university . One third of the students in the sample were seniors, whereas one fourth were juniors. 52 percent of the students in the sample were female.

There are two types of education modules or programs offered in Turkey. The first module is carried on days, and the second module is on the evenings. 15.9 % of the students in our sample was from the second module.

5. TURKISH STUDENTS' EVALUATIONS ON STATISTICS DEPARTMENTS

The majority of the participating students (65.3 %) of statistics departments thought that the education program was very difficult indeed . 71.5 % of the students needed more rigorous mathematics background to keep up with the courses they were taking. In contradiction with this fact , most of the students did not demand more mathematics courses in their statistics curriculum. On the contrary, most of the students claimed that statistics programs should be enriched by some applied statistics, optimization , computer science and some elective (social and technical) courses. 34 % of the students agreed with the proposition that the textbooks and similar reference books were sufficient both in quantity and in content whereas some other 33 % disagreed. Most of the students in our survey thought that some of the

theoretical courses offered in their departments were superfluous. 94.9 percent of the students demanded more attention on case studies in some applied courses. 79.7 percent of the students demanded more specialized statistics courses in the program.

5.1 SOME EVALUATIONS ON COURSES

We requested the students to list the most useful lectures they had ever taken. Secondly, we categorized most useful statistics core courses according to their contents in the second figure. The following tables summarizes the overall picture:

TABLE 5.1.1: The percentage distribution of most useful courses from students' point of view.

| COURSES | PERCENTAGE |
|---------------------------------------|------------|
| Statistics core courses | 38 |
| Computer programming and applications | 16 |
| Introductory statistics courses | 15 |
| Mathematics courses | 11 |
| Optimization courses | 8 |
| Other courses | 7 |
| Missing | 5 |

It should be noted that we have separated introductory statistics courses from other statistics courses to emphasize how important the basics are! Thus it has become possible for us to see a considerable number of students stating the importance of elementary concepts of statistics!

TABLE 5.1.2: The percentages of most useful courses (within the group of core courses) from students' point of view.

| COURSES | PERCENTAGE |
|---------------------------------|------------|
| Math. Statistics & Probability | 28 |
| Linear Models | 24 |
| Statistical Decision Making | 18 |
| Sampling Methods & Applications | 14 |
| Multivariate Statistics | 6 |
| Econometrics & Time Series | 5 |
| Nonparametrics | 3 |
| Other | 2 |

The top of the list is occupied by theoretical courses. This was not because most of the students did really like theoretical courses such as probability and mathematical statistics! This was just because all methodology on statistics mostly depended on some theoretic rudiments and the students were really aware of this. The second comment is on nonparametric methods. Only %3 percent found nonparametrics useful. This phenomenon is very interesting because nowadays, nonparametric methodology is gaining more and more strength and popularity among all statistical studies. Rather, this low percentage should be due to incompetencies encountered in courses!

5.2 SOME CONCEPTS STUDENTS HAD EXPERIENCED DIFFICULTY IN PERCEPTION

The students stated that they had some difficulty in understanding the following concepts:

- Some introductory concepts** : Variance, covariance, standard deviation, correlation, type-I and type-II errors, degree of freedom, hypothesis tests, point and interval estimation.
- Some probabilistic concepts and theorems** : The central limit theorems, moment generating functions, sigma algebra, some distributions including chi-square and Snedecor's F distribution.
- Some concepts on sampling**: Sampling distributions, standard deviation and standard errors. These responses were considerably surprising because the problems appeared even at the introductory levels! Besides, as can be predicted a priori, some students declared that they had experienced some difficulty in some abstract notions of probability and mathematical statistics.

6. A FACTOR ANALYSIS MODEL

We intended to form a statistical model on the satisfaction scores of students with the departments by a factor-regression model. Among 30 questions, we picked 13 questions (variables) related to students' satisfaction levels. Then we observed that these variables can be reduced to 2 factors by SPSS 11.0 module. These factors can be called as the pedagogical factor and the professional perspective factor.

TABLE 6.1: Variables in factor model

| Question code (Students) | Variables (Propositions on Questionnaire forms) |
|--------------------------|--|
| K67 | There are sufficiently large number of consultative services for students within the department. |
| K68 | The personal relations between the students and instructors, in general, are satisfactory |
| K69 | The active participations of students in the sessions are maintained strongly |

| | |
|-----|--|
| K70 | The personal relations among the students themselves are satisfactory in general |
| K72 | Behaviours of instructors towards students are friendly and helpful. |
| K74 | There are plenty number of theoretical courses in curriculum. |
| K75 | There are plenty number of applied courses in curriculum |
| K76 | The teaching methods of instructors are both vivid and pedagogic. |
| K77 | The instructors are objective and fair enough in assessing students' performances. |
| K78 | The students are motivated to carry further scientific studies by the instructors. |
| K80 | There are a lot of meetings organized in the department to interact with statistics specialists. |
| K81 | In the department, a lot of meetings or discussions are organized frequently on some other social and cultural issues. |
| K82 | The textbooks and other materials offered for the courses are quite useful. |

TABLE 6.2 : GROUPING OF VARIABLES UNDER TWO FACTORS

| Factors | Variables |
|--------------------------|---|
| Pedagogy | K67, K68, K70, K72, K74, K76, K77, K78, K69 |
| Professional perspective | K75, K80, K81, K82 |

Here Y_s represent the satisfaction level of students with the department in ten different possibilities and X_1 and X_2 represented pedagogical and professional perspective factors respectively. For this regression-model summarizing statistics are as follows:

TABLE 6.3: ANOVA TABLE FOR FACTOR REGRESSION MODEL ON STUDENTS' SATISFACTIONS WITH THE DEPARTMENTS

ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|------|-------------|---------|-------------------|
| 1 | Regression | 2023,026 | 2 | 1011,513 | 274,860 | ,000 ^a |
| | Residual | 6278,264 | 1706 | 3,680 | | |
| | Total | 8301,290 | 1708 | | | |

a. Predictors: (Constant), FAC2_2, FAC1_2

b. Dependent Variable: K109

TABLE 6.4 : SPSS 11.0 OUTPUT FOR FACTOR REGRESSION MODEL ON STUDENTS' SATISFACTIONS WITH THE DEPARTMENTS

Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|---------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 6,245 | ,046 | | 134,579 | ,000 |
| | FAC1_2 | 1,004 | ,046 | ,455 | 21,624 | ,000 |
| | FAC2_2 | ,420 | ,046 | ,191 | 9,058 | ,000 |

a. Dependent Variable: K109

The two factor regression model for students' satisfaction with the department is

$$Y_s = 6.245 + 1.004 X_1 + 0.420 X_2$$

It can be concluded that the satisfaction with the department can be reduced to two factors, namely the pedagogy factor and professional perspective factor for the students. Besides, since the estimate of β_1 (pedagogy) is much bigger than that of β_2 (professional perspective), we should emphasize the importance of pedagogical issues related to statistics education!

7. DISCUSSION

The efforts on statistics education should necessarily be linked with learning theories of psychology. Kolb(1984) created a model of learning using concrete experience, observation and reflection, forming abstract concepts and testing in new situations. The circle has described as going from (1) to (4) but one can start anywhere in the cycle which can be viewed as a continuous spiral.

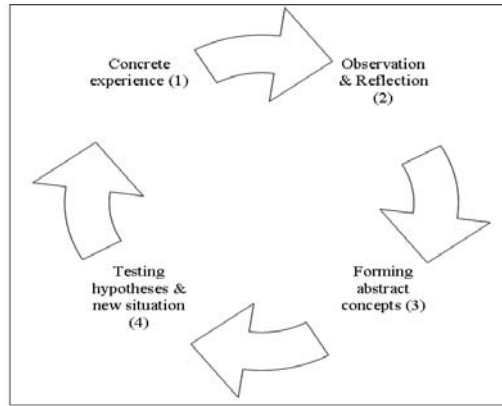


Figure 7.1 Kolb's Learning Circle

We will emphasize three issues in this context:

Learning by manipulating data: Statistics is an applied science although it has a very abstract and theoretical base. Free time practices are especially vital for the students to "recognize data", and to encounter with some aspects of statistical studies and some basic problems of the processes of collecting, summarizing, analyzing statistical data as well.

Learning by visual displays: Students should develop ways of thinking by the help of histograms, charts, graphics.

Learning by simulations and spreadsheet applications: "Teachers should consider computing as a tool for learning statistics, not simply for doing statistics. Because graphics and manipulations aid learning, we should encourage students to use software." (Moore, 1997, p. 131) Some abstract concepts of statistics

(e.g., sampling distributions, central limit theorems) may thus be taught especially by the use of interactive spreadsheet (Ms-Excel or whatever) applications.

REFERENCES

- Bryce, G. R.(2002), Undergraduate Statistics Education: An Introduction and Review of Selected Literature, *Journal of Statistics Education*, Volume 10, Number 2
- Butler, R.S. (1998), On the failure of the widespread use of statistics, *Amstat News*, March,84.
- Garfield, J. (2002), The Challenge of Developing Statistical Reasoning, *Journal of Statistics Education*, Volume 10, Number 3
- Garfield, J. & Ben-Zvi (2007), The Discipline of Statistics Education, excerpted from Garfield, J., & Ben-Zvi, D., (in press). *Developing Students' Statistical Reasoning: Connecting Research and Teaching Practice*. Emeryville, CA: Key College Publishing
- Evren, A, Yildiz, D. (2009), İstatistik Bölümü Öğrencileri Anketi ve Öğrencilerin İstatistik Bölümlerinden Duyduğu Memnuniyet Üzerine Bir Faktör Regresyon Modeli, *18. İstatistik Araştırma Sempozyumu*, 2009
- Kolb, D.A. (1984), *Experimental Learning: Experience as The Source of Learning and Development*, Prentice Hall, NewJersey
- Minton, P.D.(1983), The Visibility of Statistics as a Discipline, *The American Statistician*,37, 284-289.
- Moore, D.S. (1997), New Pedagogy and New Content: The Case of Statistics, *International Statistical Review*, 65, 123-137
- Rumsey, D.J.(2002), Statistical Literacy as a Goal for Introductory Statistics Courses, *Journal of Statistics Education*, Volume 10, Number 3
- Snee, R. (1999), Discussion: Development and Use of Statistical Thinking : A New Era. (Response to Wild and Pfannkuch), *International Statistical Review*, 67, 255-258.
- Yildiz D. et all (2007), Türkiye'deki İstatistik Bölümleri Bazında İstatistik Eğitiminin Öğrenci ve Öğretim Üyesi Gözüyle Değerlendirilmesi. TUBİTAK proje no: 105K171
- Yildiz, D.& Evren, A.(2008), Some Results from the Survey on Turkish Statistics Education, *6th International Conference Sustainable Development Culture and Education, Conference Proceeding CD*, June 4-7 2008, Eskişehir, Turkey, 816-830
- Yildiz, D.& Evren, A.(2009a), Yurtdışında İstatistik Programlarının Reforma Tabi Tutulma Çabaları, *VI. İstatistik Günleri Sempozyumu Bildiriler Kitabı*, 2009, Samsun, 59-65
- Yildiz, D.&Evren, A.(2009b), On Some Reform Initiatives on Statistics Education throughout The World, *Selçuk Journal of Applied Mathematics*, Vol. 10 No.1 2009, Konya, 95-106
- Yıldız, N.Ç., et all (2009), Türkiye'deki İstatistik Bölümlerinin Belirli Etkenler Açısından Karşılaştırılması, *I. Ulusal Ereğli Meslek Yüksek Okulu Tebliğ Günleri*, Sayı. 1 No: 1, 363-377
- Wiberg, M. (2009), Teaching Statistics in Integration with Psychology, *Journal of Statistics Education*, Volume 17, Number 1

SOSYAL AĞLARIN İLKÖĞRETİM ÖĞRENCİLERİNİN BAŞARISI VE ÖĞRENME ORTAMI TERCİHİNE ETKİSİ

Dr. Bünyamin Atıcı
Fırat Üniversitesi Eğitim Fak.
batic@firat.edu.tr

Öznur Çevik Polat
İzmir İl Millî Eğitim Müd.
cevikpolat@gmail.com

Özet

Bilgi ve iletişim teknolojilerinin yaygınlaşması öğrenme-öğretme ortamlarının farklılaşmasına yol açmaktadır. Bu farklılaşmalar öğrencilerin yüz-yüze öğrenme ortamlarında olduğu kadar çevrimiçi ve karma öğrenme çevrelerinde bulunmalarını bir zorunluluk haline getirmektedir. Bu zorunlulukların başında da yaşam boyu öğrenme bağlamında bilgi toplumunun gerektirdiği dijital yetkinlik gelmektedir. Günümüzde gittikçe artan web 2.0 uygulamaları bireylerin çevrimiçi ortamlarda kolaylıkla iletişim, etkileşim ve işbirliğinde bulunmasını kolaylaştırmaktadır. En çok kullanılan web 2.0 uygulamaları arasında blog ve önde gelen sosyal ağ sitelerinden facebook sayılabilir. Bu araştırmada sosyal ağların ilköğretim öğrencilerinin başarısı ve öğrenme ortamı tercihlerine etkisi incelenmiştir. Araştırmanın çalışma evrenini İzmir ilinde bulunan Armutlu İlköğretim Okulu sekizinci sınıf öğrencileri; örneklemini ise evden internete bağlanabilme imkânına sahip 50 öğrenci oluşturmuştur. Araştırma Fen ve Teknoloji dersinin bir ünitesi olan “Maddenin Yapısı ve Özellikleri” kapsamında beş haftada gerçekleştirilmiştir. Çevrimiçi öğrenme ortamı olarak Moodle; sosyal ağ sitesi olarak da Facebook kullanılmıştır. Katılımcıların öğrenme ortamı tercihlerini belirleyebilmek için hazırlanan anket çalışma öncesi ve sonrası uygulanmış ve sonuçlar SPSS programında değerlendirilmiştir.

Anahtar kelimeler: Çevrimiçi öğrenme ortamı, çevrimiçi araçlar, sosyal ağ, e-günlük

Abstract

Widespread use of information and communication technologies has been changing learning environments. These kinds of changes forced learners in being online or blended learning environments as well face to face. It has seen as a result of both lifelong learning and knowledge society which learners must have developed digital proficiency. Web 2.0 implementations facilitated people's way of communication, interaction and collaboration easily in online environments. It can be said the most popular web 2.0 tools as blogs and Facebook, a social networking site. This research is examined the impact of social networks on elementary school students' achievements and their learning environment preferences. The sample of the research constituted of 50 eighth grade students which able to connect to internet at home studied in Armutlu elementary school. The research implemented in five weeks according to one of the subjects of Science and Technology lesson. Moodle was used as an online learning environment as well as Facebook as social networking site. To determine the views of participants a questionnaire was developed and applied before and after the study. All the data gathered from the study examined statistically through SPSS.

Key words: Online learning settings, online tools, social networking, blog

Giriş

Web 2.0 uygulamaları ile gelişim ve yaygınlık gösteren sosyal ağlar, eğitsel uygulamalar açısından da yeni olanaklar sunmaktadır. Eğitsel ortamlarda sosyal ağların kullanımının özellikle son yıllarda artış gösterdiği görülmektedir. Yapılan bir araştırmaya göre ABD’de 9–17 yaş grubunun haftalık dokuz saatini sosyal ağlarda gezintiye, 10 saatini ise TV izlemeye harcadığı belirlenmiştir. Ayrıca sosyal ağları kullanan öğrencilerin yüzde 60’ının eğitimle ilgili konuları, yüzde 50’sinin ise okul çalışmalarını bu ortamlarda paylaştığı ortaya konulmuştur (NSBA, 2007). Sosyal ağların öğrencilerin yaşantısına olumlu katkıları olup olmayacağı, ya da bu ortamların eğitsel açıdan taşıdığı değer araştırılması gereken konular arasında yer almaktadır. Sosyal ağların kullanımını sağlayan Web 2.0’nin en önemli özelliği kullanıcılara katılıma dayalı internet deneyimi sunmasıdır. Kullanıcıları farklı okur-yazarlık, işbirliği ve yayıncılık anlayışına kavuşturan Web 2.0, eğitsel uygulamalara ilişkin modern düşünceleri harmanlayan bir yapıya sahiptir. Bu uygulamalar en azından öğrenenlere çalışmalarında bağımsız olabilmelerine dönük yeni olanaklar sunmaktadır. Web 2.0’nin öğrenci merkezli bir söyleme sahip olduğu bir gerçektir. Lenhart ve diğerleri (2007) 12-17 yaş arası grubun yüzde 64’ünün internette içerik oluşturma etkinliklerine bir ya da daha fazla katıldığını tespit etmiştir. Dolayısıyla farklı bireyler tarafından farklı şekillerde tecrübe edilen sosyal ağları, öğrenme topluluklarının model yapısı olarak görmek yanlışır. Çünkü bu ağlara dahil olan bir çok kimse “taciz” faaliyetlerine maruz kalabilmektedir (Li, 2007; McKenna, 2007; Stomfay-Stitz ve Wheeler, 2007). Bu noktada ayrıca sosyal ağlarda gençleri ve özellikle çocukları bekleyen tehlikeler ve risklerin neler olduğu; bu risklerin giderilmesinde okulların benimseyeceği koruyucu politikalar ile ailelerin çevrimiçi izleme durumu araştırılması gereken diğer konu başlıklarıdır. Çünkü sanal topluluğun bir biçimi olan sosyal ağlar kısa sürede büyük kullanıcı kitlelerine ulaşmayı başarmıştır. ABD’de web trafiğinde 16. sırada olan MySpace aylık 47 milyondan fazla kullanıcıya ulaşırken (QuantCast, 2007a); Facebook sadece öğrenciler arasında aylık 15 milyon tekil kullanıcıya ulaşmayı başarmıştır (QuantCast, 2007b). Kullanıcıların farklı amaçlarla kullandığı bu sitelerde göze çarpan temel özellik bireylerin iletişim kurma ile yeni ya da var olan ilişkilerini geliştirme ve sürdürmeleridir. İlişki geliştirme ve sürdürmenin temel ögesi olan “güven duygusunun” özellikle yüz-yüze ilişkilerde bilgi paylaşımı ve yeni ilişkilerin geliştirilmesi noktasında önemli bir belirleyici olduğu bilinmektedir (Fukuyama, 1995, Lewis ve Weigert, 1985). Güven duygusu aynı zamanda başarılı çevrimiçi etkileşimlerin gerçekleşmesi için de önemlidir (Coppola, Hiltz ve Rotter, 2004, Piccoli ve Ives, 2003).

Sosyal ağ siteleri üzerine yapılan araştırmalarda üyelerin profil oluşturma biçimleri (Boyd, 2004; Boyd, 2006; Boyd ve Heer, 2006; Donath ve Boyd, 2004), ortaöğretim ve yükseköğretimde kullanım özellikleri (Acquisti and Gross, 2006, Lampe, Ellison, and Steinfield, 2007, Stutzman, 2006) gibi konular üzerinde durulmuştur. Özellikle ilköğretim ve ortaöğretimde blog ve wiki kullanımının öğrencilerin başarısına etkisine ilişkin yapılan araştırma sayısının yeterli olmayışıdır. Bu noktada Huang’ın (2009) öğrencilerin ihtiyaçlarını karşılayan çevrimiçi eğitim programlarını kullanan kurumların çoğaldığı bu dönemde, çevrimiçi öğrenme ortamına hangi öğrencilerin dahil edilmesi gerektiği sorusunun da mutlaka cevaplandırılması gerekmektedir. Çevrimiçi öğrenme ortamları üzerine yapılan araştırmalar çoğunlukla yükseköğretim öğrencileri üzerinde yoğunlaşmaktadır. Bu araştırmada sosyal ağların ilköğretim öğrencilerinin başarısı ve öğrenme ortamı tercihlerine etkisi incelenmiştir.

Yöntem

Araştırmanın çalışma evrenini İzmir ilinde bulunan Armutlu İlköğretim Okulu altıncı sınıf öğrencileri; örneklemini ise ders başarı notu 3 ve üzeri olan ve rastlantısal olarak seçilen 50 öğrenci oluşturmuştur. Evden internete bağlanabilme imkânına sahip 25 öğrenci deney, 25 öğrenci ise kontrol grubu olarak belirlenmiştir. Bu doğrultuda hem çevrimiçi öğrenme hem de sosyal ağlarda bulunan Deney grubuna 25,

sadece çevrimiçi öğrenme ortamında bulunan kontrol grubuna 25 öğrenci seçilmiştir. Deney ve kontrol gruplarının oluşturulmasında öğrencilerin hangi ortamlarda bulunmak istediklerine ilişkin tercihleri ile ailelerin izinleri esas alınmıştır. Araştırma Fen ve Teknoloji dersinin "Madde ve Isı" konularına yönelik beş haftada gerçekleştirilmiştir. Araştırma kapsamında 25 maddelik bir başarı testi geliştirilmiş ve başarı testinin güvenilirlik katsayısı 0.73 olarak belirlenmiştir. Çevrimiçi öğrenme ortamı olarak Moodle; çevrimiçi araçlar olarak ise e-posta, e-sohbet, e-günlük, forum ve haber grupları kullanılmıştır. Katılımcıların öğrenme ortamı tercihlerini belirleyebilmek için hazırlanan ölçek çalışma öncesi ve sonrası uygulanmış ve sonuçlar SPSS programında değerlendirilmiştir.

Bulgular ve Yorumlar

Katılımcıların yüzde 48'i erkek (n=24), yüzde 52'si ise kızdır (n=26). Deney grubunu oluşturan katılımcıların yüzde 52'si erkek, yüzde 48'i kız; kontrol grubunu oluşturan katılımcıların yüzde 44'ü erkek, yüzde 56'sı ise kızdır (Tablo 1).

Tablo 1. Cinsiyete ilişkin bilgiler

| | Deney | | Kontrol | |
|--------|-------|-------|---------|-------|
| | n | % | n | % |
| Erkek | 13 | 52.0 | 11 | 44.0 |
| Kız | 12 | 48.0 | 14 | 56.0 |
| Toplam | 25 | 100.0 | 25 | 100.0 |

Katılımcıların yüzde 57.8'si günde 0-1 saat, yüzde 42.2'si ise 2-3 saat aralığında internette zaman geçirmektedir. Katılımcıların tamamı daha önce çevrimiçi eğitim ortamlarından yararlanmadıklarını belirtmiştir. Katılımcıların çalışma öncesi ve sonrası dersleriyle ilgili hangi kaynaklardan yararlandıkları Tablo 2'de gösterilmiştir.

Tablo 2. Katılımcıların derslerle ilgili en çok yararlandıkları kaynaklar

| | Çalışma Öncesi | | Çalışma Sonrası | |
|-------------------|----------------|-------|-----------------|-------|
| | n | % | n | % |
| Ders Kitapları | 33 | 66.0 | 25 | 50.0 |
| Yardımcı Kitaplar | 11 | 22.0 | 4 | 8.0 |
| TV-Radyo | 0 | 0.0 | 0 | 0.0 |
| İnternet | 6 | 16.0 | 21 | 42.0 |
| Toplam | 50 | 100.0 | 50 | 100.0 |

Deney ve kontrol grubunu oluşturan katılımcıların çalışma öncesi derslerle ilgili olarak en çok yararlandığı kaynakların ders kitapları ve yardımcı kitaplar olduğu görülmektedir. Çalışma sonrası ise yardımcı kitaplardan yararlanma oranı düşerken, internette yararlanma oranının arttığı belirlenmiştir. İlköğretim öğrencileri için kaynak olarak ders kitapları önemli bir yere sahiptir. Ancak çalışma öncesi kaynak olarak internet kullanımının yüzde 16'dan çalışma sonrası yüzde 42'ye çıkması da öğrencilerimizin bu ortamdan yararlanmalarına ilişkin bilgi eksikliğini ortaya koymaktadır. Öğrencilerle yapılan yüz-yüze görüşmelerde internette özellikle ödev amaçlı yararlandığı ve bunun da sadece belirli ödev siteleri üzerinden gerçekleştirildiği tespit edilmiştir. Deney ve kontrol gruplarının çalışma öncesi ve sonrası derslerle ilgili yararlandıkları kaynak değişimine ilişkin veriler Tablo 3'de sunulmuştur.

Tablo 3. Deney ve kontrol gruplarının derslerle ilgili en çok yararlandıkları kaynaklar

| Gruplar | Deney Grubu | | | | Kontrol | | | |
|-------------------|----------------|-------|-----------------|-------|----------------|-------|-----------------|-------|
| | Çalışma Öncesi | | Çalışma Sonrası | | Çalışma Öncesi | | Çalışma Sonrası | |
| | n | % | n | % | n | % | n | % |
| Kaynaklar | | | | | | | | |
| Ders Kitapları | 17 | 68.0 | 9 | 36.0 | 16 | 64.0 | 10 | 40.0 |
| Yardımcı Kitaplar | 5 | 20.0 | 4 | 16.0 | 8 | 32.0 | 6 | 24.0 |
| TV-Radyo | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| İnternet | 3 | 12.0 | 12 | 48.0 | 1 | 4.0 | 9 | 36.0 |
| Toplam | 25 | 100.0 | 25 | 100.0 | 25 | 100.0 | 25 | 100.0 |

Deney grubunda kaynak olarak interneti kullanma oranının çalışma öncesine göre (%12) çalışma sonrası (%48) büyük bir artış kaydettiği Tablo 3'de görülmektedir. Kontrol grubunda da benzer artış görülmekle birlikte ders kitapları ve yardımcı kitaplar önemini korumaktadır. Deney grubu öğrencileri ile yapılan yüz-yüz görüşmelerde bu duruma en çok arama motorları aracılığı ile bilgiye nasıl ulaşılabileceğinin öğrenilmesi ile internet ortamındaki farklı bilgi kaynaklarına ilişkin farkındalığın geliştirilmesinin etkili olduğu bulunmuştur. Katılımcıların en çok ders işlemek istediği ortamlara ilişkin veriler Tablo 4'de görülmektedir.

Tablo 4. Katılımcıların en çok ders işlemek istediği ortam

| Ortam | Çalışma öncesi | | Çalışma sonrası | |
|------------------------------|----------------|-------|-----------------|-------|
| | n | % | n | % |
| Sınıf | 22 | 44.0 | 10 | 20.0 |
| Karma | 9 | 18.0 | 13 | 26.0 |
| Çevrimiçi ortam | 14 | 28.0 | 16 | 32.0 |
| Çevrimiçi ortam-sosyal ağlar | 5 | 10.0 | 11 | 22.0 |
| Toplam | 50 | 100.0 | 50 | 100.0 |

Tablo 4'e göre çalışma öncesi katılımcılar en çok sınıf (%44), çevrimiçi ortam (%28) ve karma (%18) ortamı tercih ederken; çalışma sonrası durum çevrimiçi ortam (%32), karma (%26) ve çevrimiçi ortam-sosyal ağlar (%22) yönünde değişim göstermiştir. Bu değişimin gerçekleşmesindeki en önemli faktörün öğrencilerin sınıf haricinde başka öğrenme ortamına duyulan arayış ve ilgileri gelmektedir. Çalışma öncesi ilköğretim öğrencileri özellikle sınıf ve laboratuvar dışında başka öğrenme ortamı olamayacağını düşündüklerini belirtmiştir. Ancak çalışma sonrası bu durumun değişikliğe uğraması öğrencilerin bu ortamlara yönelik olumlu ilgileri açıklanabilir. Çalışma öncesi ve sonrası deney ve kontrol grupları bazında katılımcıların en çok ders işlemek istediği ortama ilişkin görüş değişiklikleri Tablo 5'de verilmiştir.

Tablo 5. Deney ve kontrol gruplarına göre en çok ders işlenilmek istenen ortam

| Gruplar | Deney Grubu | | | | Kontrol | | | |
|------------------------------|----------------|-------|-----------------|-------|----------------|-------|-----------------|-------|
| | Çalışma Öncesi | | Çalışma Sonrası | | Çalışma Öncesi | | Çalışma Sonrası | |
| | n | % | n | % | n | % | n | % |
| Ortam | | | | | | | | |
| Sınıf | 12 | 48.0 | 5 | 20.0 | 10 | 40.0 | 5 | 20.0 |
| Karma | 5 | 20.0 | 4 | 16.0 | 4 | 16.0 | 10 | 40.0 |
| Çevrimiçi ortam | 6 | 24.0 | 7 | 28.0 | 9 | 36.0 | 8 | 32.0 |
| Çevrimiçi ortam-sosyal ağlar | 2 | 8.0 | 9 | 36.0 | 2 | 8.0 | 2 | 8.0 |
| Toplam | 25 | 100.0 | 25 | 100.0 | 25 | 100.0 | 25 | 100.0 |

Deney grubunda en büyük değişiklik çevrimiçi ortam-sosyal ağların birlikte kullanımı; kontrol grubunda ise karma öğrenme çevreleri lehine gerçekleşmiştir. Kontrol grubunda en büyük değişikliğin karma öğrenme çevresi lehine gerçekleşmiş olması, öğrencilerin yüz-yüze ortamlarda bulunma ihtiyacıyla açıklanabilir. Başarı açısından gruplar arasında herhangi bir farklılık olup olmadığını belirlemek için yapılan bağımsız gruplar t testi sonuçları Tablo 6'da sunulmuştur.

Tablo 6. Grupların başarı puanlarına ilişkin bağımsız gruplar t testi sonuçları

| Gruplar | n | \bar{X} | S | sd | t | Anlamlılık düzeyi |
|--|----|-----------|------|----|-------|-------------------|
| Deney | 25 | 75.92 | 6.64 | 48 | 2.24* | p<.02 |
| Kontrol | 25 | 71.60 | 6.95 | | | |
| Levene Test Değeri=.037 Anlamlılık Düzeyi=.848 | | | | | | |

*p<.05 anlamlı

Yapılan bağımsız gruplar t testi sonucuna göre çevrimiçi ortam-sosyal ağlarda bulunan deney grubunun sadece çevrimiçi ortamda bulunan kontrol grubundan daha başarılı olduğu bulunmuştur. Bu noktada genel olarak grupların görüşlerine bakmakta yarar vardır (Tablo 7).

Tablo 7. Grupların ortamlara ilişkin görüşleri

| | n | Ranj | Min | Max | \bar{X} | Medyan | S |
|---------|----|------|-----|-----|-----------|--------|------|
| Deney | 25 | 20 | 60 | 80 | 69.44 | 70 | 6.69 |
| Kontrol | 25 | 26 | 50 | 76 | 55.04 | 52 | 7.81 |

Tablo 7'de görüldüğü gibi deney grubunun (n=25) ortalama tutum puanı 69.44'dür. Medyanın 70 olması ve aritmetik ortalamaya yakın olması katılımcıların normal dağılıma yakın olduğunu göstermektedir. Ortalama tutum puanı 69.44 5 üzerinden hesaplandığı zaman 4.34 yapmaktadır. Kontrol grubunun (n=25) ortalama tutum puanı 55.04'dür. Ortalama tutum puanı 55.04 5 üzerinden hesaplandığı zaman 3.44 yapmaktadır. Buna göre hem çevrimiçi ortam hem de sosyal ağlarda bulunan deney grubunun sadece çevrimiçi ortamda bulunan kontrol grubundan daha olumlu görüşe sahip olduğu söylenebilir. Grupların görüşleri arasında farklılık olup olmadığını belirlemek için yapılan bağımsız gruplar t testi sonuçları Tablo 8'de sunulmuştur.

Tablo 8. Grupların görüşlerine ilişkin bağımsız gruplar t testi sonuçları

| Gruplar | n | \bar{X} | S | sd | t | Anlamlılık düzeyi |
|--|----|-----------|------|----|-------|-------------------|
| Deney | 25 | 69.44 | 6.69 | 48 | 6.99* | p<.000 |
| Kontrol | 25 | 55.04 | 7.81 | | | |
| Levene Test Değeri=.328 Anlamlılık Düzeyi=.570 | | | | | | |

*p<.05 anlamlı

Buna göre grupların görüşleri arasında deney grubu lehine anlamlı farklılık belirlenmiştir. Ayrıca grupların görüş puanlarına ilişkin aritmetik ortalama ve standart sapmaları Tablo 9'da verilmiştir.

Tablo 9. Grupların görüş puanlarına ilişkin aritmetik ortalama ve standart sapmaları

| Maddeler | Deney | | | Kontrol | | |
|---|-------|-----------|------|---------|-----------|------|
| | n | \bar{X} | S | n | \bar{X} | S |
| Tartışmalara katılmanın öğrenmeyi kolaylaştırması | 25 | 4.56 | .58 | 25 | 3.96 | 1.33 |
| Öğretmen-öğrenci iletişiminin kolay gerçekleşmesi | 25 | 4.40 | .64 | 25 | 3.36 | .86 |
| Öğrenci-öğrenci iletişiminin kolay gerçekleşmesi | 25 | 4.32 | .62 | 25 | 2.44 | 1.26 |
| Ortam kullanımının kolaylığı | 25 | 4.60 | .70 | 25 | 3.44 | 1.32 |
| Öğrenme açısından ortamın zenginliği | 25 | 4.32 | .55 | 25 | 3.52 | 1.08 |
| Kendini bir topluluğa ait hissetme | 25 | 4.28 | .67 | 25 | 3.00 | 1.32 |
| Bireylere güven duygusu | 25 | 4.44 | .58 | 25 | 3.32 | 1.06 |
| Bireyler arası ilişkileri geliştirme | 25 | 4.56 | .58 | 25 | 3.28 | 1.40 |
| Her zaman bu ortamda bulunma isteği | 25 | 4.60 | .64 | 25 | 3.96 | 1.30 |
| Kendini güvenli bir ortamda hissetme | 25 | 4.28 | .79 | 25 | 3.72 | 1.24 |
| Öğrenme sorumluluğuna sahip olma | 25 | 4.24 | .77 | 25 | 3.68 | 1.21 |
| Daha çok sohbet etme olanağı | 25 | 4.44 | .71 | 25 | 3.52 | 1.26 |
| Ders dışı konuların daha çok paylaşılabilmesi | 25 | 4.60 | .57 | 25 | 2.60 | 1.47 |
| Öğretmenin yönlendirmesi | 25 | 3.84 | .80 | 25 | 4.32 | .80 |
| Bilgisayar becerilerini geliştirme | 25 | 4.00 | .70 | 25 | 3.48 | 1.19 |
| Üyeler arası dayanışmayı sağlaması | 25 | 4.28 | 1.10 | 25 | 2.96 | 1.54 |

Tablo 9'a göre gruplar arasında öne çıkan konular aşağıdaki gibi belirtilebilir:

- Tartışmalara katılım her iki grupta da öğrenmeyi kolaylaştırmakla birlikte bu oran deney grubunda daha yüksek düzeyde gerçekleşmiştir. Burada sosyal ağların öğrenciler üzerindeki olumlu etkisinden söz edilebilir.
- Deney grubunda ($\bar{X}=4.40$) öğretmen-öğrenci iletişiminin daha kolay gerçekleştiği görülmektedir. Burada sosyal ağların kullanılmasının iletişim açısından öğrenci algısını büyük ölçüde etkilediği ortaya çıkmaktadır.
- Öğrenci-öğrenci iletişiminin özellikle çevrimiçi ortamda bulunan kontrol grubunda ($\bar{X}=2.44$) zor gerçekleştiği görülmektedir. Bu açıdan iletişim ortamı olarak Moodle kullanımının ilköğretim öğrencileri açısından yeterli olmadığı belirtilebilir.
- İlköğretim öğrencilerine dönük sadece çevrimiçi öğrenme ortamı kullanımının kendini bir topluluğa ait hissetme ($\bar{X}=3.00$), bireylere güven duygusu ($\bar{X}=3.32$), bireyler arası ilişkileri geliştirmesi ($\bar{X}=3.28$), ders dışı konuların paylaşılabilirliği ($\bar{X}=2.60$) ve üyeler arası dayanışmayı sağlaması ($\bar{X}=2.96$) açılarından yetersiz kaldığı belirlenmiştir.

Sonuç

Çevrimiçi ortamda eğitsel uygulamaları etkileyecek yeni ortam ve araçların yaygınlaştığı gözlenmektedir. Araştırılması ve eğitsel ortamlarda kullanılması gereken uygulamaların başında da sosyal ağlar gelmektedir. Bu çalışmada sadece çevrimiçi öğrenme ortamı kullanımının ilköğretim öğrencileri açısından uygun ve yeterli olamayacağı anlayışından yola çıkılmıştır. Bu anlayıştan dolayı oluşturulan çevrimiçi öğrenme ortamı ve sosyal ağların birlikte kullanımının öğrencilerin başarısı üzerinde daha çok belirleyici bir etkiye sahip olduğu bulunmuştur. Açık kaynak kodlu bir öğretim yönetim sistemi olan Moodle'in işbirliği, iletişim, paylaşım, kendini bir topluluğa ait hissetme yönlerinden ilköğretim öğrencilerine yeterli gelmediği sonucu ortaya çıkmıştır. Bu noktada çevrimiçi öğrenme ortamı ile birlikte sosyal ağ kullanımının öğrencilerin derse ilişkin algılarını büyük ölçüde değiştirdiği belirlenmiştir. Çevrimiçi öğrenme ortamının yanı sıra bu ağları kullanan ilköğretim öğrencileri tartışmalara katılım, öğretmen-öğrenci, öğrenci-öğrenci iletişimi, dayanışma, öğrenme sorumluluğuna sahip olma, ortam zenginliği, her zaman bu ortamda bulunma isteği açısından daha olumlu görüşe sahip olmaktadır. Öğrencilerin sahip oldukları bu olumlu görüşler de başarılarını olumlu yönde etkilemektedir. Ayrıca çalışma sonrasında öğrencilerin ders işlemek istedikleri ortamın sınıftan çevrimiçi ortam-sosyal ağlara doğru bir değişim göstermesi de ilköğretim öğrencilerinin bu yeni ortamlara ilişkin olumlu beklenti geliştirdiklerinin bir göstergesidir.

Kaynaklar

- Lenhart, A., Madden, M., Rankin Macgill, A., Smith, A. (2007). Teens and social media. http://www.pewinternet.org/pdfs/PIP_Teens_Social_Media_Final.pdf
- Li, Q. (2007). 'New bottle but old wine: A research of cyberbullying in schools.' *Computers in Human Behavior*, 23(4), 1777-1791.
- Mckenna, P. (2007). 'The rise of cyberbullying.' *The New Scientist*, 195(2613), 26-27. Retrieved December 12, 2008, from <http://www.sciencedirect.com/science/article/B83WY-4P7FV7K-1N/2/45928e0dfe9ee85ca6b7ea17c0720459>
- Stomfay-Stitz, A., Wheeler, E. (2007). 'Cyber bullying and our middle school girls.' *Childhood Education*, 83(5), 308-J, 2.
- NSBA (2007). *Creating & Connecting: Research and Guidelines on Online Social - and Educational - Networking*. www.nsba.org/site/docs/41400/41340.pdf
- Acquisti, A. R. Gross. (2006). "Imagined Communities: Awareness, Information Sharing and Privacy on The Facebook." Proceedings of the 6th Workshop on Privacy Enhancing Technologies, Cambridge, UK, 2006.
- Boyd, d. (2004). "Friendster and Publicly Articulated Social Networks." Proceedings of the SIGCHI Conference on Human Factors and Computing Systems, Vienna, Austria, 2004.
- Boyd, d. (2006). "Friends, friendsters, and top 8: Writing community into being on social network sites," *First Monday* (8) 11-12.
- Boyd, d., Heer, J. (2006). Profiles as Conversation: Networked Identity Performance on Friendster. Proceedings of the Hawaii International Conference on System Sciences, Kauai, Hawaii, 2006 HICSS-39.
- Fukuyama, F. (1995). *Trust: The Social Virtues and the Creation of Prosperity*. New York, NY: Simon & Schuster, Inc.
- Coppola, N., S. R. Hiltz, N. Rotter (2004). "Building Trust in Virtual Teams," *IEEE Transactions on Professional Communication* (47) 2, pp. 95-104.
- Donath, J., Boyd, D. (2004). "Public Displays of Connection," *BT Technology Journal* (22) 4, pp. 71-82.
- Lewis, J. D., Weigert, A. (1985). "Trust as a Social Reality," *Social Forces* (63) 4, pp. 967-985.
- Piccoli, G., Ives, B. (2003). "Trust And The Unintended Effects Of Behavior Control In Virtual Teams," *MIS Quarterly* (27) 3, pp. 365-395.
- QuantCast (2007a) "Profile for MySpace.com," Quantcast, <http://www.quantcast.com/myspace.com>.
- QuantCast (2007b). "Profile for Facebook.com," Quantcast, <http://www.quantcast.com/facebook.com>.
- Stutzman, F. (2006). "Student Life on the Facebook," http://ibiblio.org/fred/facebook/stutzman_fbook.pdf.

**DYNED PROGRAMININ UYGULANABİLME ETKİLİLİĞİ HAKKINDA
ÖĞRENCİ GÖRÜŞLERİ
(SAFRANBOLU ÖRNEĞİ)
STUDENT THOUGHTS ABOUT PRACTIBILITY EFFECTIVENESS OF DYNED
PROGRAMME
(A CASE OF SAFRANBOLU)**

Yrd. Doç. Dr. Ahmet ESKİCUMALI¹ Adnan UCUR²

Özet

Dil öğretiminde yeni arayışlar neticesinde, Milli Eğitim Bakanlığı tarafından Dyned İngilizce Dil Eğitimi Sisteminin tüm resmi ilköğretim okullarında uygulanması zorunlu kılınmıştır. Bu çalışmanın araştırma problemi Dyned Programının Safranbolu ilçe merkezindeki ilköğretim okullarında uygulanabilme etkililiğini belirlemektir. Bu amaçla araştırmacı tarafından hazırlanan 2'si demografik olmak üzere 33 sorudan oluşan 5'li likert tipi ölçek kullanılmıştır. Bu anket Safranbolu ilçe merkezindeki 10 ilköğretim Okulu arasında SBS puanları dikkate alınarak belirlenen 3 okulda, her okulda 5, 6, 7 ve 8'inci sınıflara her sınıf için 50, toplam 600 öğrenciye uygulanmıştır. Bu verilerin değerlendirilmesinde istatistiksel analizler için SPSS (Statistical Package for Social Sciences) for Windows 15.0 programı kullanılmıştır. Yapılan faktör analizi neticesinde öğrenciler uygulama gerekliliğini en önemli faktör olarak belirlemişlerdir. Ancak uygulama verimliliği ve uygulama desteği için olumlu görüş sıralamada geri planda kalmıştır. Netice olarak öğrencilerin uygulamanın gerekli olduğu yönündeki genel görüşlerine rağmen uygulamanın etkililiği açısından bakıldığında bir olumsuzluk göze çarpmaktadır.

Anahtar Kelimeler: Dyned Programı, Yabancı Dil, İngilizce, Bilgisayar Destekli Yabancı Dil Öğretimi

Abstract

In the frame of searching new approaches, the application of Dyned English Language Education System in all official primary schools has been obliged by the Ministry of National Education. The research problem of this work is to define the practicability effectiveness of Dyned English Language Education Program in primary schools in the centre of Safranbolu. For this aim, a five level likert scale prepared by the researcher and consist of two demographic of total thirty three questions, was used. This questionnaire was applied to total 600 students of 5th, 6th, 7th and 8th grades (50 questionnaires for each grade) in 3 schools that were selected among the ten schools in the centre of Safranbolu according to their SBS (level defining exam) marks. In the analysis process of these data SPSS 15.0 for Windows was used. As a result of factor analysis, the students defined the necessity of application as the most important factor. But in the classification, the positive thought on application efficiency and application support is in the back places. As a conclusion, despite the general thoughts on the necessity of the application a trouble stands out when we consider the effectiveness of practicability.

Keywords: Dyned Program, Foreign Language, English, Computer Assisted Language Education.

INTRODUCTION

It is an inevitable situation that the communication with different cultures and so different nations is important in today's world. This is a natural result of the various job opportunities that occurs after scientific and technological developments and also the dynamism and briskness in the field of tourism. This situation states expressly that one of the main conditions and maybe the most important one that is necessary for making an individual develop himself, being able to respond the necessities of the age and follow the civilization is to know a foreign language.

It has become a necessity that individuals and indirectly the countries must know a foreign language to carry forward their international relations in social, political and economic fields. The Ministry of National Education has announced the aim of learning English as a foreign language as following:

“In our country, the aim of teaching English is not providing communication among the Turkish people whose mother tongue is already the same but also serving for using it effectively to provide a communication between the other nations' citizens and in this way make it easy to reach the advanced manner that it deserves in political, scientific, military, economical and social fields” (MEB, 2006: 2).

As it is seen in the definition above, it has been stated that using a joint language effectively. In today's word where English is being used as a joint language, among the reasons of this, some commercial, culturel and social reasons can be expressed. Üstdal states that one of the reason that English is an international science language is that the USA has also use this language (Üstdal ve Schulze, 2007: 25).

The word wide developments and also changings effect people and their life styles. Thus, an individual is aware of the things that happen around and continually has an interaction with them. How far are these away from a person, they go into his word by means of mass communication like computer and television. As a natural result of this situation the concept of “globalization” has appeared. And also at the

end of globalization, in order to have a communication with the other nations the concept of global language has come into being and there is no doubt that at the present day the global language is English (Karakoyun, 2008: 2).

In our country, according to the new approaches and reforms in recent years, a decision had been taken about the English lesson that should begin from the fourth class and it should be two lessons in a week. Later, the number of the lesson has been raised to three. The aimed situation with this application is making the students reach a certain foreign language level at the end of the compulsory primary education by placing the language in students life and by letting them notice the concept of foreign language from the early ages. The important thing here is that the students should get the importance of a foreign language, and so learn English in some basic level and be aware of the main structures and the content of the language.

Talim terbiye kurulu of The Ministry of National Education had announced the acceptance of the 4th,5th,6th,7th and 8th class English Lesson (part A) Curriculum and Elective English Lesson (part B) curriculum to be executed according to added examples in 2006-2007 academic year in 4th class; in 2007 – 2008 academic year in 5th class; 2008 – 2009 academic year in 6th, 7th and 8th classes in Primary School English Lesson (4th, 5th, 6th, 7th and 8th classes) Curriculum published in 2006. (MEB, 2006)

As a result, after these changes in education, instead of traditional understanding depends on conveying information, constructivist approach that lets the students research and learn the ways of reaching information has taken its place. For this reason the role of teachers in classroom has been changing from being a person who conveys information to a person who is a guide to reach the informatin. The main reason for this situation is that when we compare our students with the other counties they haven't got the necessary accuisition. Thus, the Ministry of National Education has aimed to do similar studies by following the other countries applications. (Karakoyun, 2008:5).

One of these application is that Dyned English Language Education System has been being used in all official primary schools in Turkey since 2008 – 2009 academic year. General Directorate of Primary Schools of the Ministry of Education has given the information about Dyned in the paper announced on the 29th of September, 2008 that Dyned English Language Education System is an interactive education program on computer and it has been used as a helping lesson material of teaching English in from 4th to 8th classes. Pilot application of Dyned English Language Education System was done in 11.152 primary schools in 2007 – 2008 academic year. Since 2008 – 2009 academic yea, it has been being used in all primary schools which have internet access in all over the country. (MEB, 2008).

Problems of Teaching Foreign Language in Turkey

Today, the difficulties faced while teaching a language have kept up to date as it was in the past and there have been various problems related with teaching a language in all situations. Nowadays there is a deflection on the goals of language teaching in our country and it seems as if it is very far away from its main goal.

Until today, always an answer has been considered to the question of “how must one learn a language? but the important thing is that “why must one learn it.” Because, the aim of learning a foreign language should be examining the developments in the world and following the scientific studies in its original language. Because as there aren't enough works in our mother language, it will be possible to have an opportunity to follow the scientific studies conducted in all over the world via a foreign language. Above all language is a means of communication. The aim should be getting the most benefit possible from this means of communication and not being a loser. Language is a window for modern civilization. Until now, so many teaching methods have been formed and used in language education. But the aim of each method has been teaching the language in the shortest time period. And also in secondary and higher education whichever method is used the lessons given depend on knowledge, but a foreign language requires skill and this skill can be acquired with a repetition. Not to forget the aimed language it is necessary to use it (İşeri, 30.11.2009).

The detection of Enginarlar about the foreign language teachers working at different schools in Turkey is very important. According to him, most of the foreign language teachers have never taken a course from the teachers whose mother language is the aimed language. They have never been to the country where the aimed foreign language is used as mother language and they also have not used that foreign language outside the classroom since they don't have the necessity or opportunity during their primary and secondary education lives (Enginarlar, 2003: 68).

Besides, there are a lot of schools which have no classroom regulations to give the opportunity for generating teaching English actively and interactively. This situation prevents group studies in which four or more students participate. Classroom activities are usually mechanical exercises far away from daily usage of the language like filling in the blanks, sentence completion, question and answer, replacement, placing the verb according to the suitable tense and also in examination or for homework the questions are asked in the same way. In this situation a student who has an understanding about the exercises can do those exercises according to some specific rules and rthym and considered as successful although s/he doesn't know the language. Whereas a student whose mark is 5 cannot communicate by using English in daily life. This situation also makes a contradiction from both student's and curriculum's point of view.

In this stage Dyned can be put into practice as a way of a solution.

DYNED

Dyned consist of the connection of the words dynamic and education and it means Dynamic Education. This programme includes a computer based education process. As it is stated in Dyned User's Guide, the most important feature of this programme is that it is also visual and at the same time auditory. Visuality involves the elements that makes the subject more understandable. This also causes the language being meaningful and learning the language in a true way. When we compare the calssical classroom based instruction with the combuter based education it is clear that each student's individual education process raises to the highest level with the computer based education. The main

reason for this is that the student is together with her/his teacher during the whole lesson when s/he is in front of the computer that can be considered as a teacher. This situation can be seen more clearly when it is compared with the classical classroom education in view of the rate of problem solving, analyzing, making synthesis. (Dyner, 2006).

But on the contrary of the things expressed in the user's guide, it is possible to say some disadvantages. Especially although it is said that individual education process is in the highest level with this programme, the question of 'how can a student turn this individuality to an advantage?' is important. Students may click randomly as being together with only the computer. They may use the method of trial and error continue clicking without listening the instructions and as a result they may use it as a free time activity that is very far away from its ultimate purpose. In this stage it is important that the students must be informed about how this program operates and how it must be studied. Also it is important that the students must be directed carefully.

According to Dyner software engineers one of the most important features of this program is also that it forces the students to be active continually. While doing this, it controls their level consistently and it is interactive. It helps the students to hit the right answer with their own logic. Every click of the students are recorded and it helps the teachers to evaluate their students. When a student gives a wrong answer to any question, s/he is warned with visual and auditory commands and wanted to reanswer the question. If the student insisted on his/her mistake, the program warns him by saying "this is enough for today" and "you should go on with another part". Besides the programme arranges the difficulty level of the questions according to the rates of true and false answers of the students and by this way it motivates the students in a positive way. In addition to this Dyner has some features that oriented to solve the problems about accent, diction and intonation. (Dyner, 2006).

Although Dyner has some features that oriented to solve the problems about accent, diction and intonation as it was stated above and also it has some support softwares to follow the students' all actions and this forms a positive view point we have also some worries that to what extent can this programme be used in our schools. Will this programme provide an important contribution to language education as it is claimed by Dyner supporters. This is our worry that although all positive sides of this programme, it may be dormant in our schools because of the reasons like technical deficiencies, worries related with completing the syllabus, some possible demotivating problems during the installation and studying period.

As it is expressed in the user's guide for Dyner, one of the main benefits of studying with interactive multimedia softwares is that it lets most parts of our brain work at the same time. It is Dyner's basic principle that the student should begin speaking and recording every sentence after studying until understanding the meaning well in a lesson. The suggested studying strategy is that after recording your sentences by microphones you should compare your pronunciation with the native speakers of English. Studying by comparing your speed, intonation and pronunciation both provides the automatic usage and develops long term memory by sparking the phonological processor. Making exercises like this for a few minutes in every studying period is one of important sides of studying philosophy of Dyner.

As all the positive sides that were stated in User's Guide and expressed by the software engineers of this program make an impression that this program should precisely be used in language teaching, there are some worries when we consider the question like 'Can this program be used in schools during the language lessons? Are there enough technical facilities at schools? Will there be some chance to use computer and technology classrooms as it is mainly reserved for computer lessons and some other ones. As having some troubles for motivating the students in the lessons, whether the language teachers can motivate them to study Dyner outside the classroom or not. This reality also requires the necessity of investigating the efficiency of this system. But, how a student, if s/he has a computer, gain the consciousness of studying Dyner at home instead of other things such as surfing on the net and playing games. Although everything this is our thought that the students should be motivated individually in any form whatsoever.

RESEARCH METHODOLOGY

This study is about practicability effectiveness of Dyner English Language Education System in application of which was obliged in all official primary schools in 2008 – 2009 academic year in the border of Safranbolu district. Firstly it was aimed that what are the students opinion about the practicability of this system and then according to the findings whether there are any faced problems while using it or not and if there are what are the reasons for it. Another goal was to be able to put some proposals for solution in present condition to raise the effectiveness. This research done about Dyner application of what was obliged in primary schools at the end of the new searches and fresh approaches is considered as important for being a source of the next researches and it can provide a contribution for being able to get rid of some problems by being more developed by other researchers.

In this research scanning model was used. Perception of 5th, 6th, 7th and 8th class students about Dyner application in primary schools and changing of it according to demographic characteristics was examined.

Research universe consists of ten primary schools in the center of Safranbolu. Research population is three primary schools among them. They were decided according to SBS exam results. According to this, one school among the first three schools, one schools among the second three schools and one school among the third four schools were randomly selected.

A five level likert scale prepared by the researcher and consist of two demographic of total thirty three questions, was used. This questionnaire was applied to total 600 students of 5, 6, 7 and 8th grades (50 questionnaires for each grade) in these 3 schools. In the analysis process of these data SPSS 15.0 for Windows was used.

FINDINGS

For testing the reliability of this scale Cronbach's Alfa was used. At the end of this process reliability was found as 93 percent. But it was determined that the 6th, 18th, 25th ve 32nd items effect the internal consistency of the scale in a negative way. For this reason these items were taken out and the reliability reanalyzed. After reanalyzing process it was found out that the reliability raised to 94 percent.

Table 1. Reliability Value

| | | | |
|----------------|----|-----------------|----|
| Cronbach'sAlfa | N | Cronbach's Alfa | N |
| 0,930 | 31 | 0,940 | 27 |

At the end of factor analysis it was found out that the sub-factors of this scale is as in the following;

1st sub-factor; application necessity: Q7, Q15, Q5 ,Q3, Q16, Q9, Q22, Q23, Q4, Q31

2nd sub-factor; application efficiency: Q13, Q10, Q21, Q20 ,Q12, Q19, Q24, Q17

3rd sub-factor; application support: Q28, Q27, Q26, Q8, Q33, Q29, Q11, Q14, Q30

Table 2. Reliability Levels Of Sub-Factors

| | Cronbach's Alpha | Number of questions |
|------------------------|------------------|---------------------|
| application necessity | 0,900 | 10 |
| application efficiency | 0,845 | 8 |
| application support | 0,873 | 9 |

Reliability levels of sub-factors changes from % 84 to %90. This means that the sub-factors are highly reliable.

1.1. Findings About Demographical Features Of Research Population

Table 3. Research Population According to Gender, Class and School

| School Name | 5th class | | 6th class | | 7th class | | 8th class | |
|--------------------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Female | Male | Female | Male | Female | Male | Female | Male |
| Zati Ađar Primary School | 29 | 21 | 27 | 23 | 22 | 28 | 28 | 22 |
| B. Şehit Atilla Bodur Primary School | 31 | 19 | 23 | 27 | 21 | 29 | 29 | 21 |
| Emek Primary School | 24 | 26 | 26 | 24 | 32 | 18 | 20 | 30 |
| Total | 84 | 66 | 76 | 74 | 75 | 75 | 77 | 73 |

312 of the population (%52) is female, and 288 (%48) is male.150 students (%25) from each class (5th, 6th, 7th and 8th class) and from each school 200 students (%33,3) were participated in this search.

1.2. Findings about the scale

Table 4. Descriptive Statistical Findings About Sub-factors

| | N | Ort | Ss | Minimum | Maksimum |
|----------------------------------|-----|------|------|---------|----------|
| Uygulama gerekliliđi | 600 | 4,00 | 0,84 | 1 | 5 |
| Uygulama verimliliđi | 600 | 3,14 | 0,97 | 1 | 5 |
| Uygulama desteđi | 600 | 3,65 | 0,97 | 1 | 5 |
| Uygulamaya iliřkin genel dűřünce | 600 | 3,63 | 0,81 | 1 | 5 |

The students participated in this research expressed that application necessity is the most important factor and application efficiency is less important one. Average general thoughts about the application is 3,63. This means that the students generally have positive opinions about the application.

Table 5. Relations Between the Sub-factors

| | | r | p |
|----------------------|----------------------|------|-------|
| Uygulama gerekliliđi | Uygulama verimliliđi | 0,62 | 0,000 |
| Uygulama gerekliliđi | Uygulama desteđi | 0,72 | 0,000 |
| Uygulama verimliliđi | Uygulama desteđi | 0,71 | 0,000 |

There is a statistically meaningful positive relation of 62 percent between application necessity and application efficiency. When the positive thoughts about application necessity raise positive thoughts about application necessity also raise. There is also a positive statistically meaningful relation between application necessity and application support. The percentage of it is % 72. When the students' thoughts about "application necessity" are positive, their answers about "application support" are also positive. Between the items of application efficiency and application support, there is also statistically meaningful positive relation and its percentage level is 71 percent. When application efficiency increases application support increases too.

Table 6. Sub-factors According to Gender

| | Cinsiyet | N | Ortalama | Ss | t | p |
|----------------------------------|----------|-----|----------|------|------|-------|
| Uygulama gerekliliđi | Kız | 312 | 4,08 | 0,78 | 2,64 | 0,009 |
| | Erkek | 288 | 3,90 | 0,90 | | |
| Uygulama verimliliđi | Kız | 312 | 3,17 | 0,91 | 0,64 | 0,521 |
| | Erkek | 288 | 3,12 | 1,03 | | |
| Uygulama desteđi | Kız | 312 | 3,71 | 0,90 | 1,65 | 0,099 |
| | Erkek | 288 | 3,58 | 1,03 | | |
| Uygulamaya ilişkin genel düşünce | Kız | 312 | 3,69 | 0,75 | 1,90 | 0,057 |
| | Erkek | 288 | 3,57 | 0,87 | | |

Female students have more positive thoughts than male students about the item of application necessity ($p<0,05$). There is no difference about application necessity, application efficiency and application support between the male and female students.

Table 5. Sub-factors According to Class

| | Sınıf | N | Ortalama | Ss | F | p |
|----------------------------------|---------|-----|----------|------|-------|-------|
| Uygulama gerekliliđi | 5.sınıf | 150 | 4,50 | 0,55 | 44,37 | 0,000 |
| | 6.sınıf | 150 | 4,13 | 0,64 | | |
| | 7.sınıf | 150 | 3,81 | 0,90 | | |
| | 8.sınıf | 150 | 3,54 | 0,91 | | |
| Uygulama verimliliđi | 5.sınıf | 150 | 3,65 | 0,85 | 28,74 | 0,000 |
| | 6.sınıf | 150 | 3,26 | 0,80 | | |
| | 7.sınıf | 150 | 2,83 | 1,07 | | |
| | 8.sınıf | 150 | 2,83 | 0,88 | | |
| Uygulama desteđi | 5.sınıf | 150 | 4,19 | 0,69 | 40,55 | 0,000 |
| | 6.sınıf | 150 | 3,86 | 0,70 | | |
| | 7.sınıf | 150 | 3,19 | 1,15 | | |
| | 8.sınıf | 150 | 3,35 | 0,91 | | |
| Uygulamaya ilişkin genel düşünce | 5.sınıf | 150 | 4,15 | 0,60 | 48,66 | 0,000 |
| | 6.sınıf | 150 | 3,79 | 0,60 | | |
| | 7.sınıf | 150 | 3,33 | 0,92 | | |
| | 8.sınıf | 150 | 3,27 | 0,76 | | |

As it is seen in the table, higher classes have less positive thoughts about the item of application necessity ($p<0,05$). Lower classes have more positive opinions about application necessity but higher classes don't agree with this. In higher classes, positive thoughts about application efficiency also decrease ($p<0,05$). Lower classes consider application efficiency more positively but on the contrary higher classes don't agree with this opinion. Positive opinion about application support decreases in higher classes and in parallel with this it is obvious that the students have a negative thought on the general opinion about the application ($p<0,05$). As a result lower classes have more positive opinions than the higher ones.

Table 5. Sub-factors According to School

| | Okul | N | Ortalama | Ss | F | p |
|----------------------------------|---------------------------------|-----|----------|------|-------|-------|
| Uygulama gerekliliđi | Zati Ađar İ.Ö.O | 200 | 3,94 | 0,90 | 7,27 | 0,001 |
| | Emek İ.Ö.O | 200 | 4,17 | 0,77 | | |
| | Bađlar Şehit Atilla Bodur İ.Ö.O | 200 | 3,87 | 0,83 | | |
| Uygulama verimliliđi | Zati Ađar İ.Ö.O | 200 | 3,15 | 0,94 | 6,17 | 0,002 |
| | Emek İ.Ö.O | 200 | 3,31 | 0,88 | | |
| | Bađlar Şehit Atilla Bodur İ.Ö.O | 200 | 2,97 | 1,05 | | |
| Uygulama desteđi | Zati Ađar İ.Ö.O | 200 | 3,64 | 0,97 | 17,02 | 0,000 |
| | Emek İ.Ö.O | 200 | 3,93 | 0,78 | | |
| | Bađlar Şehit Atilla Bodur İ.Ö.O | 200 | 3,38 | 1,06 | | |
| Uygulamaya ilişkin genel düşünce | Zati Ađar İ.Ö.O | 200 | 3,61 | 0,81 | 11,50 | 0,000 |
| | Emek İ.Ö.O | 200 | 3,84 | 0,71 | | |
| | Bađlar Şehit Atilla Bodur İ.Ö.O | 200 | 3,45 | 0,87 | | |

The students at Emek Primary School have given their opinions about the item of application necessity more positively than the other two schools ($p<0,05$). The approvals of the students at Zati Ađar Primary School and Bađlar Şehit Atilla Bodur Primary School are equal. Emek Primary School students have more positive opinions about application efficiency than Bađlar Şehit Atilla Bodur Primary School students ($p<0,05$). Also the students at Emek Primary School consider the item of application support more positively than the other two schools. ($p<0,05$). The students' general thoughts about the application in Zati Ađar Primary School and Bađlar Şehit Atilla Bodur Primary School are equal while the students in Emek Primary School give their opinion on this item more positively.

1.3. Findings About Having the Necessary Facilities for Studying Dyned

Table 6. Examining the Item of ‘I have all necessary facilities for studying Dyned’

| | Frekans | Percentage |
|----------------------------|---------|------------|
| Stronly agree | 74 | 12,3 |
| agree | 53 | 8,8 |
| Neither agree nor disagree | 46 | 7,7 |
| disagree | 98 | 16,3 |
| Strongly disagree | 329 | 54,8 |
| total | 600 | 100,0 |

As it is stated in the table 74 students (%12,3) strongly agree and 53 students agree with this item. On the contrary 98 students (%16) disagree and 329 students (% 54,8) strongly disagree. As a result 427 students (% 71,1) stated that they did not have the necessary facilities for studying Dyned at their homes. Only 127 students (%21,1) has given their opinion on this item positively. According to these results it can be said that application efficiency of Dyned is limited with the facilities at schools.

1.4. Findings About Practicability Effectiveness of Dyned

The findings here have been commented according to the opinions that were given to the open ended question of ‘What is your opinion and suggestion about Dyned’ which was at the end of the questionnaire. According to this some students – this group consist of the important majority – expressed that Dyned is a useful programme but they stressed that they didn’t have this facility at their homes.

Facility here means computer and internet access. Some students have stated that they consider Dyned as a nightmare and it must be abolished. They expressed the reason for this opinion as since they have some troubles during installation process, at the end they became demotivated. Some students also expressed that they believe that Dyned is a useful language learning programme if it is used in a right way. But while they are studying both at school and at home there are some troubles in general.

They explain the troubles that they faced at school as disruption on internet access, the problems about headphones and microphones, not opening the programme. In addition to this, they expressed that they had to share a computer with two, sometimes three students. At home, they expressed that, they didn’t have enough time for studying Dyned because they had to study for SBS exams, prepare some projects and also they had a lot of performance work.

As it is understand from the expressed thoughts and opinions, consequently it can be said that although most of the students describe dyned as a necessary and useful programme in English learning, when we consider it in the view of practicability effectiveness there are some troubles. Both insufficient technical facilities and hardwares and the personal motivation of the students are not enough to study dyned effectively are some reasons for these troubles.

CONCLUSION

The most important result of this research is that whether the students have all the necessary facilities for studying English via Dyned English Language Education Program or not. According to the findings of this research, the rate of the participants who gave the opinion that they have the facilities of studying Dyned at their homes is only 21,1 percent. When we compare this rate with the general one it is very lower. Facility means here is computer and internet access. Because these two components are the main necessities of studing on Dyned program. To be able to follow the studies of the students and direct them for a teacher is related to the internet access of the computer on which Dyned is being studied. Some of the students who participated in this research expressed that although they have computers at their homes because of some various reasons they have no internet connection.

- 1- When Dyned English education System is considered as “application necessity”, “application efficiency” and “application support” the results are various.
 - a) In this part the item of application necessity was determined according to the answers of the students to the questions like do the students consider that Dyned System is necessary or not in learning English?, Do they believe whether this system develop their language skills or not?, Whether learning English with this system is permanent or not?. According to this the students who participated in this research expressed that application necessity is the most important factor. Although they think like this, the item of application efficiency was stated by the students as more unimportant.
 - b) In this research, the item of “application efficiency” was determined according to the students’ thoughts about the statements like ‘we can study Dyned in some certain hours of English lessons, everyday I can study Dyned regularly, I have enough information about how Dyned must be studied’ that aimed to find out whether this system has been being used effectively or not. At the end of the research a statistically meaningful positive relation was found out between the items of “application necessity” and “application efficiency”. It has been observed that When the students’ thoughts about “application necessity” are positive, their answers about “application efficiency” are also positive.
 - c) Another item which we try to bring out in this research is “application support”. This item is consists of the thoughts taht indicates the statements like ‘our computer formatör teacher tries to help us about studying dyned, school management gives the reiqured importance to Dyned, our English teacher tries to motivate us for studying Dyned, when I have a trouble about Dyned, I can easily get help from my teacher’. At the end of the research also a statistically meaningful positive relation was found out between the items of “application efficiency” and “application support”. When the students’ thoughts about “application efficiency” are positive, their answers about “application support” are also positive.

- 2- When we consider the results according to the gender, it has been seen that the girls are more agree with the opinion that application is necessary than the boys. There is no difference about application necessity, application efficiency and application support between the male and female students.
- 3- When the thoughts of students are examined according to class, positive thoughts are lower in higher classes. Lower classes (grades) has a positive thought about application necessity while the higher classes thoughts on this item decrease. It has drawn the attention that in higher classes, positive thoughts about application efficiency also decrease. Lower classes consider application efficiency more positively but on the contrary higher classes don't agree with this opinion. Lastly it was found out that positive opinion about application support decreases in higher classes and in paralel with this it is obvious that the students have a negative thought on the general opinion about the application. As a result lower classes have positive opinions than the higher ones.
- 4- When we consider the results of this research according to the schools, the students of Emek Primary School has given their opinions more positively than the other two schools. It can be said that the general opinions of the students of Zati Ađar Primary School and Bađlar Şehit Atilla Bodur Primary School are equal. According to this finding when Emek Primary School is evaluated again, the situation that the Dyned Formator teacher works at here draws the attention. Here the question of whether is this situation effective on students positive thoughts about Dyned recures to the mind unavoidably. In our opinion this is an advantage for the students. It can be said that the position that there is a formator teacher who can state a solution about all possible problems in installation and studying period makes this school more advantageous than the other schools that have a potential of not to able to solve the problems in a short time and be crestfallen.
- 5- According to the thoughts that were taken while conducting the questionnaire, application of this system is **nearly impossible**. There are a lot of reasons for it. Primarily the teachers has stated that there arent enough hardware facilities in **Technology Classrooms**. Teachers gave the opinion that although the authorities put necessary hardware in these classrooms, there are **some problems especially** about the headsets and other parts or the computer system. Besides when it is considered that especially **computer lessons and the other lessons** are given in this technology classes there are some problems about the planning. It is clear **that most of the teachers** have negative opinions about this situation.
- 6- If the aim of this system is to make teoritical and partly practical study in schools and **individually motivate students** to let them study outside the English lessons, it is obvious that approximately 20 percent of the **opinion about the statement** that I have all necessary facilities to study dyned at home is among the results is this research.
- 7- Consequently we can say that although Dyned English Language Education System **obliged in all primary schools** by the ministry of Education has a potential to make significant progress in language teaching in theory or if it is used effectively, it is open to question from the point of view of its effective application. At the end of this **research although all positive thoughts** on this system is necessary, it makes a contradiction that there are some proplems while using this system.

REFERENCES

- DYNED, (2006), **Dyned İngilizce Dil Eğitimi Kullanım Kılavuzu**, Future Prints Bilgisayar ve Sanayi Ticaret A.Ş., İstanbul.
- ENGİNARLAR, Hüsnü (2003), “İlköğretim Çağında Yabancı Dil Öğretimi, Türk Eğitim Sisteminde Yabancı Dil Eğitimi ve Kalite Arayışları”, **Özel Okullar Derneđi**, İstanbul.
- İŞERİ, Kâmil, “Dilin Kazanımı ve Yabancı Dil Öğretimi”, <http://host.nigde.edu.tr/kiseri/makaleler/dilinkazanimi.pdf>, 30.11.2009.
- KARAKOYUN, Seda (2008), **İlköğretim II. Kademe Yabancı Dil Dersi Öğretim Programının Deđerlendirilmesine İlişkin Öğretmen Görüşleri (Adapazarı Örneđi)**, Yüksek Lisans Tezi, Sakarya Üniversitesi Sosyal Bilimler Enstitüsü.
- MEB (Milli Eğitim Bakanlığı), (2006), **İlköğretim İngilizce Dersi (4, 5, 6, 7 ve 8. sınıflar) Öğretim Programı**, Devlet Kitapları Müdürlüğü, Ankara.
- MEB (Milli Eğitim Bakanlığı), (2008), **Dyned İngilizce Dil eğitim Programına İlişkin Yönerge**, Ankara
- ÜSTDAL, Muzaffer ve Arnfried Schulze (2007), **Başarılı Tezler Nasıl Hazırlanır**, Cerrahpaşa Tıp Kitabevi, İstanbul.

STUDENT'S REFLECTIONS ABOUT PODCAST CREATION AND USAGE PROCESSES

Sacide Güzin Mazman, Yasemin Koçak Usluel, Vildan Çevik

Abstract

The aim of this paper is to investigate students' activity within the process of podcast creation and utilization. The study employed 50 third-year undergraduate-level students currently enrolled in the Department of Computer Education and Instructional Technologies. Data collection tool, prepared by the researchers, included open-ended questions. It was found that, most of the students had no prior experience of using or creating podcasts. Hence, podcast technology was new to them and they frequently used their personal computers while listening to the podcasts available on the Internet. In addition, students stated that they had difficulty in scenarizing the content preparation process and while trying to get clear sound while they are developing their podcasts.

KEYWORDS

Podcasting, students' created podcast, educational podcast

1. INTRODUCTION

New ways of utilizing new tools and media to support and enhance the education and training processes are studied and their effects and outcomes are interrogated in different studies. Especially, technologies with which students create collaborative products by participating actively in information construction process have been studied from many perspectives. Web 2.0 tools, namely blog, wiki, podcast, social networks, RSS etc., also known as readable and writable Web (D'Souza, 2006), are the examples of these tools.

Above all, it is stated that, as popularity of mobile media players increases and spreads out rapidly, this made podcasting an interesting and attractive way for distributing educational materials and on the other hand, as many educators consider podcasting as an exciting learning paradigm of impressive pedagogical potential with limited technical skills and efforts numbers of studies about using podcast in educational context has been increased (Lazzari and Betella, 2007).

The most valuable potentials of educational podcasting are ease of production and portable use. It is suggested that, being able to access information without being linked to a certain physical location is very attractive especially for students who are now more mobile than ever and very familiar with the technology required to download and listen to audio files (Laing, Wootton and Irons, 2006; Jham, et al., 2008).

Students can produce, edit and deliver podcasts as course lectures, interviews with experts, document field trips, observation notes and workshop reports, to meet individual learning or teaching needs with limited technical skills and effort. So this can be considered as a part of students' assignment and while enhancing communication, story telling and interpreting skills by fostering collaboration, team building and social network activities, on the other hand it provides permanency of learning with its repeatable listening potential course podcasts that are extracted from details and focused on important concepts and cases (Laing, Wootton and Irons, 2006; Lazzari, 2008; Armstrong, Tucker and Massad, 2009). In addition while educational podcasting is related to with studies or courses, it also has the potential to provide personalized content that support independent learning and develop skills of time management, presentation, problem solving and public speaking in the process of students' creating their own podcasts (Borja, 2005; Laing, Wootton and Irons, 2006).

Educational advantages of podcasts are summarized below (Kaplan-Leirson, 2005; Skiba, 2006; Armstrong, Tucker and Massad, 2009) ;

- Provide benefit for students whose learning style is mainly auditory.
- Provides an alternative to revise and review educational materials.
- Provides students to express ideas, share perceptions, debate different issues and bring experts to classroom digitally.
- Assist students who has difficulty to understand and miss course lectures or students who are non-native speakers, by providing reviewing records of events as many times and clearly.
- Provide lecturers to criticize their own lectures and recording feedback for group works.
- Replace full classroom or online sessions when content simply requires delivery Podcasting can alert learners that there is new material to be accessed and then allow them to access it whenever, wherever they want.
- Provide supplementary content or be part of a blended solution.
- Enhance support for individualized learning preference and needs.
- Support students' engagement and interest in class discussions, labs, field, research and independent projects.

In addition to its advantages, podcasting is still seen as a passive approach to learning and teaching (I speak, you listen), so it is suggested that when initially developing a educational podcasts material, educators must consider issues as what educational goal is being tried to meet and how will podcasting enhance the student's learning experience (Laing, Wootton and Irons, 2006). On the other hand, Jham et. al (2008) stated that disadvantages of podcasts include; challenges for integration with existing technology infrastructures, lack of academically available content and difficulties with licensing agreements from commercial resources, lack of awareness and knowledge by faculty and students of podcasting functionality and he also suggested that podcast should be complementary and supporter of courses rather than replacing them.

While podcasts are currently available on many different subjects from music to technology, news to foreign languages, politics to education, the use of podcasting for educational purposes is explained rather a new idea and opportunity for higher education (Lazzari, 2008). Different studies has been executed about educational usage of podcasts in different educational levels (Lazzari and Betella, 2007; Lee, McLoughlin & Chan, 2008; Lonn and Teasley, 2009). However, it is stated that most of the studies about educational usage of podcasts are merely surveys to investigate integration of podcasts into educational context and its effectiveness on learning and achievement, on the other hand while the literature is still poor of examples, case studies and evaluations of students created podcast (Lazzari, 2008; Armstrong, Tucker and Massad, 2009; Hew, 2009). Whereas, it has been suggested that, by creating their own podcasts, students will produce students-centered content and develop their knowledge construction, active participation, critical evaluation, information searching, analyzing and presenting, creativity and reflective learning skills (Scown, 2008; Armstrong, Tucker and Massad, 2009).

From this point, in this study, it is aimed to explain students' experiences of both creating podcast and utilizing from podcasts by building an environment for students in which they could actively participate in and involve in groups to develop their own podcasts.

2. METHOD

2.1 Study Group

The study group is consisted of 50 third-year students, 16 female and 34 males, from department of computer and instructional technology education.

2.2 Implementation

To explain students' podcast creation and utilizing from podcast processes, process of creating podcast is designed in phases below;

- Firstly, topics of course subjects are determined in terms of weeks and students are grouped according to numbers of topics.
- All of the topics are assigned to groups and it is expected from the group which has the subject of that week, to create their podcast by scenarizing subject after course.
- In the podcast creation process, during the lecturer teaching subject in the class, related group members took notes to prepare their podcast scripts and then group sent their scripts to lecturer for control.
- Before groups recorded their podcast, lecturer gave feedback weekly to groups after revising their scripts.
- Groups created their podcasts by recording sounds of content text that was revised by lecturer. Then groups recorded last version of their podcast after lecturer listened and approved for content and sound quality (sometimes groups had to record several times all over).
- Weekly, students created podcasts are uploaded to Moodle, learning management system of the course, by related group and prepared as readily for the usage of other group members. At the end of the term, open ended questions were asked to all students to explain students' podcast creation processes, utilizing from other groups' created podcast, general experience of podcast and podcast usage.

2.3 Data Collection Tool

Data is collected with a tool, consisted of open ended questions.

Questions are asked to determine;

- Student's prior experience of using or creating podcast
- Technologies which students use for listening podcasts
- Difficulties of students' in the podcast creation process (organizing text, scenarizing text and recording sound).

2.4 Data Analysis

Answers of open ended questions are examined by content analysis method and similar or same answers were categorized.

3. FINDINGS AND DISCUSSIONS

The first question was about students' prior experience of using or creating podcast. Only one of the students stated that he used podcast before this course while four of them stated that they created podcast before this course. This finding pointed out that podcasting in this study, providing students to both participate actively in podcast developing process and also listening podcasts created by their peers, was a new technology. Consequently, it can be suggested that contrary to classical teaching methods, this study provided students to learning a subject by a method, in which they actively participated in content production process.

When examined the technologies that used by students to listen podcast, it is found that despite all students have a mobile tool, 41 of them explained that listened podcast on their laptop/PC, 5 of them on Mp3 players, 2 of them on mobile phones and only one of them on Ipod. This finding suggest despite podcast provide students to be listened where they want and when they want, most of students preferred to listen podcast on their computers. Similarly Lonn and Teasley (2009), in their study which podcasting was examined as complementary and supplementary to classroom instructions, found that (76%) of students most often listened/watched podcast content on their laptop computers, whereas only 9% responded that they used their iPod or other portable audio device. Lee and Chan (2007) and Carvalho et. al. (2007) also found that, while most of the students had mp3 players and they liked podcast because they can listen while they are going somewhere or and where they want, generally most of the students stated that they listened course podcasts on their personal computers in these studies. The reason for this finding can be, because concentration is required for listening to academic material compared with music aimed at entertainment, despite using a mobile device, to be able to pay attention to the content students preferred to listen educational podcast generally at home, school etc. static (Edirishinga, Salmon and Fothergill, 2007). Brown and Green (2007), explained the reason of this finding as, because the ubiquitous use of podcasts does not appear to include students' use for formal education; students may not listen/view to academic podcasts in the same way that they consume other audio/video media using portable technologies and Lonn and Teasley, (2009) suggested that, the location for students' consumption of podcast educational materials may change as mobile digital devices become a more popular method for accessing the Internet.

The experiences of students during creating podcast in group process are examined under four phases; organizing text, scenarizing text, recording sound and other. The responses to this question are examined by content analysis method and the themes obtained from content analysis are grouped under common categories.

Firstly, when the experiences of students during text organizing phase is examined, the difficulties which students expressed are revealed out as;

- Students within groups could not take a common decision on editing text.
- They couldn't organize content text in a conversational form to record as podcast.

- They couldn't access sufficient resources for content.
- They had difficulties while organizing content as authentic and original.
- They had problems with breaking out content text into meaningful pieces without making a non sense content.
- They also had difficulty with determining important points in the content to emphasize while recording podcasts.

Secondly, when the experiences of students during **scenarizing text phase** are examined, the difficulties which students expressed are revealed out as;

- They had difficulties to edit plain text to dramatize content
- Some of the groups complained about their subject as not being suitable to scenarize

Thirdly, different problems and difficulties were also stated by students in **recording phase**.

The difficulties which students expressed in this phase are revealed out as;

- Difficulties with clarity of recorded sound
- Difficulties with finding a feasible environment to record
- Can not adjust the tone of voice appropriately
- Having a scratchy sound after recording
- Can not set up a natural atmosphere

In addition to these, technical problems have revealed out in recording phase as limited technical instruments and tools and problems with programs. Similarly, in his study of students' creating podcast as reusable learning objects, Scown (2008) found that while developing their own podcasts students had difficulties with both presenting content and using podcast appropriately which was a new technology for them, and also with adjusting voice volume, clarity of sound, controlling tone of voice and time management.

Except from organizing text, scenarizing text and recording phases other various problems are cited by students, for example; problems within groups (making a co decision, coming together), selecting the person to vocalize, lack of experience, non qualified products as a result of quality of instruments.

4. CONCLUSION

This study found that while the participants were Computer Education and Instructional Technologies students, most of the students had no prior podcast experience prior this study. This result can be related to the fact that podcasts are relatively newer tools than many other learning management systems, wiki, blogs, forums or discussion boards. Similarly, although all of these students listen to music or watch videos by downloading them to their portable tools or personal computers, only one student claimed that he or she used podcasts before. This finding can be related to the fact that, despite students listen music or watch video with their portable tools or on computers, they are not aware of this as a podcasting activity. On the other hand because podcast is relatively a new term for students which they probably met in this course, they responded to this question, taking into consideration only educational podcasts, ignoring their daily life.

When asked which tool they used while they listen to the uploaded podcasts, most of the students responded by stating that it was the "computer." Hence, it can be suggested that, although listening materials can be found and listened to everywhere, to concentrate on and not to distract their attention, students preferred listening to educational podcasts on their computers while sitting although they listen to content of entertainment such as music or video on their portable devices.

The examination of the difficulties students had while developing their podcasts, various problems were stated in the three phases of podcast creation, namely **text organizing**, **scenarizing content** and **recording** phases. Especially, because students used to prepare their homework or projects by searching a topic from documents, internet, books etc. and then prepare a presentation or a report about them, they had difficulties with organizing content to record as a podcast because this was an unfamiliar method for them. Students further stated the difficulties mostly in determining important points in the content to emphasize while recording, adjusting tone of voice, scenario writing content not to bore the listeners. In addition, some technical difficulties have been stated as quality of sound, scratchy sound, limited technical instruments and tools. Beside these, because students worked in groups instead of individually, various within group problems were revealed out as selecting person to vocalize podcast and coming together. As this podcast experience was quite new for students, these difficulties can be assumed possible.

In future studies, the factors affecting the integration of podcasts into the learning-instruction context should be investigated in detail. In addition, because podcasting was the first experience of most students in this study, they had various difficulties while they were creating podcasts. Hence, in further studies, students' experiences with podcasts at different time periods and different in different forms (user or creator) can be examined to reveal the differences amongst the processes or difficulties of podcast creation.

This study investigated podcast with students of computer education and instructional technologies department who are already compatible with professional context and the course context. Future studies should also focus on the experiences of students studying at different departments in relation to their podcast creation, downloading, and listening processes.

REFERENCES

- Armstrong, G. R., Tucker, J., M. & Massad, J. V. (2009). Teaching Brief. Achieving Learning Goals with Student-Created Podcasts. *Decision Sciences Journal of Innovative Education*.7 (1).
- Borja, R.R. (2005). Podcasting craze comes to K–12 schools. *Education Week*, 25 (14), 8.
- Brown, A. & Green, T. D. (2007). Video podcasting in perspective: The history, technology, aesthetics, and instructional uses of a new medium. *Journal of Educational Technology Systems*, 36(1), 3-17.
- Carvalho, A. A., Aguiar, C. J., Carvalho, C. & Cabecinhas, R. (2008). Influence of Podcasts Characteristics on Higher Students' Acceptance. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2008* (pp. 3625-3633).
- D'Souza, Q. (2006). "Web 2.0 Ideas for Educators. 22.12.2007 tarihinde <http://www.teachinghacks.com/audio/100ideasWeb2educators.pdf> adresinden erişilmiştir.
- Edirishingha, P.; Salmon, G. & Fothergill, J. (2007a). *Profcasting – a pilot study and guidelines for integrating podcasts in a blended-learning environment*. LR/BDRA demonstration file. Pre-publication version. pp.1-10.
- Hew, F. K. (2009). Use of audio podcast in K-12 and higher education: a review of research topics and methodologies. *Educational Technology Research and Development*. 57(3). 333-357.
- Jham B.C. et al. (2008). Joining the podcast revolution. *Journal of Dental Education*.72(3). 278-81.
- Kaplan-Leiserson, E. (2005). Trend: Podcasting in academic and corporate learning. *Learning Circuits*. Retrieved from <http://www.learningcircuits.org/2005/jun2005/0506>
- Laing, C., Wootton, A., & Irons, A. (2006). iPod! uLearn? Retrieved Mar 20, 2008, from <http://www.formatex.org/micte2006/Downloadable-files/oral/iPod.pdf>.
- Lazzari M. (2008). Creative use of podcasting in higher education and its effect on competitive agency. *Computer and Education*. 3(21).
- Lazzari, M. and Betella, A. (2007). Towards guidelines on educational podcasting quality: problems arising from a real world experience. Proceedings of the 12th International Conference on Human-Computer Interaction.
- Lee, M. J. W. and Chan, A. (2007). Pervasive, lifestyle-integrated mobile learning for distance learners: an analysis and unexpected results from a podcasting study', *Open Learning: The Journal of Open and Distance Learning*. 22(3),201 -218
- Lee, M. J. W., McLoughlin C., & Chan, A. (2008). Talk the talk: Learner-generated podcasts as catalysts for knowledge creation. *British Journal of Educational Technology* 39, 501-521.
- Lonn, S. & Teasley, S.D., (2009). Podcasting in higher education: What are the implications for teaching and learning?, *The Internet and Higher Education*.
- Scown, P. (2008). Using Students Assignments to Create a Library of Re-usable Learning Objects. Center for Learning and Teaching. 7(1). Retrieved from tarihinde <http://www.celt.mmu.ac.uk/ltia/issue15/scown.php> 03.09.2009.
- Skiba, D. (2006). The 2005 Word of the Year: Podcast. *Nursing Education Perspectives*, 27:1.

STUDENTS' MOTIVATION TOWARDS COMPUTER USE IN EFL LEARNING

Dr. Gülten Genç
İnönü University
ggenc@inonu.edu.tr

Dr. Selami Aydın
Balıkesir University
saydin@balikesir.edu.tr

Abstract

It has been widely recognized that language instruction that integrates technology has become popular, and has had a tremendous impact on language learning process whereas learners are expected to be more motivated in a web-based Computer assisted language learning program, and improve their comprehensive language ability. Thus, the present paper examines English as a foreign language students' motivation level in using web-based Computer-Assisted Language Learning. The sample group of the study consisted of 126 learners of English as foreign language at preparatory school of Inonu University. The data were used to provide a descriptive and correlational analysis to address the research questions. The results indicate that there is a significant correlation between motivation level and the degree of importance of learning English for the participant while the relationship between motivation level and some other variables such as age, gender, grade, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process and the experience towards computer use was not significant. Finally, some practical recommendations were noted.

Keywords: English as a foreign language, motivation, computer assisted language learning

INTRODUCTION

Over the past decade, computer-assisted language learning (CALL) has increasingly become an important part of the language learning process. In the early seventies, computers came to the forefront of language learning and teaching. After being linked to a local network or the worldwide web in the nineties, computers became the vehicle for a growing number of multimedia tools specifically designed for use in the foreign language learning process. Later on, in the nineties, the efficacy of computer use for enhancing language learning constituted an issue of major importance (Garrett, 2009). Today, computers and the internet allow the combination of different online resources through multiple hyperlinks, a feature common to most online searches and many other online utility. CALL and web-based environments are appropriate to the alternative methodologies of modern foreign language instruction. Also, CALL helps students improve their language skills rapidly, makes them study at their own pace, and gets immediate feedback, corrections and even error analysis (Hanson-Smith, 1997). As suggested by Oxford (1993) and Oxford, Rivera-Castillo, Feyten and Nutta (1998), technology will only be effective if some conditions are met: (a) if it deals with students' needs and interests and finds ways to increase learners' motivation; (b) if the appropriate technology is used for each aspect of foreign / second language learning and acquisition, and the educational goals and the kind of learners are considered; (c) if it provides a meaning-focused learning environment and abundant authentic language input, and uses relevant themes and meaningful tasks; (d) if the technology is effectively exploited in the particular instructional situation; and (e) if it deals effectively with the difficulties that students may encounter.

With the expansion of CALL, more questions have been raised. Issues of learning style, motivation, personality and some other factors have come to the fore with the use of computers. That is, it has been questioned whether computers can find even more effective solutions for individualized instruction and motivational support. For instance, in a study conducted by Ayres (2002), it was concluded that learners appreciate and value the learning that they do using computers, resulting in high face validity for CALL. Students who see CALL as an important part of the course also have a high level of motivation, and perceive CALL work as relevant to their needs. In addition, motivation, the process whereby goal-directed activity is instigated and sustained (Pintrich & Schunk, 2002), is one of the keys that influence the rate and success of language learning (Dörnyei, 1998). To add, Gardner described motivation as "complex of factors" including the desire to achieve a goal, effort expended on that direction, and reinforcement or satisfaction associated with the act of learning. According to Gardner (1985), a highly motivated individual will want to learn the language, enjoy learning the language, and strive to learn the language (Gardner 1985). Gardner (1985) also identifies motivation as the single and most influential factor in learning a new language. According to him, a motivated learner is one who is eager to learn the language, willing to expend effort on the learning activity, and willing to sustain the learning activity. In this respect, motivation has been emphasized to play a significant and direct role in the informal learning context, showing the voluntary nature of the motivated learners' participation in informal language learning contexts. However, there appears to be little research directly associated with the motivation towards web based CALL in English as foreign language (EFL) context in Turkey. Thus, the present study was designed to identify a combination of motivation and computer use among EFL students. With this concern in mind, the present paper examines two research questions:

1. What is the level of motivation of EFL learners towards computer use in EFL learning?
2. Do age, gender, grades, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process, the experience towards computer use and the degree of importance of learning English affect their level of motivation?

METHOD

The sample group of the study consisted of 126 EFL learners who were enrolled in Preparatory School of English in 2009-2010 academic year. 45 (35.7%) of the participants were females whereas (64.3) were males. They were all freshmen aged from 18 to 24 as for their distribution according to their faculties; they were students at seven different classes, three of which consisted of volunteer students whereas four were compulsory from Medical Faculty, Faculty of Administration, Faculty of Science and Letters, and Faculty of Pharmacy. 28 of the students (22.2%) attended English preparatory school of their high school, and have been receiving the second preparatory school education while 97 (77.0%) of them were receiving an English preparatory school education for the first time. With regard to the high schools that they graduated from, the participants were the graduates of Anatolian High School (32.5%), General High School (42.1%), Vocational High School (0.8%), Private High School (6.3%), and lastly, Science High Schools (18.3%). Finally, the learners group had full-time English classes (25 contact hours per week) for each semester. Also, they had 2-hour CALL class per week.

The data collection instrument consisted of a questionnaire interrogating the participants about their age, gender, grades, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process, the experience towards computer use and the degree of importance of learning English, and a scale, was adapted from Pu (2009), aiming at measuring the motivation level of learners towards the lesson and how useful they viewed the time spent in the CALL

laboratory. The scale consisted of 12 multiple-choice items that were assessed on a scale ranging from one to five (never=1, rarely=2, sometimes=3, usually=4, always=5).

The procedure of the study included the administration of the instruments and statistical analysis. After obtaining a written permission from school authorities, the background questionnaire and motivation scale were administered to the participants at fall semester in 2009. Subsequently, the collected data were analyzed using the SPSS software. In the analysis, the reliability of the scale was assessed using Cronbach's Alpha Model. The reliability coefficient of the scale, which was calculated to be 0.806, indicated a high level of reliability. Next, the frequencies, mean scores and standard deviations were calculated for each item. Finally, t-test and ANOVA were carried out to detect the correlations between the independent variables and the level of motivation.

RESULTS

The findings of the study were categorized in two sections: The level of motivation towards computer use in EFL learning, and the correlations between the level of motivation and independent variables of age, gender, grades, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process, the experience towards computer use and the degree of importance of learning English. In other words, a descriptive and correlational presentation of the collected data was provided.

One of the findings is related to the motivational level of EFL learners towards computer use in EFL learning. It is revealed that 53 students (42%) have relatively low motivation towards the lesson than the rest of the students in the range of 12 and 60 whereas 73 (58%) of the participants are at a high level of motivation.

The findings indicate that gender, age, whether the education at preparatory school was compulsory or voluntary, and whether the participants had preparatory language class are not the factor that affect the level of motivation. That is, the results of t-tests demonstrate that significance levels are 0.6 for gender and 0.2 for age. Next, the significance level is 0.3 in terms of compulsory and voluntary participation in EFL learning. However, it is worth noting that voluntary students are expected to have rather high motivation level towards computer based English course since they themselves intentionally chose to receive English preparatory education for one year. Lastly, it is found that there is no statistically significant difference with respect to the students' previous preparatory school education ($p=0.8$).

The only variable that affects significantly the motivation level of EFL learners is their beliefs about the importance of English. To begin, in terms of the importance of English for the students, 79 (62.7%) of the students express that English is "very important" and 44 (34.9%) of the students report that it is "important but not so much" whereas English is "not important at all" for 3 (2.4%) of the students. Next, the t-test results show that there exists a significant difference between the motivation level of EFL learners and their beliefs about the importance of English, as seen in Table 1.

Table 1: The relationship between motivation level towards computer use in EFL learning and their beliefs about the importance of language

| Statement | N | Frequency (%) | Mean | Std. Dev. | F | Sig. |
|----------------------------|----|---------------|------|-----------|------|------|
| English is | | | | | | |
| very important. | 79 | 62.7 | 42.9 | 7.6 | 6.74 | 0.00 |
| important but not so much. | 44 | 34.9 | 37.7 | 7.0 | | |
| not important at all. | 3 | 2.4 | 35.6 | 20.9 | | |

Another focus of the present study is the relationship between the level of motivation towards computer use and some other variables such as the high schools they graduated from, participants' achievement levels in English, their experience of EFL learning in years, and computer instruction, and computer familiarity in years. First of all, the types of the high school they graduated is not a significant factor that affects the level of motivation ($p=0.2$). Similarly, t-test results show that the relationship is not sufficient to suggest a statistically meaningful difference ($p=0.16$). To add, their EFL learning experiences in years ($p=0.85$), their achievement level in English ($p=0.85$), whether they had computer instruction ($p=0.10$), and computer familiarity ($p=0.89$) are not statistically significant in terms of the motivation level of EFL learners.

The other variables investigated in the study are their parents' educational background and their parents' proficiency in foreign language. First of all, the descriptive statistics show that 20 (15.9%) students' mothers and two (1.6%) students' fathers seem not to have gone to school at all, and that 59 (46.8%) of the students' mothers and 57 (45.2%) of the students' fathers are just graduates of primary school. Also, the participants state that 23 (21.4%) of the students' mothers and 27 (21.4%) of the students' fathers are graduates of high school whereas 14 (11.1%) of the students' mothers and 30 (23.8%) of the students' fathers have a university degree whereas four (3.2%) of the students' mothers and nine (7.1%) of the students' fathers hold an MA or PhD. Yet, the correlational analysis indicates that the educational background of the participants' parents is not a significant factor that affects EFL learners' motivation level in terms of computer use in EFL learning ($p=0.56$ for fathers, $p=0.43$ for mothers). Secondly, 32 (25.4%) of the participants state that their fathers have competence in English language and 89 (70.6%) do not have competent fathers in English. Similarly, 20 participants (15.9%) report that their mothers have competency in English language while 104 (82.5%) of the participants state that they do not have English competent mothers. To conclude, the correlational analysis demonstrates that there is no significant correlation between their parents foreign language competence and participants' level of motivation towards computer use in EFL learning ($p=0.25$ for fathers, $p=0.78$ for mothers).

CONCLUSIONS AND DISCUSSION

The present study aimed to investigate the level of motivation and the relationship between motivation level and certain variables of age, gender, grades, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process, the experience towards computer use and the degree of importance of learning English. The sample group of the study consisted of 126 EFL learners who were enrolled in Preparatory School of English at Inonu University, Turkey. A background questionnaire and a scale aiming at measuring the level of motivation towards EFL learning were used to provide a descriptive and correlational analysis.

Three main results were obtained from the study. Firstly, EFL learners mainly have a high level of motivation towards computer use in EFL learning process. Secondly, EFL learners' beliefs about the importance of foreign language learning constitute a significant factor that affects the level of their motivation. In other words, the more they believe English is important, the more they feel motivated towards computer use in EFL learning. Lastly, their age, gender, grades, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process, the experience towards computer use have no effects on their motivational levels.

Given that EFL learners have a high level of motivation towards computer use in EFL learning process, and their beliefs about the importance of English constitute a significant effect on motivation level, some practical recommendations can be noted. Firstly, it can be underlined that, as the findings of the present study suggest, computers can be integrated into EFL learning process in addition to the purchasing equipments and software, and making them available to students. Secondly, as the less students believe English is important, the less they feel motivated towards computer use in EFL learning, the factors affecting their beliefs should be investigated. To add, EFL teachers need to be aware of the negative effects of their students' beliefs about language learning on motivation towards computer use in EFL learning process. Moreover, teachers should also be instructed about how to change their students' beliefs on EFL learning. Thirdly, target groups such as teachers, software developers, and curriculum developers should be aware of that age, gender, grades, compulsory and voluntary states, types of their high school, parents' educational background, the time period of the participant's language learning process, and the experience towards computer use have no effects on learner's level of motivation towards computer use in EFL learning.

As a note on the limitations of the study, the subjects were limited to 126 EFL learners who were enrolled in Preparatory School of English at Inonu University, Turkey. Moreover, the scope of the study was confined to the data collected using the motivation scale and some selected variables. Given that the study investigates the level of motivation and the relationship between motivation and certain variables, further studies should focus on some other issues such as attitudes, beliefs, and anxiety levels.

Acknowledgements

The authors would like to thank the students of Preparatory School of Inonu University for their participation in the study. The authors also thank Lecturer Dilek Tüfekçi Can and Research Assistant Tutku Avcı for her kind assistance for proofreading of the paper.

REFERENCES

- Dörnyei, Z. & Otto, I. (1998). Motivation in action: A process model of L2 motivation. *Applied Linguistics*, 4, 43-69.
- Gardner, R.C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. London: Edward Arnold.
- Gardner, R. C. & Lambert, W. E. (1959). Motivational variables in second language acquisition. *Canadian Journal of Psychology*, 13, 266-272.
- Garrett, N. (2009). Computer-assisted language learning trends and issues revisited: Integrating innovation. *The Modern Language Journal*, 93.
- Hanson-Smith, E. (1997). Technology in the classroom: Practice and promise in the 21st century. *TESOL Professional Papers*, 2 Alexandria, VA: Teachers of English to Speakers of the Other Languages.
- Oxford, R.L. (1993). Intelligent computers for language learning: The view from language acquisition and instructional methodology. *Computer-Assisted Language Learning*, 6(2), 173-179.
- Oxford, R. L., Rivera-Castillo, Y., Feyten, C., & Nutta, J. (1998). Computers and more: Creative uses of technology for learning a second or foreign language. Paper presented at the Conference Educational Technology in Language Learning, Theoretical Considerations and Practical Applications, Lyon, France.
- Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows*. New York: Mc-Graw Hill.
- Pu, M. (2009). *An investigation of the relationship between college Chinese EFL students' autonomous learning capacity and motivation in using computer-assisted language learning*. Unpublished Dissertation.
- Pintrich, P. R. & Schunk, D. H. (1996). *Motivation in education: Theory, research, and applications*. New Jersey: Prentice-Hall.
- Tavşancıl, E. (2006). *Tutumların ölçülmesi ve SPSS ile veri analizi*. Ankara: Nobel Yayın Dağıtım.
- MEB (2006). *Milli Eğitim Bakanlığı, Yabancı Dil Eğitimi ve Öğretimi Yönetmeliği*. Retrieved from <http://www.meb.gov.tr> on 4 March 2010.

STUDENTS' PERCEPTIONS OF USING WEBQUESTS IN ELT

Harika Hamzaoglu

Abstract:

A WebQuest is “an inquiry- oriented activity in which most or all of the information used by the learners is drawn from the Web” (Dodge, 2001) This study was conducted in order to investigate students' perceptions of using WebQuests and traditional method to search for and present a subject. 54 high school students participated in the study. The students were asked to write reports and make presentations about London using a WebQuest or following the traditional way. Both a questionnaire and an interview were used for the data collection. The results of the study revealed that the students who used the WebQuest liked working in groups; searching the Web; the design and clarity of the assignment. However, most of the students following the traditional way stated that although they liked using the Web and the subject of the assignment, it was no different from what they usually do and as a result they didn't feel motivated.

Keywords: WebQuest, students' perceptions, ELT, high school

IETC 2010

STUDENTS' RETROSPECTIVE USABILITY EVALUATION OF PHYSICS MODULE IN MALAYSIA

Norlidah Alias, Professor Dr Saedah Siraj
Department of Curriculum and Instructional Technology, University of Malaya,
50603 Kuala Lumpur, Malaysia
e-mail: norlidah2007@yahoo.com & saedah@um.edu.my

Abstract

The main objective of this study is to implement and evaluate the Physics module based on technology and learning style using students' retrospective usability evaluation. Physics has always been thought of as the most difficult subject and involves abstract concepts. Research shown technology helps to increase understanding of concepts. Result of past research also shows that matching learning style strategy with certain technology able to increase student learning experience. Pedagogical aspect needs changes due to development of technology that has potential to fulfill different learning styles among students. ICT which has potential to display learning experience in variety of format is seen as one way to fulfill diversity of learning style. This study is based on the Felder Silverman Model (1988) which comprises of four dimensions (visual/verbal, active/reflective, sequential/global, sensing/intuitive). The design and development for the Physics modules comprising technology tools, technique, activities and advance exercise comes from the modified Delphi technique. The researchers use two physics teachers and 14 students from four learning styles to test the Physics module which comprises of two lessons on gas law. The researchers then interviewed the students in order to evaluate the Physics module according to students' retrospective usability evaluation. The results of the study shows that the Physics module has many strengths. Firstly, the Physics module gives space and chance to students to learn according to their learning style. Secondly, the Physics module can help students understand Physics concept. Thirdly, the Physics module provides effective two way communication between students and teachers. Fourthly, the Physics module helps students to like Physics more. Fifthly, the Physics module helps to increase students' ICT skill. Next, the Physics module has the potential to be implemented in the future. Lastly, the Physics module is easy to follow and interesting. This paper will discuss the strengths and weaknesses of the Physics module from students' retrospective usability evaluation. Therefore, the researchers suggest that physics module based on technology and learning style as an effective teaching and learning strategy.

Keywords: Physics module, technology, learning style, curriculum, students' retrospective usability evaluation.

INTRODUCTION

Past research shows that most of the students are still having difficulties in understanding concepts in Physics (Mazur, 1997; McDermott, 1993; Ramsdell, 2004). The same scenario is in Malaysia as the students have the weaknesses in mastering Physics and they assume that Physics is something that is abstract. (Abdullah Nor, 1998; Shahanom Nordin, 1994). According to Daniel (2004), the topic, "Kinetic and Dynamic" is the most problematic topic for the Physics students based on the analysis that has been done on the questionnaires in "Cikgu Sains" website from January 1998 until August 1999. In the matter that involves Physics Pedagogy, the result from the study done by Kamisah Othman, Lilia Halim and Subahan Mohd Meerah (2006) in determining the need analysis on 1690 teachers who teach Science, shows that the teachers need information on how technology should be intergrated in their teaching skills. Past research shows that matching the Physics concept, technology and learning styles can increase the students' knowledge on mastering the concepts (Hein, 1997; Ross & Lukow, 2004; Tsoi, Goh & Chia, 2005; Wong Mei Ling, 2001). Until now few research have been done on the development and evaluation of Physics module based on learning style for form 4 Physics curriculum. For this reason, in this study the researchers would like to observe the use of Physics module based on learning style by form 4 Physics students at a secondary school and further evaluate Physics module implementation from students' retrospective usability evaluation. This evaluation which uses Students' retrospective evaluation is able to give input regarding the strength and weaknesses of Physics module based on learning style which can be further improved. It is hoped that the evaluation of this module is important and useful to give balance towards the teaching which is based on the differences of each individual in the classroom. Therefore, this study result can aid the Malaysian curriculum designers in designing teaching-learning strategy with a borderless nature in terms of space, time and effort. In this way, Malaysia would be able to provide a dynamic, progressive and relevant education system of world standard in the new millennium.

GOALS

The purpose of this study is to evaluate the implementation of Physics module based on learning style using students' retrospective usability evaluation. At the same time, this study evaluates the strengths and deficiencies of Physics module implementation. Based on the above purpose, this study would provide answers to the following question:

1. What is the usability evaluation of Physics module based on learning style according to students' retrospective ?

FELDER AND SILVERMAN MODEL (1988)

Felder and Silverman (1988) have created a learning model that brings focus to the learning styles aspects among the Engineering students. After three years, a psychometric instrument which is "Felder-Soloman's Index of Learning Styles" is created. This model has classified the students into eight categories based on four dimensions: (visual/verbal, active/reflective, sequential/global, sensing/intuitive). The characteristics of each learning style of the Felder and Silverman Model (1988) can be explained in the Table 1.1.

Table 1.1
The characteristics of learning style of the Felder and Silverman Model (1988)

| Learning Style | The Characteristics |
|-----------------------|--|
| <i>Sensing</i> | Sensing learner prefers learning facts, solve problem in order with related examples, more careful in doing practical work, like memorizing dan does not like lesson that has no relationship with live outside the class. |
| <i>Intuitive</i> | Intuitive learner prefers to learn new things, works faster with not in order situation, does not like memorising facts and prefers mathematics formulae and abstract things. This type of learner does not like teachers to repeat lesson that he/she has learned before and prefers innovation. |
| <i>Active</i> | Active learner would better understand and remember what he/she will learned through doing, discussing and explaining to others, prefers to work ing group and does not like lecture. |
| <i>Reflective</i> | Reflective learner would prefer to work alone and try to think quietly in order to solve problem and prefers lecture. |
| <i>Visual</i> | Visual learner can remember what they learn better through picture, figure, flow charts and demonstration. They would prefer teacher to teach with teaching aids and lots of graphics. |
| <i>Verbal</i> | Verbal learner prefers listening to teachers or group discussion and prefers reading aloud and repeating reading a few times. |
| <i>Sequential</i> | Sequential learner can understand better when being delivered from easy to complex. He/she is difficult to get the true picture of something and cannot relate to other subject or discipline. In solving problems, he/she would prefer easy way and easily understood. |
| <i>Global</i> | Global learner can understand things in holistic manner and quite slow and unsystematic in problem solving unless he/she get the complete picture on certain matter. He/she would prefer to relate knowledge or past experience in order to understand certain things and able to relate to other subject or other discipline. |

USABILITY EVALUATION USING STUDENTS' RETROSPECTIVE

This research uses usability evaluation framework by Sing and Chen Der-Thanq (2004). They developed the framework based on the previous usability evaluation framework from Hom (1996), Nielson (1993) as well as Nielson and Mack (1994). Sing and Chen Der-Thanq (2004) usability evaluation framework provide a clear guidelines to classify types of usability evaluation based on three parties involve in the usability evaluation. The three parties involve are:

- the system under evaluation which can be in the form product that has been released or prototype or design document.
- user that the reason product is produced.
- evaluator that are going to evaluate.

The three parties, depending on the focus of the evaluation, may change their roles in certain situation and hence prodece the choice of evaluation method. Table 1.2 shows how the roles of the three parties in determining the choice of evaluation method.

Table 1.2
Usability evaluation method framework

| The Role of the System | Users' Role | Evaluator's Role | Type of Evaluation Method |
|---|--|--|---------------------------|
| Presence | Users perform certain tasks using the system | Evaluator evaluates the interaction between user and the system | Usability Test |
| (The System exists during the evaluation) | No real user involved | Evaluator evaluates interaction between evaluator and the system | Usability Observation |
| Absence | Users have finishes certain tasks using the system | Evaluator evaluates user reaction towards interaction with the system | User Retrospective |
| (The System is not present during the evaluation) | No real user involved | Evaluator evaluates her/his reaction towards interaction with the system | Evaluator Retrospective |

Adaptation from Chai, C. S. & Chen, D. (2004). *A review on usability evaluation methods for instructional multimedia: an analytical framework*. Retrieved January 20 2009 from Instructional Journal of Multimedia Vol. 31(3), 2004, pg 231. ERIC Fulltext: <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?acc.no=ED501628>

Based on the table, usability evaluation is divided into four methods. Usability test and usability observation are used when the system is present. On the other hand, user retrospective and evaluator retrospective are used when the system is not present. This means that user or evaluator had an experience with the system and the system does not present during the evaluation. Hence, in this research, the researchers chose user retrospective as the most suitable method to evaluate the Physics module based on learning style. The justifications are that firstly, students in this research had had an experience using the Physics module in their lessons. Secondly, the module does not present during the evaluation taken place. Lastly, the researchers interviewed the students to know their reaction with the Physics module that they had used.

METHODOLOGY

This study is to evaluate the usability of Physics module implementation using students' retrospective in a secondary school in Klang, Selangor, Malaysia. Laptops and broadband had been utilized in this study. Moreover, video clip and webquest had been used as the supporting digital resources in this study. These elements are selected from the outcome of the design and development of the module based on the modified Delphi Technique. This paper would not discuss the design and development part of the module as the aim of this research is to evaluate the usability of Physics module implementation. The elements of the Physics module based on learning style are as follows:

- The elements for active learners module are laptop, webquest, project, answers post to blog and group work
- The elements for reflective learners module are laptop, video clip, drill, answers post to wiki and producing mind maps.
- The elements for visual learners module are laptop, webquest, demonstration, answers post to wiki and making power point.
- The elements for verbal learners module are laptop, video clip, lecture, tutorial and presenting assignment.

The gas law involve in this research are Boyle's Law and Charle's Law. 14 form 4 Physics students from 4 learning style were involved in the implementation of this research, and 10 students had been selected to make the retrospective usability evaluation. The schedule of the research is shown in Table 1.3 below:

Table 1.3
Implementation Schedule

| Week | Teaching & Learning | Duration | Learning Activity |
|--------|--|----------|--|
| Week 1 | Distribution of Index of Learning Style (ILS) Instrument | 2 hours | Introduction and distribution of ILS instrument to two science classes. |
| Week 1 | Distribution of agreement letter from parents to allow their children's involvement in the research. | 1 hour | Explanation of the implementation schedule. |
| Week 2 | Students' Orientation | 2 hours | Introduction to email, blog, power point to the participants in the pilot test and in the research. |
| Week 2 | Teachers' Orientation | 1 hour | Introduction to Physics module and distribution of printed Physics module to two Physics teachers. Lesson 1: En Sobri (not the real name) Lesson 2: Pn Tee (not the real name) |
| Week 3 | Pilot Test 1 | 2 hours | En Sobri teaches using Physics module Lesson 1 with 10 participants. |
| | Pilot Test 2 | 2 hours | Pn Tee teaches using Physics module Lesson 2 with 10 participants. |
| Week 4 | Implementation of Lesson 1 | 2 hours | En Sobri teaches using Physics module Lesson 1 with 14 participants. |
| | Implementation of Lesson 2 | 2 hours | Pn Tee teaches using Physics module Lesson 2 with 14 participants. |
| Week 4 | Interview | 3 hours | 1 teacher and 5 students |
| | Interview | 3 hours | 1 teacher and 5 students |

DATA ANALYSIS PROCEDURE

The interview data with two teachers has been analysed thematically.

SUMMARY

The result of interview provide the students' retrospective of the usability evaluation of the Physics module based on learning style as below:

| | |
|---|---|
| 1. Provide space and chance to students to learn according to their learning style. | <ul style="list-style-type: none"> • Learning style ... no teacher allows me to learn alone. Haha ... • I think ... learning this way ... I like it ... definitely suites me.(R1: 150) • My learning process becomes easier because I can understand Easily with what the video clip tries to explain (VB2:50) |
| 2. Understanding Physics concept. | <ul style="list-style-type: none"> • I had to think. Not only doing copy, paste. (V1:133) • Unbelievable! I can still remember until now. (R1:47) <p>Effective ... haa ... that's it. I can still remember till now. (R1:186)</p> |
| 3. Encouraging effective two way communication. | <ul style="list-style-type: none"> • So if we learn using this way, some sort of communicating, through communication, we give opinion before doing any work. (A1:33) |
| 4. Students like Physics more. | <ul style="list-style-type: none"> • Aaa ... because Physics normally does not interest me. I know ... I know the basic of Physics but I do not know how to apply them. Hence, when I use power point, webquest, I am really clear with the whole topic. (V1: 58) • Learning Physics become much more fun this way. All the videos and exercises helps. I really hope that someday I might learning at school with technology like this (Aiman's blog, Oct 5 2009) |
| 5.Improves students' ICT skill. | <ul style="list-style-type: none"> • My new experience is that I explore more on power point and more towards knowledge. If I use the internet, knowledge, seek for knowledge ... and try to get |

| | |
|--|---|
| | knowledge from the internet and apply it. (V1: 84) |
| 6. The Physics Module has the potential to be implemented in the future. | <ul style="list-style-type: none"> I ... want and hope that the researchers will strive to make it successful. (V1:65) Suitable. I think this module is useful because if not, there are a few students that do not care for Physics as they think it is a difficult subject, they would neglect the subject and nobody to motivate them.(V1: 145) I think you (the researchers) should produce more on this type of mLearning Module based on learning style and not only for your experiment, you may also publish the blog for public to use. (V1:161) |
| 7. The module is easy to follow and interesting. | <ul style="list-style-type: none"> From aspect ... if the text book I can get facts only ... if using this module I can get the real picture. (V2:53) This module ... you can easily understand certain thing. It is not like ... If all words, all like difficult to understand ... boring. This module is really attracting my attention and easy.(V2:60) |

However, the teachers also pointed a few weaknesses of the Physics module based on learning style for form 4 Physics curriculum as follows:

| | |
|--|---|
| 1. Exercises | <ul style="list-style-type: none"> There is one exercise that requires conversion from atmosphere to torr. Therefore ... aaa ... that's all. Others are technical problem. (R1:70) |
| 2. Long period of video clip and clearness of the speech | <ul style="list-style-type: none"> If for shorter period okay ... but too long, I have no mood to watch. (R2:49) Okay but the speech is not clear. Better if subtitle is provided ... because they slang is different from ours. (VB3:35) |

CONCLUSION AND IMPLICATION

In conclusion, the Physics module based on learning style has many strengths based on students' retrospective usability evaluation. Firstly, the Physics module provides space and chance to students to learn according to their learning style. Secondly, the Physics module can help students understand Physics concept. Thirdly, the Physics module encourages effective two way communication between students and teachers. Fourthly, the Physics module helps students to like Physics more. Fifthly, the Physics module helps to improve students' ICT skill. Next, the Physics module has the potential to be implemented in the future. Lastly, the Physics module is easy to follow and interesting. This study revealed that Physics module based on learning style has its positive impacts on students' interest towards learning Physics. Physics module based on learning style is also an effective teaching and learning strategy. Overall, the result of this research can assist the Curriculum Development Devison, Ministry of Education Malaysia to develop the Physics module framework which is based on learning style for better understanding of Physics. Physics module findings are an alternative to students in their learning in Physics compared to using textbooks. In addition, information obtained from the internet usually experiences changes and additions. These findings also aided the interaction-designers of Technology Education Devison, Ministry of Education Malaysia in planning and developing tools and teaching-learning approach that could fulfill current and future teachers-students' requirements based on learning style.

REFERENCE

- Abdullah Nor (1998). *Kajian mengenai beberapa faktor yang mempengaruhi kecenderungan terhadap Fizik bagi pelajar-pelajar tingkatan empat*. Latihan Ilmiah. Universiti Kebangsaan Malaysia.
- Chai, C. S. & Chen, D. (2004). A review on usability evaluation methods for instructional multimedia: an analytical framework. Retrieved January 20 2009 from *Instructional Journal of Multimedia Vol. 31(3)*, 2004, pg 231. ERIC Fulltext: <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?acc.no=ED501628>
- Daniel, E. G. S. (2004). Penggunaan laman web pakar: Masa depannya dalam pendidikan Sains. Dalam Noraini Idris, Daniel E. G. S., & Rohaida Mohd Saat, *Teknologi dalam pendidikan Sains dan Matematik* (hlm. 93-120). Kuala Lumpur: Penerbit Universiti Malaya.
- Felder, R. M. & Silverman, L. K. (1988). Learning Style and Teaching Styles in Engineering Education. *Engr. Education*, 78(7), 674-681.
- Hein, T. L. (1997). Digital video, learning styles and students understanding of kinematics graph. Doctor of Philosophy, Kansas State University. Retrieved November 25, 2008, from *ProQuest Digital Dissertations database*. (Publication No. 9736737).
- Kamisah Othman, Lilia Halim & Subahan Mohd Meerah. (2006). What Malaysian Science teachers need to improve their science instruction: A comparison across gender, school location and area of specialization. *Eurasia Journal of Mathematics, Science and Technology (Edn.)*, 2(2). Retrieved December 4, 2008, from <http://www.ejmste.com/022006/d4.pdf>.
- Mazur, E. (1997). *Peer Instruction: a user's manual*. New Jersey: Prentice Hall.
- McDermott, L. C. (1993). Millikan Lecture 1990: How we teach and how students learn- A mismatch? *American Journal Physics*, 61, 295-298.
- Ramsdell, M. W. (2004). The design, development, and assessment of advanced modeling based project in introductory Physics. Doctor of Philosophy, Clarkson University. Retrieved November 26, 2008, from *ProQuest Digital Dissertation database*. (Publication No. 3139893).
- Ross, C. M., & Lukow, J. E. (2004). Are learning styles a good predictor for integrating instructional technology into a curriculum?. *Journal of Scholarship of teaching and learning* 4(1), Retrieved July 25, 2008 from <http://www.iupui.edu/~josotl/2004vol4no1/RossLukow.pdf>
- Shahanom Nordin. (1994). *Penghasilan dan penilaian Keberkesanan Modul Pengajaran Kendiri Fizik di kalangan pelajar berbeza kebolehan dan jantina pada peringkat Tingkatan 4*. Tesis Doktor Falsafah. Universiti Teknologi Malaysia.
- Tsoi, M. F., Goh, N. K., & Chia, L. S. (2005). Multimedia learning design pedagogy: A hybrid learning model. *US-China Education Review, ISSN1548-6613, USA 2(9)*, 59-62. Retrieved November 20, 2008 from <http://www.80/2b/c1/6e.pdf>
- Wong Mei Ling. (2001). *Design and development of the Bio-webclean for form four students of different learning styles*. Unpublished Masters dissertation. University of Malaya.

SUFFICIENCY OF VOCATIONAL SCHOOL OF HIGHER EDUCATION STUDENTS ABOUT TECHNOLOGY USE

Prof. Dr. Sedat Cereci

Abstract:

Technology is an unescapable part of contemporary world and need of people. Almost every area uses technology, especially medicine, science and education. Technology is a result of human mind, it is a result of human's fantasy. It usually ease people's lives but on the other hand technology has a secret sovereignty over people. Students want to use technology and need informations about technology use. Technology use is an important matter in higher education, especially in vocational school in where technological, economical, industrial base are formed. Higher education has an important role for economical and social improvement. Higher education constitutes basic facilities for development by teaching technology use and make students design contemporary productions. Technology is directly associated with improvement and future of societies are constituted on the base of technoloy in the world recently. Vocational School of Higher Education Students mostly use technological products both in their daily life and in their education. Mobile telephone and computer are the most favorite technological products that students mostly use. 215 girls and boys students were chosen randomly and the students participated in a survey about technology use in Van Vocational School of Higher Education and answered 15 questions about techonogy use. According to the survey, Vocational School of Higher Education usually use techonology, and want to be educated by the help of technology, and they sometimes have problems with technology use and technological informations.

Keywords: Vocational School, Higher Education, Technology, future, student

SYMBOLIC COMPUTATION TECHNIQUES AS AN EDUCATIONAL TOOL

A.Y. Teşneli
atesneli@sakarya.edu.tr

N.B. Teşneli
btesneli@sakarya.edu.tr

B. Kanberoğlu
bkanberoglu@sakarya.edu.tr

Sakarya University, Engineering Faculty, Dept. of Electrical Electronics Engineering
Esentepe 54187, Serdivan, Sakarya, Turkey

Abstract

Symbolic computation is one of the most fundamental areas of research in computational science that produces powerful software systems for exact computation and formal reasoning with expressions in symbolic form. Such systems provide a revolutionary way of presenting scientific knowledge principles to the current generation of students. They have been widely used for education in many disciplines at different levels. One of the computer programs which allows symbolic computation is Macsyma, developed at MIT. The purpose of this work is to present a number of Macsyma applications that show how Macsyma possibilities can be used in electronics engineering education. To understand the procedure easily, dipole antenna analysis which is a well known problem of electromagnetics has been presented.

Keywords: Symbolic computation, engineering education, small dipole antenna

1. INTRODUCTION

There are a lot of studies to make the use of symbolic computation systems more effective for education, to create curricula and dynamic teaching and learning environments into which symbolic computation is integrated, to design innovative pedagogical methodologies, techniques and materials based on symbolic computation, to evaluate the impact of symbolic computation in education and to determine the type of new methods and tools developed for educational purposes (Li, Wang and Zhang, 2007). The use and development of software systems and technologies of symbolic computation for education have drawn growing interest in today's world where computing technologies play an increasingly important role.

Computers have traditionally been used to solve scientific problems that could be expressed in terms of numbers. The programming languages FORTRAN, C or JAVA assist scientists in dealing with numeric problems. This approach to problem solving works well, when a problem can easily expressed in terms of calculations with numbers. But there are some problems which can be expressed best in symbolic terms, or can only be expressed that way. Such solutions are very useful for interpretation of results.

Macsyma is a computer code written in program language LISP for the performing symbolic and numeric mathematical manipulations (Macsyma Manual, 1996). Manipulations of algebraic expressions and functions can be easily done with Macsyma. Differentiation, integration, solving linear equations, expansion functions in series, solving differential equations, plot curves, and manipulating matrices and tensors are some examples of Macsyma possibilities. The user can also write programs for symbolic manipulations and numerical calculations. The calling of procedures is also possible and permits easy interpretation of results. Very useful for electromagnetic applications are integrations, Laplace transforms, inverse Laplace transforms and vector analysis. The last version of Macsyma has many new features, which will be demonstrated in this paper. Macsyma was the first of a new breed of computer algebra systems, leading the way for programs such as Maple and Mathematica. Maxima is a descendant of Macsyma, which had its origins in the late 1960s at Massachusetts Institute of Technology (MIT).

Macsyma is also a programming environment in which mathematical procedures can be defined tailored to user's needs. The symbolic approach to computation provided by Macsyma can be continue with the numeric approach additionally by computer languages such as FORTRAN or C

2. SMALL DIPOLE ANTENNA PROBLEM

An approximation of the current distribution of small dipole antennas, whose lengths are usually $\lambda/50 < \ell \leq \lambda/10$ (ℓ : length of small dipole and λ : wavelength), is the triangular variation. The sinusoidal variations are more accurate representations of the current distribution of any length wire antenna. The most convenient geometrical arrangement for the analysis of a dipole is usually to have it positioned symmetrically about the origin with its length directed along z-axis, as shown Figure 1(a).

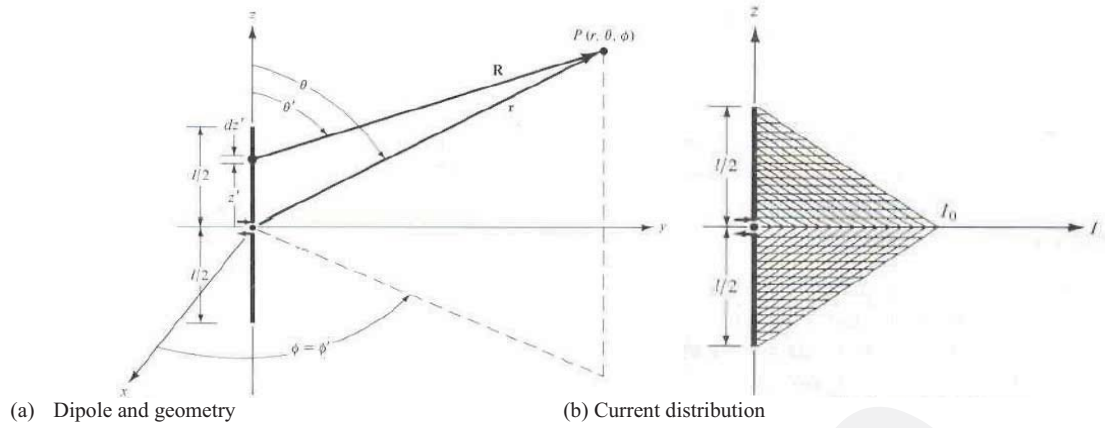


Figure 1. Geometrical arrangement of dipole and current distribution

To find the fields radiated by a small dipole antenna, it will be required to determine first the vector potential (A) then find electric (E) and magnetic (H) fields. The vector potential function A given as (Balanis, 1997; Kraus, 1988)

$$A = \frac{\mu}{4\pi c} \int \mathbf{I}_e \frac{e^{-jkR}}{R} dl' \quad (1)$$

The current distribution of a small dipole is shown in Figure 1(b), and it is given by

$$\mathbf{I}_e(x', y', z') = \begin{cases} \hat{z} I_0 \left(1 - \frac{2}{l} z'\right), & 0 \leq z' \leq l/2 \\ \hat{z} I_0 \left(1 + \frac{2}{l} z'\right), & -l/2 \leq z' \leq 0 \end{cases} \quad (2)$$

where $I_0 = \text{constant}$

The vector potential of (1) can be written using (2) as

$$A = [A_x, A_y, A_z] = \left[0, 0, \frac{\mu}{4\pi} \left[\int_{-l/2}^0 I_0 \left(1 + \frac{2}{l} z'\right) \frac{e^{-jkR}}{R} dz' + \int_0^{l/2} I_0 \left(1 - \frac{2}{l} z'\right) \frac{e^{-jkR}}{R} dz' \right] \right] \quad (3)$$

Because the overall length of the dipole is very small, the values of R for different values of z' along the length of the wire are not much different from r . Thus R can be approximated by $R \approx r$ throughout the integration path. Performing the integration, (3) reduces to

$$A = [A_x, A_y, A_z] = \left[0, 0, \frac{l}{2} \left[\frac{\mu I_0 l e^{-jkr}}{4\pi r} \right] \right] \quad (4)$$

The transformation between rectangular and spherical components is given, in matrix form, by

$$\begin{bmatrix} A_r \\ A_\theta \\ A_\phi \end{bmatrix} = \begin{bmatrix} \sin \theta \cos \phi & \sin \theta \sin \phi & \cos \theta \\ \cos \theta \cos \phi & \cos \theta \sin \phi & -\sin \theta \\ -\sin \phi & \cos \phi & 0 \end{bmatrix} \begin{bmatrix} A_x \\ A_y \\ A_z \end{bmatrix} \quad (5)$$

For this problem $A_x = A_y = 0$, so (5) using (4) reduces to

$$A = [A_r, A_\theta, A_\phi] = [A_z \cos \theta, -A_z \sin \theta, 0] \\ = \left[\frac{\mu I_0 l e^{-jkr}}{8\pi r} \cos \theta, -\frac{\mu I_0 l e^{-jkr}}{8\pi r} \sin \theta, 0 \right] \quad (6)$$

After determining the potential function A , electromagnetic fields E and H can be calculated using the following equations.

$$\mathbf{H} = [H_r, H_\theta, H_\phi] = \frac{1}{\mu} \nabla \times \mathbf{A} \quad (7)$$

$$\mathbf{E} = [E_r, E_\theta, E_\phi] = -j\omega\mathbf{A} + \frac{1}{j\omega\mu\epsilon}\nabla(\nabla\cdot\mathbf{A}) \quad (8)$$

3. SYMBOLIC COMPUTATION

To do symbolic computation for the small dipole antenna problem, first Macsyma package is loaded, then a list of the following statements $c1, c2, c3, \dots$ must be given by user. The system give responses as $d1, d2, d3, \dots$. The sign of % symbolize the last response of the system, when it is used alone.

Declaration of the vectors of $\mathbf{I}, \mathbf{A}, \mathbf{H}$ and \mathbf{E}

C:\Macsyma\Macsyma2\system\init.lsp being loaded.

(c1) declare([i, a, h, e], nonscalar)\$

Definition of current \mathbf{I} using (2)

(c2) i1(z)=[0, 0, i0*(1-2/l*z)]

$$i1(z) = \left[0, 0, i0 \left(1 - \frac{2z}{l} \right) \right]$$

(c3) i2(z)=[0, 0, i0*(1+2/l*z)]

$$i2(z) = \left[0, 0, i0 \left(1 + \frac{2z}{l} \right) \right]$$

Substituting (2) into (1), the potential function \mathbf{A} is obtained in rectangular coordinates as

(c4) a: mu/(4*pi)*('integrate(i1(z)*exp(-%i*k*r)/r, z, 0, l/2) + 'integrate(i2(z)*exp(-%i*k*r)/r, z, -l/2, 0))

(d4)

$$\frac{\int_{-\frac{l}{2}}^0 \left[0, 0, \frac{i0 e^{-ikr} \left(\frac{2z}{l} + 1 \right)}{r} \right] dz + \int_0^{\frac{l}{2}} \left[0, 0, \frac{i0 e^{-ikr} \left(1 - \frac{2z}{l} \right)}{r} \right] dz}{4\pi} \mu$$

Evaluating the integrals the vector potential function \mathbf{A} is obtained in rectangular coordinates (A_x, A_y, A_z) as

(c5) a: ev(a, integrate)

(d5)

$$\left[0, 0, \frac{i0 l \mu e^{-ikr}}{8 \pi r} \right]$$

The vector potential function \mathbf{A} is obtained using (6) in spherical coordinates (A_r, A_θ, A_ϕ) as

(c6) a: [cos(theta)*a[3], 0, -sin(theta)*a[3]]

(d6)

$$\left[\frac{i0 l \mu e^{-ikr} \cos(\theta)}{8 \pi r}, 0, -\frac{i0 l \mu e^{-ikr} \sin(\theta)}{8 \pi r} \right]$$

The magnetic field \mathbf{H} can be found substituting (6) into (7). Evaluating the derivatives and expanding the expression in partial fractions with respect to the variable r , the magnetic field \mathbf{H} is obtained in spherical coordinates (H_r, H_θ, H_ϕ) as (Arı and Tesneli, 2002)

(c7) h: vect_express(-curl(a)/mu, spherical)\$

C:\Macysma\Macysma2\share\vect.fas being loaded.
 C:\Macysma\Macysma2\share\VECT_ORT.fas being loaded.
 C:\Macysma\Macysma2\matrix\matfuncs.fas being loaded.
 C:\Macysma\Macysma2\share\trigsimp.fas being loaded.

(c8) h: ev(% , diff)\$

(e9) h: partfrac(% , r)

$$\left[0, \frac{i \mu k l e^{-i k r} \sin(\theta)}{8 \pi r} + \frac{i \mu l e^{-i k r} \sin(\theta)}{8 \pi r^2}, 0 \right]$$

substituting (6) into (8), evaluating the derivatives and expanding the expression in partial fractions with respect to the variable r , the electric field E is obtained in spherical coordinates (E_r, E_θ, E_ϕ) as

(c10) e: vect_express(-%i*w*a+1/(%i*w*mu*epsilon)*grad(div(a), spherical)\$

(c11) e: ev(% , diff)\$

(c12) e: partfrac(e, r)\$

(c13) e: ev(% , k^2=w^2*mu*epsilon)

(d13)

$$\left[\frac{i \mu k l e^{-i k r} \cos(\theta)}{4 \pi \epsilon r^2 w} - \frac{i \mu l e^{-i k r} \cos(\theta)}{4 \pi \epsilon r^3 w}, 0, \frac{i \mu l \mu e^{-i k r} \sin(\theta) w}{8 \pi r} + \frac{i \mu k l e^{-i k r} \sin(\theta)}{8 \pi \epsilon r^2 w} - \frac{i \mu l e^{-i k r} \sin(\theta)}{8 \pi \epsilon r^3 w} \right]$$

To plot the field patterns, the magnitudes of the field vectors E and H are determined. The magnitude expressions are defined as a function. Then field patterns are plotted for selected values of the parameters or normalized expressions. In this study, normalized three dimensional H field pattern is plotted.

Magnitude of the magnetic field H becomes

(c14) hm: sqrt(abs(h[1])^2+abs(h[2])^2+abs(h[3])^3)

$$\sqrt{\left(\left(\frac{i \mu k l \sin(k r) \sin(\theta)}{8 \pi r} + \frac{i \mu l \cos(k r) \sin(\theta)}{8 \pi r^2} \right)^2 + \left(\frac{i \mu k l \cos(k r) \sin(\theta)}{8 \pi r} - \frac{i \mu l \sin(k r) \sin(\theta)}{8 \pi r^2} \right)^2 \right)}$$

(c15) hm: trigsimp(%)

$$\frac{\sqrt{i \mu^2 k^2 l^2 r^2 + i \mu^2 l^2} \sin(\theta)}{8 \pi r^2}$$

Function of the normalized magnitude of the magnetic field vector H is defined as

(c16) define(h(theta), hm)\$

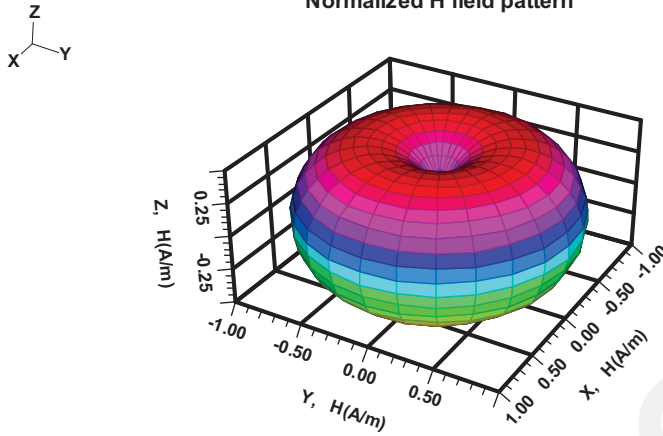
(c17) define(hn(theta), h(theta)/h(%pi/2))

(d17)

$$hn(\theta) := \sin(\theta)$$

Using the normalized magnitude function of the magnetic field, three dimensional magnetic field pattern is obtained as (Tesneli and Ari, 2004; 2006; Tesneli and Demir, 2003)

(c18) `([equalscale:true, plotnum0:34, plotnum1:26, plot_tessellation:4], plotsurf([[hn(th)*sin(th)*cos(ph), hn(th)*sin(th)*sin(ph), hn(th)*cos(th)]], th, 0, %pi, ph, 0, 2*%pi)), xlabel:"X, H(A/m)", ylabel:"Y, H(A/m)", zlabel:"Z, H(A/m)", title:"Normalized H field pattern", plot_style=scientific3d$`



4. CONCLUSIONS

Symbolic computation results of a small dipole antenna have been obtained using *Macsyma* possibilities. The electromagnetic field patterns have also been illustrated as an example. So, how the symbolic computation techniques can be applied to electromagnetic and antenna theory courses in electronic engineering education has been shown. This technique is a useful tool to determine the long and complex solutions of many problems and a good supporter to check the results of manually solved ones for the engineering students.

REFERENCES

- Ari, N., Tesneli, A.Y. (2002). Symbolic Computation Techniques for Aperture Antennas. 9th International Conference on Mathematical Methods in Electromagnetic Theory (MMET*02), Kiev, Ukraine, September
- Balanis, C.(1997). Antenna Theory Analysis and Design. John Wiley & Sons, Inc., USA, 1997.
- Kraus, John D. (1988). Antennas. McGraw-Hill International Editions, Singapore
- Li S., Wang D. and Zhang J. (2007). Symbolic Computation and Education. World Scientific Publishing Co.Pte.Ltd., Singapore
- Macsyma Mathematics and System Reference Manual 16th ed, (1996). Macsyma, Inc., USA
- Tesneli, A.Y., Demir, Z. (2003). EMC Education at Sakarya University. IEEE International Symposium on EMC, Istanbul, Turkey, May
- Tesneli, A.Y., Ari, N. (2004). Symbolic Computation Techniques For Circular Loop Antennas. 4th International Conference on Advanced Engineering Design, Glasgow Scotland UK, September
- Tesneli, A.Y., Ari, N. (2006). Small Square Loop Antenna Analysis Using Symbolic Computation Techniques. 3rd International Conference on Electronics and Computer Engineering (IKECCO 2006), Bishkek, Kyrgyzstan, 12-14 April

TEACHER CANDIDATES' PERCEIVED INFORMATION LITERACY SELF-EFFICACY AND PERCEIVED COMPUTER SELF-EFFICACY

Ahmet ADALIER
Oğuz SERİN

Abstract:

The aim of this study is to address the teacher candidates' perceived information literacy self-efficacy and perceived computer self efficacy with respect to social demographic properties.

The population of the study consists of the teacher candidates at the universities in Cyprus. The sample consists of 350 [58,3% (n=204) female, and 41,7% (n=146) male] teacher candidates who were selected according to purposeful sampling in Faculty of Education at Cyprus International University. In this study the "Perceived Information Literacy Self-Efficacy" scale developed by Kurbanoğlu, Akkoyunlu and Umay (2006) with a Cronbach alpha reliability coefficient of 0.91 and the "Perceived Computer Self Efficacy" scale developed by Aşkar and Umay (2001) with a Cronbach alpha reliability coefficient of 0.71 were used as a means of collecting data. Considering the purposes of the study percentage documentation average, t-test, ANOVA, Scheffe test were figured out in data analysis. The statistical significance level was accepted as 0.05 in the study. The result of this study showed that there is a positive relation between teacher candidates' perceived information literacy self-efficacy and perceived computer self-efficacy.

Keywords: Perceived Information Literacy, Perceived Computer Self Efficacy, Candidate Teacher

TEACHER EDUCATION FROM E-LEARNER TO E-TEACHER: MASTER CURRICULUM

Assoc. Prof., PhD Radojka Krmeta
Assist. Prof., PhD Danijela Milosevic
Assoc. Prof., PhD Dragana Bjekic

Abstract:

Development of e-learning systems and e-teaching modalities makes possibilities to involve them in teachers' professional activities and development in several ways: (a) When e-learning/e-teaching is the technology which supports the process of teacher's learning the disciplines relevant to the subject or acquiring pedagogic knowledge and skills, then the teacher is in the position of e-learner; (b) When e-learning/e-teaching is the content the teacher studies in order to apply it in the teaching process, then the teacher switches from the position of e-learner to the one of e-teacher in blended or total e-learning systems.

The reasons for systematic formal teacher education for e-learning/e-teaching implementation, and structure or teacher's ICT-competencies and e-competencies are considered in the paper.

The curriculum for master study for e-learning and example of the programme realization are presented. University curriculum of e-learning at Kragujevac University - Technical faculty in Čačak (Serbia) was developed as the part of the international project (TEMPUS JEP-41016-2006).

The curriculum is focused on the development of different e-roles for teachers and e-teachers: e-creator, e-designer, e-facilitator, e-tutor, e-moderator, etc.

This master study programme is the part of teacher in-service formal education for primary and secondary school teachers. The curriculum is adaptable to teachers' initial education, too. However, it is more effective as the part of in-service education than as the part of pre-service undergraduate education, because the active teachers recognize their professional roles better than prospective teachers.

Keywords: e-teacher, e-learning, e-teaching, curriculum of e-learning

TEACHERS' ATTITUDES TOWARD INFORMATION AND COMMUNICATION TECHNOLOGIES: THE CASE OF TURKISH UNIVERSITY EFL INSTRUCTORS

Asist Prof.Dr. Gencer ELKILIÇ
Kafkas University, Faculty of Science and Letters
Department of English Language and Literature, Kars, Turkey
gencerkilic1322@gmail.com

Abstract

Information and communication Technologies (ICT) have been used dominantly in the classroom environment over the last two decades as they have a very strong effect in education and provide enormous tools for enhancing teaching and learning. However, it is known that the ability to teach with technology comprises a much broader set of cognitive and psychological qualities, including: teachers' knowledge of technology as a solution to their problems; teachers' beliefs about and attitude toward technology. Therefore, the aim of this study was to explore the attitudes of ELT university instructors in Turkey toward ICT. The participants of the study were 105 university instructors from different parts of Turkey. To this end, a questionnaire, developed by Albirini (2006), was used in this study. In the analysis of the data, SPSS 17.00 for Windows was used and the results were assessed through descriptive statistics and independent samples t-test. According to the result of the study, Turkish EFL instructors had a positive attitude toward ICT and there was a positive correlation between computer competence and computer attitude $r = 0,433, p < 0,05$.

Keywords: teachers's attitudes, information technology, communication technology, Turkish university instructors, experience, age, gender.

INTRODUCTION

Information and communication technologies (ICT) have been used prevalently in classroom environment especially over the last two decades. ICT have a very strong effect in education and it provide enormous tools for enhancing teaching and learning (Cavas et al., 2009). Infact, having technology can only be valuable if instructors use it in the classroom environment (Kozma, 2003).

In learning-teaching process "initially the emphasis was on learning about ICT, yet, it is now on using as a learning tool in all forms and all levels of education (Volman, 2005). Dusick (1998) maintains that in order to use instructional technology learning how to use it is a must. Similarly, "Zhao, Frank, and Ellefson (2006) point out that teaching for meaningful learning with technology is not simply inserting technology into the teaching sequence, but, rather, inventing new ways of teaching (cited in Oberlander, 2007, pp.2-3). Albrini (2006) states that the integration of ICT into education has been assumed as the potential of the new technological tools to revolutionize an outmoded educational system. On the other hand, "incorporating the use of technology via professional development requires more than one session exposure. Just as with all other newly introduced ideas, in order for the use of technology to be evidenced through student achievement, teachers must have the opportunity to implement its use, receive feedback, have ongoing training, and have some meaningful way of assessing its use" (Gonzales & Vodicka, 2008, p. 3-4)."

As ICT have become so important in education domain, countries see it as potential tools for change and innovation in education (Eurydice, 2001; Papanastasiou & Angeli, 2008; cited in Tezci 2009, p. 1285) and, thus, make investments in ICT. Investments in ICT lead to achievement at training stage as well as at implementation. On the other hand, Turkey's investment in ICT seems to be much lower than that of Europe (Tezci, 2009). In addition, Tezci (2009) claims that much as personal computer and Internet use has increased highly in Turkey, it is not in paralel with the levels of developing countries.

Dupagne and Krendl (1992) assert that "teachers share a number of concerns about integrating computers in their instruction: although teachers may believe in the instructional effectiveness of computers, they remain unable to make use of the technology because they have their own limitations, such as time or lack of knowledge"(p. 26).

Problem

Volman (2005) maintains that "despite the growing number of computers used in schools and their increasing use, it cannot be said that revolutionary changes in schools have taken place under the influence of ICT (p.15). In the implementation of ICT into classroom there have been some problems in Turkey. As Arkin (2003) claims "the underutilization of computers has discouraged researchers in the field and led them to question the true effectiveness of educational technology and to start investigating what motivates some teachers to use computers in their instruction and causes others to avoid them" (p.24).

Purpose of the Study

Positive attitudes and perceptions towards computers are important in the integration of ICT, as they lead to increased computer competency (Wang, 2002). Therefore, the purpose of this study, was to find out Turkish EFL instructors' attitudes toward ICT in education.

Reserch Questions

1. What are the EFL instructors' perceptions of their computer competence?
2. What are the attitudes of Turkish EFL instructors toward ICT in education?
3. Is there a significant difference in the computer competence of the EFL instructors in relation to their gender?
4. Is there a significant difference in the computer attitudes of the EFL instructors in relation to their gender?
5. Is there a significant difference in the attitudes of the EFL instructors towards ICT in relation to their attending to computer courses?
6. Is there a correlation between the computer competence and attitudes towards ICT?

REVIEW OF LITERATURE

Attitudes are considered to be the key factors in the integration of ICT into education domain. As Tezci (2009) reports "attitudes affect teachers' behaviours. Additionally, they have a considerable effect on openness to new experiences, as well as on reflecting and implementing change"(p.1288). According to Tezci (2009), positive attitudes of teachers towards ICT, contribute to their using it. "The

effectiveness of ICT investments can be achieved with their effective application in the classroom as a part of the curriculum. By this way, learner-based learning environments can be created” (Tezci, 2009, p.1288).

There has been much research on the computer attitudes of teachers towards ICT (Tuzcuoglu, 2000; Altun, 2003; Cavas & Kesercioglu, 2003; Deniz, 2005; Gomleksiz, 2004; Albirini, 2006). For example, Tuzcuoglu (2000) investigated teachers' attitudes towards computer-assisted language learning (CALL) in the Foreign Languages Department (FLD) at Osmangazi university in Turkey and found out that teachers had positive attitudes towards using CALL in language teaching and they liked using computers in their teaching environment.

On the other hand, while in some research gender seems to be important in computer attitudes (Hong & Koh, 2002; Garland & Noyes, 2004; Çelik & Bindak, 2005; Tezci, 2009) in favour of males, some research indicates that there is no difference (Woodrow, 1992; Cavas et al., 2009).

In literature, some studies indicate that age is very important in computer attitudes (Blankenship, 1998; Deniz, 2005). In a study Chio (1992) found out that older teachers had more positive attitudes toward computers even though they had lower computer knowledge awareness than the younger teachers did. Similarly, in another study, Deniz (2005) determined that teachers' age was significantly related to teachers' attitudes. It has been reported that sufficient amount of computer knowledge and experience leads to positive attitude (Woodrow, 1992; Yıldırım, 2000; Gaudron & Vignoli 2002). In a study Cavas et al., (2009) discovered that science teachers' attitudes toward ICT differ with computer experience and prior computer experience is crucial for teachers' positive attitudes towards ICT in education. According to Tezci (2009), “as the duration of internet and computer use increases, experiences and attitudes toward ICT also improve” (p.1291). In addition, in a study carried out by Yang, Mohamed, & Beyerbach (1999) it was determined that teachers' negative attitudes towards computers change after having formal education about computer use.

METHODOLOGY

Participants

The participants of the study were a total of 105 university instructors (58 male and 47 female) from Kafkas university, Karadeniz Technical University, Gazi University, and Atatürk University.

Instrument

A questionnaire, developed by Albirini (2006), consisting of four parts was used in this study. First part of the questionnaire aimed to solicit demographic data related to the participants (8 items). The second part consisted of the questions related to the frequency of computer access at home, at school or in other places. In this part, a four-point Likert type scale was used (1.daily, 2. 2 or 3 times a week, 3. once a week, 4. once a month, and 5. never). The third part elicited information on the computer competence level of the participants (15 items). In this part, a four-point Likert-type scale was used (1.no competence, 2.little competence, 3.moderate competence, and 4.much competence). The fourth part consisted of 19 items soliciting information related to the attitude towards computers. In this part a 5-point Likert-type scale was used (1.strongly disagree, 2.disagree, 3.neutral, 4.agree and 5. strongly agree). The Cronbach's α reliability coefficient was computed by Albirini (2006) as 0.94 for computer competence scale and 0.90 for computer attitude.

RESULTS

Analysis of Demographic Data

1. What is your gender?

Of 105 EFL instructors 58 were male and 47 were female.

2. What is your age?

According to the result of the study, out of 105 instructors, 46 (43, 6 %) were between 20-29 years of age, 35 (33,3 %) were 30-39, 20 (19 %) were 40-49, 3 (2,9) were 50-59, and 1(0,0 %) was over 60 years of age.

3. Including the current year, how many years have you been teaching?

37 (35,2 %) of the instructors had 1-5 years of teaching experience, 36 (34,3 %) had 6-10 years, 13(12,4%) had 11-15, 11(10,5 %) had 16-20 years, 08 (07,6 %) had 20 and over.

4. What is your highest completed degree?

46 (43,8%) of the instructors had BA, 49 (46,7%) had , and 10 (9,5%) had PhD, respectively.

5. Do you have a computer?

102 (97,1%) of the instructors responded as “Yes”, while 3 (2,9 %) as “No”.

6. Have you ever attended any training course, workshop, or seminar on using computers?

62 (59 %) had a computer training course, whereas 43 (41%) didn't have.

7. What is the teaching method you use most often?

55(52,4 %) of the instructors stated that they mostly use “computer-assisted instruction”, 29 (27,6%) stated that they use “collaborative activities”, and 20(19 %) stated that they use “lecturing”.

Analysis of the Computer Access Frequency in different contexts

Table 1. Computer Access Frequency

| Context | Never | Once a month | Once a week | 2-3 Times a week | Daily |
|-----------------------------|----------|--------------|-------------|------------------|------------|
| Home | 00 | 00 | 00 | 26 (24,8 %) | 78 (74,3%) |
| School | 2 (1,9%) | 00 | 1 (1,0%) | 18 (17,1%) | 84 (80,0%) |
| Other (cafés, friends etc.) | 84(80%) | 18 (17,1) | 2 (1,9%) | 1,0(1,0%) | 00 |

According to Table 1, “Daily usage of computer” was the highest frequency for both school and home domains, 84 (80,0%) and 78 (74,3%), respectively. The lowest frequency was the “daily usage” in other domains such as cafés and friends etc.

Analysis of the Data Related to the Research Questions

1. What are the EFL instructors' perceptions of their computer competence?

Results show that EFL instructors were competent enough in computers. The highest competence percentages were “using computer keyboard 105 (100%), using a printer 99 (94,3 %)” and “using the Internet for communication 72 (68,6 %)”.

The lowest competence were “operating a database program 48 (45,7%), operating a graphics program 42 (40%)” and “solving simple problems in operating computers 34(31,4 %)”.

2. What are the attitudes of Turkish EFL instructors toward ICT in education?

According to the results of the questionnaire, the participants had a positive attitude towards ICT. In this respect the highest mean scores for attitude scale were as follows: Disagreeing with the idea “I have no intention to use computers in near future” (M=4,61), agreeing with “I would like to learn more about computers” (M =4,46), and disagreeing with “I don’t think I would ever need a computer in my classroom” (M =4,43). As for the least mean scores of the attitude scale, they were disagreeing with the idea “I don’t like talking with others about computers “ (M =3,77), agreeing with “Using computers is enjoyable” (M =3,90), and agreeing with “Computers do not scare me at all” (M =3,92), respectively.

3. Is there a significant difference in the computer competence of the EFL instructors in relation to their gender?

Table 2. Relationship between computer competence and gender

| Gender | N | X | S | sd | t | p |
|--------|----|-------|------|-----|------|-----|
| Male | 58 | 52,90 | 5,00 | 103 | 7,02 | ,00 |
| Female | 47 | 45,79 | 5,35 | | | |

There was a significant difference between the competence of male instructors and female instructors $t(103)=7,02$, $p<0,05$. Male instructors were more competent (M = 58) than female ones (M =45,79).

4. Is there a significant difference in the computer attitudes of the EFL instructors in relation to their gender?

There was no significant difference between the attitudes of male instructors and female instructors $t(103)=1,66$, $p>0,05$.

5. Is there a significant difference in the attitudes of the EFL instructors towards ICT in relation to their attending to computer courses?

Table 3. Relationship between computer attitude and attending to computer courses

| Attending to course | N | X | S | sd | t | p |
|---------------------|----|-------|------|-----|------|-----|
| Yes | 43 | 86,16 | 7,33 | 103 | 6,90 | ,00 |
| No | 62 | 76,10 | 7,36 | | | |

As seen in Table 2, attending to computer courses had significant importance on the attitudes towards using ICT in EFL instructions. Instructors attending to computer courses had a more positive attitude than those who didn’t $T(103)=6,90$, $p<,05$.

6. Is there a correlation between the computer competence and attitudes towards ICT?

According to the result of the study, there was a positive correlation between computer competence and computer attitude $r= 0,433$, $p<0,05$.

DISCUSSION AND CONCLUSION

The result of the study indicated that a high percentage of EFL instructors had the opportunity of using computers daily both at school and home 80,0% and 74,3%, respectively. In literature (Medlin, 2001, Surendra,2001, cited in Cavas et.,al 2009) the accessibility and availability of computers was an important factor affecting the use of computers for instructional purposes. Thus, the present study is in paralel with the studies of Meldin and Surendra.

Tuzcuoglu (2000) investigated teachers' attitudes towards computer-assisted language learning (CALL) in the Foreign Languages Department (FLD) at Osmangazi university in Turkey and found out that teachers had positive attitudes towards using CALL in language teaching and they were in favor of using computers in their teaching environment. Present study is in paralel with Tuzcuoğlu’s study as EFL instructors had a positive attitude towards ICT.

In literature according to some research gender seems to be important in computer attitudes (Hong & Koh, 2002; Garland & Noyes, 2004; Celik & Bindak, 2005; Tezci, 2009) in favour of males, some research indicates that there is no difference (Woodrow, 1992; Cavas et. al., 2009). However, in the present study, there was no significant difference between the attitudes of male instructors and female instructors $t(103)=1,66$, $p>0,05$.

In addition, in a study carried out by Yang, Mohamed, & Beyerbach (1999) it was determined that teachers’ negative attitudes towards computers change after having formal education about computer use.

Still, in the present study although mostly the instructors’ attitudes were positive towards ICT, the attitudes of those who had a formal education of computer skills were significantly higher than those who didn’t, $T(103)=6,90$, $p<,05$.

On the other hand “previous research has pointed to teachers’ lack of computer competence as a main barrier to their acceptance and adoption of ICT in developing countries” (Albrini, 2006, p.387). In his study, Albrini found out that on average, the teachers had “Little Competence” (mean = 1.78; SD = 0.67) in computer uses, including software installation, printer usage, productivity software, telecommunication resources, basic troubleshooting, graphic application, grade keeping, educational software evaluation, organization tools, and virus removal. However, this study showed that Turkish EFL instructors had enough computer competence and the highest percentages

were “using computer keyboard 105 (100%), using a printer 99 (94,3 %)” and “using the Internet for communication 72 (68,6 %)” and the lowest competence were “operating a database program 48 (45,7%), operating a graphics program 42 (40%)” and “solving simple problems in operating computers 34(31,4 %”, respectively.

Despite positive attitudes toward ICT and enough computer competence, in order to integrate ICT into language teaching and learning process properly Turkish EFL instructors should :

- have a good deal of computer competence.
- have an ICT training.
- have enough class time implement them.
- be open to innovations.

In addition, according to (Zhao, et. al., 2006 , cited in Oberlander, 2007, p.2), they must have knowledge of:

- 1.Technology as a solution to their problems.
- 2.Enabling conditions of a technology.
- 3.Location of support and ways to obtain it.

REFERENCES

- Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: the case of Syrian EFL teachers. *Computers & Education*, 47(4), 373-398.
- Altun, A. (2003) Öğretmen adaylarının bilişsel stilleri ile bilgisayara yönelik tutumları arasındaki ilişkinin incelenmesi. *The Turkish Online Journal of Educational Technology*. 2(1), Retrieved from www.tojet.net (Date 12.11.2009).
- Arkın, E.İ.(2003). Teachers' Attitudes towards computer technology use in vocabulary instruction.Unpublished dissertation.Ankara: Bilkent University.
- Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technologyusing classrooms? *Computers & Education* 39, 395-414.
- Blankenship, S. E. (1998). Factors related to computer use by teachers in classroom instruction. Doctoral Dissertation, Virginia Polytechnic Institute and State University.
- Cavas, B. and Kesercioglu, T. (2003). Primary Science Teachers' Attitudes toward Computer Assisted Learning. *Ege Journal of Education*, 3(2), 35-43.
- Bulent CAVAS, B., Cavas, P., Karaoğlan, B. & Kilsa, T. (2009). A Study on Science Teachers' Attitudes toward Information and Communication Technologies in Education. *The Turkish Online Journal of Educational Technology – TOJET*,8(2). Retrieved from www.tojet.net (Date 18.11.2009)
- Çelik, H. & Bindak, R. (2005). Examination of computer attitudes among teachers employed in primary schools in terms of different variables. *İnönü University, Journal of the Faculty of Education*, 6(10).27-38.
- Deniz, L. (2005). İlköğretim Okullarında Görev Yapan Sınıf ve Alan Öğretmenlerinin Bilgisayar Tutumları. *The Turkish Online Journal of Educational Technology*. 4 (4). Retrieved from www.tojet.net (Date 18.11.2009)
- Dupagne, M., and Krendel, K. A. (1992). Teachers' attitudes towards computers: A review of literature. *Journal of Research on Computing in Education*, 24(3), 420-429.
- Dusick, D. M. (1998). What social cognitive factors influence faculty members' use of computers for teaching? A literature review. *Journal of Research on Computing in Education*, 31 (2). Retrieved from EBSCO Host.(Date, 12.11.2009).
- Garland, K. J. & Noyes, J. M. (2004). Computer experience: a poor predictor of computer attitude. *Computers in Human Behavior*, 20, 823-840.
- Gaudron J.-P. and Vignoli E. (2002) Assessing computer anxiety with the interaction model of anxiety:development and validation of the computer anxiety trait subscale. *Computers in Human Behavior*, 18, 315-325.
- Gonzales, L. & Vodicka, D. (2008). Professional learning: New strategies. *Leadership*, 37(4), 2-12. Retrieved from Academic Search Premier database.(Date, 22.11.2009).
- Gömlüksiz, M. N. (2004). Use of education technology in English classes. *The Turkish Online Journal of Educational Technology*. 3(2). Retrieved from www.tojet.net (Date 12.11.2009).
- Hong, K-S. & Koh, C. K., (2002). Computer anxiety and attitudes towards computers among rural secondary school teachers: A Malesian Perspective. *Journal of Research on Technology on Education*, 35(1), 27-48.
- Kozma, R. B. (ed.) (2003). *Technology, innovation, and educational change: A global perspective*. Eugene, OR: International Society for Technology in Education.
- Oberlander, J.(2007). Envisioning the Foundations of Technology Integration in Pre-service Education.Paper presented at the Association for Teacher Educators, San Diego, California February 20,2007.
- Tezci, E. (2009). Teachers' effect on ict use in education: the Turkey sample. *Procedia Social and Behavioral Sciences*, 1, 1285-1294
- Tuzcuoglu, U. (2000). Teachers' attitudes towards using computer assisted language learning (CALL) in the foreign languages department at Osmangazi University. Unpublished Master's Thesis. Bilkent University, Ankara, Turkey.
- Volman, M.(2005). A variety of roles for a new type of teacher Educational technology and the teaching profession. *Teaching and Teacher Education* 21, 15-31
- Woodrow, J. E. (1992), The influence of programming training on the computer literacy and attitudes of preservice teachers. *Journal of Research on Computing in Education*, 25(2), 200-218.
- Yang, H. H., Mohamad, D. A., and Beyerbach, B. A. (1999). An investigation on computer anxiety among vocational-technical teachers. *Journal of Industrial Teacher Education*, 37, 64-72.
- Yıldırım, S. (2000). Effects of an educational computing course on pre-service and inservice teachers: A discussion and analysis of attitudes and use. *Journal of Research on computing in Education*, 3, 479-495.

TEACHERS' KNOWLEDGE, USE OF ICT IN THE CLASSROOM, ATTITUDES AND TRAINING NEEDS

Ana García-Valcárcel Muñoz-Repiso. *University of Salamanca (Spain). E-mail: anagv@usal.es*
Francisco Javier Tejedor Tejedor. *University of Salamanca (Spain). E-mail: tejedor@usal.es*

Abstract

We attempt to analyze the present situation in regard to teachers' attitudes, knowledge, their use of ICT (Information and Communication Technology) in the classroom and training needs in different technological resources. The study is based on a survey of the population of Primary and Secondary teachers of Castile and Leon (Spain) with a stratified random sampling. As conclusions of our work we can affirm that teachers have a positive attitude towards the use of technological resources and training in this field. In relation to the knowledge they have, we observed deficiencies in the design of digital teaching materials, these being possible learning tools. As regards the integration of ICT into school practice, the data confirm that technologies have still not become regular resources in the classroom and there are few activities carried out that allow students and teachers to take advantage of the didactic potential of these technologies.

Key words: teacher training in ICT, teachers' attitudes, ICT competence, ICT training needs

1. INTRODUCTION: REFLECTIONS ON APPROACHING THE TRAINING OF TEACHERS IN ICT

The integration of ICT in teaching, linked to educational innovation processes, (one of the objectives the educational system must take on if it is not to be left out of the Information Society) has as one of its pillars the adequate training of teachers at all educational levels. Without teachers well-trained in technological competencies and without the necessary support for incorporating technology into educational practice, the endowment of resources will not achieve the objective proposed.

Different European reports have pointed out the importance of this training variable (Commission of the European Communities, 1996, 2000a, 2000b, 2000c), defending the need to improve the technical aspect of the training offered, to train teachers throughout their careers and to promote structured services of exchange and support as well as educational multimedia contents.

Most of the studies carried out show that teachers do not currently feel qualified, even though they are greatly interested in being trained in ICT, and that they possess less knowledge for didactic use and for designing materials than for technical management. Also, despite the fact that there is a high volume of training activities being offered from the state administration in Spain, much of it seems to be going in the wrong direction (Cabero, 2004). It could be said that for now, teachers are not taking advantage of ICT in all their didactic potential: as motivating resources, for exemplification of contents, complementary activities for reinforcement or extension, group work, attention to diversity or for evaluation activities, fundamentally because they lack technical (25%) and didactic knowledge (37%), in spite of the training received, as shown by Santandreu and Gisbert (2005). The problems detected revolve around a lack of time for becoming familiar with computers (or with the available applications), for preparing technological material to be used in class, and for exchanging ideas with other teachers (Quintero and Hernández, 2005; García-Valcárcel and Tejedor, 2005; Tejedor and García-Valcárcel, 2006).

Our concern with all these factors that intervene in the success of the training programmes currently being carried out to bring teachers up to date and give them greater technological competence, so that schools can take advantage of all the possibilities offered by these technological resources, has led us to participate in a research study aimed, among other things, at studying the following variables overall and by population segments and also in relation to each other:

- Teachers' attitudes towards ICT training
- Their knowledge of the most important software and applications
- The use they make of ICT both personally and in the classroom
- The extent to which they use ICT in curricular planning, methodological development and assessment activities
- What they consider training needs in the different technological resources
- Their interest in being trained in these fields

This research has been carried out as part of a project (National Plan of R + D + I, 2002-05). The data presented here were obtained in the autonomous community of Castile & Leon.

Below we describe the research design and the most important outcomes of the study, with the idea of extracting some conclusions that would help us to establish guidelines for the design of teacher training strategies in ICT.

2. PRESENTATION OF THE RESEARCH DESIGN

2.1. Characterization of the sample used

The study is based on a survey of the population of teachers of primary, secondary and upper secondary schools in Castile & Leon, Spain, with a random sample stratified according to educational level (primary/secondary), the nature of the school (state/private), the location of the school (urban/rural) and the province. The primary unit of our sample is the school and the secondary unit is comprised of the teachers who responded to the questionnaire. The number of teachers definitively comprising the real sample was 368. Data were collected in 2005.

Table 1: Sample of teachers

| Sample selection criteria | | Final Sample Used | |
|---------------------------|----------------------------|-------------------|------|
| | | N | % |
| Nature of the school | Public | 245 | 66.6 |
| | Private (state funded) | 123 | 33.4 |
| Educational level | Primary | 217 | 59 |
| | Secondary- Upper Secondary | 151 | 41 |
| Geographic location | Provincial capital | 257 | 70 |
| | Main town in the county | 111 | 30 |

2.2. Study variables and instrument for obtaining information

In line with the theoretical reflection carried out and the objectives programmed for our research, we specified 8 study variables, which can be defined in the following terms: 1) Availability of resources, 2) Teachers' knowledge of how to use ICT, 3) Personal use of ICT, 4) School use of ICT, 5) Integration of ICT in the curriculum, 6) Training needs for using ICT, 7) Training needs for integrating ICT in the curriculum, and 8) Teachers' attitudes towards ICT. To obtain the information needed we devised a broad questionnaire that included diverse items related to each variable, with a scale since 1 to 5. The questionnaire was given to all the teachers in the sample. The information gathered was extended by interviewing the ICT consultants at some of the Centres for Continuing Teacher Education (CFIE) in the provinces where the study was being carried out.

The information relating to the variable 'availability of resources', an important variable because it conditions the rest of the ICT activities the teachers can carry out, was obtained from 7 items in the questionnaire. The state of the situation of the teachers all together is shown in Table 2.

Table 2. Availability of resources for teachers (percentages)

| | | Computer | Internet | |
|------|---------------|----------|----------------------|------|
| | | | Telephone Connection | ADSL |
| Home | Availability | 81.3 | 61.2 | 18 |
| | Frequent use | 74 | 57.4 | |
| Work | Classroom | 13 | 4 | |
| | Computer room | 100 | 90 | |

Most of the teachers have a computer at home and more than half have Internet access by telephone line, although broadband connection is limited to 18%. The use they make of these resources could be said to be normal, since only 10% do not use them at all and only 12% say they never use or hardly ever use the Internet.

A large majority of the teachers do not have computers in their classrooms; only 13% say they have a computer there, and in these cases there is only one. Even fewer teachers have a computer with Internet connection in their classrooms, slightly less than 4%. Given that there are no computers available in ordinary classrooms, the alternative is to be able to use the computer room, an option that most teachers have, although they point out many limitations:

- The room is occupied by other classes (mainly computer science classes)
- It is unsuitable for the teaching activity to be carried out (the young age of the pupils, it is not useful at a given level, the subject does not need it, it is not pertinent to the subject, etc.)
- Teachers' lack of knowledge of how to use it correctly and in an educationally productive way
- Deficient organization in the school, bad maintenance, bad management, etc.

3. PRESENTATION OF DATA

3.1. Teachers' knowledge of ICT

The grouping of items in dimensions allows us to observe that the teachers have sufficient knowledge of basic computer applications such as word processing, spreadsheets and databases, of how to use and handle the operating system of a computer and the use of communication through the Internet, whereas they lack the knowledge to create multimedia presentations and applications for teaching.

Analysis of general knowledge in the sample subsets yields the following results:

- Men teachers have a higher level of knowledge (2.60) than women teachers (2.09).
- Primary school teachers show a lower level of knowledge (2.21) than secondary and upper secondary teachers (2.55).
- Younger teachers have a higher level of knowledge (2.77) than those with a mean amount of experience (2.28) and those with the most experience (2.12).

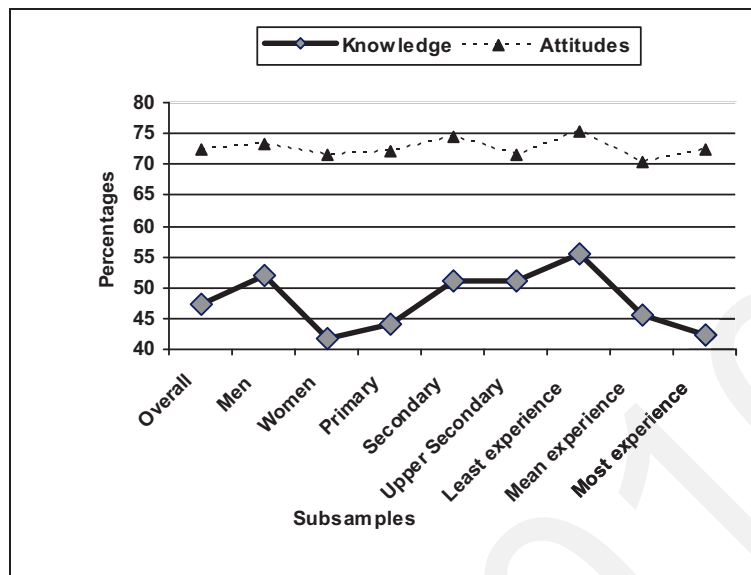
3.2. Teachers' attitudes towards training in ICT

Overall, it can be said that the teachers have a quite positive attitude towards the new technologies and their use in education, with a mean overall score of 87 with respect to the maximum of 120, which gives us a mean of 3.62 on a scale of 5.

Analysis of the overall score in the different subsamples yielded the following data:

- Men and women teachers have similar attitudes towards ICT
- Primary school teachers are slightly more favourable to ICT than secondary and upper-secondary school teachers
- Teachers with the least teaching experience (i.e. the youngest ones) have more favourable attitudes towards ICT.

One result that should be highlighted is that the teachers score higher (in percentages of the maximum value on the scale) in the variable "attitude" than in the variable "knowledge", and this occurs in both the overall sample and in the set of subsamples (Graph 1). Significant differences at 0.001



Graph 1. Comparative profile of scores in knowledge and attitudes of the different subsamples

Nonetheless, these mean scores conceal the great variety existing among the teachers, both in attitudes and knowledge, which ranges from 'those who refuse to use a computer to those who are total enthusiasts', in the words of one of the ICT trainers at the Centres for Continuing Teacher Education (CFIE) whom we interviewed during the 2003 academic year. According to these instructors, it is in the rural schools where the teachers show the most interest in working with computers, since they have them available in the classroom (thanks to the 'Digital Village' project promoted by the Educational Administration) and where the youngest teachers are, who, as we have seen, are more interested in computers. It should also be noted that some of the teachers with the greatest knowledge of ICT help to train their own colleagues, in spite of the problems involved (coordinating timetables, having time available, lack of resources, etc.)

3.3. How teachers use ICT

The teachers' personal use of computers can be considered reasonable and within the parameters of normality: there is greater use of the most popular resources (word processing, audiovisual media, looking for information on the Internet, and e-mail) and lesser use of those resources requiring greater skill (web page design and multimedia applications).

On the other hand, the use teachers give ICT in the classroom can be considered very low; the percentages, except in the case of audiovisual media, which is more widely implemented, are frankly very low (Table 3). This result clearly shows the need to design strategies that will enable the gradual use of ICT in the classroom.

Table 3: Percentage of use of ICT by teachers

| Item | | Personal use | | Classroom use | |
|------|---|--------------------|------------------------|--------------------|------------------------|
| | | Little/ Not at all | Quite a lot/ Very much | Little/ Not at all | Quite a lot/ Very much |
| 1 | Word processing | 14.4 | 61.7 | 57.6 | 9.0 |
| 2 | Spreadsheets | 57.3 | 19.1 | 72.2 | 3.3 |
| 3 | Databases | 57.6 | 15.8 | 73.1 | 2.5 |
| 4 | Multimedia presentations | 56.2 | 14.9 | 66.9 | 3.6 |
| 5 | Document bases | 62.0 | 11.1 | 69.3 | 3.3 |
| 6 | Audiovisual media (video, CD, etc.) | 32.3 | 33.4 | 43.5 | 17.7 |
| 7 | Educational software | 44.6 | 19.8 | 55.5 | 9.0 |
| 8 | Languages and author systems for designing multimedia applications | 76.1 | 4.7 | 73.9 | 2.5 |
| 9 | Internet: obtaining information and resources (navigating) | 21.8 | 46.2 | 58.5 | 9.5 |
| 10 | Internet: means of communication (e-mail, distribution lists, forums, chat rooms, etc.) | 38.6 | 32.6 | 70.2 | 3.8 |
| 11 | Web page design: editors | 78.5 | 6 | 76.6 | 1.6 |
| 12 | Advanced web page design: languages and author tools | 84.5 | 2 | 78.8 | 0.8 |

3.4. Integrating ICT into the teaching-learning process

The scores the teachers of the sample obtained in the items referring to processes of integrating technological resources into curricular planning, which regulates basic teaching, can be considered very low, almost all of them below the mid-point on the scale of 2.5. This result is consistent with the statements of teachers regarding the use of ICT in the classroom, which as we saw was also very low. It should be clarified when gauging the incorporation of ICT to teaching that this integration process is a more complex step than the more or less sporadic use of ICT in the classroom since it involves a greater degree of systemization and frequency of use of these resources.

Table 9: Mean values of the items in 'Integration of ICT in the curriculum/teaching'

| Item | Text | Mean |
|------|---|------|
| 1 | I take technological resources into account when selecting curricular material. | 2.79 |
| 2 | I evaluate the technological resources that can be beneficial for the teaching process. | 2.76 |
| 3 | I design curricular material using technological resources. | 2.38 |
| 4 | I use technology as a means to carry out educational activities relating to my area of specialisation and to the use of ICT in the classroom. | 2.33 |
| 5 | I design learning situations in which I can use ICT. | 2.04 |
| 6 | I create a classroom environment in which technologies are a totally integrated component. | 1.81 |
| 7 | I use technological tools as an instrument for student assessment. | 1.95 |
| 8 | I use different technological aids and/or educational software for students with diverse educational needs. | 1.81 |
| 9 | I design, coordinate and participate in the use of technology as a form of collaboration and communication among the entire educational community (teachers, students, parents, etc.) | 1.79 |
| 10 | I participate in research and innovation projects through the use of different technological resources in the classroom. | 1.72 |
| 11 | I take into account the ethical and legal problems derived from the use of technological resources. | 2.42 |
| | OVERALL SCORE INTEGRATION | 2.16 |

3.5. Teachers' training needs in ICT

The analysis of the teachers' responses led us to interpret that the feeling of a 'training need' is greater with regard to those topics in which the teachers are more knowledgeable, which can seem paradoxical; that is, the teachers manifest a need to go deeper into the resources they have already partially mastered rather than express a need to learn new topics altogether.

When a training plan is being designed, it is the responsibility of the expert to assess the usefulness of the activities demanded by the teachers with a view to improving the productive use of ICT in the teaching-learning process. These considerations should perhaps be taken into account to reformulate the procedure that the educational authorities have used to organize training programmes so far. According to the ICT consultants at the Centres for Continuing Teacher Education, biases can occur as a result of the fact that the interests expressed in surveys carried out in schools are in contrast to the establishment of needs in ICT competencies based on qualification standards.

4. CONCLUSIONS AND GUIDELINES FOR DESIGNING STRATEGIES FOR TRAINING TEACHERS IN ICT

In conclusion, we can affirm that teachers have a positive attitude towards the use of technological resources and training in this area because they feel they are falling behind with respect to the rest of the social and professional contexts, in which the use of information and communication technologies has been widely accepted as a factor of effectiveness in the processes of obtaining and disseminating information.

Moreover, teachers should understand that social differences will increase further if schools do not come to terms with the use of ICT in their educational activity, since schools are the only place where some children will be able to learn the technological competencies necessary to cope in our current society. Schools therefore have an ethical commitment to take on this type of training for all, that is, to provide information literacy. We must not lose sight of these ethical matters when formulating plans for teacher training in this sense (García-Valcárcel, 2003; UNESCO, 2008; ISTE, 2008; OECD, 2009).

Concerning teachers' knowledge in this area, one deficiency observed in the study is that referring to the design of teaching materials using ICT (presentations, multimedia applications, web pages, etc.), these being teaching tools that will possibly facilitate learning. For reasons that have been demonstrated in different studies (lack of time, lack of training), teachers on the whole have not managed to design their own materials in line with the official curriculum that they can work on in class with their students. We consider this to be a fundamental training area that should be worked on in groups at schools, with teachers at the same educational level working together. It can be considered a creative and gratifying activity through which teachers not only manage to devise didactic resources for their students, but at the same time reflect on their teaching practice and share this experience with their colleagues. These activities are the true seeds of educational innovation (García-Valcárcel, 2009).

As regards the integration of ICT into teaching, the data confirm that these technologies have still not become routine as classroom resources and that very few activities are carried out that take advantage of their teaching potential, findings which are consistent with the results of other similar studies. Until now, the lack of resources in the classroom has been wielded to justify this situation; nevertheless, in the short and medium term this situation will change drastically, as is already occurring in other regions of Spain, with the arrival of computers with Internet connections in the regular classroom. As teachers will have to have ideas about how to insert these media into their teaching methodology, training should be orientated in this direction (selection of media, assessment of materials, constructivist use of the media, knowledge of telematic projects among schools, design of webquest or weblogs for learning, creation of digital school magazines or newspapers, assessment strategies on the web, etc.). To achieve this, teachers should gradually be incorporating their work into networks as part of their teaching professionalization, they should have experience in online training through platforms, use online educational portals, participate in distribution lists regarding educational topics, design a web page for their subject, etc. In a nutshell, they should begin to experience the possibilities of working in a network and working with electronic materials so that they can then use them with their students.

We would also like to point out the need to reinforce the role of the Centres for Continuing Teacher Education here in Spain as well as their resources, both human and material. According to the ICT consultants working there, the Centres are quite limited in this sense, and they feel powerless to meet the increasing demand and even that they are being neglected by the authorities. In this respect it is necessary to support these Centres and monitor their work and needs, without forgetting the role of other training institutions such as universities, which also have something to offer in this area.

It is also desirable and necessary for all schools in the near future to have an ICT specialist to foster the integration of technologies in teaching, to stimulate teachers' initiatives and collaborative work with a view to innovation and research based on practice, to provide assurance throughout the process and to help them with their specific needs as they arise. In the words of one of the ICT consultants, 'when there is somebody at the school to take the lead, the activity works'. This is perhaps the role of the specialist that we are demanding.

These approaches correspond to different actions being carried out in the context of the new technologies in the European Union, especially those provided for in the following programmes: The European Schoolnet (<http://www.eun.org>) and the Community for schools in Europe: e-Twinning (<http://www.etwinning.net>).

REFERENCES

- Cabero, J. (2004). Formación del profesorado en TIC. El gran caballo de batalla. *Comunicación y Pedagogía. Revista de nuevas tecnologías y recursos didácticos*, 195, 27-37.
- Commission of the European Communities (1996). *Learning in the Information Society. Action plan for a European education initiative (1996-98)*. (<http://europa.eu.int/comm/education/elearning/eplanen.pdf>).
- Commission of the European Communities (2000a). *Concebir la educación del futuro. Promover la innovación con las nuevas tecnologías*. (<http://europa.eu.int/comm/education/elearning/rapes.pdf>)
- Commission of the European Communities (2000b). *eEurope. Una sociedad de la información para todos*. (http://europa.eu.int/comm/information_society/eeurope/documentation/index_en.htm)
- Commission of the European Communities (2000c). *eLearning. Concebir la educación del futuro*. (<http://europa.eu.int/comm/education/elearning/index.html>)
- García-Valcárcel, A. (2003). *Tecnología educativa. Implicaciones educativas del desarrollo tecnológico*. Madrid: La Muralla.
- García-Valcárcel, A. y Tejedor, F.J. (2009). Evaluación de medios didácticos y proyectos TIC. En J. Pablos (coord.) *Tecnología Educativa. La formación del profesorado en la era de Internet*. Málaga, Aljibe.
- García-Valcárcel, A. and Tejedor, F.J. (2005). Condicionantes (actitudes, conocimientos, usos, intereses, necesidades formativas) a tener en cuenta en la formación del profesorado no universitario en TIC, *Enseñanza. Anuario Interuniversitario de Didáctica*, 23, 115-142.
- ISTE (International Society for Technology in Education) (2008). *NETS for Teachers 2008*. (<http://www.iste.org/AM/Template.cfm?Section=NETS>)
- OECD (2009). *Creating effective teaching and learning environments: First results from the OECD Teaching and Learning Survey. (TALIS)*. Disponible en: http://www.oecd.org/document/0/0,3343,en_2649_39263231_38052160_1_1_1_1,00.html [Consultado el 4 de octubre de 2009]
- Quintero, A. y Hernández, A. (2005). El profesor ante el reto de integrar las TIC en los procesos de enseñanza, *Enseñanza. Anuario Interuniversitario de Didáctica*, 23, 305-321.
- Santandreu, M. and Gisbert, M. (2005). El profesorado de matemáticas frente al uso de las TIC. *Educativa. Revista electrónica de Tecnología Educativa*, 19, 1-8.
- Tejedor Tejedor, F.J. y García-Valcárcel, A. (2006). Competencias de los profesores para el uso de las TIC en la enseñanza. Análisis de sus conocimientos y actitudes, *Revista Española de Pedagogía*, 64 (233), 21-44.
- UNESCO (2008) Estándares de competencia en TIC para docentes. (<http://www.eduteka.org/EstandaresDocentesUnesco.php>)

TEACHING AND LEARNING WITH PEN-BASED TECHNOLOGY

Tolga GÖK

Colorado School of Mines, Physics Department, Colorado, US tgok@mines.edu
University of Dokuz Eylul, Izmir, Turkey tolga.gok@deu.edu.tr

Abstract

This study monitors the effect of the developed problem solving strategies (ILM) in conjunction with Tablet PCs on students' performance in Advance Electricity and Magnetism course during Spring 2008 semester. Tablet PCs were used to promote engaged and dynamic instruction and to facilitate classroom communication with real-time feedback. The method defining the difficulty level of a problem was also reported. The data were collected with in-class assignments and scores were analyzed according to difficulty levels of problems asked. The students had similar scores with more difficult problems towards the end of semester. The findings indicated that problem solving strategies will improve students' problem solving skills and each student can become an experienced-problem solver if the active-learning environment is created, students can discuss a problem with instructor and they can approach to the problem in an organized way.

INTRODUCTION

The use of educational technologies in university physics courses has increased dramatically in the last decade. Tablet PCs with pen-based feature is one of the current technologies used in physics education. Since their first release in 2002, Tablet PCs have gradually gained acceptance as a useful tool for educators, professionals, and casual users (Mock, 2003). The pen can be used as a navigation tool and an input device that allows users to write on the screen using digital ink. This digital ink can be stored directly as a graphic or it can be converted to the text.

Tablet PCs are usually used by the instructor in a classroom setting as a presentation device that eliminates the need for a blackboard or whiteboard. The presentation is typically projected on to a screen using an overhead projection device. With the products such as Microsoft OneNote, PowerPoint, or MS Journal, the instructor has the ability to use prepared lecture notes or slides and annotate them. Teaching faculties are able to connect to the projection device wirelessly which eliminates the need of providing a Tablet PC docking station in each presentation classroom. All students also have Tablet PCs and at the discretion of the instructor, can assume control of the projector allowing them to share what is on their Tablet PCs desktop with other class participants. This capability fosters an "active learning" environment where students are actively taking part in the presentation which has been shown to increase learning (Barkhuus, 2005; Mock, 2004).

Some anticipated benefits of Tablet PCs include: improved note taking, ability to highlight and annotate key points, increased classroom interaction, the facilitation of student inquiry, simplified drawing in support of concepts, and increased communication for group work. While it is important for the college and university of science, social, and engineering to stay current with technology, these schools have a vested interest to examine how this new technology is changing classroom teaching and student learning. While the overall value of technology to undergraduate or high school instruction is now widely recognized, emergent technologies must still be carefully examined to ensure their contribution to student learning.

Most students often have difficulty in listening to the lectures and taking notes when complex information is delivered at a rapid rate. Further, the retention rate of the presented information may be as low as 10% after just 15 minutes in a traditional lecture (Wieman & Perkins, 2005). Some of these recent researches have been integrated Tablet PCs applications with software packages to promote active learning and real-time communication (Frolik & Zurn, 2004; Gill, 2007). The researchers have designed and introduced several software such as *DyKnow* (Berque, 2006; Hrepic, 2007), *Classroom Presenter* (Anderson *et al.*, 2005; Koile & Singer, 2006), *Ubiquitous Presenter* (Wilkerson *et al.*, 2005; Price & Simon, 2007), and *InkSurvey* (Kowalski *et al.*, 2005) for use on Tablet PC as well as other pen-based computing devices to provide an interactive learning environment in a large science and/or engineering classroom.

In this research the free web-based tool, the *InkSurvey*, (Kowalski *et al.*, 2005) was selected to promote the student interaction with the instructor to build on correct ideas to achieve a more mature understanding. With the *InkSurvey*, the instructor poses open-ended questions and students use Tablet PCs to facilitate constructing and submitting their responses. Using open-ended questions and responses for real-time assessment has significant advantages over using the multiple-choice and short answer formats that restrict clickers with more valid feedback about student understanding and misconceptions. Other advantages are; easier construction for the instructor, greater freedom in assessing higher level thinking skills, clearer alignment with demonstration of the mastery of the learning objectives in the exam setting, and a greater opportunity to refine the communication skills for students (Kowalski *et al.*, 2007). According to researchers, the greatest single advantage of combining Tablet PC & *InkSurvey* "Tablet Model" and an open-ended question format is the richness of the student responses received.

This research presents a detailed investigation on the effects of Interactive Learning Method on students' problem solving skills in Advance Electricity and Magnetism course for a semester. Also, problem solving strategy steps were developed for solving open-ended questions for this study. Finally, to be able to analyze each problem asked during the course, a criterion for the difficulty level of the problem was defined.

METHOD and MATERIAL

The present study examines the effect of Interactive Learning Method "ILM" on students' problem solving skills as well as on teaching and learning quality of Advance Electricity and Magnetism course. The course is a 6th semester core course for Physics Engineering majors covering Magnetostatics, Electrodynamics, and Magnetic Fields in Matter, etc. The research was conducted in the spring semester of 2008 (S08) and implemented on a single selected group (62 students). In the experimental design, Socratic teaching method was employed with pre-defined problem solving strategy steps. The data were collected through in-class assignments including open-ended questions. Students' responses were graded according to the criterion developed to determine the difficulty level of the questions.

1) Socrates Approach

In the research it was intended to provide a good learning environment including active-learning experiences for the students to incorporate new knowledge and understanding with early knowledge and real-world facts. As in the Socratic Method, relatively small-scale class was created and instructor posed open-ended questions to engage students with the fundamental concepts and prevent the drawbacks of the multiple-choice questions. In order to create the active-learning environment, the physics department at CSM distributed a set of 80 Tablet PCs to students. With this set, in S08, each student enrolled in the course had his or her individual Tablet PC to use during class time.

Students were also allowed to check Tablet PCs out when classes were not in session. A real-time formative assessment was performed to keep the connection and information transfer between the instructor and students during the course time.

2) Developed Problem Solving Strategy Steps

Researcher developed Problem Solving Strategy Steps (PSSS) which were the combination of the problem solving strategies reported by Polya (1957), Heller *et al.* (1992), and Reif (1995). The necessary strategy steps which should be followed through the problem solving process were listed.

I. Identify the Fundamental Principle(s): In the first and most important step, a student should accurately identify and understand the problem. The student should examine both the qualitative and quantitative aspects of the problem and interpret the problem in light of his/her own knowledge and experience. This enables the student to decide whether information is important and if more information is needed. This strategy step can be formulated as follows: (i) simplify the problem situation by describing it with a diagram or a sketch in terms of simple physical objects and essential physical quantities, (ii) restate which mathematical quantities you need to calculate, (iii) explore the fundamental concepts and principles covered in the problem.

II. Solving: The student should use a qualitative understanding of the problem to prepare for a quantitative solution. The two main constraints direct the solving process are; (i) early knowledge and experiences, (ii) number of numerical relations and equations to be used. This step is facilitated if the problem is about real-world facts or there are only few numerical relations will be used. In other cases dividing the problem into sub-problems is an effective strategy for constructing the solution. Solution process can be summarized as follows: (i) divide the problem into sub-problems containing basic concepts, (ii) solve these sub-problems and connect the result of each sub-problem with another to complete all pieces needed to get final solution. To realize and organize the sub-problems is critical in the solving process

III. Checking: The student should check the solution if is numerically or theoretically reasonable. Otherwise, he/she should ask following questions and revise if there are any defects in the solution. (i) Has all wanted information been found? (ii) Are answers expressed in terms of known quantities? (iii) Are units, signs or directions in equations consistent? (iv) Are both magnitudes and directions of vectors specified? (v) Are answers consistent with special cases or with expected functional dependence? (vi) Are answers consistent with those obtained by another solution method? (vii) Are answers and solution as clear and simple as possible? (viii) Are answers in general algebraic form?

These strategy steps were expected to increase experienced-problem solvers and to organize students' minds in the solution process.

3) The Difficulty Levels of the Problems

In the research design, to define difficulty level and grading criteria of the open-ended problems had great importance to analyze the effect of the teaching/learning method on students' performance. The difficulty level of each problem varied in the range of 0 and 11 points. Table 1 shows the points given for a physics problem. *Problem content* explains contexts familiar to most of introductory students through direct experience: newspaper, television or standard textbook problems. *Hints related to problem* express problems having a hint on the related principles with the problem.

Table 1 Analysis of the Problem Solving Strategy Steps (PSSS)

| Analysis of the difficulty level of each problem | | Grading Criteria of the PSSS | |
|--|----------------|---------------------------------------|----------|
| Problem Content | 1 point | Identifying the fundamental principle | 2 points |
| Hints related to problem | 1 point | Solving | 2 points |
| Given information | 1 point | Checking | 1 point |
| Clarity of the problem | 1 point | | |
| Numerical approach | 1 point | | |
| Conception number | up to 3 points | 0-2 | 1 point |
| | | 2-4 | 1 point |
| | | 4-6 | 1 point |
| Mathematical approach | up to 3 points | 0-2 | 1 point |
| | | 2-4 | 1 point |
| | | 4-6 | 1 point |

Given information describes problems with no extraneous information or missing information in the problem statement. *Clarity of problem* represents problems that specify a particular unknown variable. *Numerical approach* implies problems that could be solved with one set of related principles. *Conception number* states problems solved with one or more concept. *Mathematical approach* denotes problems solved with one or more mathematical process. In conception number and mathematical approach, points are given based on the number of concepts and/or mathematical approaches used in the problem (Heller *et al.*, 1992). The in-class assignments were graded in reference to problem solving strategy steps criteria and difficulty level of the problem as represented in Table 1.

4) InkSurvey

The InkSurvey software incorporated with Tablet PCs was used in the research. The "blackboard" feature was used to answer or discuss an open-ended question containing problem solving strategy steps. In the student's web browser, the activated problems appeared on a menu and the student had an option to respond either with text (PDF or Word Document) or digital ink (sketches, free-hand equations, etc). Each problem was divided into three parts in accordance with developed problem solving strategies steps. Students sent their solution of each part separately. Responses were either anonymous or identified with numbers. When instructor refreshed his/her web page, students' submissions were displayed on the instructor's web page as they accumulate. A student could pose problem to the instructor on the "blackboard" and instructor could respond by giving guidance to the whole class. As the instructor scrolled through the answers being submitted, he/she may offer comments to the class to realign students' thinking about particular misunderstandings. So, the instructor easily monitored the misconceptions and the incorrect answers of the students. Figure 1 shows Tablet PC windows of a student and instructor in the process of answering a problem.

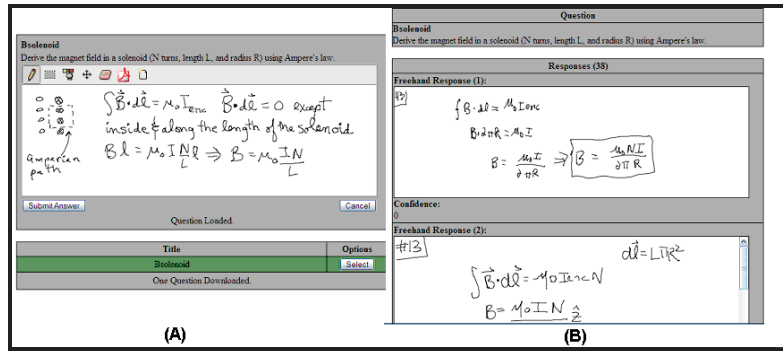


Figure 1. A. Student view of InkSurvey, as response is being prepared to submit B.

To determine the performance of teaching/learning the problem solving strategy steps, the instructor prepared in-class assignments having different difficulty levels. The students included in the research group were required to solve those problems with ILM. Assignment problems were provided in three parts (Identifying the Fundamental Principle, Solving, and Checking) to organize their solving method while approaching to the problem. The instructor reviewed each student’s solution and gave feedback according to the level of conceptual understanding, clarity of description, selection of equations, solution ways, logical progression, and mathematical expressions. The open-ended responses submitted were recorded automatically and analyzed statistically. Researcher graded the solutions of each student by considering the problem solving strategy steps and the difficulty level of the problem asked for eleven chapters.

RESULTS and DISCUSSION

The effect of ILM on students’ performances obtained in Advanced Electricity and Magnetism course in S08 were monitored with in-class assignments. The assignments graded according to the problem solving strategies and difficulty levels. The difficulty level of the problems was changed during the semester randomly. Average scores of the problem solving strategy steps with various difficulty levels are presented in the following Figure 2. In the graph, the y-axis shows the difficulty level of the problem while the x-axis represents the means of students’ grades which were graded with the approach given in the Table 1. The numbers above the graph-bars show chapters’ numbers.

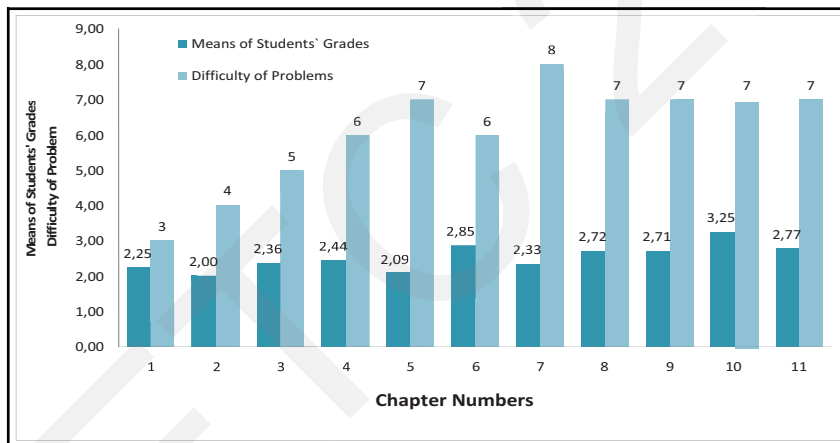


Figure 2. The degree of difficulty versus arithmetic means of PSSS (Chapters: (1)Force the Lorentz Force Law, (2)Magnetic Force, (3)The Biot-Savart Law, (4)Application of Ampère’s Law, (5)Ohm’s Law, (6)Electromotive Force, (7)Faraday’s Law, (8)The Induced Electric Field, (9)Magnetization, (10)The Field of a Magnetized Object, (11)The Auxiliary Field H)

Initially (for the 1st chapter) the Arithmetic Mean of Problem Solving Strategy Steps (AMPS) is 2.25 over 5. When the difficulty level of the problem increases in the chapter on “Magnetic Force”, AMPS decreases by 10%. Even though, in the chapters on “Biot-Savart Law” and “Ampere’s Law” the difficulty levels increases, the grades increases by 18% and 4%, respectively. Difficulties of the problems continued to be increased on the “Ohm’s Law”. However, the scores decrease by 14%. In that case, the instructor asks easier questions (decreases difficulty level by 1 unit) to have stable average scores and find the proper difficulty level for the students. In the “Electromotive Force” chapter, grades increases by 36%. Second attempt to increase is made on “Faraday’s Law” and difficulty is increased by 2 units. As expected students’ scores decrease by 18%. The difficulty of problems asked in “Induced Electric Field”, “Magnetization”, “Field of a Magnetized Object”, “The Auxiliary Field H” is kept same at the level of seven. The similar scores are obtained when the difficulty level is seven.

In addition to these findings, observations showed that the students were usually comfortable using Tablet PCs to take notes and perform problem-solving activities. The free-style handwriting possibility made the students more comfortable to express their ideas in sketches or annotations. It made the lectures more dynamic and interactive. An important feature of exchanging digital resources among the students (or with the instructor) was recognized. The students were happy to store and manage their courses information in digital format. Also it can be reported that there was an increment of the students’ interest during the classes and also an improvement in the way used by the instructors to deliver knowledge.

CONCLUSION

This research investigates the effect of Interactive Learning Method consisting Tablet PCs and problem solving strategies on students' performance in the university/college level physics course. The performances were obtained by employing in-class assignments on Tablet PCs. Tablet PC were used to promote the active-learning environment and to ensure stepwise approach to problems with problem solving strategies. Tablet PCs were practical to be used in such computer-based research due to its contributions to real-time communication between students and instructor. Obviously, the problem solving strategies improved students' problem solving skills and increased experienced-problem solvers in the Advance Electricity and Magnetism course towards the end of the semester. Also results showed that, the average level of problem solving skills of students in a classroom could be obtained by determining the proper problems with specific difficulty level.

Acknowledgements

I acknowledge the HP Technology for Teaching. I also appreciate the support of the Colorado School of Mines, Physics Department. I am particularly indebted to CSM's TICC (Technology in Classroom Committee). Finally, I thank Dr. Frank Kowalski and Susan Kowalski.

References

- Anderson, R., Anderson, R., McDowell, L., & Simon, B. (2005). Use of classroom presenter in engineering courses. *35th ASEE/IEEE Frontiers in Education Conference*, October 19-22, Indianapolis, IN.
- Barkhuus, L. (2005). Bring your own laptop unless you want to follow the lecture: Alternative communications in the classroom. *Paper presented at the Proceeding of the 2005 International ACM SIGGROUP Conference*, Sanibel Island, FL.
- Berque, D. (2006). An evaluation of a broad deployment of DyKnow software to support note taking and interaction using pen-based computers. *Journal of Computing Sciences in Colleges*, 21(6), 204-216.
- Frolik, J., & Zurn, J. B. (2004). Evaluation of Tablet PCs for engineering content development and instruction. *34th ASEE/IEEE Frontiers in Education Conference*, October 20-23, Georgia, USA.
- Heller, P., Keith, R., & Anderson, S. (1992). Teaching problem-solving through cooperative grouping Part I: Group versus individual problem-solving. *American Journal of Physics*, 60(7), 627-636.
- Hrepic, Z. (2007). Utilizing DyKnow software and pen-based, wireless computing in teaching Introductory Modern Physics. *Processing of 30th Jubilee International Convention MIPRO, Conference on Computers in Education*, Opatija, Croatia.
- Gill, T. G. (2007). Using the Tablet PC for instruction. *Decision Sciences Journal of Innovative Education*, 5(1).
- Kolie, K., & Singer, D. (2006). Improving learning CS1 via Tablet PC-based in class assessment. *ICER (International Computing Education Research Workshop)*, September 9-10, University of Kent, Canterbury, UK.
- Kowalski, F. V., Kowalski, S. E., & Campagnola, L. (2005). Tablet computers used for teaching and real-time assessment of conceptual understanding of engineering students. *ASEE Conference*, 14 June Portland.
- Kowalski, F. V., Kowalski, S. E., & Hoover, E. (2007). Using *InkSurvey*: A free web-based tool for open-ended questioning to promote active learning and real-time formative assessment of Tablet PC-equipped engineering students. *ASEE Conference and Exposition*, Honolulu, HI.
- Mock, K. (2004). Teaching with Tablet PCs. *J. of Computing Sciences in Colleges*, 20(2), 17-27.
- Polya, G. (1957). *How to solve it*. Princeton University Press.
- Price, E., & Simon, B. (2007). Instructor inking in physics classes with Ubiquitous Presenter. *WIPTE*, June 11-12, Purdue University, Indiana.
- Reif, F. (1995). Millikan Lecture 1994: Understanding and teaching important scientific thought process. *American Journal of Physics*, 59, 891.
- Wieman, C., & Perkins, K. (2005). Transforming physics education. *Physics Today*, 58(11).
- Wilkerson, M., Griswold, W. G., & Simon, B. (2005). Ubiquitous presenter: Increasing student access and control in a digital lecturing environment. *SIGCSE*, February 23-27, Missouri, USA.

TEACHING THE *DIAGONALIZATION* CONCEPT IN LINEAR ALGEBRA WITH TECHNOLOGY: A CASE STUDY AT GALATASARAY UNIVERSITY

Ayşegül YILDIZ ULUS¹, Gülay KAYA²

¹ Asst. Prof. Dr., Galatasaray University Faculty of Arts&Science, Department of Mathematics, aulus@gsu.edu.tr

² Asst. Prof. Dr., Galatasaray University Faculty of Arts&Science, Department of Mathematics, gukaya@gsu.edu.tr

Abstract:

This paper provides an examination of experimental and algorithmic contributions of advanced calculators (the graphing and CAS: computer algebra system) in teaching the concept of *diagonalization* which is one of the key subjects in Linear Algebra courses at the undergraduate level. The research problem of this study was how an appropriate use of advanced calculators could be organized in order to develop a deep conceptual understanding.

In this paper, a new dimension of teaching is presented via some instructional materials designed on this particular subject which is a combination of theoretical experimentation and algorithmic approach. Main findings in this case study indicated that advanced calculators, by providing carefully designed tasks which favor the acquisition of mathematical knowledge and help deepen the students' perception of the concept, are valuable tools in teaching the *diagonalization* concept.

Keywords: Linear Algebra, diagonalization, ICT, advanced calculators, theoretical experimentation, algorithmic approach.

INTRODUCTION

Linear Algebra plays a significant role in the curriculum of undergraduate mathematics since it forms the basis for many further subjects in mathematics. Furthermore it has various applications in engineering, economics, physical and chemical sciences, and statistics. Fundamentally, it is comprised of the study of matrices, systems of linear equations, vector spaces, inner products, orthogonality and the theory of *diagonalization*. As other areas of collegiate level mathematics, Linear Algebra provides very useful tools and various applications.

Linear Algebra is an abstract area of mathematics which had been taught at graduate level up to 1960s in almost all countries. Since then, it has appeared at the undergraduate level and its applications in various fields have become quite common. In 1990, the LACSG (Linear Algebra Curriculum Study Group) in the USA produced a recommended core curriculum for a first Linear Algebra course. LACSG published a report in 1993 (Carlson et al., 1993) about who needs Linear Algebra, why it is needed and what might be the scope of a first course. For a short review of published literature on how students learn Linear Algebra, one must first mention Harel (1998) who provided some suggestions for Linear Algebra teachers. Carlson (1993) (who was in fact a member of LACSG) added some important points to the recommendations of LACSG which specified the major topics in Linear Algebra that are problematic to students. Dubinsky (1997) offered an alternative project about learning Linear Algebra that can be seen as an extension of *Calculus Reform*. His approach makes use of students programming computers, cooperative learning and alternatives to lecturing. Day and Kalman (2001) presented some issues and resources on teaching Linear Algebra that contain material on goals of instruction, materials to cover, methods of instruction, instructional technology, levels of abstraction and rigor, applications, student diversity, connections with other courses, and more others. Finally, Uhlig (2003) developed a different approach which he called *balanced approach* for teaching of Linear Algebra. According to this approach, a successful comprehensive teaching method can be developed by finding a balance between the theory itself, practical computations and the applications accompanied by interlocking pedagogical principles: openness of teaching and exploration, concreteness (hands-on computations), usefulness (applications) and creativity.

The availability of Information and Communication Technologies (ICT) has offered new opportunities with their powerful symbolic, graphic and programming capabilities in various concepts and topics in Linear Algebra. However, taking advantage of ICT requires reconsidering teaching and learning many topics in the Linear Algebra curriculum. In that regard, there have been several different views and experiences of using technology in teaching and learning. Today, there are two main technological materials that can be used in Linear Algebra teaching: hand-held tools such as advanced (the graphing and CAS: computer algebra system) calculators and mathematical software (like MatLab, Octave, Maple, Sage, Mathematica, Mathwright) for teaching and learning. These technological materials provide students useful tools to carry out some matrix computations instantaneously and effortlessly. Thus, instead of concentrating on heavy computations, students are able to concentrate on the questions about the nature of the operations: what happens when certain computations are performed? This is the ultimate goal of many instructors using software.

Hand-held technology, such as TI-84 plus, TI Voyage or nSpice and Casio-ClassPad 330, is endowed with very powerful software as well as the programming options, allowing the undergraduate students to solve advanced problems that were previously very difficult. Similar to hand-held versions, emulator software allows teaching and learning in many different ways than the software. Since there is no need for computer labs, students can benefit from these tools without restraint of time and place: in school, at home, even in the examinations if the teachers permit. On the other hand, utilizing this hand-held software, the teachers may enrich their lectures by allowing exploration and rapid hands-on computations. As a result, for students and teachers, it is an efficient way of using technology in or out of school.

This paper is a part of the report of a project supported by Galatasaray University, Istanbul, Turkey. The Project has two major goals: (1) to investigate how to incorporate ICT into undergraduate mathematics; (2) to develop a series of new instructional materials on several topics of undergraduate mathematics. Specifically, the present paper deals with the concept of diagonalization which has a great importance among the interesting topics in Linear Algebra. It is built on the results of the study of matrices and vector spaces and applicable in many areas such as algebraic geometry, differential equations and physics. By utilizing this concept, it is possible to canonicalize a system of equations in simpler form. With a square $n \times n$ matrix, one has a system of $n \times n$ equations, but if the matrix is diagonalizable, the number of equations can be reduced to n by the help of the diagonal matrix. However, as might be expected, the diagonalization process of a square matrix requires some complicated matrix calculations like finding the determinant of a matrix and finding the solution spaces of homogeneous systems by reducing matrices. The steps of this process are difficult to follow and there is a great risk of making mistakes in the calculations especially if the size of the matrix gets large. After the matrix calculations, the critical part of the process is to decide whether the matrix is diagonalizable or not. Thus, it is interesting to observe the experimental and the algorithmic contributions of technology in the concept of diagonalization.

METHODOLOGY

Rationale: In contrast to other areas of mathematics education, current research about the use of the advanced calculators in teaching and learning of Linear Algebra is still in its infancy. Our aim in this case study is to shed light on teaching/learning Linear Algebra via introducing and integrating advanced calculators into the higher educational environment and setting up a mobile mathematics laboratory. However, as the review of research at the international level (Lagrange et al., 2003) pointed out that there are many difficulties of integrating computing tools into the educational institutions. These difficulties stem from various problems, such as the large number of students in classes, hesitation and unwillingness of the instructors to use ICT in the corresponding teaching, the problem of curriculum change which supposes a more experimental conception of mathematics.

Goals: This study has two major goals: (1) to investigate how to incorporate ICT into undergraduate mathematics; (2) to develop a series of new instructional materials on several topics of undergraduate mathematics.

Research Problems: The research problems/questions in the present study are: (a) How an appropriate use of ICT can be organized taking account of the problems cited above in Rationale, and (b) How can we take full advantage of such powerful tools in order to develop a deep conceptual understanding of diagonalization in Linear Algebra?

One of the original points of this study comes from the introduction of a new dimension of teaching which is a combination of *theoretical experimentation* (this notion is due to Borwein et al. (1996)) and algorithmic approach. The second important aspect is the fact that this will be the first experimental study on teaching Linear Algebra course in Turkey and the integration of advanced calculators.

In the applications, the advanced calculators (*Casio-ClassPad 330*) with programming options were preferred to use as technologies. Theoretical experimentation includes structuring a domain to formulate hypothesis, deriving motivating examples to solve with a calculator and interpreting the calculator's results. Algorithmic dimension includes constructing algorithms and writing programs. Lagrange (2005) mentioned that algorithmic dimension by using calculator needs a great change of teaching regarding the utilization of the programming options of advanced calculators. However, there is a little didactical research offering help about this change. Nevertheless, an algorithmic way of thinking and sufficient programming skills brought about interesting applications.

Measuring Tools: A set of questions for group interview was applied to gather the students' views on the designed instructional materials, about the benefits of ICT (the advanced calculator) in Linear Algebra courses I, II. Students' success was assessed by several homework and specific questions in midterm and final exams.

Limitation of the Present Study: This study, as its name suggests, is just a *case study*. Hence, it was not aimed to draw general conclusions in the domain.

TEACHING PRACTICE AND DEVELOPMENT OF INSTRUCTIONAL MATERIALS

Teaching Practice: The teaching practices were carried out in the second year classes in the Department of Mathematics at Galatasaray University in which there are only 6 students. They all had an advanced calculator (*Casio-ClassPad 330*) in the academic years 2008-09. They were the first group of students whose curriculum is recently adapted to teaching and learning with technology. It is worth to underline the fact that the students were well-qualified in programming since they started to learn some computational languages such as ISETL and C++ in the first year of their education and in the second year they took Algorithms and Advanced Programming Courses. The hand-held facility of calculators permitted us to have a unified teaching of theory, hands-on computations on calculators and applications.

First, in the classroom the idea was motivated by exercises and then the theory of the diagonalization was taught and some problems were solved by using paper-and-pencil skills. In order to carry out the pre-planned activities, some instructional materials were designed in the form of worksheets involving exploration, investigation and challenging problems on which they used advanced calculators. Then, an algorithm was constructed by the help of the flow charts and finally a program was written which helps decide the diagonalizability of a matrix. In the recitation hours, these worksheets were given to the students and some observations were noted.

Use of ICT in Teaching the Process of Diagonalization: First, in the classroom, the idea behind the concept was given by defining the diagonal and other related matrices. With the help of similarity to a diagonal matrix, some problems were set out such as solving a system of equations which evoke the idea of being able to reduce the number of equations. Second, the theory of the diagonalization was taught by giving the definitions and theorems with their proofs. Here we recall that, an $n \times n$ matrix A is diagonalizable if it has n linearly independent eigenvectors and a square matrix A is diagonalizable over R if there is an invertible matrix P such that $P^{-1}AP$ is a diagonal matrix.

Then the process of *diagonalization* was introduced which was deduced from the proof of the main theorem:

Step 1: Find the characteristic polynomial of the matrix A , which is the determinant of the matrix $A - xI$.

Step 2: Find the eigenvalues x_i of A which are the roots of the characteristic polynomial.

- If there are n distinct eigenvalues $x_1 \dots x_n$, A is diagonalizable. Then there exists a diagonal matrix D whose diagonal elements are these eigenvalues such that $P^{-1}AP = D$. Then, we continue to *Step 3* in order to obtain P .
- If all eigenvalues are not distinct, continue to *Step 3*.

Step 3: For each eigenvalue x_i , for $i=1 \dots r$ where $r < n$, determine the corresponding eigenspaces. In other words, solve the homogeneous system $(A - x_i I)u = 0$ and find a basis for its solution space. In this step, one has to reduce the matrix $A - x_i I$ and solve the equivalent system. Choosing a base in every eigenspace E_{x_i} and the union of these bases constitute a base of eigenvectors (a non-zero column vector u such that $Au = x_i u$).

Step 4: Using the results of *Step 3*, determine whether A is diagonalizable or not. If one can find n linearly independent eigenvectors $u_1 \dots u_n$, then A is diagonalizable and P is the passage matrix to this new base of eigenvectors, and there exists a diagonal matrix D such that $P^{-1}AP = D$. Otherwise, it means $\dim E_{x_1} + \dots + \dim E_{x_r} \neq n$ and A is not diagonalizable. This last result is due to a corollary of the theorem which states a square $n \times n$ matrix is diagonalizable if and only if $\dim E_{x_1} + \dots + \dim E_{x_r} = n$ for some distinct eigenvalues $x_1 \dots x_r$ with $r < n$ or $r = n$.

Finally, in the recitation hours, some problems were solved by using paper-and-pencil skills. Then, students were given a worksheet including examples on which they used advanced calculators in order see how easy it was to handle the calculations by the calculators relative to the use of paper-pen-pencil skills only. This was also an opportunity for them to become familiar with the commands of the calculators, explore and conjecture themselves and about several interesting mathematical facts. For example, one of the questions of the

worksheet was the computation of the matrix power or matrix exponential. After computations on several matrices, they all conjectured correctly and two of the students could prove it by using the concept of diagonalization.

In a quiz, the students were asked to decide whether the given two 3×3 matrices are diagonalizable or not and find the matrix P for the diagonalizable matrix. They were allowed to use the calculators in the first 3 steps: In *Step 1* the command “ $\det(A-xI)$ ” was used to find the characteristic polynomial $q(x)$, in *Step 2* “ $\text{factor}(q(x))$ ” or “ $\text{solve}(q(x)=0,x)$ ” was used to find the roots of the characteristic polynomial and in *Step 3* “ $\text{rref}(A-x_iI)$ ” was used to reduce the corresponding matrix $A-x_iI$. One of the students, who preferred to find the determinant by paper-and-pencil method in the first step, could not evaluate it and could not continue to next steps. The rest of students who preferred to use the calculators could handle these calculations without mistakes. In *Step 4*, for the diagonalizable matrix, they could give the correct answer and using the basis vectors of the eigenspaces they correctly constructed the matrix P . However, for the matrix which is not diagonalizable, they all tried to use the main theorem but none of them could correctly state the arguments.

Subsequently, in the mid-term examination they were given an exercise in which there were three 3×3 matrices and they were asked to decide whether the matrices were diagonalizable or not, via using the experimental approach and the theoretical experimentation approach:

Experimental approach: Two of the matrices were diagonalizable and the other one was not. By the experimental approach, they were allowed to pass directly the first three steps and obtain the eigenvalues and eigenvectors and conclude about the diagonalizability of the matrices. For the matrices which was diagonalizable and non-diagonalizable, in the last step, *three* of the students utilized the corollary of the theorem (this result is also underlined in the redaction of the program) and stated their decisions correctly.

Theoretical experimentation approach: By the theoretical experimentation approach, while all of the students could follow the steps separately and state easily the diagonalizability of the first two matrices, *three* of them could correctly find out the non-diagonalizability of the third matrix. This was the control action of the experimental approach which provided a flow chart and then an algorithm.

Algorithmic approach: After the midterm, a discussion was organized about whether a program could be written which would tell us directly whether a matrix is diagonalizable or not just after the inputting of a matrix. The idea appeared to be exciting and students all agreed that this would not be difficult since the process of diagonalization was given like a flow chart. Moreover, fortunately, the programming language of advanced calculators is not complicated. What remains was constructing an algorithm. To this end, a program was written interactively together with the students. As the major objective was to improve algorithmic thinking capability of the students, the steps which cover all of the possible cases were considered following a theoretical experimentation. In the last step of the process, this program used one of the corollaries of the main theorem which tells that a matrix is diagonalizable if and only if the sum of the dimensions of its eigenspaces is equal to its dimension.

Following this application, it was observed in the final exam that none of the students encountered a problem in the exercises that needed this concept. It is worth noting that, the advanced calculators were not authorized in the final exam. Hence, we were able to conclude that previously designed instructional materials with experimental, theoretical experimental approaches and algorithmic options of advanced calculators were successful in the sense that they contributed to the internalization of the knowledge.

FINDINGS AND RESULTS

Here it must be noted that while the small number of students in this study may possibly pose problems about the reliability of the results, it also has numerous advantages. For instance, it allowed us to equip all the students with the necessary devices and also observe directly the contribution of the ICT to the students. The students were interviewed by a student group interview in 4 main titles: (1) Using advanced calculators; (2) Teachers and teaching; (3) Students' learning; (4) Advices. By a general questionnaire, the students' opinions were obtained about teaching with technology in Linear Algebra. Finally, they reflected their impressions, personal aspects and suggestions concerning the concept of diagonalization and the use of calculators on a topic questionnaire. These answers were analyzed by *Content Analysis Method*. First of all, teaching with technology was really appreciated by all of our students. Advanced calculators, with their hand-held and practical use, enriched the lectures, especially the recitation hours. They investigated, explored, compared their results and discussed about the concepts. Constructing an algorithm and a program summarizes the mechanism underlying the relations of reason-result. Of course, as might be expected, the students who had a special interest in programming and who did their homework regularly succeeded quite well.

Table 1 gives an overall content assessment of the application. Findings were then classified in Table 2 and Table 3 in two main dimensions: experimental and algorithmic dimensions.

Table 1. General opinions¹ about the content of the application of “teaching with ICT²”.

| General Assessment | 5 | 4 | 3 | 2 | 1 |
|---|-----|-----|-----|-----|-----|
| | (f) | (f) | (f) | (f) | (f) |
| ICT helps me to understand more deeply the concepts in Linear Algebra I and II | 3 | 2 | 1 | 0 | 0 |
| With ICT Linear Algebra Courses are easier | 2 | 4 | 0 | 0 | 0 |
| There is no need to have ICT in Linear Algebra I – II | 0 | 0 | 1 | 2 | 3 |
| Designed instructional materials are helpful | 4 | 1 | 1 | 0 | 0 |
| I feel more confident with ICT | 5 | 1 | 0 | 0 | 0 |
| ICT enriches the lectures | 5 | 1 | 0 | 0 | 0 |
| I enjoy using ICT | 6 | 0 | 0 | 0 | 0 |
| I would like to have ICT also in other courses | 3 | 1 | 1 | 1 | 0 |
| Matrix algebra is the most important topic of Linear Algebra I and II | 4 | 2 | 0 | 0 | 0 |
| The concept of diagonalization is one of the most important concept in Linear Algebra I- II | 2 | 4 | 0 | 0 | 0 |

¹ 5,4,3,2,1 mean respectively: 5: I completely agree, 4: I agree, 3: I am undecided, 2: I don't agree, 1: I completely disagree.

Table 2. Assessment of experimental dimension of ICT

| Assessment of theoretical experimental dimension of ICT | agree | neutral | Disagree |
|--|-------|---------|----------|
| | (f) | (f) | (f) |
| Computations become easier with ICT | 6 | 0 | 0 |
| ICT is time-saving | 6 | 0 | 0 |
| ICT helps me to conserve my attention in matrix calculations | 6 | 0 | 0 |
| ICT provides a reason to understand the theory | 5 | 1 | 0 |
| ICT provides a mechanism for using the theorems | 4 | 2 | 0 |
| I feel like an unthinking button-pusher | 0 | 1 | 5 |

Table3. Assessment of algorithmic dimension of ICT

| Assessment of algorithmic dimension of ICT | agree | neutral | Disagree |
|--|-------|---------|----------|
| | (f) | (f) | (f) |
| Writing an algorithm helps me to deepen my perception of the concept | 5 | 0 | 1 |
| The flow charts for constructing an algorithm explains the processes | 6 | 0 | 0 |
| With this approach I improve my capabilities in making correct decisions of the results. | 5 | 1 | 0 |
| With an algorithm I can interpret the relations of reason-result | 5 | 1 | 0 |
| With an algorithm I repeat my course | 5 | 1 | 0 |
| A cause this approach I lost my attention to the courses | 1 | 0 | 5 |
| This approach is needless | 1 | 0 | 5 |
| Writing programs is difficult | 2 | 3 | 1 |
| Language of programming is easy to handle | 3 | 2 | 1 |

CONCLUSION

Main findings in this case study indicated that advanced calculators are valuable tools to teach the concept of diagonalization which is one of the key and difficult concepts in the Linear Algebra course at the undergraduate level. First, they offered assistance to the students for the computations and to conserve their attentions in the matrix calculations. Secondly, it is proved by the theoretical experimentation approach that these tools can be used in order to favor the construction of mathematical knowledge and can act as a mediator. Finally, the process of writing an algorithm helps to deepen the students' perception of the concept and improve their capabilities in making correct decisions. Once the students constructed the algorithms, the complete knowledge is achieved in their mind with all of the possible cases.

Another important contribution of these advanced personal tools was from pedagogical aspect. By this case study, it is observed that in teaching with technology the lectures become more interactive and student-centered. Besides their functional aspect, the use of advanced calculators has especially pedagogical aspects. As it is noted in Heid et al. (1990), with technology, new roles are assigned to the teachers as technical assistant, collaborator, facilitator of student learning and catalyst and this poses a real challenge for the change of teaching.

As a summary, Linear Algebra course is one of the two basic undergraduate courses and widely accepted as the beginning of the abstract theory. The discussion in this study has been on the use of technology to support student learning in a targeted way of a chosen concept in Linear Algebra with which the students struggle. This case study points out that the technology itself does not simplify the learning but it requires carefully designed teaching environment. In order to verify the robustness of this study, a long-term work is needed including observations of comparative results over years, technologies, and teaching practices with a larger sample of students. In some sense, however, this study can be seen as a first attempt to investigate how students learn basic concepts of the courses with an appropriate use of ICT. As technology advances and more students have access to new technologies, more opportunities would become available to help students learn and this will lead to new questions and treatments.

REFERENCES

- Borwein, J., Borwein, P., Girgensohn, R. & Parnes, S. (1996). Making Sense of Experimental Mathematics. *The Mathematical Intelligencer*, 18(4), 12-17.
- Carlson, D. (1993). Teaching Linear Algebra: Must the Fog Always Roll In? *College Mathematics Journal*, 24 (1), 29-40.
- Carlson, D., Johnson, C. R., Lay, D. C. & Porter, A. D. (1993). The Linear Algebra Curriculum Study Group Recommendations for the First Course in Linear Algebra. *College Mathematics Journal*, 24, 41-46.
- Day, J. M. & Kalman, D. (2001). Teaching Linear Algebra: Issues and resources. *The College Mathematics Journal*, 32 (3), 162-169.
- Dubinsky, E. (1997). Some Thoughts on a First Course in Linear Algebra at the College Level. *Resources for Teaching Linear Algebra, MAA notes*, Volume 42, Pages 85-106
- Harel, G. (1998). Two Dual Assertions: The First on Learning and the Second on Teaching (or Vice Versa). *American Mathematical Monthly*, 105 (6), 497-507.
- Heid, M.K. Sheets, C. and Matras, M.A. (1990). *Computer Enhanced Algebra: New Roles and Challenges for Teachers and Students*, in T. Cooney (Ed.), Teaching and Learning Mathematics in 1990's, NCTM 1990 Year Book. Reston, VA: NCTM, 194-204.
- Lagrange, J.B., Artigue, M., Laborde, C., Trouche L. (2003). *Technology and Mathematics Education: A Multidimensional Study of the Evolution of Research and Innovation*, in A.J. Bishop, M.A. Clements, C. Keitel, J. Kilpatrick, F.K.S. Leung (Eds.), Second International Handbook of Mathematics Education, vol. 1., pp. 239-271. Dordrecht: Kluwer Academic Publishers.
- Lagrange, J.B. (2005). *Transposing Computer Tools from the Mathematical Sciences into Teaching*, in Guin, D., Ruthven, K. and Trouche L (Eds.), Didactical Challenge of Symbolic Calculators, Melbourne: Springer.
- Uhlig, F. (2003). A new unified, balanced, and conceptual approach to teaching Linear Algebra. *Linear Algebra and its Applications*, 361,147-159.

TECHNOLOGICALLY ENHANCED TEACHING: BLOGS IN ELT

Hilal Büyükgöze, Aksaray University, hilal.buyukgoze@gmail.com

Lütfiye Cengizhan, Trakya University, lutfivecen@yahoo.com

Abstract

This century has turned out to be the century of the challenges in education, it has faced many challenges in different settings. To keep up with these new developments and threats, educational technology has improved its own approaches. Concerning this, the role of information and communication technologies (ICTs) have been more important, and therefore ICTs have become a necessary and an integral part of language learning. The integration of ICTs in the language classroom and in the language learning process has increased its value in the eyes of teachers, and all auidal and visual technology-related applications and materials have begun to be appreciated significantly both by teachers and students. Researchers have observed that after a slow start, blogs (short for Weblogs) have gained in popularity in the past few years. Blogging has become increasingly popular as a language teaching tool by educators, as well. This paper displays that blogs usually become more than a way to just communicate; they become a way to reflect on life, to bring together the learners and teachers and also the speakers of English language through a different channel.

Key words: weblog; language learning; language teaching; online community; computer applications

INTRODUCTION

The 21st century has confronted lots of challenges in education; it has faced many challenges in different settings. To keep up with these new developments and threats, educational technology has improved its own approaches. As the role of information and communication technologies (ICTs) have been more important, they have become a necessary and integral part of language learning/ teaching.

In fact, we live in the age of the computer, and there are growing demands on the integration of ICTs in the language classroom and in the language learning/ teaching process has increased its value in the eyes of teachers, and all auidal and visual technology-related applications and materials have begun to be appreciated significantly both by teachers and students, because as Prensky (2001) stated our students have changed radically, today's students are no longer the people our educational system was designed to teach.

In accordance with this, we have observed a rapid increase in the use of internet applications like Blogs (a contradiction of the term "web log") (Blood, 2000) in the past few years. Blogs and blogging have become increasingly popular as a language teaching tool by educators, as well. Today's teachers have recognized that they have to learn to communicate in the language and style of their students. Teachers dedicated to ELT seem to begin enabling their students to engage in the knowledge society and to motivate them participating in research and/ or collaboration (Brady, 2005).

WEBLOGS

What is a blog?

A blog is a frequently updated website that often resembles an online journal or a magazine (Stanley, 2005). They are logs of thoughts, reflections, and events in the writer's life and become a fact of contemporary life (Eastment, 2005).

It has never been difficult to create and update a blog, but nowadays the process has become simpler. And it requires only basic access to the internet and a minimum knowledge of computer applications. Just google 'blog', find a blogging service; you will have a blog account in 3 easy steps. First, you create an account, then name your blog, and finally select a design. It takes only fifteen minutes from creating an account to publishing your first post in the internet using the blogging tool.

Blogs may appear in many shapes and sizes. Blogs mostly base on a simple layout consisting of a title banner, a side bar on the left or right of the page, and the posting area (Brandy, 2005).

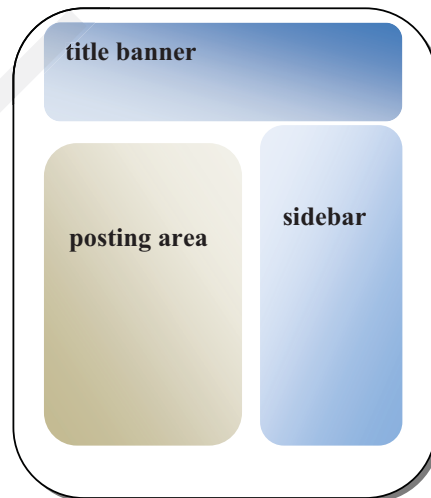


Figure 1: Typical layout of a blog page (Brandy, 2005)

A bit of history

Actually, blogging does not seem to have been invented by any person or organization (Brandy, 2005), but the term “weblog” was coined by Jorn Barger on 17 December 1997 (Wortham, 2007). And the short form, “blog” was coined by Peter Merholz, who broke the word *weblog* into the phrase *we blog* in the sidebar of his blog Peterme.com in April or May 1999 (Wikipedia) (Merholz, 1999). Then, Evan Williams used “blog” as both a noun and verb and devised the term “blogger” leading to the popularization of the terms (Baker, 2008). These were closer to our concept of a personal page, though *link-comment* pattern seen in blogs today was present (Brandy, 2005).

No one really knows how many people are using the blogs. It is difficult to know the exact number of active blogs in existence, however we can assume that in the 1990s the numbers were very small. As computers and the internet become increasingly available, publishing one-to-many become easier. In the earlier days of the internet– the most significant development in communication tools since the invention of the printing press (Teeler & Gray, 2003) – this was limited to those with the money to spend on the equipment and to knowledge to set it up (Brandy, 2005).

Today, blogs are everywhere. Politicians, musicians, artists, photographers, and celebrities use blogs; even Noam Chomsky has one. (see at References)

Types of weblogs for use in EFL classrooms

Aaron Patric Campbell (2003) introduces three ways that weblogs can be used to EFL classroom learning:

- **The Tutor Blog** is run by the teacher of a class. The following are some purposes:
 - It offers daily reading practice to the students. Language learners sometimes **do not relate with the assigned reading material**, or it may be boring for them. So, the teacher writes to them and links **related online sources for further reading**. To develop students’ familiarity with target language patterns, the blogger -the teacher- **may use a casual writing style**.
 - By using the comment buttons, students are encouraged to comment on **different blog posts**.
 - Links can be provided in the left or right of the blog to **promote students’ self-study**, for example links to sites with potential for language activities, for four basic skills.
 - Students can take the opportunity of exploring of new **English sites** while using blogs. Engaging in interesting English language websites will help them improve their self-esteem.
 - This type of blogs can also be used to help students **remind about homeworks**, project deadlines, and ongoing/upcoming events in the class or syllabus.
- **The Learner Blog** is run either by individual students or by small groups of students. It serves the following uses:
 - A whole class assignment can be **followed by postings** of the learners or group of learners.
 - To find websites to which **links can be made may encourage** students to use search engines and to surf in English sites.
 - Blogs can be used for **free writing practice** or for personal expression.
 - As students publish on their **blogs**, comment features of the software will enable them to exchange ideas instantly.
- **The Class Blog** is run both by students and the teacher. It has some possible uses:
 - It is mostly used as a **collaborative** shared space for use of the teacher and the students to post messages, pictures, links related to **topics or thoughts on an assignment** if desired.
 - The sense of **freedom** and participation may also promote students’ self-concept and actualization.
 - It may become an international classroom language exchange by involving students from different countries learning the same foreign language.

Why to use Blogs in language teaching?

Today’s students – K through university – represent the first generations to grow up with new technologies. They are spending their lives encompassed by and using computers, games, music players, mobile phones, video cameras, and other products of our digital age (Prensky, 2001). We should recognize that it is a fact that today’s students comprehend and process information completely differently from the former learners.

As educators, we need to be thinking about how to make use of these newly emerged trends and technologies in language teaching, as well. Because of its birth in the United States, most of the communication via the internet go on in English. This is what makes it such a perfect tool for English language teaching.

There are several ways of capturing students’ interest in the subject matter, and helping them learn easier with more exposure to the target language.

The system of weblogs is a worldwide network of open groups or individuals on thousands of subject. They are open in that they are not necessarily supervised or moderated and can be read by anyone that is interested. They are interesting spaces for sharing, and there are several dedicated to educational themes. Blogs are one of the most effective ways to get students reflecting on their learning, for creative

writing, or just to turn them on to the process of writing (Eastment, 2005). It offers a real audience to the bloggers including their peers, their friends from other classes, and even from other countries, their parents, their key-pals, and the teacher.

And it has been interesting to follow and read comments made by the teacher, the classmates, by people interested all over the world. The act of following ESL blogs provide extra reading practice to students.

As blogs are public/private, web services as well as individuals can tap into their power to develop unique uses. They can be used as online learner journals which can be a private channel between teacher and student. This may also motivate students to write.

For the moment English is the common language on the www, so, this may help learners to find online resources appropriate for their language level. But, as no one exactly knows how many websites we have on the internet, teachers guide students by using tutor blog as a portal for learners (Stanley, 2005).

The sense of togetherness can be fostered especially by using a class blog in which the class members share information about themselves and their interests, and thoughts. And comments will also promote the positive atmosphere of online collaboration.

Blogs can provide an opportunity to express the feelings, interests and thoughts of introvert learners in the classroom. The online environment may help them reduce the anxiety, stress they feel in the class.

As teachers, we all do not have ideal classes, some of us have really large classes. In large classes, students sometimes spend their time without getting to know each classmate well. Even a blog can serve as a tool that bring every member of the class together.

Blogs also promote students critical thinking skills: how to know, how to understand, how to evaluate and select from great quantity of available, let's say, Google information (Hannam, 2004).

METHOD

To be able to make a clear evaluation about weblogs and to discuss the changes they brought to EFL classrooms, the researchers composed a variety of blogs created by both educators and students from different contexts to form a typical layout of a blog used for language learning/teaching. Some were interviewed about their experience of blogging.

Participants

Experienced blog-user teachers, teacher trainers, language learners from state to private schools and from primary school to university level reflected their perceptions during interviews.

RESULTS

Results have demonstrated that blogs can enable students to engage in the online community. It is also clear that weblogs offer much more authentic and ungraded language.

Student participants mostly expressed that blogs promoted their self-esteem toward learning English. Language teachers and teacher trainers stated that students encouraged to write, to express themselves and to reflect on their learning through blogs.

English teachers expressed that students' parents were also pleased that their children used computers and the internet for improving their language by communicative and collaborative applications.

DISCUSSION and CONCLUSION

It is obvious that people observed several advancements in technology over the past one hundred years, and there are growing demands on technology still. Everyday we are introduced with a new computer application, software, and/or tool. So, today's students are surrounded by every kind of technological toys and get used to see and engage in these every time of their days.

To get students' interests, teachers have begun to use the internet and its complements more. One of these is a blog and it is now widely used mostly to improve students' writing ability, promote student participation, expose learners to casual but authentic language, and create a sense of community both in small and large classes.

It is now clear that blogs like other applications will be used increasingly as a teaching tool by teachers and a language learning tool by students in the near future.

"It would appear that we have reached the limits of what it is possible to achieve with computer technology, although I should be careful with such statements, as they sound pretty silly in 5 years" said John von Neumann in 1949 which is really true for today's world. We cannot know what will happen next, but we as responsible educators should benefit from and believe in technology to teach today's digital natives (Prensky, 2001).

REFERENCES

- Baker, J.** 2008. Origins of “Blog” and “Blogger”. <http://listserv.linguistlist.org/cgi-bin/wa?A2=ind0804C&L=ADS-L&P=R16795&I=-3> accessed 21 June 2009.
- Blood, R.** 2000. Weblogs: A History and Perspective. http://www.rebeccablood.net/essays/weblog_history.html accessed 09 June 2009.
- Brady, M.** 2005. Blogging, personal participation in public knowledge-building on the web. Chimera Working Paper 2005-02. Colchester: University of Essex.
- Campbell, A. P.** 2003. Weblogs for Use with ESL Classes. *The Internet TEFL Journal*. 9:2. <http://iteslj.org/Techniques/Campbell-Weblogs.html> accessed 01 Oct 2009.
- Chomsky, A. N.** 2010. <http://www.zcommunications.org/zspace/noamchomsky> accessed 06 Apr 2010.
- Eastment, D.** 2005. Websites for the Language Teacher: Blogging. *ELT Journal*. 59:4
- Hannam, S.** 2004. The Power of the Moving Image: Using Authentic Video in the Language Classroom. *English Teaching Professional*. Issue 31.
- Merholz, P.** 1999. [Peterme.com](http://peterme.com) accessed 2008.
- Prensky, M.** 2001. Digital Natives, Digital Immigrants. *On the Horizon Journal*. 9:5
- Stanley, G.** 2005. Blogging in ELT. <http://www.teachingenglish.org.uk/think/articles/blogging-elt> accessed 07 May 2009.
- Wortham, J.** 2007. After 10 Years of Blogs, the Future’s Brighter Than Ever. http://www.wired.com/entertainment/theweb/news/2007/12/blog_anniversary accessed May 2009.
- Teeler, D. & Gray, P.** 2003. *How to Use the Internet in ELT*. London: Pearson Education Limited
<http://en.wikipedia.org/wiki/Blog> accessed 01 Feb 2010.

TECHNOLOGY BARRIERS: CHALLENGES OF TEACHER CANDIDATES WHILE USING TECHNOLOGY

Assist. Prof.Dr Hamit Caner
hamit.caner@emu.edu.tr

Dr. Bengi Sonyel
bengi.sonyel@emu.edu.tr

Assist. Prof.Dr Hatice Nilay Hasipođlu
hatice.hasipoglu@emu.edu.tr

Assist. Prof.Dr Süheyla Ü. Erbilin
suheyla.erbilen@emu.edu.tr

Abstract:

This research examines the challenges of teacher candidates while using technology. In the era that we live in, technology has changed and improved rapidly. Using technology became inevitable in our lives as its implications affect the educational environment as well. In this research, it has been found significant that technology plays an important role specifically in teacher candidates' everyday lives. Therefore, the purpose of this research is to investigate the technological barriers and challenges which teacher candidates face up with.

Keywords: Technology, teacher candidates, barriers, challenges

TEKNİK ÖĞRETMENLERİN BİLİŞİM TEKNOLOJİLERİNİ KULLANIM DÜZEYLERİNİN VE ÖĞRETİM SÜRECİNE KATKILARININ BELİRLENMESİ ÜZERİNE BİR ALAN ARAŞTIRMASI*

Şenol OKAY

Pamukkale Üniversitesi, Teknik Eğitim Fakültesi, Denizli, senolokay@pau.edu.tr

Bu çalışmada, mesleki ve teknik eğitimde görev yapan teknik öğretmenlerin; bilişim teknolojilerini kullanım düzeylerinin ve öğretim sürecine katkılarının belirlenmesi amaçlanmıştır. Ayrıca bu amaçların öğretmenlerin yaş aralıklarına göre farklılaşıp farklılaşmadıkları incelenmiştir. Araştırma tarama modelinde tasarlanmış olup, çalışma grubunu Denizli ilinde faaliyet gösteren üç adet mesleki ve teknik ortaöğretim kurumunda görev yapan ve ölçme aracına cevap veren 160 teknik öğretmen oluşturmuştur. Bilişim teknolojileri kullanım düzeylerini ve amaçlarını ölçme aracı anketler öğretmenlere elden ulaştırılarak yüz yüze görüşme yöntemi ile doldurulması temin edilmiştir. Anketler aracılığı ile toplanan veriler bilgisayara girilmiş ve SPSS 12.0 for Windows programı ortamında analiz edilmiştir.

Anahtar Kelimeler: Mesleki ve Teknik Eğitim, Teknik Öğretmen, Bilişim Teknolojileri.

AN AREA STUDY ON DETERMINING THE INFORMATION TECHNOLOGIES USING LEVELS AND THE CONTRIBUTION TO EDUCATION PROCESS OF TECHNICAL TEACHERS

In this study, it has been aimed to determine the information technologies using levels and the contribution to education process of technical teachers. Furthermore, these objectives were examined in terms of differentiations with reference to their age-intervals. The research was designed as a sweep-model and a workgroup was established by 160 staff-teachers served at 3 professional and technical schools (secondary) in Denizli. The questionnaires were used as measuring tools by using face-to face interview method for the determining of the informatics' technologies usage-levels and their goals. The data collected via questionnaires were analyzed and evaluated with a statistical software package (SPSS).

Keywords: Professional and Technical Education, Technical Teacher, Information Technologies.

1. GİRİŞ

Günümüzde bilgiye ulaşma, bilgiyi değerlendirme, bilgiyi organize etme, bilgiyi kullanma ve bilgiyi diğerleriyle paylaşma çok önem kazanmıştır. Bütün bunların sonucu olarak da, öğretim ortamında bireyleri bilgiye ulaştıracak, bilgiyi kullanabilmesini ve yayabilmesini sağlayacak her türlü aracı kullanmak zorunda olunacağı ifade edilebilir. Bilgi teknolojilerinin kültürü ve ekonomiyi zorlayan bir güç olduğu belirtilebilir (Karahana ve İzci, 2001). Bilgi günümüzde "güç" ile eş anlamlı kullanılmaktadır. Özellikle kargaşa ve değişim zamanlarında, bilginin gücü daha fazla ortaya çıkmaktadır. Bilginin etkin bir şekilde oluşturulması, aktarılması, geliştirilmesi ve paylaşılmasında bilişim teknolojilerinin rolü tartışılmazdır. Bu da bilişim teknolojilerini ülkeler için kritik ve bir o kadar da vazgeçilmez önemini ortaya koymaktadır. (Halawi vd., 2006).

Bilişim teknolojilerindeki gelişmelerin çizgisine bakıldığında en kapsamlı değişikliklerin yaşandığı dönemin 1990'lı yılların başı olduğu görülmektedir. 1990'lı yıllarda bilgisayarların hızının ve kapasitesinin baş döndürücü biçimde gelişmesi önce bilgisayar ağlarından oluşan modelleri, sonrasında da ağların birbirine bağlanması ile geniş alanlara yayılmış tek merkezden de idare edilebilen sistemleri karşımıza çıkarmıştır. Yine aynı dönemlerde, yazılım teknolojisi de donanım teknolojisi kadar hızla değilse bile yakın düzeyde bir değişim göstermiş; programlama dilleri, sistem yazılımları, verimlilik araçları ve uygulama yazılımları alanında çok sayıda çözüm ve ürün pazarlara sunulmuştur. (Süygün, 2007)

Disiplinler arası özellik taşıyan bir öğretim ve hizmet kesimi olan bilişim, bilgisayar da içeride olmak üzere, bilişim ve bilgi erişim dizgilerinde kullanılan türlü araçların tasarlanması, geliştirilmesi ve üretilmesiyle ilgili konuları kapsamaktadır (Köksal, 1981). Bilişim kelimesi, en yaygın sekiyle, bilginin işlenmesi, depolanarak saklanması, bilginin teknik araçlara en hızlı ve en kolay yoldan iletilerek bilgi akışının sağlanması demektir. Bilişim teknolojilerinin başlangıç noktası bu süreçtir (Kök, 2006).

Bilişim teknolojileri kavramı; donanım (hardware), yazılım/program (software), bilgisayar ağları (network), bilgisayar ağ yazılımları, sistem entegrasyonu, internet, telekomünikasyon ve telekomünikasyon yazılımları ve hatta alana ilişkin eğitim ve danışmanlığı da içeren, kendi içinde çok hızlı değişen ve gelişen ayrıntılı bir teknoloji dünyasına karşılık gelmektedir. (Göker, 2007, Daniels, 1993).

Bilişim teknolojileri, başka bir tanıma göre; verilerin kayıt edilmesi, saklanması, belirli bir işlem sürecinden geçirilip anlamlı bilgiler üretilmesi, üretilen bu bilgilere ulaşılması, kaydedilmesi ve taşınması gibi işlemlerin verimli bir şekilde yapılmasına olanak tanıyan teknolojiler olarak tanımlanabilir (Bengshir, 1996). Bilişim teknolojisi; bilginin üretilmesi, işlenmesi, saklanması, iletilmesinde kullanılan araçlar ve organizasyondaki bu araçların karar verme süreci ve diğer süreçler üzerindeki etkisi olarak da tanımlanmaktadır. (Huber, 1985; Akın vd., 1999; Erkut, 1995; Grover vd., 1999). Bilişim sistemleri kavramıyla ise bilginin erişilmesi, toplanması, saklanması, işlenmesi ve dağıtılmasıyla ilgili teknolojiler ile sistem üzerindeki bilgilerin tümü kastedilmektedir (Güleş, 2000).

Bilişim teknolojileri, tamamıyla bir sistemin bütününe ifade eder. Bahsedilen sistemin iki ana ayağı, araç ve aygıtlardan oluşan bir donanım ile bu donanımda kullanılmak üzere özel olarak geliştirilmiş yazılımlardır. İşte bilişim sistemleri, bu iki temel unsur aracılığıyla bilgi erişimini, kullanımını ve paylaşılmasını içeren bir düşünce bütününe ifade etmektedir. Bu anlamda bilişim teknolojileri tek bir uygulamayı, belli bir donanımı ya da yazılımı değil; bu unsurlar her ikisini de birbiri ile uyumlu bir şekilde ve ihtiyaçlara göre birleştirerek etkin iş görmeye olanak tanıyan bir oluşumu kapsamaktadır (Yahyagil, 2001).

Bilgisayar teknolojilerinin yalnızca öğrenme ve öğretmede kullanılacak araçlar olmadığını aynı zamanda bilgiyi bulma, işleme ve iletmede de kullanılan araçlardır. Ayrıca, toplumun ihtiyacı olan insan profiline uygun bireyler yetiştirme sorumluluğunu üstlenmiş olan eğitim kurumlarından bilgi becerileriyle donatılmış teknolojiyi kullanabilen ve kendi kendisine öğrenebilen bireyler yetiştirmeleri beklenmektedir. Bu yüzden öğretmen ve öğretmen adaylarının bilgisayar teknolojileri ve bilgi okuryazarlığı alanında yeterli bilgi ve beceriye sahip olmaları onların hem kendi gelişimlerini hem de öğrencilerini doğru yönlendirmeleri ve yetiştirmeleri için oldukça gereklidir. Dolayısıyla, bilgisayar teknolojileri ve bilgi okuryazarlığı öğretmen ve öğretmen adaylarının konu alanı bilgisi ve pedagojik formasyonlarının yanı sıra bilgi ve beceri sahibi olmaları gereken diğer önemli konulardır (Akkoyunlu ve Kurbanoglu, 2003).

* Bu çalışma Pamukkale Üniversitesi BAP birimince 2010KKP033 nolu proje ile desteklenmiştir.

1.1. Araştırmanın Amacı

Bu araştırmada; mesleki ve teknik eğitimde görev yapan teknik öğretmenlerin; bilişim teknolojilerini kullanım düzeylerinin ve öğretim sürecine katkılarının belirlenmesi amaçlanmıştır. Ayrıca bu amaçların öğretmenlerin yaş aralıklarına göre farklılaşıp farklılaşmadıkları incelenmiştir.

2. YÖNTEM

2.1. Araştırmanın Modeli

Bu çalışmada araştırmaya konu olan olay, birey ya da nesne, kendi koşulları içinde ve olduğu gibi tanımlanmaya çalışıldığı ve çok sayıda elemandan oluşan bir evrende, evren hakkında genel bir yargıya varmak amacıyla evrenin tümü ya da ondan alınacak bir grup, örnek ya da örneklem üzerinde çalışma yapmaya uygun olduğu için tarama modeline dayalı olarak gerçekleştirilmiştir (Karasar, 2005).

2.2. Çalışma Grubu

Araştırmanın çalışma grubunu 2008-2009 öğretim yılında Denizli ilinde faaliyet gösteren üç adet mesleki ve teknik ortaöğretim kurumunda görev yapan ve ölçme aracına cevap veren 160 teknik öğretmen oluşturmuştur.

2.3. Veri Toplama Aracı

Araştırmada veri toplama aracı olarak anket kullanılmıştır. Anketteki maddelerin oluşturulmasında Taş vd.'nin (2007) çalışmasında kullanılan ankette yararlanılmıştır. Anketin Cronbach Alpha güvenilirlik katsayısı 0.84 olarak hesaplanmıştır. Buna göre, anketin oldukça yüksek bir güvenilirliğe sahip olduğu söylenebilir (Özdamar, 1999).

2.4. Verilerin Analizi

Anketler aracılığı ile toplanan veriler bilgisayara girilmiş ve SPSS (Statistical Package for Social Sciences) 15.0 for Windows ortamında analiz edilmiştir. Analiz sonucu oluşturulan tabloların değerlendirilmesi ardından sonuç ve öneriler yapılmıştır. Araştırmada kullanılan Likert ölçeğinde aralıkların genişliği "dizi genişliği/yapılacak grup sayısı" sayısı formülü ile hesaplanmıştır. Buna göre aralıklar oluşmuş ve sınıflama buna göre yapılmıştır. Aralıkların anlamları "1.00-1.80" kesinlikle katılmıyorum, "1.81-2.60" katılmıyorum, "2.61-3.40" fikrim yok", "3.41-4.20" katılıyorum ve "4.21-5.00" kesinlikle katılıyorum şeklindedir (Tekin, 1993).

3. BULGULAR

3.1. Araştırmaya Katılanlar Hakkında Genel Bilgiler

Araştırmaya katılan teknik öğretmenler hakkında genel bilgiler Tablo 1'de görülmektedir.

Tablo 1. Katılımcılara ilişkin demografik bulgular

| Değişkenler | | Frekans | Yüzde |
|-------------|-------|---------|-------|
| Cinsiyet | Erkek | 151 | 94.4 |
| | Kadın | 9 | 5.6 |
| Toplam | | 160 | 100 |
| Yaş Aralığı | 25-30 | 18 | 11.3 |
| | 31-35 | 42 | 26.3 |
| | 36-40 | 44 | 27.5 |
| | 41-45 | 35 | 21.9 |
| | 46-50 | 21 | 13.1 |
| | 51+ | - | - |
| Toplam | | 160 | 100 |
| Hizmet Yılı | 1-5 | 13 | 8.1 |
| | 6-10 | 31 | 19.4 |
| | 11-15 | 45 | 28.1 |
| | 16-20 | 36 | 22.5 |
| | 21-25 | 27 | 16.9 |
| | 26+ | 8 | 5.0 |
| Toplam | | 160 | 100 |

Araştırmaya katılan teknik öğretmenlerin %94.4'ünün erkek, %5.6'sı ise bayandır. Öğretmenlerin %27.5'i 36-40, %26.3'ü 31-35 ve %21.9'u ise 41-45 yaş aralığındadır. Hizmet yıllarında ise 11-15 yıl aralığında %28.1'i, 16-20 yıl aralığında ise %22.5'i görev yapmaktadır. 1-5 yıl aralığında görev yapanların %8.1 oranında olduğu görülmektedir. son yıllarda Milli Eğitim Bakanlığının (MEB) birkaç branş dışında teknik öğretmen ataması yapmaması nedeniyle oranda düşüklük olduğu belirtilebilir.

Tablo 2. Katılımcıların bilgisayar ve internetle ilgili bulguları

| Değişkenler | | Frekans | Yüzde |
|--|----------------------|---------|-------|
| Görev yapılan okulun teknolojik donanımı | Yeterli | 78 | 48.7 |
| | Yetersiz | 82 | 51.3 |
| Toplam | | 160 | 100 |
| Bilgisayar ile ilgili alınan kurs, seminer, ders etkinliğine katılma | Katıldım | 145 | 90.6 |
| | Katılmadım | 15 | 9.4 |
| Toplam | | 160 | 100 |
| Bilgisayar sahip olma durumu | Var | 149 | 93.1 |
| | Yok | 11 | 6.9 |
| Toplam | | 160 | 100 |
| Evde internet bağlantısı olma durumu | Var | 150 | 93.8 |
| | Yok | 10 | 6.3 |
| Toplam | | 160 | 100 |
| İnternet kullanma sıklığı | Her gün kullanıyorum | 118 | 73.8 |
| | Haftada birkaç kez | 36 | 22.5 |
| | Ayda birkaç kez | 4 | 2.5 |
| | Yılda birkaç kez | 2 | 1.3 |
| | Hiç kullanmıyorum | - | - |
| Toplam | | 160 | 100 |
| İnterneti kullanma süresi | 1 yıl | 9 | 5.6 |
| | 2 yıl | 11 | 6.9 |
| | 3 yıl | 19 | 11.9 |
| | 4 yıl | 23 | 14.4 |
| | 5 yıl+ | 98 | 61.3 |
| Toplam | | 160 | 100 |

Araştırmaya katılan öğretmenlerin %51.3'ü görev yaptıkları okulların teknolojik donanımını yetersiz bulurken, %48.7'si ise yeterli olduğunu düşünmektedir. Katılımcıların %90.6'sı bilgisayar ile ilgili ders, kurs ve seminer şeklinde etkinliklere katıldıklarını ifade etmektedir. Bu sonuçlarda MEB'nin bütün öğretmenleri zorunlu olarak bilgisayar kullanımı konusunda eğitime tabi tutmasının büyük etkisinin olduğu belirtilebilir. Katılımcıların %93.1'nin kendisine ait bilgisayarı vardır. Bilgisayar sahibi öğretmenlerin aynı zamanda evinde internet bağlantısının da olduğu (%93.8) görülmektedir. Öğretmenlerin %73.8'i interneti her gün kullandıklarını, % 22.5'i haftada birkaç kez kullandıklarını belirtmektedirler. Araştırmaya cevap verenlerin tamamına yakınının aktif olarak interneti kullandıkları ifade edilebilir. Öğretmenlerin %75.1'i interneti 4 yıl ve üzerinde süredir kullanmaktadır.

Tablo 3. Teknik öğretmenlerin kullandıkları bilişim teknolojileri

| Bilişim Teknolojileri | Biliyorum Kullanyorum | | Biliyorum Kullanmıyorum | | Bilmiyorum | |
|---|-----------------------|------|-------------------------|------|------------|------|
| | f | % | f | % | f | % |
| Video kamera | 104 | 65 | 38 | 23.8 | 18 | 11.3 |
| Dijital fotoğraf makinesi | 139 | 86.9 | 15 | 9.4 | 6 | 3.8 |
| LCD projektör | 113 | 70.6 | 31 | 19.4 | 16 | 10 |
| Tepegöz | 92 | 57.5 | 59 | 36.9 | 9 | 5.6 |
| Yazıcı | 145 | 90.6 | 11 | 6.9 | 4 | 2.5 |
| E- posta | 142 | 88.8 | 8 | 5 | 10 | 6.3 |
| Bilgisayar simülasyonları | 94 | 58.8 | 28 | 17.5 | 38 | 23.8 |
| Microsoft Office Word gibi yazı yazma programları | 136 | 85 | 12 | 7.5 | 12 | 7.5 |
| Powerpoint gibi sunum programları | 116 | 72.5 | 27 | 16.9 | 17 | 10.6 |
| Microsoft Office Excel gibi hesap /işlem programları | 115 | 71.9 | 25 | 15.6 | 20 | 12.5 |
| Access veri tabanı programları | 34 | 21.3 | 37 | 23.1 | 89 | 55.6 |
| Photoshop ve corel draw gibi fotoğraf ve grafik düzenleme | 42 | 26.3 | 29 | 18.1 | 89 | 55.6 |
| Basic ,C++,norton | 21 | 13.1 | 27 | 16.9 | 112 | 70 |
| Auto Cad –Solid Works gibi bilgisayar programları | 53 | 33.1 | 32 | 20 | 75 | 46.9 |

Tablo 3'de araştırmaya katılan teknik öğretmenlerin kullandıkları bilişim teknolojileri görülmektedir. Buna göre; bilgisayar Office programlarından Word (%92.5), Excel (%87.5) ve Powerpoint (%89.4) oranlarında kullanmayı bilmektedirler. %88.8'i e-postayı aktif olarak kullanmaktadır. Katılımcıların %94.4'ü tepegöz, %97.5'i yazıcı ve %96.3'ü dijital fotoğraf makinesi, %90'ı projektör ve %88.8'i ise video kamera kullanmayı bildiklerini ifade etmişlerdir. Bu teknolojileri aktif kullanım oranının da çok yüksek olduğu görülmektedir. Bilgisayarlarda yazılım, çizim ve grafik programlarını bilme oranı ise ortalama katılımcıların yarısını kapsamaktadır. Access (%55.6), Photoshop ve Corel draw (%55.6), Auto Cad-Solid Works (%46.9) ve Basic-Norton-C++ (%70) programlarını bilmediklerini ifade etmektedirler. Bu programların daha spesifik ilgi ve bilgi alanına girdiğinden sonuçların beklenen düzeyde olduğu belirtilebilir. Teknik öğretmenlerin branşları gereği teknoloji ile daha fazla uğraşmalarına paralel, bilişim teknolojilerini de çok yüksek oranda kullandıkları ifade edilebilir.

Tablo 4. Katılımcıların bilişim teknolojileri kullanımında karşılaştıkları sorunlara ilişkin görüşleri

| Yargılar | Kesinlikle Katılmıyorum | | Katılmıyorum | | Fikrim Yok | | Katılıyorum | | Kesinlikle Katılıyorum | | \bar{X} | S |
|---|-------------------------|------|--------------|------|------------|------|-------------|------|------------------------|------|-----------|------|
| | f | % | f | % | f | % | f | % | f | % | | |
| Teknoloji iyi ama çok pahalıdır. | 9 | 5.6 | 24 | 15 | 9 | 5.6 | 72 | 45 | 46 | 28.8 | 3.76 | 1.18 |
| Yeni teknoloji öğrenmek için zamanım yoktur. | 35 | 21.9 | 57 | 35.6 | 13 | 8.1 | 46 | 28.8 | 9 | 5.6 | 2.60 | 1.26 |
| Bilgisayara bağlı teçhizatlar çok çabuk bozulmaktadır. | 15 | 9.4 | 65 | 40.6 | 20 | 12.5 | 46 | 28.8 | 14 | 8.8 | 2.86 | 1.18 |
| Zaman tüketici/ümit kırıcıdır. | 27 | 16.9 | 59 | 36.9 | 27 | 16.9 | 36 | 22.5 | 11 | 6.9 | 2.65 | 1.19 |
| Çok karışıktır. | 24 | 15 | 71 | 44.4 | 14 | 8.8 | 39 | 24.4 | 12 | 7.5 | 2.65 | 1.21 |
| Virüs ve diğer teknolojik problemler baş ağrıttıcıdır. | 4 | 2.5 | 39 | 24.4 | 14 | 8.8 | 63 | 39.4 | 40 | 25 | 3.60 | 1.17 |
| Yazılım programlarını temin etmek zordur. | 10 | 6.3 | 50 | 31.3 | 22 | 13.8 | 54 | 33.8 | 24 | 15 | 3.20 | 1.21 |
| Hazmetmek için çok fazla bilgi vardır. | 8 | 5 | 31 | 19.4 | 18 | 11.3 | 84 | 52.5 | 19 | 11.9 | 3.46 | 1.08 |
| Makineye çok fazla bağımlı kalmaktadır. | 10 | 6.3 | 28 | 17.5 | 15 | 9.4 | 81 | 50.6 | 26 | 16.3 | 3.53 | 1.14 |
| Öğrenciler çok kayıtsız kalmaktadırlar. | 16 | 10 | 35 | 21.9 | 18 | 11.3 | 61 | 38.1 | 30 | 18.8 | 3.33 | 1.28 |
| Alışkanlık yapmakta ve insanı gerçek ortamdan uzaklaştırmaktadır. | 7 | 4.4 | 27 | 16.9 | 12 | 7.5 | 68 | 42.5 | 46 | 28.8 | 3.74 | 1.17 |
| Öğrencilerinin sosyal yönünün zayıf yetişmesine neden olmaktadır. | 8 | 5 | 21 | 13.1 | 11 | 6.9 | 57 | 35.6 | 63 | 39.4 | 3.91 | 1.19 |

Tablo 4’de teknoloji kullanımıyla ortaya çıkan sorunlara ilişkin yargılara ilişkin teknik öğretmenlerin değerlendirmeleri görülmektedir. Buna göre bilgisayar teknolojilerinin “Öğrencilerinin sosyal yönünün zayıf yetişmesine neden olmaktadır” (%75), “Teknoloji iyi ama çok pahalıdır” (%73.8) ve “Alışkanlık yapmakta ve insanı gerçek ortamdan uzaklaştırmaktadır” (%71.3) yargılarına “katılıyorum ve kesinlikle katılıyorum” düzeyinde cevaplar vermişlerdir. Buna karşılık “Yeni teknoloji öğrenmek için zamanım yoktur” (%67.5), “Çok karışıktır” (%59.4) ve “Zaman tüketici/ümit kırıcıdır” (%53.8) yargılarına “katılmıyorum ve kesinlikle katılmıyorum” seviyesinde cevaplamışlardır. Yargıların ortalamaları incelendiğinde “Öğrencilerinin sosyal yönünün zayıf yetişmesine neden olmaktadır” ($\bar{X}=3.91$), “Teknoloji iyi ama çok pahalıdır” ($\bar{X}=3.76$) ve “Alışkanlık yapmakta ve insanı gerçek ortamdan uzaklaştırmaktadır” ($\bar{X}=3.74$) ortalamaları ile “katılıyorum” aralığında değerlendirdikleri görülmektedir. “Yeni teknoloji öğrenmek için zamanım yoktur” yargısı ise ($\bar{X}=2.60$) ortalama ile “katılmıyorum” aralığında değerlendirmişlerdir.

Tablo 5: Bilişim teknolojileri kullanımının öğretim sürecine etkilerine ilişkin görüşleri

| Yargılar | Kesinlikle Katılmıyorum | | Katılmıyorum | | Fikrim Yok | | Katılıyorum | | Kesinlikle Katılıyorum | | \bar{X} | S |
|--|-------------------------|-----|--------------|------|------------|------|-------------|------|------------------------|------|-----------|------|
| | f | % | f | % | f | % | f | % | f | % | | |
| Öğretim yöntemlerinde çeşitlilik ortaya çıkardı | 7 | 4.4 | 9 | 5.6 | 11 | 6.9 | 97 | 60.6 | 36 | 22.5 | 3.91 | .95 |
| Kaynak kullanımında çeşitliliği artırdı | 2 | 1.3 | 2 | 1.3 | 6 | 3.8 | 106 | 66.3 | 44 | 27.5 | 4.17 | .66 |
| Sınıfta mesleki konuların açıklanmasını kolaylaştırdı | 4 | 2.5 | 3 | 1.9 | 5 | 3.1 | 91 | 56.9 | 57 | 35.6 | 4.21 | .80 |
| Zamanı daha etkili kullanma imkânı sağladı | 4 | 2.5 | 1 | 0.6 | 5 | 3.1 | 91 | 56.9 | 59 | 36.9 | 4.25 | .76 |
| Daha güncel veriye daha hızlı erişimi sağladı | 2 | 1.3 | 3 | 1.9 | 9 | 5.6 | 80 | 50 | 66 | 41.3 | 4.28 | .76 |
| Meslek derslerine ilgiyi artırdı | 4 | 2.5 | 12 | 7.5 | 21 | 13.1 | 82 | 51.3 | 41 | 25.6 | 3.90 | .95 |
| Mesleki eğitimi daha etkin hale getirdi | 3 | 1.9 | 14 | 8.8 | 12 | 7.5 | 88 | 55 | 43 | 26.9 | 3.96 | .93 |
| Dünyayı artık sınıfa taşıyabiliyorum | 3 | 1.9 | 13 | 8.1 | 5 | 3.1 | 91 | 56.9 | 48 | 30 | 4.05 | .90 |
| Öğrenci merkezli eğitime katkı sağladı | 6 | 3.8 | 21 | 13.1 | 13 | 8.1 | 90 | 56.3 | 30 | 18.8 | 3.73 | 1.03 |
| Öğrencilerde yetenek gelişimine katkı sağladı | 6 | 3.8 | 26 | 16.3 | 23 | 14.4 | 82 | 51.3 | 23 | 14.4 | 3.56 | 1.04 |
| Öğrencilerin zor konuları daha rahat öğrenmelerine katkı sağladı | 6 | 3.8 | 14 | 8.8 | 16 | 10 | 93 | 58.1 | 31 | 19.4 | 3.80 | .97 |
| İşlerimi daha | 3 | 1.9 | 8 | 5 | 12 | 7.5 | 95 | 59.4 | 42 | 26.3 | 4.03 | .84 |

| | | | | | | | | | | | | |
|---|---|-----|----|------|----|------|-----|------|----|------|------|------|
| çabuk ve az bir gayretle hazırlayabiliyorum | | | | | | | | | | | | |
| Düşünmeye ayrılan vakti artırdı | 8 | 5 | 26 | 16.3 | 25 | 15.6 | 79 | 49.4 | 22 | 13.8 | 3.50 | 1.07 |
| Yeni teknolojiye erişimi hızlandırdı | 2 | 1.3 | 9 | 5.6 | 10 | 6.3 | 93 | 58.1 | 46 | 28.8 | 4.07 | .82 |
| Ders ve çalışmalarımı daha profesyonelleştirdi | 5 | 3.1 | 11 | 6.9 | 11 | 6.9 | 97 | 60.6 | 36 | 22.5 | 3.92 | .92 |
| Öğretmen teknoloji ile artık daha eğlendirici bir kişi oldu | 6 | 3.8 | 21 | 13.1 | 10 | 6.3 | 96 | 60 | 27 | 16.9 | 3.73 | 1.01 |
| Öğrencilerin hayata hazırlanmasını kolaylaştırdı | 4 | 2.5 | 23 | 14.4 | 25 | 15.6 | 85 | 53.1 | 23 | 14.4 | 3.62 | .98 |
| Daha az kâğıt kullanımı sağladı | 4 | 2.5 | 24 | 15 | 10 | 6.3 | 87 | 54.4 | 35 | 21.9 | 3.78 | 1.03 |
| Daha çok araştırma yapmak için motivasyon sağladı | 3 | 1.9 | 10 | 6.3 | 13 | 8.1 | 105 | 65.6 | 29 | 18.1 | 3.91 | .82 |
| Öğretmenliği daha eğlenceli hale getirdi | 6 | 3.8 | 20 | 12.5 | 13 | 8.1 | 95 | 59.4 | 26 | 16.3 | 3.71 | 1.00 |
| Öğretimde kalite arttı | 6 | 3.8 | 14 | 8.8 | 12 | 7.5 | 91 | 56.9 | 37 | 23.1 | 3.86 | .99 |

Tablo 5’de bilişim teknolojileri kullanımının öğretim sürecine katkılarının belirlenmesine yönelik teknik öğretmenlerin değerlendirmeleri görülmektedir. Bütünsel olarak tablodaki veriler incelendiğinde, bilişim teknolojileri kullanımının öğretimi kolaylaştırıcı, olumlu katkıların fazla olduğu ifade edilebilir. “Daha güncel veriye daha hızlı erişimi sağladı” ($\bar{X}=4.28$), “Zamanı daha etkili kullanma imkânı sağladı” ($\bar{X}=3.74$) ve “Sınıfta mesleki konuların açıklanmasını kolaylaştırdı” ($\bar{X}=3.74$) ortalamaları ile yargılara “kesinlikle katılıyorum” aralığında değerlendirildiği görülmektedir. Diğer yargıların tümüne ise “katılıyorum” aralığında değerlendirilmiştir.

Tablo 6. Teknik öğretmenlerin bilişim teknolojileri kullanımına ilişkin değerlendirmelerinin yaşlarına göre farklılığa ilişkin ANOVA sonuçları

| Sorunlar ve Etkileri | Varyansın Kaynağı | KT | SD | KO | F | P | Fark Tukey-Hsd |
|---------------------------|-------------------|--------|-----|------|-------|-------|----------------|
| Karşılaşılan Sorunlar | Gruplar arası | 1.269 | 4 | .317 | .907 | 0.461 | - |
| | Gruplar içi | 54.185 | 155 | .350 | | | |
| | Toplam | 55.453 | 159 | | | | |
| Öğretim Sürecine Etkileri | Gruplar arası | 1.585 | 4 | .396 | 1.068 | 0.374 | - |
| | Gruplar içi | 57.513 | 155 | .371 | | | |
| | Toplam | 59.097 | 159 | | | | |

Tablo 6’da teknik öğretmenlerin bilişim teknolojileri kullanımına ilişkin değerlendirmelerinin yaşlarına göre farklılığa ilişkin bulgular verilmektedir. Bulgular incelendiğinde; “Bilişim teknolojilerinin kullanımında karşılaşılan sorunlar” [$F(4,155)=0.907$; $p>.05$] ve “Bilişim teknolojileri kullanımının öğretim sürecine etkileri” [$F(4,155)=1.068$; $p>.05$] ne ilişkin yargıların değerlendirilmesinde teknik öğretmenlerin yaş farklılıklarına göre düşüncelerinde anlamlı fark bulunamamıştır. Teknik öğretmenlerin değerlendirmelerinde aynı ya da benzer düşünceler içerisinde oldukları belirtilebilir. Bu durumda yaş değişkeninin bilişim teknolojileri kullanımına ilişkin değerlendirmelerde anlamlı fark oluşturacak düzeyde bir değişken olmadığı ifade edilebilir.

4. SONUÇLAR

Teknik öğretmenlerin bilişim teknolojileri kullanım düzeylerinin ve öğretim sürecine katkılarının belirlenmesini amaçlayan bu çalışmada aşağıdaki sonuçlara ulaşılmıştır:

- Öğretmenlerin yaklaşık yarısı görev yaptıkları okulun teknolojik donanımın yetersiz bulmaktadırlar.
- Öğretmenlerin tamamına yakının bilgisayar ile ilgili ders, kurs ve seminer şeklinde eğitim faaliyetlerine katılmışlardır. Bu sonuca paralel öğretmenlerin %93.1’inin kişisel bilgisayarı vardır.
- Bilgisayar sahibi olan öğretmenlerin tamamının evinde internet bağlantısı mevcuttur.
- Araştırmaya cevap veren öğretmenlerin tamamına yakını interneti aktif olarak kullandıkları ifade edilebilir.
- Bilişim teknolojileri kullanım oranı teknik öğretmenlerde çok yüksek düzeyde çıkmıştır. Mesleki eğitim veren kişiler olarak teknoloji ile bağları güçlü olan öğretmenlerin bilgisayar teknolojilerini yardımcı araç ve gereçleri kullanmayı bilme oranları yüksek çıkmasına paralel, büyük oranda da bunları kullandıkları görülmektedir. Bu durum derslerin izlenmesi ve anlaşılmasında kolaylaştırıcı bir etki ortaya koyduğu düşünülmektedir.
- Bilgisayar teknolojisi kullanımının öğrencilerin sosyal yönden zayıf yetişmesine neden olduğu, teknolojinin pahalı olduğu ve insanda alışkanlık yaparak gerçek ortamdan uzaklaştırdığına ilişkin öğretmenlerin kanaatlerinin yüksek olduğu görülmektedir.
- Öğretmenlerin bilişim teknolojilerini kullanma oranlarının yüksekliğine paralel, teknolojiyi öğrenmek için zaman ayırabileceğini düşünmektedirler.
- Bilgisayar teknolojilerinin kullanımı sonucunda makineye bağımlılığın arttığı belirtilmektedir. Ayrıca öğrenilmesi gereken bilginin de arttığı vurgulanmaktadır.
- Yaş değişkeninin bilişim teknolojileri kullanımına ilişkin değerlendirmelerde anlamlı fark oluşturacak düzeyde bir değişken olmadığı ifade edilebilir.

KAYNAKLAR

- Akın, H. L., Sardağ, A., Tolun, L. ve Atay, N. Z. (1999), “Boğaziçi University Student Information and Registration System (ÖBIKAS)”, *Bilişim* 99.
- Akkoyunlu, B. ve Kurbanoglu, S. (2003), “Öğretmen adaylarının bilgi okuryazarlığı ve bilgisayar öz-yeterlik algıları üzerine bir çalışma”, *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 24, 1-10.
- Bengshir, K. (1996), “Bilgi Teknolojileri ve Örgütsel Değişim”, Türkiye ve Orta Doğu Amme İdaresi Enstitüsü, Ankara, 34.
- Daniels, N.C. (1993), *Information Technology*, Addison Wesley Publication Co., Inc., 36, Boston.
- Erkut H., (1995), *Hizmet Kalitesi, Toplam Kalite Yönetimi Dizisi*, Interbank Yayınları, İstanbul.
- Göker, G. (2007), “Bilişim Teknolojileri Süreli Yayınlarının Reklam Metinlerinde Toplumsal Cinsiyet Örtüntüleri: Bt Haber Örneği” Ankara Üniversitesi Sosyal Bilimler Enstitüsü Kadın Çalışmaları Anabilim Dalı, Yayınlanmamış Yüksek Lisans Tezi, 13, Ankara.
- Grover, V., Fiedler, K. D. and Teng, J. T. C. (1999), “The role of organizational and information technology antecedents in reengineering initiation behaviour”, *Decision Sciences*, 30.
- Güles H. K. (2000), “Bilişim Sistemlerinin Toplam Kalite Yönetimindeki Yeri Ve Önemi”, *Dokuz Eylül Üniversitesi, İktisadi Ve İdari Bilimler Fakültesi Dergisi*, 15, 1, 14.
- Halawi, L.A., McCarthy, R.V. and Aronson, J.E. (2006), “Knowledge Management and the Competitive Strategy of the Firm”, *The Learning Organization*, 13, 4, 384 – 397.
- Huber, G.P. (1985), “Retrospective reports of strategic level managers: Guidelines for accuracy”, *Strategic Management Journal*, 6, 171-180.
- Karahan, M. ve İzci, E. (2001), “Üniversite öğrencilerinin internet kullanım düzeyleri ve beklentilerinin değerlendirilmesi”, *Milli Eğitim Dergisi*, Sayı 150, http://yayim.meb.gov.tr/dergiler/150/karahan_izci.htm (Erişim Tarihi:31.12.2009).
- Karasar, N. (2005), *Bilimsel araştırma yöntemi*, Ankara: Nobel Yayıncılık.
- Kök, S.B. (2006), “Bilişim Teknolojilerinin Yönetimsel ve Örgütsel Etkileri”, *Ticaret ve Turizm Eğitim Fakültesi Dergisi*, 2, 123-140.
- Köksal, A. (1981), *Bilişim Terimleri Sözlüğü*, Türk Dil Kurumu Yayınları, AÜ Basımevi, Ankara,1981.
- Özdamar, K. (1999), “Paket programlar ile istatistiksel veri analizi 1”, *Kaan Kitabevi*, Eskişehir, 275-281.
- Süygün, M.S. (2007), “Çukurova Bölgesinde Faaliyet Gösteren İhracatçı KOBİ’lerin Bilişim Teknolojileri Kullanımlarının Belirlenmesi”, Çukurova Üniversitesi Sosyal Bilimler Enstitüsü, Yayınlanmamış Yüksek Lisans Tezi, 6, Adana.
- Taş, H.İ., Özel, A. ve Demirci, A. (2007), “Coğrafya Öğretmenlerinin Teknolojiye Bakış Açılı ve Teknolojiden Yararlanma Seviyeleri”, *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 19, 31-51.
- Tekin, H. (1993), “Eğitimde ölçme ve değerlendirme” *Yargı Yayınları*, Ankara.
- Yahyagil, M. (2001), “KOBİ’lerde Bilgisayar Teknolojileri Uygulamaları”, İstanbul Ticaret Odası Yayını, Yayın No:2001-26, 6-7.

TEKNOLOJİ ENTEGRASYON MODELLERİ

Zeynel Abidin MISIRLI
Adile Aşkı KURT

Özet:

Bilgi ve iletişim teknolojilerindeki gelişmeler sonucunda ortaya çıkan yenilikler sayesinde bilgiye en kısa yoldan ulaşılabilen ve bilgi aktarımının hızlı bir şekilde gerçekleşmesi sağlanabilmektedir. Bilgisayar, mobil cihazlar, internet gibi teknolojik araçlar günlük yaşamımızın vazgeçilmez bir parçası haline gelmiş ve bu yeni teknolojileri kullanmak bizler için bir lüks olmaktan çıkıp bir zorunluluk haline dönüşmüştür. Bu yenilikleri takip etmek ve bunları günlük hayatın bir parçası haline getirmek çağdaş bir toplum olmada anahtar role sahiptir. Yeni teknolojilerin sınıflara girmesinden çok öğretmen ve öğrencilerin bu teknolojilerin nasıl kullanılacağını bilmesi ve bu teknolojilerin kitap sayfalarını elektronik ortama aktaran araçlar olmaktan çok iletişimi, işbirliğini, üst düzey düşünme becerilerini arttırmada kullanılmaları gerektiği unutulmamalıdır. Bu çalışmada teknoloji entegrasyon modelleri incelenmiş, üstün yanları ve sınırlılıkları karşılaştırılmıştır.

Anahtar Kelimeler: Teknoloji entegrasyonu, teknoloji entegrasyon modelleri, bilgi ve iletişim teknolojileri

TEKNOLOJİ VE ÖĞRENME EĞİLİMLERİ

TECHNOLOGY AND LEARNING TRENDS

Özlem OZAN

Eskişehir Osmangazi Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
ozlemozan@gmail.com

Özet

Eğitim içinde bulunduğu toplumdaki ve toplumsal gelişmelerden bağımsız bir alan değildir, sosyal dönüşümlerden etkilenen karşılıklı bağımlı bir olgudur. 1900'lerin başında moderniteyle birlikte eğitim, elitist, hiyerarşik, ailevi bir kültür aktarımı olmaktan çıkmış endüstrileşerek bir hizmet haline dönüşmüş daha eşitlikçi ve açık hale gelmiştir. Bu noktadan itibaren teknolojiye yaşanan kırılma noktaları bilginin aktarım ortamını dolayısıyla eğitim hizmetlerinin sunuş ve dağıtımına da etkilemiştir, yeni fırsat ve talepler doğrultusunda sürekli yeni kavramlar gündeme gelmiştir. Bu bağlamda sırasıyla uzaktan eğitim (distance education), uzaktan-görsel öğrenme (tele-visual learning), eÖğrenme (electronic learning), mÖğrenme kavramları gündeme gelmiştir, 2. nesil uzaktan-görsel öğrenme ve cihaz, yer ve zamandan bağımsız öğrenme (ubiquitous learning) kavramlarının ise gündeme gelmesi beklenmektedir. Bu bağlamda bu çalışmada teknolojiye bağlı olarak eğitim süreçlerinde ortaya çıkan eğilimler incelenmiştir ve ulusal alan yazına katkı sağlanmaya çalışılmıştır.

Anahtar Kelimeler: Teknoloji, Öğrenme Eğilimleri

Abstract

Together with modernity, education has gone beyond being an elitist, hierarchical and family culture transfer, and became industrialized form of education and turned into a service which is open to everyone. Besides these social changes, medium for data transfer do also change with the developments in communication technologies. Consequently, presentation and delivery of learning change, as well. Within in this context, distance education, t-learning (televsual learning), electronic learning, mobile learning concepts are disappeared consecutively. Moreover t-learning 2nd generation and ubiquitous learning concepts have begun to discussed. In this study characteristics of learning trends and technology, which is trigger them, is presented.

Keywords: Technology, Learning Trends

GİRİŞ

Geçmişten günümüze öğrenme ihtiyacı artarak büyümektedir. Bu bağlamda eğitim ve öğrenme süreçleri de değişim geçirmektedir. Ernest Hemingway ünlü yapıtı 'Çanlar Kimin İçin Çalıyor'un girişinde John Donne'dan bir alıntıya yer vererek "Hiçbir insan bir ada, kendi başına bir bütün değildir: her insan kıta'nın bir parçası, ana toprağın bir bölümüdür." demektedir. İnsanın potansiyelini ortaya çıkartmanın bir aracı olan eğitim de tek başına bir ada içinde bulunduğu toplumdaki ve toplumsal gelişmelerden bağımsız bir alan değildir; nüfus değişimleri, teknolojik gelişmeler, ekonomik iniş-çıkışlar, paradigma değişimleri, sosyal dönüşümlerden etkilenen karşılıklı bağımlı bir olgudur. Bu bağlamda bu çalışmada teknolojiye bağlı olarak eğitim süreçlerinde ortaya çıkan eğilimler ve özellikleri incelenmiştir.

1900'lerin başında modernite ile birlikte eğitim, elitist, hiyerarşik, ailevi bir kültür aktarımı olmaktan çıkmış endüstrileşerek bir hizmet haline dönüşmüş daha eşitlikçi ve herkese açık hale gelmiştir. Uzaktan eğitim de bu sürecin doğal bir parçası olarak hayatımıza girmiştir (Peterson, 2007). 1870'li yıllarda gazete ve mektup aracılığıyla ortaya çıkan uzaktan eğitim, 1920-1950'li yıllarda basılı materyal, radyo, televizyon ve video teknolojilerindeki iyileşmelerle yoğunlaşmış, 90'lı yıllarda söz konusu teknolojilerin sayısallaşmasıyla video ve televizyondan öğrenme diğer bir ifade ile uzaktan-görsel öğrenme (televsual learning) tartışılmıştır. Daha sonra 95'li yıllarda yaşanan internet kırılması ile bilgi toplumunda e-öğrenme gündeme gelmiştir, web-tabanlı eğitimler çoğalmıştır. Günümüzde kablosuz iletişim teknolojilerinin sağladığı imkânlarla mobil öğrenme yükselen bir eğilim olmuştur. Mobil öğrenmenin yanı sıra bant genişliklerindeki artış ve IP üzerinden görüntü aktarımını mümkün kılan teknolojilerle uzaktan-görsel öğrenmenin IPTV açılımı ile yeniden gündeme gelmesi beklenmektedir. Ağ toplumu sürecinde ise WEB OS, yapay zekâ ve nanoteknoloji uygulamalarıyla hali hazırda tartışılmaya bağlanmış olan cihaz, yer ve zamandan bağımsız (ubiquitous) öğrenmenin gündeme geleceği öngörülmektedir.

TEKNOLOJİ VE ÖĞRENME EĞİLİMLERİ

Eğitimde kullanılan en eski ve halen geçerli teknoloji kara tahtadır diyebiliriz. Geleneksel yüz yüze eğitimin halen kullanılan bilgi aktarım aracı olan kara tahta öğrenme ihtiyacının artarak büyümeye başlamasıyla yetersiz kalmıştır. Endüstrileşme ve sonrasında bilgi toplumuna dönüşüm süreciyle birlikte dünya üzerindeki hemen her toplum bu hızlı değişime ayak uydurmak durumunda kalmış, değişen toplumsal ve ekonomik ihtiyaçlara göre yeni eğitim modelleri arayışına girmiştir (Girginer, 2001). Uzaktan eğitim, bu arayışlar sonucunda ortaya çıkmış bir yaklaşımdır. Tarihsel olarak, uzaktan eğitim, geleneksel eğitim sisteminin erişemediği uzak yerlerde yaşayan yetişkin öğrencilerin öğretim sistemi içine girmesini sağlamak için kullanılmıştır (Hawkins, 1999). Kavram olarak 1700'lü yıllara dayanmakta ve mektupla öğretim uygulamalarıyla başlamaktadır. Uzaktan eğitim uygulamalarında kullanılan ilk araçlar mektup, gazete ve kitaplardır. Örneğin, ilk uzaktan eğitim çalışması 1728'de Boston Gazetesinde "Steno Dersleri" ile başlamıştır (Kaya, 2002). Uzaktan eğitim kavramının oluşum sürecine katkı sağlayan ilkleri Tablo 1'deki gibi listeleyebiliriz.

Tablo 1: Dünyada mektupla yapılan ilk eğitim uygulamalarından bazıları.

| Yıl | Olay |
|------|---|
| 1728 | İlk Uzaktan eğitim çalışması Boston gazetesinde "Steno Dersleri" ile başlamıştır (Kaya, 2002). |
| 1833 | İsveç Üniversitesinde hanımlara "Mektupla Kompozisyon Dersleri" verilmiştir (Kaya, 2002). |
| 1856 | Almanya Berlin'de Toussaint ve Langescheidt dil öğretimi için mektup kullanmaya başlamıştır. (Watkins & Wright, 1991). |
| 1877 | Illinois Wesleyan Üniversitesi yetişkinler için ilk planlı mektupla eğitimi başlatmıştır (Watkins & Wright, 1991). |
| 1892 | Chicago Üniversitesinde ilk Mektupla Eğitim bölümü açılmıştır (Kaya, 2002) . |
| 1898 | İsveç'te ilk uzaktan eğitim ders kitabı "Book Keeping by Single and Double Entry" basılmıştır (İşman, 2005). |
| 1906 | Yazışmalı İlköğretim ABD'de başlamıştır (Kaya, 2002). |
| 1907 | Fransa Paris'te Ecole Üniversitesinde yazışmalı uzaktan eğitim birimi kurulmuştur (İşman, 2005). Baltimore Maryland'da Calvert İlköğretim Okulu ilköğretim öğrencilerine evde mektupla eğitim imkanı sunmuştur (Ossian & Christensen, 1971). |
| 1910 | Londra Metropolitan Yüksek Okulunda yazışmalı uzaktan eğitim birimi kurulmuştur (İşman, 2005). |
| 1913 | California Üniversitesi yazışmalı uzaktan eğitim programı açılmıştır (İşman, 2005). |
| 1914 | Norveç'te ilk yazışmalı uzaktan eğitim kurumu kurulmuştur (İşman, 2005). Avustralya yazışmalı uzaktan eğitim sistemi kurulmuştur (İşman, 2005). |
| 1922 | Yeni Zelanda Mektupla Öğretim Okulu kurulmuştur (Kaya, 2002). |
| 1923 | ABD'de Mektupla Lise Eğitimi başlamıştır (Kaya, 2002). |

1920-1950'li yıllarda basılı materyal, radyo, televizyon ve video teknolojilerindeki iyileşmelerle uzaktan eğitimdeki çalışmalar yoğunlaşmıştır. Radyo ve televizyon sistemleri üzerinden eğitim uygulamaları hız kazanmıştır. Tablo 2'de Dünyada radyo ve televizyon ile yapılan ilk eğitim uygulamalarından bazıları verilmiştir. Bu dönemdeki öğrenmeye ilişkin yaygın kavramlar evde eğitim (home schooling) ve bağımsız çalışmadır (independent study). 1960'larda uzaktan eğitim üniversitelerinin kurulması ile açık eğitim kavramı gündeme gelmiştir. Alkan'a (1981) göre buradaki açıklık kavramı informal sınıf düzenlemesi ya da "duvarsız okul" olmaktan çok toplumda bireylerin ne öğreneceği, ne zaman öğreneceği ve nasıl öğreneceğine kendi kendilerine karar verdikleri "açık toplum" görüşünden kaynaklanmaktadır. Öğrenme de "açıklık" kavramı ile birlikte öğrenenlerin kendi çalışma programlarını kendilerinin düzenleyebilmeleri, kendi öğrenme hızlarına göre programı düzenleyebilmeleri, imkân ve fırsat eşitliği bağlamında eğitimin herkese açık olması gündeme gelmiştir.

Tablo 2: Dünyada radyo ve televizyon ile yapılan ilk eğitim uygulamalarından bazıları.

| Yıl | Olay |
|---------|---|
| 1919 | ABD'de ilk eğitim ile ilgili radyo istasyonu kurulmuştur (Kaya, 2002). |
| 1920 | ABD'de 176 tane eğitim amaçlı radyo istasyonu kurulmuştur (Kaya, 2002). İngiltere Milli Eğitim Bakanlığı eğitim kurumlarını radyo dersleri ile desteklemeye başlamıştır (İşman, 2005). |
| 1929 | Çin radyoyu uzaktan eğitim sistemini desteklemek için kullanmaya başlamıştır (İşman, 2005). |
| 1932-37 | ABD'de eğitim televizyonu yayınları IOWA ve Kansan Eyalet Üniversitesinde başlamıştır (Kaya, 2002). |
| 1941 | Türkiye'de İlk eğitsel yayın olarak kırsal kesime yönelik TRT'de Ziraat Takvimi Programı yapılmıştır (İşman, 2005). |
| 1947 | Kolombiya hükümeti radyoyu kendi uzaktan eğitim sisteminde kullanmaya başlamıştır. (İşman, 2005). |
| 1949 | Hindistan hükümeti radyoyu kendi uzaktan eğitim sisteminde kullanmaya başlamıştır (İşman, 2005). |
| 1950 | Michigan Üniversitesi eğitim televizyonu yayınlarına başlamıştır (İşman, 2005). Macaristan, televizyonu kendi uzaktan eğitim sistemi içinde kullanmıştır (İşman, 2005). |
| 1951 | Japonya'da Nippon Hoso Kyokai (NHK) uzaktan eğitim içinde ortaöğretim öğrencilerine yerel olarak radyodan ders yayınına başlamıştır (Mackenzie & Christensen, 1971). |
| 1952 | Türkiye'de İstanbul yapımı tarım ve hayvancılık konulu uzaktan eğitim radyo programları yayınlanmaya başlanmıştır (İşman, 2005). |
| 1956 | ABD'de televizyon kolejlere ile projeli yayınlar başlamıştır (Kaya, 2002) . |
| 1957 | New York Üniversitesi, CBS televizyonu şirketi ile anlaşarak bazı uzaktan eğitim programları tasarlamıştır (İşman, 2005). |
| 1958 | İtalya'da Tele-okul projesi hayata geçmiştir (Kaya, 2002). |
| 1960 | Türkiye'de Milli Eğitim Bakanlığı, İstatistik ve Yayın Müdürlüğü bünyesinde Mektupla Uzaktan Öğretim Merkezi kurulmuştur (Özdil, 1986) . |
| 1961 | Japonya'da televizyon, uzaktan eğitim sisteminin üniversite düzeyinde kullanılmıştır (İşman, 2005). |
| 1966 | Fransız Milli Eğitim Bakanlığı belli bazı dersleri farklı bölgelerde yaşayan öğrencilere televizyonla aktarmıştır (İşman, 2005). |
| 1968 | TRT Stüdyolarında on beş günde bir yayınlanan on beşer dakikalık ilk eğitim programları yayınları başlamıştır (İşman, 2005). |
| 1970 | Wisconsin Üniversitesi sesli konferans uygulamasını gerçekleştirmiştir. |
| 1979 | Çin'de "China TV University System" kurulmuştur (Moore & Kearsley, 2005) . |
| 1980 | Kanada, kendi uzaktan eğitim programlarını desteklemek için televizyon yayınlarını kullanmıştır (İşman, 2005). |

| | |
|------|--|
| 1985 | New York Empire Eyalet Koleji, Kuzey Doğu London Polytechnic Üniversitesi ve Batı Avustralya Murdoc Üniversitesi kendi aralarında telekonferans temelli olarak uzaktan eğitim dersleri organize etmişlerdir. Amerika'da 200 televizyon programı ve haftada 27 saat yayın ile uzaktan eğitim dersleri yayını yapmışlardır (İşman, 2005) |
| 1993 | Hindistan Gandhi Ulusal Açık Üniversitesi radyo konferans sistemini kurdu. Hindistanda bulunan beş eyaletin uzaktan eğitim üniversiteleri ve 16 coğrafik bölge merkezi kendi arasında bağlandı (İşman, 2005). |

1990'lı yılların başında televizyon ve video teknolojilerin sayısallaşmasıyla video ve televizyondan öğrenme diğer bir ifade ile uzaktan-görsel öğrenme (televsual learning) tartışılmıştır. Bu çalışmada "Televsual learning" kavramının Türkçe karşılığı olarak Uzaktan Görsel Öğrenme kullanılmıştır. Televsual learning, TV-based learning olarak da alanyazında yer almaktadır ve televizyondan veya videokasetlerden öğrenme anlamında kullanılmaktadır. 1990'lı yılların başında televizyon teknolojilerinin sayısallaşması ve televizyon üzerinden etkileşim imkânının doğması ile gündeme gelmiştir. Temel vurgusu televizyon üzerinden geleneksel eğitimin ulaştığından daha fazla insana ulaşma potansiyeline sahip olmasıdır ve görsel bir eğitim sunmasıdır diyebiliriz.

Radyo ve televizyondan öğretim uygulamaları, bu teknolojilerin ortaya çıkışından bilgisayarlar ve internetin yaygınlaşmasına kadar olan süreçte devam etmiştir. İnternetle gelen etkileşim imkânı web-tabanlı sistemleri ihtiyaca daha kolay cevap verebilir hale getirdiğinden televizyon ve video'dan öğrenme yerini görece olarak elektronik öğrenmeye bırakmıştır. Bilgisayarların hayatımıza girmesiyle birlikte bilgisayar ortamı iletişim (computer mediated communication) kavramı, ardından bu ortamlarda bireylerin sosyal bulunuşluğu (social presence), öğrenme toplulukları (learning community), toplulukların öğrenmesi (community learning) ve bilginin sosyal ağlarda inşası kavramları gündeme gelmiştir. Sanal sınıflar, sanal gerçeklik uygulamaları, web konferans, eşzamanlı ve eşzamansız tartışma grupları, blog, viki gibi Web 2.0 uygulamaları ile öğrenenlerin içerik oluşturma süreçlerinde aktif olması ile bu dönemde öğrenmenin sosyal ve etkileşimli boyutuna olan vurgu artmıştır. Ayrıca öğrenin öğrenme sürecini kendi hızına göre ayarlaması görece olarak daha kolaylaşmıştır. Dünyada bilgisayar ve internetin eğitim sürecinde yer aldığı ilk uygulamalarından bazıları kırılma noktalarının yaklaşık olarak hangi yıllarda başladığını gösterebilmek adına Tablo 3'de verilmiştir.

Tablo 3: Dünyada bilgisayar ve internetin eğitim sürecinde yer aldığı ilk uygulamalarından bazıları.

| Yıl | Olay |
|------|---|
| 1955 | IBM'in ilk ticari bilgisayarı satıldı (Murdock, 2004). |
| 1960 | Illinois Üniversitesi tarafından PLATO (Programmed Logic for Automatic Teaching Operations) isimli ilk bilgisayar destekli öğretim programı geliştirilmiştir (Culatta, 2010). |
| 1965 | ABD'de Birinci ve İkinci Kademe Eğitim Hareketi (Elementary and Secondary Education Act) bazı okullara mini-bilgisayarlar yerleştirdi (Murdock, 2004). |
| 1975 | Apple bazı okullara kişisel bilgisayar (PC) bağışladı (Murdock, 2004). |
| 1976 | Sosyal Bulunuşluk (Social Presence) kavramı alan yazına yer aldı (Short, Williams, & Christie, 1976) |
| 1977 | İlk zengin ortam (hypermedia) ve sanal gerçeklik (virtual reality) uygulamaları MIT tarafından gerçekleştirildi (Wikipedia, 2010a). |
| 1979 | USENET kullanılmaya başlanmıştır (Culatta, 2010). |
| 1980 | ABD'deki yüksek öğretim kurumlarında öğrenme toplulukları (learning communities) kavramları popülerlik kazanmaya başlamıştır (Wikipedia, 2010). |
| 1982 | Yetişkin öğrenenler için Computer Assisted Learning Center (CALC) isimli çevrimdışı çalışan bilgisayar destekli öğretim merkezi kurulmuştur (Culatta, 2010). |
| 1990 | Multimedia Bilgisayarlar geliştirildi (Murdock, 2004). |
| 1992 | Michigan State Üniversitesi fizik derslerinde kullanılmak üzere CAPA (Computer Assisted Personalized Approach) sistemini geliştirdi (Culatta, 2010). |
| 1994 | Computer-Mediated Communication Dergisinin ilk sayısı yayımlandı (December, 2010). |
| 1995 | The Internet ve world wide web kullanılmaya başlandı (Murdock, 2004). |
| 1997 | WebCT 1.0 öğrenme yönetim sistemi piyasaya sürüldü (Culatta, 2010). |
| 2001 | Moodle öğrenme yönetim sistemi piyasaya sürüldü (Culatta, 2010). |
| 2004 | Web 2.0 gündeme geldi (Wikipedia, 2010b). |

Teknoloji ile yaşanan değişime paralel olarak bilgi ve iletişim teknolojilerinin yakınsamasıyla internet temelli, etkileşimli ve genişletilmiş televizyon deneyimi olan IPTV bizleri bildiğimiz TV deneyiminin ötesinde aktif birer izleyici haline getirmektedir (Özarslan, 2010). Televizyon hizmetinin IP üzerinden ağ alt yapısını kullanarak verilmesi, internet ile ortaya çıkan sosyal, etkileşimli ve informal öğrenme imkânlarını televizyonun görsel gücü ile birleştirmektedir. Bu bağlamda uzaktan görsel öğrenmenin etkileşimli ve zengin bir içerikle yeniden gündeme gelmesi beklenmektedir.

Mobil teknolojilerin eğitim ve öğrenme süreçlerinde "erişilebilirlik" ve "yeni bir öğrenme biçimi" olmak üzere iki temel çıktısından söz etmek mümkündür (Valk, Rashid, & Eld, 2010). *Erişilebilirlik* kavramı, hem 21. yüzyılın bilgiye her an her yerden ulaşma ihtiyacı, hem de kırsal gibi dezavantajlı bölgelere bilgiyi ulaştırabilme imkânı olarak ele alınabilir. "Yeni bir öğrenme biçimi" ise öğrenenlerin sürekli internete bağlı olabilmesi böylelikle öğrenme materyallerine her an her yerden kolaylıkla ulaşabilmeleri, yanlarında taşıyabilmeleri ile ilintilidir. Bu imkân, bireylere ihtiyacı olduğu anda, ihtiyaç duyduğu kadarını ve kendi istediği şekilde öğrenme fırsatını sunmaktadır. Dolayısıyla öğrenme süreçlerinde öğrenen kontrolü ve öğrenmenin ağ ortamında gerçekleşmesinden dolayı informal öğrenme artmaktadır. Ayrıca mobil teknolojilerin kişiselleştirmeye olanak tanınması, öğrenme ortamlarının kişiselleştirilebilmesini de kolaylaştırmaktadır. Bu bağlamda mobil öğrenme ortamları, hem kişiselleştirmeye, hem bireysel çalışmaya hem de işbirliğine açık olduğundan uzun vadede tam anlamıyla öğrenen merkezli olma potansiyelini taşımaktadır.

Tablo 4: Mobil öğrenme sürecine ilişkin ilklerden bazıları.

| Yıl | Olay |
|------|---|
| 1972 | Dynabook isimli kitap boyutunda ilk bilgisayar üretildi (Wikipedia, 2010c). |
| 1991 | Günümüzdeki anlamıyla ilk sayısal kablosuz telefon Finlandiya'da piyasaya sürüldü (Wikipedi, 2010c). |
| 1992 | Personal digital assistant (PDA) kavramı ilk olarak Apple tarafından kullanıldı (Wikipedia, 2010d). |
| 1996 | Nokia PDA özelliği taşıyan ilk cep telefonunu piyasaya sürdü (Wikipedia, 2010d). |
| 2001 | Tablet PC kavramı Microsoft tarafından popüler hale getirildi (Wikipedia, 2010e). |
| 2001 | İlk ticari 3G dolayısıyla geniş bant mobil internet uygulaması Japonya'da satışa çıktı (Wikipedi, 2010c). |
| 2007 | Apple tarafından çokluortam ve internet özelliğine sahip iPhone piyasaya sürüldü. |
| 2008 | MoLeaP Mobil öğrenme projeleri veri tabanı kuruldu. http://www.moleap.net |

Mobil öğrenmenin bir sonraki aşaması olarak cihaz yer ve zamandan bağımsız öğrenme (ubiquitous learning) uygulamaları şimdiden tartışılmaya başlanmıştır. Cihaz, yer ve zamandan bağımsız öğrenmenin, bilgisayarların yapay zekâ uygulamalarıyla akıllı hale gelmesi ve nanoteknolojiyle küçülerek eşyalarla bütünleşmesi sonucunda tetikleneceğini söylemek mümkündür. Anlamsal Ağ (Semantic Web) ve Web OS ile cihazların üzerine program kurmadan ağdan çalışabilmesi giyilebilir bilgisayarlar veya akıllı evler gibi günlük etkinliklerle bütünleşik olması temel özelliği olacaktır. Genişletilmiş gerçeklik (augmented reality) uygulamaları ise fiziksel dünyanın gerçekliğinin sayısal ortamda da yaşanmasına imkân sunacaktır.

SONUÇ VE DEĞERLENDİRME

Bilgi aktarım teknolojileri bakımından öğrenme süreçleri incelendiğinde Tablo 5'de gösterildiği üzere yüz yüze eğitimi izleyen 7 temel kırılma karşımıza çıkmaktadır. Her bir teknoloji ile yeni kavramlar gündeme gelmiştir.

Tablo 5: Öğrenme Eğilimlerinin Özellikleri

| Öğrenme Eğilimleri | Bilgi Aktarım Teknolojisi | Ortaya Çıkış Dönemi İtibarıyla Barındırdığı Öğrenme Özelliği |
|---|---|--|
| Yüz Yüze Öğrenme | Kara tahta, tebeşir | Eş zamanlı, sınıfta, etkileşimli, öğrenen kontrolü düşük |
| Uzaktan Öğrenme | Mektup ve gazete Basılı Materyaller Radyo | Zaman ve yerden bağımsız, bireysel çalışma (independet study) açık, esnek, öğrenen kontrolü düşük |
| Uzaktan Görsel Öğrenme | Video, Televizyon | Yerden bağımsız, eş zamansız, görsel, bireysel, açık, esnek, öğrenen kontrolü düşük |
| Elektronik Öğrenme | Bilgisayar, İnternet ve ağ teknolojileri | Zaman ve yerden bağımsız, etkileşimli, çokluortam, sosyal, açık esnek, öğrenen kontrolü yüksek |
| Mobil Öğrenme | Kablosuz Teknolojiler | Her an her yerden, etkileşimli, sosyal, açık esnek, öğrenen kontrolü yüksek, kişiselleştirilebilir |
| Uzaktan Görsel Öğrenme (2. Nesil) | IPTV, Web TV, Mobil TV | Zaman ve yerden bağımsız, etkileşimli, zengin görsel, sosyal, açık esnek, öğrenen kontrolü yüksek, kişiselleştirilebilir |
| Cihaz, yer ve zamandan bağımsız (ubiquitous) öğrenme | Herhangi bir cihaz. | Araç ve platform bağımsız, her an her yerden, herhangi bir cihazla, zengin görsel, etkileşimli, kişiselleştirilebilir, günlük etkinliklerle bütünleşik |

KAYNAKÇA

- Alkan, C. (1981). Açık Üniversite. Ankara Üniversitesi Eğitim Fakültesi Dergisi , 1 (2), 339-352.
- Culatta, R. (2010). Innovative Learning. 03 26, 2010 tarihinde Online Learning Timeline: http://www.innovativelearning.com/online_learning/timeline.html adresinden alındı
- December, J. (2010, 03 31). December Communications, Inc. 04 02, 2010 tarihinde Computer-Mediated Communication Magazine: <http://www.december.com/cmc/mag/> adresinden alındı
- Girginer, N. (2001). Uzaktan Eğitim Kararlarında Teknoloji, Maliyet, Etkinlik Boyutları ve Uzaktan Eğitime Geçiş İçin Kavramsal Bir Model Yayımlanmış Doktora Tezi . Eskişehir, Türkiye: Anadolu Üniversitesi Sosyal Bilimler Enstitüsü.
- Hawkins, B. L. (1999). Distributed learning and institutional restructuring . Educom Review , 34 (4) .
- Holmberg, B. (1986). Growth and Structure of Distance Education. London: Croom Helm.
- İşman, A. (2005). Uzaktan Eğitim. Ankara: Pegem A Yayıncılık.
- Kaya, Z. (2002). Uzaktan Eğitim. Ankara, Türkiye: Pegem A Yayıncılık.
- Keegan, D. (1986). The Foundations of Distance Education. London: Croom Helm.
- Mackenzie, O., & Christensen, E. L. (1971). The Changing Word of Correspondence Study. London, UK: The Pennsylvania State University Press.
- Moore, M., & Kearsley, G. (2005). Distance Education: A System View. Canada: Wadsworth.
- Murdock, E. (2004). History, the History of Computers, and the History of Computers in Education. 04 01, 2010 tarihinde Everett Murdock, Emeritus Professor Department of Educational Psychology, Administration, and Counseling : <http://www.csulb.edu/~murdock/histofcs.html> adresinden alındı
- Ossian, M., & Christensen, E. (1971). The Chaning World of Correspondence Study: International Readings. Unversity Park,PA: Pennsylvania State Press.
- Özarslan, Y. (2010). Kişiselleştirilmiş Öğrenme Ortamı Olarak IPTV. International Educational Technology Conference. İstanbul.
- Özdil, İ. (1986). Uzaktan Öğretimin Evrensel Çerçevesi ve Türk Eğitim sisteminde Uzaktan Öğretim Yeri. Ankara: Anadolu Üniversitesi Yayınları.
- Peters, O. (2007). Handbook of Distance Education. M. G. Moore içinde, The Most Industrialized Form of Education. (s. 57-68). NJ: Lawrence Erlbaum Associates.
- Short, J. A., Williams, E., & Christie, B. (1976). The social psychology of telecommunications. New York: John Wiley & Sons.
- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2003). Teaching an Learning at a Distance. Ohio: Columbus.
- Smart, J. E. (1987). A Short Story of the Early Years of Study by Correspondence . Rocheport,MO: Smartco.
- The International Encyclopedia of Education. (1993). USA: Washington Action Corp.
- Valk, J. H., Rashid, A. T., & Eld, L. (2010). Using Mobile Phones to Improve Educational Outcomes: An Analysis of Evidence from Asia. The International Review of Research in Open and Distance Learning, Vol 11, No 1 (2010) , 11 (1).
- Watkins, B. L., & Wright, S. J. (1991). The Foundations of American Distance Education: A Century of Collegiate Corresspondence Study. Dubuque, IA: Kendall/Hunt.
- Wikipedi. (2010c). Mobile phone. 04 02, 2010 tarihinde Wikipedi: http://en.wikipedia.org/wiki/Cell_phone adresinden alındı
- Wikipedia. (2010, 03). IPTV. 03 25, 2010 tarihinde Wikipedia: <http://en.wikipedia.org/wiki/IPTV#History> adresinden alındı
- Wikipedia. (2010). Learning community. 04 02, 2010 tarihinde Wikipedia: http://en.wikipedia.org/wiki/Learning_community adresinden alındı
- Wikipedia. (2010e). Tablet PC. 04 02, 2010 tarihinde Wikipedia: http://en.wikipedia.org/wiki/Tablet_PC adresinden alındı
- Wikipedia. (2010a). Virtual reality. 04 02, 2010 tarihinde Wikipedia: http://en.wikipedia.org/wiki/Virtual_reality#Timeline adresinden alındı
- Wikipedia. (2010b). Web 2.0 Summit. 04 02, 2010 tarihinde Wikipedia: http://en.wikipedia.org/wiki/Web_2.0_Summit adresinden alındı
- Wikipedia. (2010c). Wikipedia. 04 02, 2010 tarihinde Dynabook: <http://en.wikipedia.org/wiki/Dynabook> adresinden alındı
- Wikipedia. (2010d). Wikipedia. 04 02, 2010 tarihinde Personal digital assistant: http://en.wikipedia.org/wiki/Personal_digital_assistant adresinden alındı
- Yates, J. B. (2003). Interactyive Distance Learning in PreK-12 Settings: A Handbook of Possibilities. Connecticut: Greenwood Publishing Group.

TEKNOLOJİK PEDAGOJİK İÇERİK BİLGİSİ MODELİNE GÖRE BİT'İN ÖĞRENME-ÖĞRETME SÜRECİNE ENTEGRASYONU İLE İLGİLİ ÖLÇEK GELİŞTİRME ÇALIŞMASI

A SCALE DEVELOPMENT STUDY OF INTEGRATION OF ICT INTO LEARNING AND TEACHING PROCESS ACCORDING TO TPACK

Filiz KUŞKAYA MUMCU, Yasemin KOÇAK USLU
 Hacettepe Üniversitesi, Eğitim Fakültesi
 Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
 Beytepe, Ankara/TÜRKİYE
mumcu@hacettepe.edu.tr; kocak@hacettepe.edu.tr

Özet

Bu çalışmanın amacı, öğretmenlerin bilgi ve iletişim teknolojilerini öğrenme-öğretme sürecine entegrasyonu ile ilgili teknolojik pedagojik içerik bilgisi (TPİB) modeli çerçevesinde bir ölçme aracı geliştirmektir. Bu amaçla Ankara İli Çankaya İlçe merkezindeki 21 ilköğretim okulunda görev yapmakta olan 327 öğretmene araç uygulanmıştır. Ölçeğin geçerlilik çalışmaları için doğrulayıcı faktör analizi yapılmıştır. Analiz sonucu elde edilen uyum indeksi değerleri modelin iyi uyum gösterdiğini ortaya koymuştur. Buna göre teknolojik bilgi, teknolojik içerik bilgisi, teknolojik pedagojik bilgi ve teknolojik pedagojik içerik bilgisi olmak üzere toplam dört bölüm ve 15 maddeden oluşan ölçeğin, maddelerinin içeriklerine göre; 4 madde teknoloji bilgisi, 4 madde teknolojik içerik bilgisi, 4 madde teknolojik pedagojik bilgi ve 3 madde teknolojik pedagojik içerik bilgisi olarak belirlenmiştir. Güvenirlik çalışması için ölçeğin güvenirlilik katsayısı hesaplanmıştır. Yapılan hesaplamalar sonucunda ölçeğin güvenirlilik katsayısı .96 olarak bulunmuştur. Faktör puanları bazında güvenirlilik katsayıları ise; teknolojik bilgi için $\alpha=0.86$, teknolojik içerik bilgisi için $\alpha=0.85$, teknolojik pedagojik bilgi için $\alpha=0.93$, teknolojik pedagojik içerik bilgisi için $\alpha=0.91$ olarak bulunmuştur.

Anahtar kelimeler: BİT'in öğrenme-öğretme sürecine entegrasyonu, teknolojik pedagojik içerik bilgisi modeli, tpib, ölçek geliştirme, doğrulayıcı faktör analizi

Abstract

This study aims to develop a scale about integration of information and communication technologies (ICT) into learning and teaching process under technological pedagogical content knowledge (TPACK) model. For this aim, a scale was developed by researchers and applied to 327 teachers from 21 primary schools in Ankara, capital of Turkey. In order to find out validity and reliability of the scale, confirmatory factor analysis and Cronbach Alpha coefficient were used. Confirmatory factor analysis revealed that TPACK scale consists of 15 items and four sections, and the scale is at an acceptable degree of goodness of fit. As a result of analysis according to TPACK model 4 items were identified as technological knowledge; 4 items were identified as technological content knowledge; 4 items were identified as technological pedagogical knowledge; and 3 items were identified as technological pedagogical content knowledge. Cronbach's α coefficient of reliability in the analysis was examined and found to be .96. On the basis of factor scores, Cronbach's α coefficients are .86 for technological knowledge, .85 for technological content knowledge, .93 for technological pedagogical knowledge and .91 for technological pedagogical content knowledge.

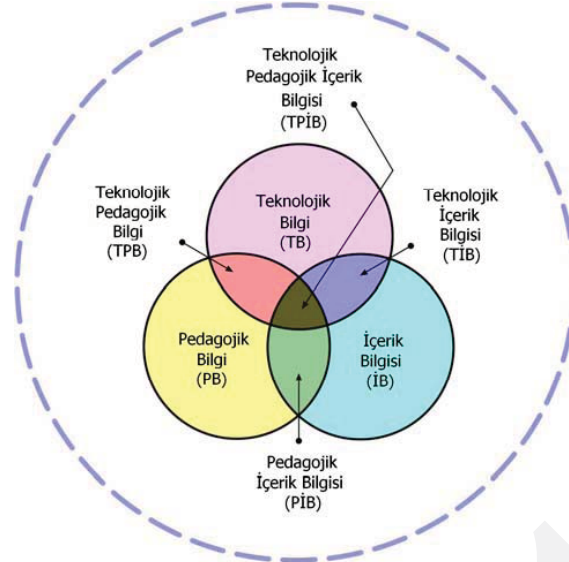
Keywords: Integration of ICT into learning-teaching process, technological pedagogical content knowledge model, tpack, scale development, confirmatory factor analysis

GİRİŞ

Bilgi ve İletişim Teknolojilerinin (BİT) öğrenme-öğretme sürecine entegrasyonu, hem çağın gereksinimlerine uygun olarak öğrencilerin beklenti ve gereksinimlerini karşılayabilmek, hem de bu teknolojilerin öğrenme açısından önemli bir araç haline gelmesi nedeniyle giderek daha fazla önem kazanmaktadır (Angeli ve Valanides, 2009; Gill ve Dalgarno, 2008). Son yıllarda BİT entegrasyonu ile ilgili yapılan araştırmalarda, BİT'in öğrenme-öğretme sürecine entegrasyonundan sadece derslerde BİT'in kullanılmasının anlaşılması, önemli olanın BİT'in etkili olarak sınıf içerisinde konu bağlamında uygun öğrenme-öğretme yöntemleriyle bütünleşmesi olduğu vurgulanmaktadır (Mishra and Koehler, 2006). Ancak birçok kalıba giren, değişen, anlaşılması güç yeni sayısal teknolojiler öğretimlerinde teknoloji kullanmakla uğraşan öğretmenler için yeni zorlukları beraberinde getirmektedir (Koehler and Mishra, 2009). Bu doğrultuda Teknolojik Pedagojik İçerik Bilgisi (TPİB) modelinin, öğretmenlerin teknolojiyi öğrenme-öğretme sürecine entegre etmeleri için gerekli bilginin özelleştirilmiş, çok yönlü biçimlerini anlamak için geçerli bir yapı sunduğu ileri sürülebilir.

Teknolojik Pedagojik İçerik Bilgisi (TPİB) Modeli

Başarılı bir teknoloji entegrasyonu gerçekleştirebilmek için öğretmenlerin teknolojik, pedagojik ve içerik bilgileri arasındaki bağlantıları kurabilmede TPİB anlayışlarının önemli olduğu vurgulanmaktadır (Shin, Koehler, Mishra, Schmidt, Baran, and Thompson, 2009). Shulman'ın geliştirdiği pedagojik içerik bilgisi yapısına teknoloji bilgisini ekleyerek geliştirilen bu model, öğretmenlerin teknolojiyi öğrenme-öğretme süreçlerine nasıl entegre edebileceklerine ilişkin teknolojik, pedagojik ve içerik bilgisi adı verilen bir yapı tanımlamaktır (Şekil 1). Bu yapının öğeleri aşağıda kısaca özetlenmiştir (Archambault ve Crippen, 2009; Harris, Mishra ve Koehler, 2009; Koehler ve Mishra, 2009; Koehler ve Mishra, 2008; Mishra ve Koehler, 2008; Mishra ve Koehler, 2006).



Şekil 1. Teknolojik Pedagojik İçerik Bilgisi Modeli (Koehler and Mishra, 2009)

İçerik bilgisi, öğrenilecek veya öğretilecek konu alanı hakkındaki bilgidir. Bu bilgi farklı sınıf seviyeleri için değişmekte ve içerisinde kavramların, kuramların, fikirlerin, kurumsal yapıların, kanıtların yanı sıra bu bilginin gelişimindeki uygulamaların ve yaklaşımların bilgisini de barındırmaktadır.

Pedagojik bilgi, öğrenme ve öğretme yöntemleri, süreçleri ve uygulamaları hakkındaki bilgidir. Bütün eğitimsel niyetleri, değerleri ve amaçları içinde barındırır. Bilginin bu genel biçimi öğrenciler nasıl öğrenir, genel sınıf yönetim becerileri, ders planlama ve öğrenci değerlendirme anlayışına uygulanır. Sınıf içerisinde kullanılan teknik veya yöntemler, hedef kitlenin doğası, öğrenci öğrenmesini değerlendirme stratejileri hakkındaki bilgiyi içerir.

Pedagojik içerik bilgisi, konu alanı bilgisinin öğretim etkinliklerine dönüştürülmesidir. Bu dönüşüm özellikle öğretmen tarafından konu alanının yorumladığında, bunu göstermek için farklı yollar bulduğunda ve öğretimsel materyalleri alternatif kavramlara ve öğrencilerin var olan bilgilerine uyarladığında ve önceki bilgileri ile ilişkilendirdiğinde meydana gelir.

Teknolojik bilgi, TPİB yapısındaki diğer iki çekirdek bilgi alanından daha fazla ve sürekli bir değişkenlik içerisindedir. Bu yüzden, bu bilgiyi tanımlamak oldukça zordur. Teknolojik bilginin herhangi bir tanımı, bu yazı yayımlandıktan sonra eskimiş olma tehlikesiyle karşı karşıyadır. Teknolojik bilgiye sahip bir birey bilgi teknolojilerini kullanarak çok farklı görevleri başarma ve verilen görevi başarmada farklı yollar geliştirme olanağına sahiptir.

Teknolojik içerik bilgisi, ele alınan disiplin için teknolojinin içerik üzerindeki etkisinin anlaşılması, eğitimsel amaçlar için uygun teknolojik araçlar geliştirilmesi bilgisidir. Teknolojinin seçimi, öğretilecek içerik bilgisinin biçimlerini güçlendirebilir de zorlayabilir de. Bunun yanında teknolojik araçlar gösterimler arası daha esnek bir yönlendirme sağlayabilir. Kısacası teknolojik içerik bilgisi, teknoloji ve içeriğin bir diğerini etkileme ve sınırlama biçiminin bir anlayışıdır.

Teknolojik pedagojik bilgi, belirli teknolojiler belirli yollarla kullanıldığında öğrenme ve öğretme nasıl değişebilir sorusunu yanıtlamada kullanılan bilgidir. Bu bilgi disiplin ve gelişimsel olarak uygun pedagojik tasarım ve stratejilerle ilişkili teknolojik araçların güçlü yönleri ve sınırlılıklarını bilmeyi kapsamaktadır. Bir teknolojiye ilişkin tek bir kullanım seçeneği sunmak doğru değildir.

Teknolojinin öğrenme-öğretme sürecine entegrasyonunda “tek bir yol” yoktur. *Teknolojik pedagojik içerik bilgisi* öğretmenlerin teknolojiyi öğretimlerine entegre etmeleri için gerekli bilginin özelleştirilmiş, çok yönlü biçimlerini anlamak için bir yapı sunmaktadır. TPİB modeline göre etkili öğretimin sağlanmasında sadece var olan öğretim sürecine veya içeriğe teknolojiyi dâhil etmek yeterli değildir. Etkili teknoloji entegrasyonu için teknolojiyi, içeriği ve pedagojiyi birbirinden ayırmadan aralarındaki karmaşık ilişkiyi bir sistem içinde tanımlayan TPİB, içeriğe uygun pedagojilerle bütünleştirilmiş teknolojik kaynaklar ve uygulamaları içeren sürecin tamamını ifade etmektedir.

Çalışmanın Amacı

Entegrasyon süreci ile ilgili alanyazın incelendiğinde, genellikle entegrasyon sürecini engelleyen unsurların neler olduğu (Holden, Ozok ve Rada, 2008; Mueller, Wood, Willoughby, Ross ve Specht, 2008; Hew ve Brush, 2007; Usluel, Mumcu ve Demiraslan, 2007; Balanskat, Blamire ve Kefala, 2006; Mumcu ve Usluel, 2004; British Educational Communications and Technology Agency [BECTA], 2004), sürece hangi açıdan bakılmasının uygun olacağı - okul temelli, öğretmen temelli, öğrenci öğrenmesi temelli - ve etkili entegrasyon sürecinin göstergelerinin neler olabileceği (Angeli ve Valanides, 2009; Gill ve Dalgarno, 2008; Martin ve Vallance, 2008; Mueller, Wood, Willoughby, Ross ve Specht, 2008; Mumcu, Haşlaman ve Usluel, 2008; Haşlaman, Mumcu ve Usluel, 2007; Dawson, Forster ve Reid, 2006; Glazer, Hannafin ve Song, 2005; Steketee, 2005; Wang, 2002) üzerinde tartışmaların yoğunlukta olduğu dikkati çekmektedir. Elbette bu tartışmaların sürdürülmesi alana katkı getirici niteliktedir. Ancak bu tartışmaların yanı sıra entegrasyon sürecinde var olan durumun betimlenmesini sağlamaya dönük somut uygulamalara daha fazla gereksinim bulunmaktadır. Çünkü var olan durumun betimlenmesi etkili entegrasyon sürecinin gerçekleştirilmesi ile ilgili yol haritasının düzenlenmesinde başlangıç noktası olacaktır. Bu nedenle çalışmada TPİB ölçeğinin geliştirilmesi ve bu ölçek aracılığıyla BİT'in öğrenme öğretme sürecine entegrasyonunda var olan durumun betimlenmesine katkı sağlanması amaçlanmıştır.

Bu amaçla çalışmada, TPİB modeli çerçevesinde, öğretmenlerin bilgi ve iletişim teknolojilerini öğrenme-öğretme sürecine entegrasyonu ile ilgili, “teknolojik bilgi”, “teknolojik içerik bilgisi”, “teknolojik pedagojik bilgi” ve “teknolojik pedagojik içerik bilgisi” ile ilgili durumlarını incelemek için bir TPİB ölçeğinin geliştirilme süreci açıklanmıştır.

YÖNTEM

Araştırma Grubu

Araştırma grubu, Ankara İli Çankaya İlçe merkezinde bulunan, 21 ilköğretim okulunda görev yapan 327 öğretmenden oluşmaktadır. Öğretmenlerden %78.5'i kadın (256 kişi), %21.5'i erkek (70 kişi); %47.2'si (134 kişi) sınıf öğretmeni, %52.8'i (150 kişi) branş öğretmenidir.

Veri Toplama Aracı ve Analiz

TPİB ölçeği teknolojik bilgi, teknolojik içerik bilgisi, teknolojik pedagojik bilgi ve teknolojik pedagojik içerik bilgisi olmak üzere dört bölümden oluşmaktadır. Ölçek 10'lu Likert tipinde toplam 19 madde olarak hazırlanmıştır. Öğretmenler ölçekteki maddelere "Kesinlikle katılmıyorum: 1" ve "Kesinlikle katılıyorum: 10" kriterlerine göre 1'den 10'a kadar bir puan vermişlerdir.

Daha çok ölçek geliştirme ve geçerlik analizlerinde kullanılan ve önceden belirlenmiş ya da kurgulanmış bir yapının doğrulanması ya da teyit edilmesi amacını taşıyan ve geleneksel kökeni genel faktör analizine dayanan doğrulayıcı faktör analizi, belirli değişkenlerin bir kuram temelinde önceden belirlenmiş faktörler üzerinde ağırlıklı olarak yer alacağı şeklindeki bir ön beklentinin sınanmasına dayanmaktadır (Sümer, 2000). Bu doğrultuda çalışmada LISREL 8.80 istatistiksel analiz programı kullanılarak doğrulayıcı faktör analizi yapılmıştır. Yapılan analiz sonucunda elde edilen veriler, doğrulayıcı faktör analizlerinde ve yapısal eşitlik modellerinde modelin veriyeye uyumunun değerlendirilmesinde çoğunlukla kullanılan çeşitli uyum indeksleri açısından incelenmiştir.

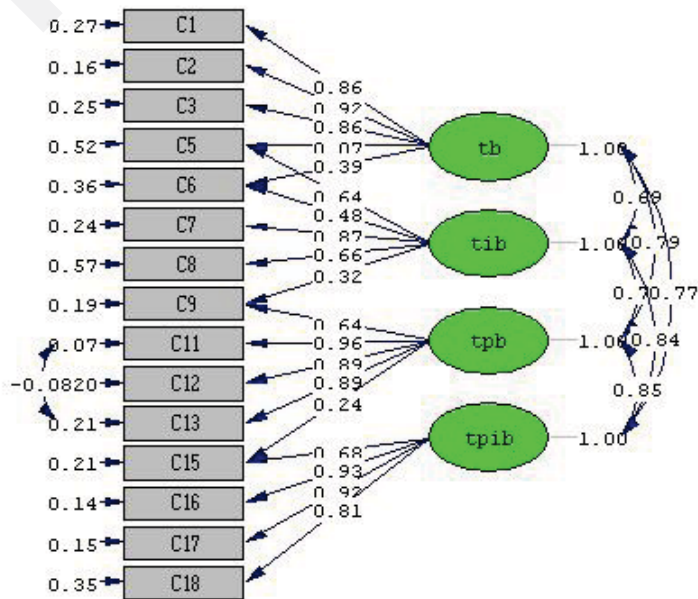
19 madde üzerinden gerçekleştirilen analiz sonucunda RMSEA değeri 0.13 olarak bulunmuştur. Analiz sonunda elde edilen değerler [$\chi^2_{(146, N=327)}=855.83$, $p<0.00$, $RMSEA=0.13$, $S-RMR=0.058$, $NFI=0.96$, $NNFI=0.96$, $CFI=0.97$, $GFI=0.76$, $AGFI=0.68$] modelin iyi bir uyum göstermediği sonucunu vermiştir. Değerler incelendiğinde her ne kadar NFI, NNFI ve CFI uyum ölçütleri kabul edilebilir aralıklar içerisinde çıksa da, özellikle χ^2/sd oranının 5/1'den ve RMSEA değerinin 0.08'den büyük olması nedeni ile uyum istatistikleri ile modifikasyon indekslerinin incelenerek ölçekten bazı maddelerin çıkarılmasına karar verilmiştir. Madde çıkarma ve modifikasyon indekslerinin önerdiği bağlantıların analize ekleme işlemleri aşamalı olarak gerçekleştirilmiştir. Bu işlemler sonunda 4 tane maddenin ölçekten çıkarılmasına karar verilmiştir. 2 madde arasında ise modifikasyon indekslerinin önerdiği bağlantıların analize eklenmiştir. Düzenlemeler yapıldıktan sonra gerçekleştirilen doğrulayıcı faktör analizi sonucunda, elde edilen değerler ölçeğin iyi bir uyum gösterdiğini ve TPİB modeli çerçevesinde BİT'in öğrenme-öğretme sürecine entegrasyonunda öğretmenlere uygulanabilir olduğunu göstermiştir (Tablo 1).

Tablo 1. Doğrulayıcı Faktör Analizi Sonucunda TPİB Ölçeğine İlişkin Gözlenen Değerler

| Uyum indeksleri | Mükemmel uyum* | Kabul edilebilir aralık* | Ölçek ile ilgili gözlenen değerler |
|-------------------------------------|--------------------|--------------------------|------------------------------------|
| RMSEA | $0 < RMSEA < 0.05$ | $0.05 < RMSEA < 0.08$ | 0.075 |
| S-RMR | $0 < S-RMR < 0.05$ | $0.05 < S-RMR < 0.1$ | 0.034 |
| NFI | $0.95 < NFI < 1$ | $0.90 < NFI < 0.95$ | 0.99 |
| NNFI | $0.97 < NNFI < 1$ | $0.95 < NNFI < 0.97$ | 0.99 |
| CFI | $0.97 < CFI < 1$ | $0.95 < CFI < 0.97$ | 0.99 |
| GFI | $0.95 < GFI < 1$ | $0.90 < GFI < 0.95$ | 0.92 |
| AGFI | $0.90 < AGFI < 1$ | $0.85 < AGFI < 0.90$ | 0.87 |
| χ^2 (ki-kare) / sd (226.08/79) | $\chi^2/sd < 3$ | $3 < \chi^2/sd < 5$ | 2.86 |

*(Schermelleh-Engel, Moosbrugger ve Müller, 2003; Sümer, 2000)

Yapılan analiz sonucunda TPİB ölçeği maddeleri içeriklerine göre; 4 madde teknolojik bilgi, 4 madde teknolojik içerik bilgisi, 4 madde teknolojik pedagojik bilgi ve 3 madde teknolojik pedagojik içerik bilgisi olarak belirlenmiştir (Ek 1). Bu haliyle ölçeğin yapısı Şekil 2'de görülmektedir.



Chi-Square=224.56, df=79, P-value=0.00000, RMSEA=0.075

Şekil 2. TPİB Ölçeği Birinci Düzey Doğrulamalı Faktör Analizi Bağlantı Diyagramı (Standart Katsayılar)

Güvenirlilik analizi sonucunda ölçeğin güvenirlilik katsayısı .96 olarak bulunmuştur. Faktör puanları bazında güvenirlilik katsayıları; teknolojik bilgi için $\alpha=0.86$, teknolojik içerik bilgisi için $\alpha=0.85$, teknolojik pedagojik bilgi için $\alpha=0.93$, teknolojik pedagojik içerik bilgisi için $\alpha=0.91$ olarak bulunmuştur.

SONUÇ

TPİB modeli çerçevesinde, öğretmenlerin BİT'i öğrenme-öğretme sürecine entegrasyonu ile ilgili, teknolojik bilgi, teknolojik içerik bilgisi, teknolojik pedagojik bilgi ve teknolojik pedagojik içerik bilgisi durumlarını incelemek için geliştirilen TPİB ölçeği, yapılan doğrulamalı faktör analizi sonucunda 15 madde ve 4 faktör olarak son halini almıştır (Ek 1). Analiz sonunda TPİB ölçeği maddeleri, içeriklerine göre; 4 madde teknoloji bilgisi, 4 madde teknolojik içerik bilgisi, 4 madde teknolojik pedagojik bilgi ve 3 madde teknolojik pedagojik içerik bilgisi olarak belirlenmiştir. Güvenirlilik çalışması için ölçeğin güvenirlilik katsayısı hesaplanmış ve .96 olarak bulunmuştur. Faktör puanları bazında güvenirlilik katsayıları ise; teknolojik bilgi için $\alpha=0.86$, teknolojik içerik bilgisi için $\alpha=0.85$, teknolojik pedagojik bilgi için $\alpha=0.93$, teknolojik pedagojik içerik bilgisi için $\alpha=0.91$ olarak bulunmuştur.

Analizden elde edilen değerler ölçeğin iyi bir uyum gösterdiğini ve TPİB modeli çerçevesinde BİT'in öğrenme-öğretme sürecine entegrasyonunda öğretmenlere uygulanabilirliğinin olduğunu göstermiştir. Bu çalışmada geliştirilen TPİB ölçeğinin BİT'in öğrenme-öğretme sürecine entegrasyonu ile ilgili ileride yapılacak çalışmalara katkı sağlayacağı umulmaktadır.

KAYNAKÇA

- Angeli, C. Ve Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computers and Education*, 52(1), 154-168.
- Archambault, L. ve Crippen, K. (2009). Examining TPACK among K-12 online distance educators in the United States. *Contemporary Issues in Technology and Teacher Education*, 9(1).
- Balanskat, A., Blamire, R. ve Kefala, S. (2006). *The ICT Impact Report: A Review of Studies of ICT Impact on Schools in Europe*. European Schoolnet: http://ec.europa.eu/education/pdf/doc254_en.pdf
- British Educational Commucitions and Technology Agency [BECTA] (2004). *A review of the research literature on barriers to the uptake of ICT by teachers*. http://www.becta.org.uk/page_documents/research/barriers.pdf
- Dawson, V., Forster, P. ve Reid, D. (2006). ICT integration a science education unit for preservice science teachers; students' perceptions of their ICT skills, knowledge and pedagogy. *International Journal of Science and Mathematics Education*, 4, 345-363.
- Glazer, E., Hannafin M.J. ve Song L. (2005). Promoting technology integration through collaborative apprenticeship. *Education Technology Research Development*, 53(4), 57-67.
- Gill, L. ve Dalgarno, B. (2008). Influences on pre-service teachers' preparedness to use ICTs in the classroom. In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008*. <http://www.ascilite.org.au/conferences/melbourne08/procs/gill.pdf>
- Harris, J., Mishra, P. ve Koehler, M. J. (2009). Teachers' technological pedagogical content knowledge and learning activity types: Curriculum-based technology integration reframed. *Journal of Research on Technology in Education*, 41(4), 393-416.
- Haşlaman, T., Mumcu, F. K. ve Usluel, Y. K. (2007). Bilgi ve iletişim teknolojilerinin öğrenme-öğretme süreçleriyle bütünleştirilmesine yönelik bir ders planı örneği. *Eğitim ve Bilim Dergisi*, 32(146), 54-63.
- Hew, K. F. ve Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Education Technology and Research Development*, 55, 223-252.
- Holden, H., Ozok, A. A. ve Rada, R. (2008). Technology use and perceptions in the classroom.: Results from an exploratory study among secondary education teachers. *Interactive Technology and Smart Education*, 5(2), 113-134.
- Koehler, M. J. ve Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70.
- Koehler, M. J. ve Mishra, P. (2008). Introducing Technological Pedagogical Knowledge. In AACTE (Eds.). *The Handbook of Technological Pedagogical Content Knowledge for Educators*. Routledge/Taylor & Francis Group for the American Association of Colleges of Teacher Education.
- Martin, S. ve Vallance, M. (2008). The impact of synchronous inter-networked teacher training in information and communication technology integration. *Computers and Education*, 51(1), 34-53.
- Mishra, P. ve Koehler, M. J. (2008). Introducing technological pedagogical content knowledge. *Paper presented the Annual Meeting of the American Educational Research Association*. New York, March 24-28.
- Mishra, P. ve Koehler, M. J. (2006). Technological pedagogical content knowledge: A new framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Mueller, J., Wood, E., Willoughby, T., DeYoung, T., Ross, C. Ve Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited integration. *Computers and Education*, 51, 1523-1537.
- Mumcu, F. K., Haşlaman, T. ve Usluel, Y. K. (2008). Teknolojik pedagojik içerik bilgisi modeli çerçevesinde etkili teknoloji entegrasyonunun göstergeleri. *International Educational Technology Conference (IETC) 2008*, 6 - 8 Mayıs. Eskişehir, Anadolu Üniversitesi.
- Mumcu, F. K. ve Usluel, Y. K. (2004). Mesleki ve teknik okul öğretmenlerinin bilgisayar kullanımları ve engeller. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 26, 91-100.
- Schermelleh-Engel, K., Moosbrugger, H. ve Müller, H. (2003). Evaluating the fit of structural equation models: Test of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23-74. University of Koblenz-Landau.
- Shin, T., Koehler, M. J., Mishra, P. Schmidt, D., Baran, E. ve Thompson, A. (2009). Changing technological pedagogical content knowledge (TPACK) through course experiences. *Paper presented at the 2009 International Conference of the Society for the Information and Technology & Teacher Education*. March 2-6, Charleston, South Carolina.

Steketee, C. (2005). Integrating ICT as an integral teaching and learning tool into pre-service teacher training courses. *Issues in Educational Research*, 15(1), 101-113.

Sümer, N. (2000). Yapısal eşitlik modelleri: Temel kavramlar ve örnek uygulamalar. *Türk Psikoloji Yazıları*, 3(6), 49 -74.

Usluel, Y. K. , Mumcu, F. K. ve Demiraslan Y. (2007). Öğrenme-öğretme sürecinde bilgi ve iletişim teknolojileri: Öğretmenlerin entegrasyon süreci ve engelleriyle ilgili görüşleri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 32, 164-179.

Wang, Y. (2002). When technology meets beliefs: Preservice teachers' perceptions of the teachers role in the classroom with computers. *Journal of Research on Technology in Education*, 35(1), 150-161.

EK 1: Teknolojik Pedagojik İçerik Bilgisi (TPİB) Ölçeği

| Faktör | Maddeler | |
|--|----------|--|
| Teknolojik Bilgi (tb) | C1 | Teknolojik yenilikleri takip ederim. |
| | C2 | Yeni çıkan teknolojileri nasıl kullanacağımı öğrenmeye çalışırım. |
| | C3 | İhtiyacım doğrultusunda teknoloji seçimi yapabilirim. |
| | C5 | Yazılım ve donanım ile ilgili karşılaştığım basit teknik problemleri çözebilirim. |
| Teknolojik İçerik Bilgisi (tib) | C6 | Bir ders için içeriği zenginleştirmede teknolojiden yararlanırım. |
| | C7 | Öğrenme alanına ait kavramların gösterimi için BİT uygulamalarını (çoklu ortam, görsel sunular vb.) hazırlar ve kullanırım. |
| | C8 | Bir dersin içeriğini çevrimiçi bir ortamdan (internet veya bir ağ üzerinden) sunabilirim (okul web sayfası, kişisel web sayfası gibi). |
| | C9 | Dersimin içeriğine uygun olarak kullanacağım teknolojileri seçerim. |
| Teknolojik Pedagojik Bilgi (tpb) | C11 | Derslerimde öğrenme-öğretme yöntemime uygun teknolojileri seçerim. |
| | C12 | Öğrencilerimin daha etkili öğrenmeleri için teknolojiden yararlanırım. |
| | C13 | Derslerimde kullanacağım teknolojileri seçerken öğrencilerimin özelliklerini göz önünde bulundururum. |
| | C15 | Öğretim yöntemlerime uygun olarak kullanacağım teknolojilerle ilgili sınıf yönetim becerilerine sahibim. |
| Teknolojik Pedagojik İçerik Bilgisi (tpib) | C16 | Derslerimi planlarken, öğrencinin öğrenmesini destekleyecek şekilde dersin içeriğini, öğrenme-öğretme stratejilerini ve bunlara uygun BİT kaynaklarının bir arada kullanımını göz önünde bulundururum. |
| | C17 | Derslerimi planlarken, dersin içeriğini, öğrenme-öğretme stratejilerini ve bunlara uygun yeni BİT uygulamalarını izlerim. |
| | C18 | Öğrencilerimin gerçekleştirmesini planladığım etkinliklerde uygun BİT uygulamalarını seçmeleri ve kullanmaları için yönergeler sunarım. |

TEXT-TO-SPEECH ANIMATED MOVIE CREATION: POSSIBLE USES IN LANGUAGE EDUCATION

Ferit KILIÇKAYA
Middle East Technical University
kilickay@metu.edu.tr
ferit.kilickaya@gmail.com

Abstract

In this era of flourishing technology and the attempt to benefit from technology in education as much as possible, language educators, together with learners, are provided with many tools that enable them to better benefit from the activities they are engaged in. The Internet proves to be the place where quite a number of resources and materials are presented and by which meaningful tasks can be created, making language learning fun and attractive. In addition, most of the resources available are web-based and do not require any technical or programming knowledge. One of these web-based tools is *Xtranormal* (<http://www.xtranormal.com/>), a text-to-speech animated movie creator. With the help of this tool, a scene is created as a series of movies by choosing backgrounds and characters, writing the script and then dropping on different actions and sound effects. The output will be an animated movie with 3D characters speaking and role-playing. Considering the features it provides, *Xtranormal* can be seen as a great tool for generating listening, writing and pronunciation activities, as well as being a lot of fun. In this respect, the current paper dwells on the possible uses and teaching tips in language learning contexts as regards the use of this text-to-speech movie creation tool.

Keywords: Text-to-speech, animated movie, Xtranormal, comic strips, language education

INTRODUCTION

Nowadays, we are witnessing an interacting twofold movement of computers in education, consisting on the one hand of what the rapid advancements in the field of Information and Communications Technologies (ICT) can offer and on the other hand of how the expansion of computer applications can contribute to language instruction. The combination of multiple media such as text, audio, video and graphics greatly facilitates learning, when especially learning materials are accompanied by illustrations, videos or sounds. Technology is continually breaking new ground, providing new possibilities for language learning and teaching. Consequently, they are becoming more and more widespread at homes, schools and universities with various uses expanding. In the light of the proliferation of educational technology, teachers continue debate on the effectiveness of multimedia language programs and their influence on the activities carried out in the classroom. Undoubtedly, the multimodal presentation of language increases learner's motivation, arouses their interest in the language itself, makes a process of learning more fascinating and matches various learning styles. More importantly, younger generation or digital natives as Prensky (2001) calls them, perceive computers and the Internet as natural and inseparable parts of their lives and use the opportunities provided by technology, though the aim might not be necessarily targeted towards educational knowledge, practice or purposes. Taking the availability of various multimedia materials and Web 2.0 collaboration tools on the Net, especially language teachers appreciate the importance of technology and can now have the opportunity to benefit from these resources in their daily activities or student projects (Son, 2007; Murugesan, 2010). Such opportunity is, moreover, does not require any technical or programming skills or knowledge and most of the resources available are web-based. From this perspective, computers, with unlimited possibilities, can be seen as an inherent part of language teaching and learning.

One of the web-based tools that do not necessitate specific programming skills is *Xtranormal* (<http://www.xtranormal.com/>), a text-to-speech animated movie or cartoon animation creator. It can be seen as a tool that combines text-to-speech technology and web-based comic strips, providing scenes with various backgrounds and characters. From the point of view of a foreign language teacher, animated characters and sound production can make *Xtranormal* an entertaining and creative tool that can facilitate language pronunciation, listening and writing skills. Touching upon the issues of text-to-speech technology, creation of web-based comic strips and the use of multimedia will be useful before going to how *Xtranormal* works and can be used in language education.

Text-to-Speech Technology (TTS)

With the introduction of Text-to-speech technology, the conversion of text to speech via special computer application and voices, and the advancements following, it has been possible to make any document such as web pages, PDFs or websites speak and to hear any words or sentences available digitally. The use of this technology as a tool for foreign language education has shown that it can be used to help language-learning process, especially for listening activities (Azuma, 2008). Furthermore, Kataoka (2007) found in his study with high school students in Japan that the participants learned and memorized more English words using TTS. TTS really lends itself to listening and pronunciation activities in language classrooms. According to Kılıçkaya (2006), TTS has this special role with several advantages:

- Listening to any text and any topic, which is not limited to audio cassettes, CDs or DVDs of the course book.)Most EFL listening materials cover a limited range of topics and some of them are rather expensive.)
- Adjusting the speed of reading
- Creating audio materials from any text as wav or mp3
- Creating pronunciation exercises in which a single word or multiple words can be listened
- Creating dialogues using more than one character or speaker with different accents

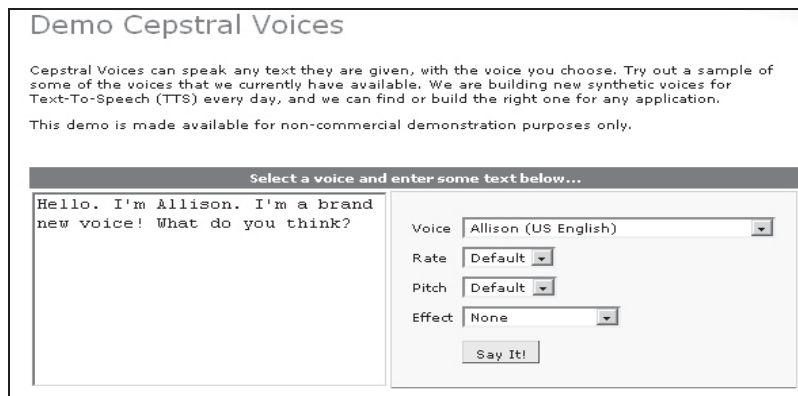


Figure 1. Demo version of Cepstral Voices on the web.

Web-based Comic Strips

Regarding the use of comic strips in education, Jacobs (2007, p. 185) emphasized the importance and value of comic strips since they highly support literacy and recommended that educators 'see the potential that exists when we, as teachers and scholar, engage with comics in meaningful way'. In contrast to the discussions especially in the past stating that comic strips did not possess any value or use, most of the learners enjoy reading comic books and it has been realized that comic strips are really appealing to all age groups. Moreover, in relation with comic strips, excellent graphic novels or book-length comics appear to be found for all age groups in different topics. Comic strips and graphic novels are appealing as simply they are engaging and motivating (Gorman, 2002). In addition, the main advantage of comic strips and graphic novels is that they integrate images and text to get the meaning across, which is not possible using only a single medium or tool. On the net, there are some various web-based comic strips creation tools offering teachers, parents or students to express their thoughts and opinions through combining graphics, characters and text. Of these popular tools, *Make Beliefs Comix!* (<http://www.makebeliefscomix.com/>), online educational comic generator for kinds of all ages, is especially available for children (Figure 2).



Figure 2. A screen shot from the website, *Make Beliefs Comix!*

Multimedia in language education

Multimedia has a very important role considering the opportunities it provides and the resources it presents such as audio and video clips. It brings engaging and motivating activities into a traditional and monotonous classroom, offering impressive learning and teaching tools and contributing to the many aspects of learning such as linguistic, cognitive and social development. With the rapid technological development and the multimedia resources available on the Internet, learners of any foreign language can enjoy learning a foreign language through these resources. In addition to multimedia packages offered to learners such as *Rosetta Stone* and *Tell Me More*, learners now fully benefit from CD/DVD dictionaries that provide fast access to words supported by a considerable amount of knowledge such as cultural information and collocation entries, not to mention spoken examples and pronunciation. Online dictionaries providing definitions and example sentences together with sound files for pronunciation such as Cambridge Dictionaries online (<http://dictionary.cambridge.org>) and meta-dictionaries giving access to multiple dictionaries and thesauri have paved the way for grasping any opportunity to expand language knowledge.

COMBINING TEXT-TO-SPEECH TECHNOLOGY AND COMIC STRIPS: XTRANORMAL

Xtranormal was launched in 2006 with a mission of 'brining movie-making to the people' advising that everyone can make short or long movies. Their motto is 'If you can type, you can make movies'. *Xtranormal* includes 3D characters, though some are not free, and the system to convert text to speech, offering to make the characters speak what you have written in the script section and behave or show actions with easy drag-and-drop animation system (Figure 3). Although it does not aim to practice language learning or provide educational use, it has the potential to be used in classroom projects especially language-oriented activities. Taking into consideration its features and the promising activities, especially practicing writing and speaking skills, it can be considered as one of the world's most innovative web sites. Moreover, learners will enhance their creativity and explore other possibilities while using the characters with different moods and writing sentences or dialogues during comic strip creation. *Xtranormal* can be seen as a valuable resource from different aspects.

Linguistic aspect

Xtranormal can be used as an effective way of presenting and reviewing language material in an environment of visual elements supported by audio materials. These materials can specifically be used to expand vocabulary knowledge and improve pronunciation, when we especially consider language acquisition takes place in interesting and enjoyable environments (Klassen & Milton, 1999).

Cognitive and psychological aspects

Taking the features of *Xtranormal* into consideration such as 3D characters and the visual elements, it can be claimed that it will further enhance learners' experience and the way how they are exposed to information. With its potential to provide relaxed and stress-free environment, learners can enjoy what they are doing with the target language.

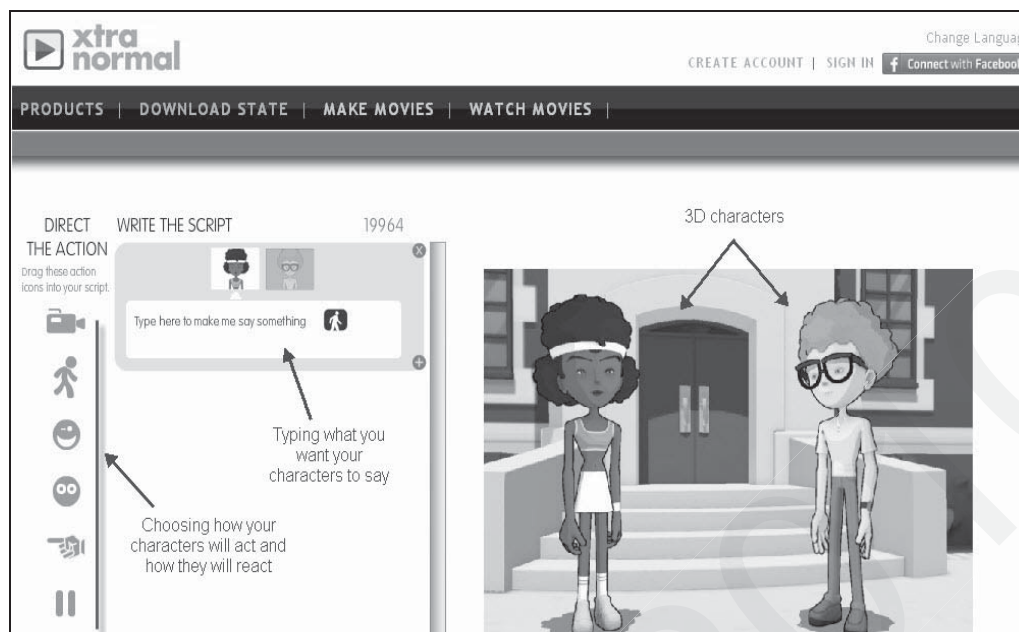


Figure 3. A screen shot from *Xtranormal* movie creation section

Cultural aspect

From cultural perspective, *Xtranormal* can be seen as an opportunity to introduce the target and local cultures, the differences and similarities, making the characters talk about the specific culture elements, which will foster mutual understanding, tolerance and intercultural competence (Aguilar, 2007).

Social aspect

When *Xtranormal* is encouraged to be used in classroom or performance projects with pair or group work, cooperation and interaction skills among learners can be fostered. Pairs and groups can also work together to improve the movies created, taking each other's comments and suggestions.

Multiple Intelligences Theory

From Multiple Intelligences Theory perspective, *Xtranormal* can provide an ideal opportunity for developing different types of intelligences especially for verbal-linguistic, visual-spatial and musical-auditory students (Gardner, 2002).

POSSIBLE USES IN LANGUAGE EDUCATION

Xtranormal was one of the topics that were introduced to the course FLE 318 Audio-visual Aids in ELT offered during the academic year 2008-2009, aiming to present the technologies ranging from Discussion Boards and Wikis to online teaching tools at the Department of Foreign Language Education, Middle East Technical University. Following the discussions on text-to-speech technology and its features, students were introduced to *Xtranormal*, its basic features together with a demonstration. The following week, the assigned group created movies to show how it could be used in language classrooms, presenting the limitations and problems encountered. Following the presentation, the students and the instructor discussed whether it is a potential resource for language learning and teaching and how it can be applied to language education, taking its limitations into consideration. Most of the students confirmed that *Xtranormal* can be seen as a valuable resource from different aspects and be applied to foreign language education today. Below is a list of several possible benefits, uses and limitations of using this tool in language learning and teaching.

Possible benefits

- The multimodal environment of visual and auditory input can create entertaining, creative and stress free environment in which learners can enjoy doing language activities.
- In addition to traditional ways of writing and listening activities, learners can practice and improve writing, listening and pronunciation skills.
- When done in pair or group work, it can promote collaboration, cooperation and interaction, which is a very important skill.
- Browser-based access, flash-based design and no requirement of programming skills enable this tool to be instantly used by teachers and students alike.
- Content can be posted immediately and seen by everyone online.

Possible uses

- Learner/teachers can write dialogues for specific topics such as bad habits and advising a friend who asks for help to buy a new computer.
- Learners/teachers can make the characters talk about vocabulary items or grammatical structures.
- Learners/teachers can create monologues in which characters talk about their own cultures or dialogues between two characters on specific cultures, differences and similarities, which will foster tolerance and understanding.
- Learners/teachers can create stories or news on the daily issues.
- Using the 'Remix' feature of *Xtranormal*, learners can create new movies using other movies.
- Learners/teachers can create news bulletin or 'agony' columns in which a character asks for help about their personal problems. Using the 'Remix', another learner can give advice using another character.
- Learners/teachers can create their own soap opera and add different scenes each week by the same learners or different learners.
- Learners/teachers can upload their movies to wiki pages and then learners/teachers can leave comments and suggestions, enabling communication and collaboration.

Limitations and possible problems

- One caveat is that some animations available on the website are simply not for educational purposes and inappropriate for young learners or even offensive to older ones. Therefore, it can deter educators from using it in an educational context.
- Another one is that as it takes a lot of time to plan and create the movie, it is especially useful for classroom projects or performance projects assigned for a semester.
- Free use is limited to certain characters.
- The voices used to create speech especially from longer sentences or dialogues do not sound real.
- Graphic use and animation creation result in pages that load slowly especially when the Internet access is limited or provided through low bandwidth connection.

CONCLUSION

No one can deny the fact that communication in any foreign language is one of the main aims of today's language instruction, meaning learners should not only produce the language, but also actually **communicate with others**. The growing interest in educational technology and its promising benefits has led to more and more widespread use of applications, helping teachers and students take communication and cooperation go beyond the walls of the classroom and providing an enjoyable atmosphere. Among these applications is *Xtranormal*, which really lends itself to language learning activities dealing with writing, listening or pronunciation. Moreover, it can be also considered as a platform where teachers' and learners' imagination and creativity can be put to good use. Like other tools provided by technology, *Xtranormal* can make language learning and teaching effective and enjoyable provided that it is employed and benefited by teachers and learners taking its benefits and limitations into consideration. Nonetheless, the coalescence of a human teacher, opportunities for human-human interaction in the classroom or outside the classroom via text, face-to-face or online communication supported by the technology constitute the most desirable solution for both educators and students.

REFERENCES

- Aguilar, M. J. C. (2007). Dealing with intercultural communicative competence in the foreign language classroom. In E. A. Soler, M. P. S. Jorda (Eds.), *Intercultural language use and language learning* (pp. 59-78). Dordrecht: Springer.
- Azuma, J. (2008). Applying TTS technology to foreign language teaching. In F. Zhang, & B. Barber. (Ed.), *Handbook of Research on Computer-Enhanced Language Acquisition and Learning* (pp. 497-506). N.Y.: Information Science Reference.
- Gardner, H. (2002). *M.I. millennium: Multiple intelligences for the new millennium*. Los Angeles: Into the Classroom Media.
- Gorman, M. (2002). What teens want: Thirty graphic novels you can't live without. *School Library Journal*, 48(8), 42-47.
- Jacobs, D. (2007). Marveling at the man called Nova: Comics as sponsors of multimodal literacy. *College Composition and Communication*, 59(2), 180-205.
- Kataoka, H. (2007). Preparation for university entrance examinations: How to learn frequently-appearing English words with the TTS audios. A paper presented at the Multimedia & Internet Seminar in 2007, Japan Association for Language Education and Technology (LET), Kansai Chapter, held in Osaka on December 22, 2007.
- Kılıçkaya, F. (2006). Text-to-speech technology: What does it offer to foreign language learners? *CALL-EJ Online*, 7(2).
- Klassen, J., & Milton, P. (1999). Enhancing English language skills using multimedia: tried and tested. *Computer Assisted Language Learning*, 12, 281-294.
- Murugesan, S. (ed.). (2010). *Handbook of research on web 2.0, 3.0, and X.0: Technologies, business, and social applications*. New York: IGI Global.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, October 2001, 9(5).
- Son, J.-B. (2007). Learner experiences in web-based language learning. *Computer Assisted Language Learning*. 20(1), 2-36.

THE AUDIOVISUAL SIDE OF E-LEARNING: A WEB BASED MULTIMEDIA BROADCASTING MODEL

Alper GEDİK (alper.gedik@ieu.edu.tr)

İzmir Ekonomi Üniversitesi

Abstract

Audiovisual data transferring technologies, in our age, has come to a level which may also be as easy, practical and portable as a mobile phone or a portable multimedia device. Thus, transmitting services are adaptable to a more interactive and almost completely individual e-learning solution, of course, not losing the function of carrying and delivering news and information for other media. We are experiencing a whole new or deeply renovated technological development on the field of education every other day. So we need to accept that some critiques about this ever-changing style and attitude of teaching methods could exist. The audiovisual multimedia tools used on e-learning structures and systems may be designed flawless but we are not able to be sure its dynamic concept is the best and most effective way to teach and learn.

This study will be framing the interactive structure of e-learning, in addition to take place as a healthy and idealized, integrated and operable model to a web-based multimedia broadcast system which has the essential components of an entire streaming infrastructure. In this paper, setting up a specifically configured workflow model for e-education, its operation, and managing the content production period will be told and the readers of the paper will be acknowledged about the essential components of a web-based streaming system and the interaction between those components.

INTRODUCTION

E-learning, known as *web based education* or *online learning* was composed of e-book presentations and online availability of course contents, essays and books in its first years. However, expectations from e-learning concept has increased with the widespread usage of the internet and personal communication devices. Today, unidirectional information obtained from a computer or a personal communication device with the internet connectivity has lost its attraction as learners quest for interactivity. This situation leads web developers, open universities and universities with distance learning service to make new inventions. In audiovisual devices not only the content but also the presentation of content has gained importance. Interaction models designed in accordance with the content makes learners active and maximises the efficiency of e-education. The audiovisual side in education has been in the center of interest since the first years of e-learning concept and has been a keypoint in effective distance learning basis.

The effect of commercial films, cinema, radio advertisements on human behaviors brought along the evaluation of these factors as new fields where education can be given. Compared to TV, radio, video and CD based education in the past, a far more interactive sharing can be seen in distance education today.

The current situation in web programming, faster microprocessors, server connections with more developed bandwidth amounts have provided the necessary environment for innovations and developments in e-education concept.

By explaining a basic web based multimedia streaming model that is necessary for the realization of e-learning process, this study is mentioning its components and the interaction between them.

COMPONENTS OF A STREAMING WEB PORTAL

Without a doubt, a complete virtual learning system needs appropriate hardware as well as software to operate as it designed. In this part of the paper, we will explore the basic elements of a multimedia broadcasting system and the interactivity between them.

Basically, the logic lays underneath audiovisual media streaming is a modified version of traditional communication methods. It could be understood as a linear-progressive way of transmitting data (courses) to receivers. But of course, e-learning systems with a lot of component, content and function, includes much more complexity then it seems to have.

First of all, we need to be acknowledged that e-learning uses computer and communication technologies together, letting employees to learn at any time and any place. All they need is a computer, an internet connection, and to access to the course materials that reside on the web (Henderson, 2003). To realize this whole project, we need to construct a workflow structure that performs as an online streaming platform.

Storage

Naturally, every online multimedia streaming portal, which delivers courses online by using 2 different ways; *VoD* (Video on Demand) and Live, needs storage devices to store media data files on the network/server or to make backups of live broadcasted programs

for archiving purposes. The size of storage device needed, depends on the digital quality and amount of media stored on the network. The greater quality, of course, needs more space because of bit rate issue.

Source

The *source* on a streaming server means *offline product* or *live element*. Media (animations, texts, videos, audio courses etc.) stored on the storage device are sources of *VoD* streaming.

To make live streaming, a *VTR* (Video Tape Recorder), a video camera, an audio player, an ordinary microphone could be sources, depends on our need in that particular moment. Source is a vital part to the e-learning system. As it could be understood, a *source* is the instructor's tool to deliver a course.

Encoder

Encoder has the role to prepare digital content for streaming by coding the video or audio signal into numbers and algorithms to be sent over a network or internet. In our case, which we also use a *media server*, the actual role of encoder is to send encoded data (push) to media server over network.

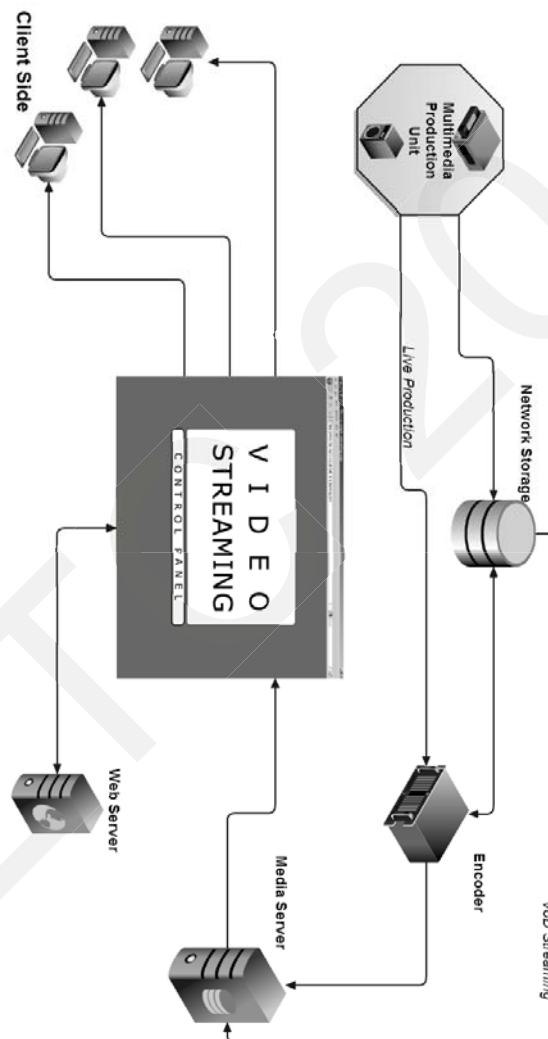


Chart 1: Essential components of a basic streaming web portal

Media Server

Media server could be defined as a distribution point for the media that just encoded one step before, on encoder device. Media server works using *RTMP* (Real Time Messaging Protocol) technology to serve encoded media to receivers. In our case, the infrastructure used on media server is *Adobe's Flash Media Streaming Server (FMSS)* software. But *Adobe* solution is not the only option to configure a workstation as a media server. As an open source streaming server software, *RED5*, could be used as well to receive encoded media data packages and stream towards client media players or web browsers. But with confidence; we can say that configuring *RED5* needs a little bit more profession to operate. On the other hand, *Adobe's Flash Media Streaming Server* could be installed and configured with an average competence on streaming technology.

Actually, *Windows Media* (WMV) based media streaming is also available, but in our case we use *Flash* (FLV) format streaming as it's more flexible, modifiable and more widespread on internet with Youtube-like websites.

An *Adobe Flash Media Streaming Server* may be installed on a *Windows* or *Linux* based machine, depending on the system administrator's tendency.

Client Side

Every effort and construction made to build a media streaming server is naturally made for the viewers, in other words; the *client side*. The receivers of our streaming media need to communicate our server by their compatible media players or web browsers. The important point about client side viewers is that the client side player and streaming server need to be using the same streaming format and communication protocol. For instance; if server delivers audiovisual data by *Windows Media* protocol, then client side needs to have *Windows Media Plug-in* installed and working on the web browser.

CONTENT PRODUCTION AND MANAGEMENT

Content Production

Creating e-learning refers to the process of authoring and integrating content. It can take place at each level of content. That is, you can create raw media elements; integrate them into pages, displays, and learning objects; link those to create lessons; aggregate the lessons to create courses; and link courses to create curriculum (Horton, 2003). But our point of interest in this paper is to create audiovisual content for use on e-learning systems.

Generating audiovisual material for an e-learning system, technically, is not so different than producing an advertisement or promotion film for a company. The essential tools of information and communication technologies are used, such as computers, video camcorders, editing units, VTRs, audio recorders and lighting equipment. After authoring media, using tools of audiovisual material creation, education theories, pedagogical knowledge, teachers, instructors, studios and so; that final product, as a digital medium, is needed to be uploaded –or in other words; integrated- on to our e-learning portal to be delivered to the client-side learners.

Content Management

As a matter of fact that on an e-learning system the student and teacher don't meet in the means of physical space, the production quality and style of e-learning content and a successful content management becomes more vital.

A *learning content management system* (LCMS) is a means of organizing the learning –a repository for storing, retrieving and launching courses or their components. An LCMS can generate reports too, such as reports on the uptake of courses, or on success rates. But the real benefits are in managing the learning content, and so LCMS should be used in tandem with an authoring tool. This combination enables the user to write and store courses and their building blocks, reusable learning objects. The main drawback of an LCMS is its focus on 'content' rather than learning experiences; it is really just a slightly specialized version of a generic software application, the content management system, used in various information processing contexts (Fee, 2009).

As we can see, the point in generating audiovisual content for others to 'learn' and managing it to be more effective and reliable, is to design it perfect by combining the best tools for production.

CONCLUSION

If the mind is such a complicated mechanism and we really are so far from fully understanding how it –by implication, learning-works, then how much more foolhardy are the claims of e-learning vendors to understand learning and to offer solutions (Fee, 2009)

As a major part of e-education, the audiovisual broadcasting systems take bigger and bigger place every other day. To catch up the technology and bring together new pieces that will going to help making online learning process smoother and more flawless, the educators and experts of information and communication technologies need to work together and benefit each other's field of profession. In this era of information, nearly every field of study is being reshaped by computers.

With inventions of recent communication tools like touch screen tablet PCs, humanity request more interactivity and more participation over virtual worlds. In social sciences we observe that nearly any kind of education –including infants and children education- is supported by computerized technologies. And in near future, upon my prevision, open universities, universities with live streaming systems and distance learning applications are going to be more widespread.

References

- FEE Kenneth, *Delivering E-Learning: A Complete Strategy for Design, Application and Assessment*, Kogan Page, 2009, London
- HENDERSON Allen, *The E-Learning Question and Answer Book: A Survival Guide for Trainers and Business Managers*, Amacom, 2003, United States of America
- HORTON William, HORTON Katherine, *E-Learning Tools and Technologies*, Wiley Publishing Inc., 2003, Indianapolis

THE CORRELATION BETWEEN THE PERCEPTIONS OF EPS INSTRUCTORS AND EPS STUDENTS TOWARDS TECHNOLOGY USE IN THEIR CLASSES

Nazan Doğruer and İpek Meneviş (a, b)

^{a,b} Eastern Mediterranean University, School of Foreign Languages, English Preparatory School,
NORTH CYPRUS

nazan.dogurer@emu.edu.tr, ipek.menevis@emu.edu.tr

Abstract

There are two parties in classrooms in education, teachers and students. When teachers use different types of instructional technology, students benefit from it. In today's world as the use of instructional technology is common, it is necessary to know how both parties perceive it. Therefore, the aim of this study is to correlate the perceptions of English Preparatory School instructors with the perceptions of their students towards technology use in their classes. This study took place at Eastern Mediterranean University (EMU) during the 2009 – 2010 Academic Year Fall Semester. Two different scales prepared by the researchers were given to both instructors and students. The collected data was analyzed by using SPSS Statistical Program. It revealed that although there are some differences, generally the perceptions of instructors and students correlate with each other.

Keywords: *Perceptions, EPS Instructors, EPS students, correlation, instructional technology*

INTRODUCTION

There are two parties in classrooms in education, teachers and students. When teachers use different types of technology, students benefit from it. It has recently been stated that the use of technology in class helps students and teachers to teach more efficiently and learn more effectively. As Schacter and Fagnano (1999) mentioned, the effective application of technology increases student learning, understanding and achievement as well as motivation and participation.

Students benefit from new technology by learning more easily and in a fun way, therefore, it can be stated that with technology, nowadays, learning has become more fun and easier. That is the reason why teachers who use technology in class benefit from it very much since teachers are the real users of the technology in class (Kelley, 1994). It can be said that new technology has been a revolution in classroom teaching and learning in many ways. It provides different learning opportunities and various advantages both for teachers and students.

Technology always helps both students and teachers to reach more resources and use different types of resources and materials. In this way, the instruction becomes richer, fun and effective. Moreover, using different devices provides teachers with variety in their classrooms. Therefore, it is believed that technology-rich environment also has positive effects on students' achievement since it enhances meaningful learning (Ashburn and Floden, 2006).

The main concern with using technology in class is to know how to use and when to use them. Therefore, it is important to integrate instructional technology in the curriculum of lifelong learning and not simply use it to impart technology-related knowledge and skills (Whitehead, Jensen, and Boschee, 2003). Teachers have always been the decision makers on the selection of best materials and the most effective methods in instruction for the benefit of their students. Additionally, as Smaldino, Russell, Heinich and Molenda (2005) mentioned, teachers need to choose the best tools in their instruction as they have become the facilitator of knowledge acquisition. They are required to make the most effective use of available technology and media to engage students in learning.

Today's world depends on technology since it has rapidly been developed and this change has to be accepted in today's classrooms because of technology's common use. How teachers perceive technology is as important as the perception of students because teachers are the real users of technology while students are the ones who are exposed to its use so it is necessary to know how both parties perceive it. Therefore, the aim of this study is to correlate the perceptions of English Preparatory School instructors with the perceptions of their students towards using technology in their classes.

METHODOLOGY

Design of the Study

This study has been designed as a quantitative research method. In this study, the full-time instructors at Eastern Mediterranean University English Preparatory School (EMUEPS) in the Fall Semester of the Academic Year 2009-2010 were asked to participate since the real users of instructional technology are the teachers themselves and they are likely to have not only positive but also negative attitudes towards the use of instructional technology in class. Moreover, students who are affected from the use of technology are the other group of participants in the study.

Participants

EPS instructors and students participated in this study. There were 100 instructors who have been teaching English at EPS and their experiences vary from 5 to 20 years. There were 488 students who studied at various levels at the preparatory school in the 2009 – 2010 Fall Semester.

Instruments

During the study two different instruments were used. Both of them were prepared by the researchers and proofread by native speakers of English.

The Scale for the EPS Instructors

There were two sections in the scale. In the first section, there were some personal questions about the participants such as their age, gender, nationality, and years of experience. In the second section, there were 48 statements and the participants were asked to respond to the statements as a) strongly disagree, b) disagree, c) neutral, d) agree, and e) strongly agree and code their answers on the optic answer sheet. The statements were a mutual decision by the researchers.

The Scale for the EPS Students

There were two sections in the scale. In the first section, there were some personal questions about the participants such as their age, gender, level at EPS, nationality and type of schools they had studied at before they came to this university. In the second section, there were 38 statements and the participants were asked to respond to the statements as a) strongly disagree, b) disagree, c) neutral, d) agree, and e) strongly agree and code their answers on the optic answer sheet. The statements were a mutual decision by the researchers. The scale was prepared in two languages, English and Turkish. Turkish students answered them in their own language and students from different countries answered them in English.

Procedure

When both data were collected from the respondents and analyzed by using SPSS Program 14.0, the similar items from each scale were selected for comparison. The results were analyzed according to the categories identified by the researchers, and these categories were the effects of the use of instructional technology in class on i) instructors, ii) students' motivation and attention, iii) lessons, iv) students' success and learning and iv) the effectiveness of technology itself.

RESULTS

The results were evaluated according to the categorized topics as the effects of technology use on instructors, the effects of it on students' attention and motivation, its effects on lessons, the use of technology and its effects on success and learning.

The Effects of Instructional Technology Use on Instructors

There were five items common for both EPS instructors and students in the section "the effects on instructional technology on instructors". The results are presented in Table 1. When the results were examined, it could be clearly seen that both EPS instructors and students had similar attitude towards the effects of instructional technology use in the classroom. They did not believe that teachers were more relaxed without the use of technology. None of the groups believed that teachers stayed in the background and had worse communication with their students when instructional technology was used. They acknowledged that the use of instructional technology prevented the negative effects of blackboard use and it also helped teachers use the class time more effectively.

Table 1 The Effects of Instructional Technology Use on Instructors

| | Strongly Agree & Agree | | Neutral | | Disagree & Strongly Disagree | |
|---|------------------------|--------------|-----------------|--------------|------------------------------|--------------|
| | Instructors (%) | Students (%) | Instructors (%) | Students (%) | Instructors (%) | Students (%) |
| A traditional lesson makes the teacher more relaxed in the class | 13.3 | 30.4 | 14.3 | 21.7 | 71.4 | 47.7 |
| Prevents the negative effects of blackboard use | 54.1 | 60.7 | 37.8 | 21.0 | 8.1 | 18.3 |
| Makes teacher stay in the background | 26.5 | 23.4 | 28.6 | 20.5 | 44.9 | 56.2 |
| Helps teacher use class time more effectively | 56.1 | 69.4 | 26.5 | 18.1 | 16.3 | 12.1 |
| Affects the communication of teacher with his/her students | 2.0 | 18.8 | 8.2 | 17.8 | 89.8 | 63.4 |

The Effects of Instructional Technology Use on Students' Attention and Motivation

The second topic in the scale was the effects of instructional technology use on students' attention and motivation. There were three common items. The results of this part are shown in Table 2. When the results were checked, it could be clearly seen that the instructors' and the students' tendencies were the same. They both accepted that the use of instructional technology increased both students' interest and participation. On the other hand, both groups disagreed with the idea that it did not increase students' interest towards lessons.

Table 2 The Effects of Instructional Technology Use on Students' Attention and Motivation

| | Strongly Agree & Agree | | Neutral | | Disagree & Strongly Disagree | |
|---|------------------------|--------------|-----------------|--------------|------------------------------|--------------|
| | Instructors (%) | Students (%) | Instructors (%) | Students (%) | Instructors (%) | Students (%) |
| Does not increase students interest towards lesson | 5.1 | 19.1 | 8.2 | 20.7 | 85.7 | 60.3 |
| Increases students' participation | 81.6 | 70.8 | 17.3 | 20.0 | 4.1 | 9.1 |
| Increases students' interest towards lessons | 81.6 | 69.7 | 17.3 | 17.8 | 1.0 | 12.6 |

The Effects of Instructional Technology Use on the Effectiveness of Lessons

When the effects of instructional technology use on the effectiveness of lessons was considered, 6 items were in common and the results are shown in Table 3. For most of the items both instructors and students responded in the same way. Most of the participants in both parties believed that lessons were more fun when instructional technology was used. Both instructors and students agreed that when instructional technology was used, students learned topics better and it helped lessons to be understood easily. However, for these items, EPS students preferred to mark 'strongly agree' or 'agree' more than the EPS instructors. Also when the "it makes the lessons more complicated"

issue was examined, both parties disagreed with this idea but a considerable amount of student participants agreed with the issue. The only issue that they didn't agree on was if the lessons became more mechanical with the use of instructional technology. Although instructors did not agree with this, students agreed on this statement. When we consider the item "lessons become more productive", more than half of the students agreed with the statement whereas nearly half of the teachers' preference were neutral.

Table 3 The Effects of Instructional Technology Use on the Effectiveness of Lessons

| | Strongly Agree & Agree | | Neutral | | Disagree & Strongly Disagree | |
|---|------------------------------|-----------------|--------------------|-----------------|------------------------------------|-----------------|
| | Instructors (%) | Students (%) | Instructors (%) | Students (%) | Instructors (%) | Students (%) |
| Lessons are more fun | 73.4 | 79.1 | 22.4 | 12.5 | 4.1 | 8.5 |
| Lessons are more complicated | 5.1 | 30.6 | 21.4 | 23.4 | 73.5 | 46.0 |
| Makes lessons mechanical | 4.0 | 36.9 | 11.2 | 27.2 | 84.6 | 35.9 |
| Makes lessons easy to understand | 55.1 | 80.0 | 39.8 | 14.9 | 5.1 | 5.1 |
| Students learn topics better | 53.0 | 71.8 | 31.6 | 23.6 | 14.3 | 4.3 |
| Lessons become more productive | 9.2 | 57.2 | 48.0 | 27.2 | 42.9 | 21.9 |

The Effectiveness of the Use of Technology

The aim of the items was to find out whether the participants considered the technology used in class as effective. There were 6 items in common in this part and five of them were about different technological devices which are used in class. The responses of the participants from both groups can be seen in Table 4. When the results were analyzed, it is possible to say that both parties believed in the effectiveness of the technology used in class with high percentages, especially for CD players, OHP and data projector which are the most common ones at EMUEPS at the moment. They all agreed that they were effective tools when they were used. Additionally, like instructors, students also would like to use audio-visual instruments if they were asked to do a presentation.

Table 4 The Effectiveness of the Use of Technology

| | Strongly Agree & Agree | | Neutral | | Disagree & Strongly Disagree | |
|--|------------------------------|-----------------|--------------------|-----------------|------------------------------------|-----------------|
| | Instructors (%) | Students (%) | Instructors (%) | Students (%) | Instructors (%) | Students (%) |
| Would like/intend to use audio-visual instruments | 93.9 | 81.5 | 5.1 | 13.3 | 1.0 | 5.0 |
| Using CD players is effective | 81.6 | 75.4 | 17.3 | 14.2 | 1.0 | 10.3 |
| Using computers is effective | 63.3 | 73.5 | 34.7 | 14.9 | 2.0 | 10.6 |
| Using data projectors is effective | 67.4 | 78.1 | 30.6 | 14.9 | 2.0 | 7.0 |
| Using OHPs is effective | 81.6 | 83.4 | 16.3 | 10.1 | 2.0 | 6.5 |
| Using videos is effective | 76.5 | 70.9 | 22.4 | 15.7 | 1.0 | 13.2 |

The Effects of Instructional Technology on Students' Success and Learning

The aim of the items in this part was to determine if the use of instructional technology has any effects on students' success and learning. The results of five items are shown in Table 5. The analysis of the results revealed that both instructors and students shared the same opinions for most of the items. Both groups believed that the use of instructional technology in class had a positive effect on students' success and they also shared the idea that instructional technology made learning easier. In addition, they disagreed with the idea that it did not increase the amount of learning. On the other hand, more than half of the students believed that it was not effective with the success rate of students whereas instructors stayed neutral on this issue. Moreover, the majority of the instructors indicated that students learned well even though technology was not used but students disagreed with this item.

Table 5 The Effects of Instructional Technology on Students' Success and Learning

| | Strongly Agree & Agree | | Neutral | | Disagree & Strongly Disagree | |
|---|------------------------------|-----------------|--------------------|-----------------|------------------------------------|-----------------|
| | Instructors (%) | Students (%) | Instructors (%) | Students (%) | Instructors (%) | Students (%) |
| Has positive effects on students' success | 73.4 | 71.8 | 25.5 | 18.1 | 1.0 | 10.1 |
| Is not effective with the success rate of students | 27.5 | 58.3 | 38.8 | 26.5 | 32.7 | 15.2 |
| Makes learning easier | 69.3 | 72.8 | 28.6 | 17.8 | 2.0 | 9.4 |
| Students learn well even though technology is not used | 77.5 | 30.1 | 16.3 | 20.0 | 6.1 | 49.9 |
| Does not increase the amount of learning | 12.2 | 17.2 | 33.7 | 17.8 | 54.1 | 62.4 |

DISCUSSION

The results of this study revealed that both EPS instructors and students believe that using instructional technology (video, OHP, data projector, computer, CD players, etc.) helps students learn better as well as increases students' participation and interest towards the lesson. Moreover, instructional technology provides different teaching and learning opportunities, supply variety and prevent the negative effects of blackboard use. It can also be stated that with instructional technology students learn the topics more easily and the lessons become fun. Last, but not least, it can also be said that when instructional technology is used in class, students could be more successful and the lessons become more productive.

As technology provides more opportunities to the students like seeing things visually and hearing sounds and conversations in their natural environment, the learning process is affected positively and this provides a healthier classroom atmosphere when instructional technology is used in class.

As a further study, it can be suggested to look at the perceptions of prospective teacher candidates' views on using instructional technology in class in order to have their opinions as they were brought up in today's technology-rich era. Moreover, the perceptions of these prospective teachers can be correlated with the current teachers in order to see whether there is a positive correlation between them.

REFERENCES

- Ashburn, E., A., & Floden, R. E. (2006). *Meaningful Learning Using Technology*. New York: Teachers College Press
- Schacter, J., & Fagnano, C. (1999). *Does computer technology improve student learning and achievement? How, when, and under what conditions?* *Journal of Educational Computing Research*, 20(4), 329-343
- Smaldino, S. E., Russell J. D., Heinich R., & Molenda, M. (2005). *Instructional Technology and Media for Learning*. Eighth Edition. Merrill, an imprint of Prentice Hall
- Whitehead, B., M., Jensen, D. F. N., & Boschee, F. (2003). *Planning for Technology*. California: Sage Publication.
- Wiske, M., S., Franz, K. R., & Breit, L. (2005). *Teaching for Understanding with Technology*. San Francisco: Jossey-Bass, (Chapter 1)

THE CORRELATION BETWEEN THE PERCEPTIONS OF PROSPECTIVE TEACHERS OF ENGLISH AND EPS INSTRUCTORS TOWARDS THE USE OF INSTRUCTIONAL TECHNOLOGY IN CLASS

İpek Meneviş, Nazan Doğruer and Ramadan Eyyam (a, b, c)

*a,b,c Eastern Mediterranean University, School of Foreign Languages, English Preparatory School,
NORTH CYPRUS*

ipek.menevis@emu.edu.tr, nazan.dogruer@emu.edu.tr, ramadan.eyyam@emu.edu.tr

Abstract

Instructional technology has become an indispensable part of teaching. When it is used effectively and appropriately in class, it is believed that it increases student motivation, cooperation, students' problem solving skills, creativity and so forth. Although there is at least one kind of instructional technology in every classroom, the use of them varies from one teacher to another. Therefore, this study aims to find out whether there is a correlation between the perceptions of prospective teachers of English and EPS instructors towards the use of instructional technology in class. This study took place at Eastern Mediterranean University (EMU), in Famagusta during the 2009-2010 Academic Year Fall Semester. An attitude scale identifying prospective teachers of English and EPS instructors' perceptions towards technology with Likert Scale was prepared. It has been found out that there is a positive correlation between the prospective and experienced teachers of English.

Keywords: *Perceptions, prospective English teachers, EPS Instructors, Instructional Technology, Correlation*

INTRODUCTION

The term "technology" can be used to mean a number of various things in education. When teachers use technology, they might mean the "new" technology like computers, CD players, videos, MP3 Players, i-phones or the "old" technology like pencil. Teaching without new or old technology is impossible and meaningless. Therefore, instructional technology has become an indispensable part of teaching. However, new technology, provided in today's world, enhance meaningful learning which is not possible with the old technology. Some of the advantages of new technology are "supporting interaction, creating real context, providing dynamic displays and linked representations" (Ashburn and Floden, 2006).

When instructional technology is used effectively and appropriately in class, it is believed that it "increases student motivation, cooperation, students' problem solving skills, creativity, enhance the quality and quantity of writing processes and content, facilitate independent work, teamwork, and collaborative inquiry, increase performance in basic skills learning, especially in math and reading, widen the scope of instructional opportunities, increase mastery of vocational and workplace skills, promote higher student retention rates, encourage higher-order thinking skills (organizing, analyzing, and communicating complex information), and serve students with special needs effectively and efficiently" (Whitehead, Jensen and Boschee, 2003). Also, it provides a rich learning environment that students can benefit a lot. Moreover, technology provides fun and variety in class. Using technology in class also provides teachers many opportunities such as various resources and different classroom contexts. Therefore, it can be said that technology is a tool that can be used to reach instructional goals more easily and more efficiently.

It also provides learner-centered opportunities to teachers. Students can use technology to do research, prepare homework or projects and discover the world with technology. Moreover, it was also proven that students who use technology as a resource can develop higher order thinking, creativity and research skills. As Grabe and Grabe (2007) pointed out, technology-facilitated classroom activities provides an active learning environment which engages the thinking, decision-making, problem-solving, and reasoning skills of students. In this respect, teachers should be well-trained and know how to use technology in class effectively and efficiently. It can also be argued that technology use in language teaching enhances authenticity which is the most crucial thing in language teaching and learning.

Although research continues to reveal the positive impact of instructional technology on learning and success, at present only limited research is available that shows a correlation between the increase in student achievement and the use of instructional technology at schools (Ringstaff and Kelley, 2002; Schacter and Fagnano, 1999). Every classroom has recently been supported with at least one kind of instructional technology because of these results. However, the use of instructional technology varies from one teacher to another. Therefore, this study aims to find out whether there is a correlation between the perceptions of prospective teachers of English and EPS instructors towards the use of instructional technology in class.

METHODOLOGY

Participants

In order to correlate the data, two different sampling groups were used. The first group was the English language instructors who work at English Preparatory School (EPS) of Eastern Mediterranean University (EMU). The second group was the third and fourth year students studying at English Language Teaching (ELT) Department at EMU and they were accepted as prospective teachers in the same field.

There were 147 full-time instructors at EPS during the Fall Semester of 2009 – 2010 Academic Year and 100 of them had participated in the study. Twenty-four of the participants were male, and 74 of them were female. Out of 100 instructors, 78 of them were non-native speakers of English and 22 of them were native English speakers. The experience of the instructors varied from 5 years to more than 21 years.

Out of 68 prospective English teachers, 47 of them participated in the study. Thirty-seven of them were female and 10 of them were male. Out of 47, 33 of them were 3rd year students and 14 of them were 4th year students.

Instruments

Two versions of the attitude scale were designed and prepared by the researchers. The second part of both scales was the same but there were some differences in the first part as their background information was not the same. The items of the scale were prepared by the researchers and proof-read by native speakers of English.

In the scale, there were 47 items and the participants were asked to rate them as a) Strongly Agree, b) Agree, c) Neutral, d) Disagree, and e) Strongly Disagree. The items were categorized as i) the effects of technology use on the success of the students; ii) the effects of technology use on learning; iii) the effects of technology use on students' attention and motivation; iv) the effects of technology use on lessons; v) the effects of technology use on instructors' performance; and vi) the effects of technology use itself.

Procedure

For EPS instructors, after the necessary permission was received from the necessary bodies, the researchers approached each instructor individually, explained the aim of the study and asked them to complete the scale using optic answer sheets. For prospective English teachers, after the necessary permission was received, the researchers approached the course lecturers and with the help of the lecturers in their lesson hours, participants were asked to complete the scale using optic answer sheets. All the data was evaluated by using SPSS 14.00.

RESULTS

As the items in the scale were categorized into six different groups, the items for each group were analyzed together and the differences or the similarities between the groups were provided in different tables.

The Effects of Instructional Technology Use on Success

There were seven items to find out whether the participants believed that using instructional technology had effects on the success of students. The results of the items are shown in Table 1. As it can be seen in the table, in most of the items, both EPS instructors and prospective teachers shared the same perceptions. Both groups accepted that successful and motivated students do not need instructional technology in order to be successful. Moreover, both groups stated that instructional technology had positive effects on students' success and improved their autonomy. On the other hand, while nearly half of the EPS instructors remained neutral for the statement that 'more technology use brings more success', many prospective teachers agreed with the statement. Also, for the item "instructional technology is not effective with the success rate of students", the responses of the participants were different, that is to say, EPS instructors preferred to remain neutral whereas prospective teachers disagreed with this statement. The main difference between the participants was the item whether the success of the students is dependent on the amount of technology used in class because most of the EPS instructors disagreed with the statement whereas nearly half of the prospective teachers agreed with it.

Table 1: The Effects of Instructional Technology Use on Success

| Items | EPS Instructors | | | Prospective Teachers | | |
|--|-----------------|-------------|-------------|----------------------|---------|-------------|
| | Agree | Neutral | Disagree | Agree | Neutral | Disagree |
| More technology more success | 38.0 | 44.9 | 7.1 | 72.3 | 17.0 | 8.5 |
| Successful students' success is not affected | 79.5 | 15.3 | 5.1 | 63.9 | 23.4 | 8.5 |
| Motivated students do not need it to be successful | 48.0 | 24.5 | 27.5 | 38.2 | 31.9 | 29.8 |
| Success is dependent on the amount of technology used in class | 5.1 | 26.5 | 78.3 | 40.5 | 36.2 | 13.4 |
| Has positive effects on students' success | 73.4 | 25.5 | 1.0 | 80.9 | 14.9 | 4.3 |
| Helps students improve autonomy in learning | 64.3 | 33.7 | 2.0 | 61.7 | 19.1 | 42.5 |
| Is not effective on the success rate of students | 27.5 | 38.8 | 32.7 | 35.2 | 19.1 | 42.5 |

* the figures are in percentages

The Effects of Instructional Technology Use on Learning

There were seven items in the scale to find out the attitudes of participants towards the effects of instructional technology use on learning. The results were presented in Table 2. When the results are analyzed, for all of the items the tendency of the participants was similar. One of the significant results was about the item "students understand difficult subjects better." Although most of the participants in both groups agreed on the item, there was a considerable amount of EPS instructors who preferred to be neutral.

Table 2: The Effects of Instructional Technology Use on Learning

| Items | EPS Instructors | | | Prospective Teachers | | |
|--|-----------------|---------|-------------|----------------------|---------|-------------|
| | Agree | Neutral | Disagree | Agree | Neutral | Disagree |
| Makes learning easier | 69.3 | 28.6 | 2.0 | 80.9 | 14.9 | 4.3 |
| Positive effects on learning fruitfully | 80.7 | 17.3 | 2.0 | 91.5 | 8.5 | -- |
| Learn well enough without technology | 77.5 | 16.3 | 6.1 | 57.4 | 19.1 | 21.2 |
| Provides help for students to learn better | 79.5 | 18.4 | 2.0 | 89.4 | 8.5 | -- |
| Helps students understand better the subjects that are difficult to understand | 46.9 | 43.9 | 9.1 | 80.8 | 14.9 | -- |
| Does not increase the amount of learning | 12.2 | 33.7 | 54.1 | 23.4 | 31.9 | 44.7 |
| Without technology learning environment is better | 11.2 | 26.5 | 62.2 | 19.1 | 14.9 | 65.9 |

* the figures are in percentages

The Effects of Instructional Technology Use on Students' Attention and Motivation

In the scale there were seven items to find out the participants' perceptions on how the use of instructional technology affect students' attention and motivation. For most of the items, the participants were on the same side. All of them agreed that instructional technology increases students' involvement and interest and they also agreed that students become more interested in lessons when instructional technology is used in class. Moreover, both groups disagreed with the statements that "students are passive" and "they concentrate on technological devices when instructional technology is used". On the other hand, there were some items that participants had different tendencies. While most of the EPS instructors did not agree with the item "the use of instructional technology does not increase students' interest", a considerable amount of prospective teachers agreed with this statement. Moreover, most of the prospective teachers stated that instructional technology helps students become more motivated whereas EPS instructors disagreed with the statement.

Table 3: The Effects of Instructional Technology Use on Students' Attention and Motivation

| Items | EPS Instructors | | | Prospective Teachers | | |
|--|-----------------|---------|----------|----------------------|---------|----------|
| | Agree | Neutral | Disagree | Agree | Neutral | Disagree |
| Students are passive | 10.2 | 16.3 | 72.4 | 27.6 | 23.4 | 48.9 |
| Does not increase students' interest towards lessons | 5.1 | 8.2 | 85.7 | 63.8 | 25.5 | 10.6 |
| Provides active involvement of students | 49.0 | 36.7 | 14.2 | 57.4 | 27.7 | 14.9 |
| Increases students' interest towards lessons | 81.6 | 17.3 | 1.0 | 80.9 | 12.8 | 6.4 |
| Students concentrate on technological devices more | 6.1 | 31.6 | 62.2 | 19.1 | 27.7 | 53.2 |
| Helps students become more motivated | -- | 24.5 | 75.5 | 72.3 | 17.0 | 8.5 |
| Become more interested in lessons | 62.3 | 23.5 | 13.3 | 80.8 | 12.8 | 4.2 |

* the figures are in percentages

The Effects of Instructional Technology Use on Lessons

There were nine items in the scale to detect how the participants distinguish the effects of instructional technology use on lessons. The results for the items can be seen in Table 4. For most of the items the participants had the same opinions. They all agreed that using audio-visual tools increases the permanence in learning, lessons become more fun and easy to understand, students learn topics better and there is more exposure to the target language when instructional technology is used in class. Also, both parties did not agree with the statements that lessons are more complicated and instructional technology makes the lesson difficult to understand. On the other hand, nearly half of the prospective teachers agreed that instructional technology makes lessons mechanical, whereas most of the EPS instructors have the opposite opinion. Moreover, the majority of the prospective teachers agreed that when instructional technology is used in class, lessons become more productive, but nearly half of the EPS instructors preferred to be neutral.

Table 4: The Effects of Instructional Technology Use on Lessons

| Items | EPS Instructors | | | Prospective Teachers | | |
|--|-----------------|---------|----------|----------------------|---------|----------|
| | Agree | Neutral | Disagree | Agree | Neutral | Disagree |
| Audio-visual tools increase permanence in learning | 84.7 | 7.1 | 5.1 | 89.4 | 8.5 | 2.1 |
| More fun | 73.4 | 22.4 | 4.1 | 80.9 | 14.9 | 4.2 |
| More complicated | 5.1 | 21.4 | 73.5 | 36.2 | 17.0 | 40.5 |
| Makes lessons mechanical | 4.0 | 11.2 | 84.6 | 44.6 | 34.0 | 21.2 |
| Makes lessons more difficult to understand | 3.0 | 10.2 | 86.7 | 25.6 | 10.6 | 63.8 |
| Makes lessons easy to understand | 55.1 | 39.8 | 5.1 | 76.6 | 21.3 | 2.1 |
| Students learn topic better | 53.0 | 31.6 | 14.3 | 29.8 | 25.5 | 44.7 |
| Lessons become more productive | 9.2 | 48.0 | 42.9 | 83.0 | 12.8 | 4.3 |
| More exposure of target language | 45.9 | 43.9 | 10.2 | 68.1 | 23.4 | 8.5 |

* the figures are in percentages

The Effects of Instructional Technology Use on Instructors' Performance

In the scale there were nine items to diagnose how the participants perceive the effects of instructional technology used in class on instructors' performance. For most of the items both groups shared the same opinions. They all believed that the use of instructional technology is effective during the presentation of a new topic. Moreover, they agreed that it is necessary for teachers to get necessary information before they use instructional technology in class. Both EPS instructors and prospective teachers believed that the use of instructional technology in class helps teachers use class time more effectively and it prevents negative effects of blackboard use. They also opposed the ideas that it makes teachers stay in the background and affects teacher – student interaction negatively. On the other hand, while prospective teachers believed that teachers have more organized lessons with instructional technology, EPS teachers preferred to stay neutral. Also, almost half of the EPS instructors did not agree with the item "the use of instructional technology increases the load of teachers" but more than half of the prospective teachers agreed with this statement.

Table 5: The Effects of Instructional Technology Use on Instructors' Performance

| Items | EPS Instructors | | | Prospective Teachers | | |
|---|-----------------|-------------|-------------|----------------------|---------|-------------|
| | Agree | Neutral | Disagree | Agree | Neutral | Disagree |
| Traditional lesson makes teacher more relaxed | 13.3 | 14.3 | 71.4 | 35.3 | 31.9 | 29.8 |
| Can be effective while presenting a new topic | 90.8 | 7.1 | 2.0 | 89.3 | 8.5 | 2.1 |
| Necessary information should be given before it is used | 87.7 | 7.1 | 5.1 | 80.9 | 17.0 | 2.1 |
| Increases the load of the teacher | 26.5 | 26.5 | 46.9 | 55.4 | 29.8 | 12.8 |
| Prevents the negative effects of blackboard use | 54.1 | 37.8 | 8.1 | 61.7 | 17.0 | 19.1 |
| Makes teacher stay in the background | 26.5 | 28.6 | 44.9 | 27.7 | 27.7 | 44.7 |
| Helps teacher use class time more effectively | 56.1 | 26.5 | 16.3 | 83.0 | 8.5 | 8.5 |
| Affects teacher – student interaction negatively | 2.0 | 8.2 | 89.8 | 23.4 | 19.1 | 57.4 |
| Teachers have more organized lessons | 36.7 | 55.1 | 7.1 | 80.8 | 17.0 | 2.1 |

* the figures are in percentages

The Use of Instructional Technology

There are seven items in the section to find out how they perceive the technology used in class. For all of the items both parties had the same attitudes. Most of them declared that they would like to use audio-visual instruments in their lessons but they also agreed that teachers need to have the necessary knowledge and ability to use instructional technology in their lessons. Moreover, they agreed that using CD players, computers, data projectors, OHPs and videos was effective.

Table 6: The Use of Instructional Technology

| Items | EPS Instructors | | | Prospective Teachers | | |
|---|-----------------|---------|----------|----------------------|---------|----------|
| | Agree | Neutral | Disagree | Agree | Neutral | Disagree |
| Would like/intend to use audio-visual instruments | 93.9 | 5.1 | 1.0 | 93.6 | 4.3 | 2.1 |
| Requires having necessary knowledge and ability | 82.7 | 12.2 | 5.1 | 89.4 | 10.6 | -- |
| Using CD players is effective | 81.6 | 17.3 | 1.0 | 76.6 | 14.9 | 4.3 |
| Using computers is effective | 63.3 | 34.7 | 2.0 | 76.6 | 21.3 | 2.1 |
| Using data projectors is effective | 67.4 | 30.6 | 2.0 | 83.0 | 12.8 | 4.3 |
| Using OHPs is effective | 81.6 | 16.3 | 2.0 | 83.0 | 12.8 | 4.3 |
| Using videos is effective | 76.5 | 22.4 | 1.0 | 87.2 | 6.4 | 6.4 |

* the figures are in percentages

DISCUSSION

When the results were examined, for some items, the classroom experiences of the EPS instructors played an important role because they had the experiences to refer to. On the other hand, instead of being a teacher, the responses of prospective teachers were as students in ELT classes and based on their own assumptions in language learning.

For the relationship between the success and the use of instructional technology, prospective teachers agreed that more technology brings more success because it is an assumption that technology use brings success. On the other hand, for EPS instructors the reality in the classroom is different because there is evidence that traditional teaching methods also bring success. Therefore, when the relationship between the use of instructional technology and success is taken into consideration, it is possible to say that EPS instructors are more deliberate than prospective teachers.

For the students' attention and motivation issue, there were two topics which were contradictory. EPS teachers did not agree that using instructional technology in class helps students become more motivated as there were different factors which affect students' motivation. However, they stated the positive effects of instructional technology use on students' interest. For prospective teachers, the situation was just the opposite since they did not believe it increased the amount of interest so they disagreed that it helps students become more motivated.

Because of their own experiences, prospective teachers believed that instructional technology makes lessons more complicated, whereas EPS instructors did not believe it as the types of materials are more important than using instructional technology in class. At this point, the experiences of the instructors play an important role while determining their attitudes towards the use of instructional technology.

Prospective teachers had a tendency to believe that the use of instructional technology increases the load of teachers because of being inexperienced in the field. However, EPS instructors disagreed with this idea as they have had a chance to experience the positive effects of using it so as a result, they had a tendency towards non-traditional lessons, whereas a considerable amount of prospective teachers had just the opposite idea because of their own experiences in language classes.

REFERENCES

- Ashburn, E., A., & Floden, R. E. (2006). *Meaningful Learning Using Technology*. New York: Teachers College Press
- Grabe, M., & Grabe, C. (2007). *Integrating Technology for Meaningful Learning*. (5th ed.). New York: Houghton Mifflin Company
- Ringstaff, C., & Kelley, L. (2002). *The learning return on our education technology investment: A review of findings from research*. San Francisco: WestEd. RTEC.
- Schacter, J., & Fagnano, C. (1999). *Does computer technology improve student learning and achievement? How, when, and under what conditions?* *Journal of Educational Computing Research*, 20(4), 329-343
- Whitehead, B., M., Jensen, D. F. N., & Boschee, F. (2003). *Planning for Technology*. California: Sage Publication.

IETC 2010

THE ECLECTIC SCHOOL TECHNOLOGY PLANNING MODEL AND ITS APPLICATION IN THE EVALUATION OF ESENTEPE'S TECHNOLOGY INTEGRATION PROCESS

Dr. Ashhan SABAN

Selcuk University, Ahmet Kelesoglu Faculty of Education
Department of Computer and Instructional Technologies Education
E-mail: aslihansaban@yahoo.com

Abstract

The purpose of this study was to examine the technology integration process of Private Esentepe Elementary School in Konya, Turkey. The questions were: (1) What are the major dimensions of a successful school technology planning process? (2) How does the technology integration profile of Esentepe look like with regard to these dimensions? To answer the first question, based on an internet search, five major school technology planning models were analyzed. Afterwards, the 11-dimensional "Eclectic School Technology Planning Model" was developed. To answer the second question, based on the Eclectic Model, Esentepe's technology integration profile was assessed in two different times (May 2005 and January 2010). Results show that Esentepe's technology integration efforts have been piecemeal and lack leadership. The study concludes that a successful technology integration process is comprehensive and requires a systematic effort on the part of all staff members. Therefore, each school should develop its own technology integration plan and form a representative committee to be responsible for carrying out this plan.

Keywords: Models of school technology planning, Private Esentepe Elementary School's technology profile, case study research

INTRODUCTION

Technology is the main dynamic of today's information societies. Thus, being out of the "technological progress" in a way means "being out of life" (Üşür, 2001). More importantly, with technology, schools are able to provide many new and meaningful learning opportunities for students, and students, in turn, are better at meeting their individual learning needs and interests. Hence, the question "Is the integration of technology into schools necessary?" has lost its validity today. Instead, the question raised by many educators is "How can technology be integrated into schools successfully?" (Bracci, 1999). In this regard, many educators suggest that each school should develop its own technology integration plan and form a representative committee to be responsible for carrying out this plan.

The purpose of this study was to examine the technology integration process of Private Esentepe Elementary School in Konya, Turkey. Specifically, the following two questions guided the study: (1) What are the major dimensions of a successful school technology planning process? (2) How does the technology integration profile of Esentepe look like with regard to these dimensions?

METHOD

The Study Site

Founded by the Selcuk University Foundation, Private Esentepe Elementary School started its education in the 2000-2001 academic year. In the May 2005 study, Esentepe had 36 full-time staff (22 females and 14 males). Their ages ranged from 21 to 55, with a mean age of 37 and their working experiences ranged from 1 year to 34 years, with a mean year of 15. In the January 2010 study, Esentepe had 46 full-time staff (30 females and 16 males). Their ages ranged from 23 to 59, with an average age of 36 and their working experiences ranged from 1 year to 35 years, with an average year of 13.

Data Collection and Analysis

First, based on an internet search, five major school technology-planning models were identified and reviewed. Afterwards, the 11 dimensional "Eclectic School Technology Planning Model" was developed. Later, based on the 11 major dimensions, a "School Technology Profile Survey (STPS)" was developed (see Saban, 2006) and administered in Esentepe in two different times (May 2005 and January 2010). The STPS was composed of 30 questions (five demographical, 24 close-ended and one open-ended). In addition, relevant school documents were examined, and a series of interviews with Esentepe's Computer Teacher were conducted. Finally, all the study data were analyzed descriptively.

RESULTS

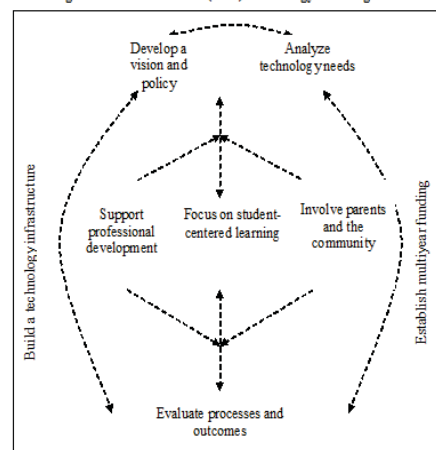
The Development of the Eclectic School Technology Planning Model

The "Eclectic School Technology Planning Model" was developed based on the analysis of the following five major school technology planning models. This section first reviews these models and then introduces the 11-dimensional "Eclectic School Technology Planning Model", which was used to evaluate Esentepe's technology integration process.

McNabb et al.'s (1999) School Technology Planning Model

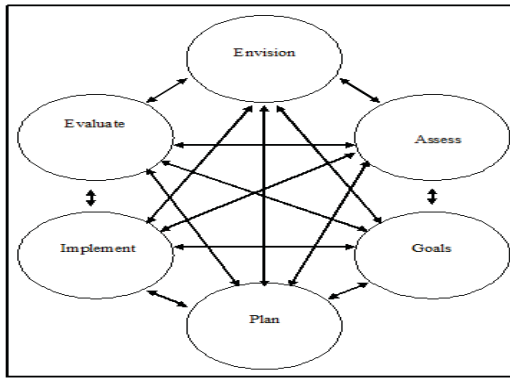
McNabb et al.'s (1999) School Technology Planning Model consists of eight interconnected dimensions (see Figure 1): (1) Developing a collective vision and policy that will drive the technology integration efforts in the school. (2) Conducting a technology needs assessment (i.e. identifying the gap between the school's technology vision and its present situation). (3) Focusing on student-centered learning (i.e. each student is unique with his/her own learning style). (4) Involving parents and the community in children's learning. (5) Providing technology-rich professional development opportunities for school staff. (6) Building the school's technology infrastructure (e.g. equipping the school with the necessary hardware and software). (7) Establishing multiyear funding. (8) Evaluating processes and outcomes for getting timely feedback about the school's technology integration efforts.

Figure 1: McNabb et al.'s (1999) Technology Planning Model



Apple Computer Inc.'s (2005) School Technology Planning Model

Figure 2: Apple Computer Inc.'s (2005) Technology Planning Model



Apple Computer Inc.'s (2005) School Technology Planning Model consists of six interconnected steps (see Figure 2): (1) Creating a vision (i.e. successful technology integration begins with a strong vision that gives a tangible direction). (2) Assessing the school's present situation in terms of its resources, strengths, and weaknesses. (3) Establishing measurable goals for achievement (i.e. addressing the gap between the vision and reality). (4) Developing an action plan to accomplish the goals. (5) Implementing the action plan. (6) Evaluating the school's technology integration process to see whether the goals and objectives are accomplished.

Knuth et al.'s (1996) School Technology Planning Model

Knuth et al.'s (1996) School Technology Planning Model consists of seven areas of consideration and each area is defined by a central question (see Figure 3): (1) Creating a vision (i.e. What is your vision of learning?). (2) Designing for learning (i.e. How will you use technology to support your vision of learning?). (3) Designing the infrastructure (i.e. How will you develop a supportive infrastructure?). (4) Context of planning (i.e. Do you understand the context of your technology planning process?). (5) Garnering public support (i.e. How will you garner public support for your plan?). (6) Implementing a plan (i.e., How will you implement your plan?). (7) Ongoing evaluation (i.e. How will you evaluate the implementation of your technology plan?).

Anderson's (1996) School Technology Planning Model

Anderson's (1996) School Technology Planning Model consists of five phases (see Figure 4): (1) Recruiting and organizing a planning team that represents all stakeholders. (2) Identifying the technology needs of the individuals and the school. (3) Constructing a technology plan which defines the school's vision as well as the goals and the tasks that will lead to fulfilling this vision. (4) Formalizing the planning (i.e. articulating in a document what is believed, what exists, what is to be, and how goals are to be achieved). (5) Continual implementing, evaluating and revising the plan.

Figure 3: Knuth et al.'s (1996) Technology Planning Model

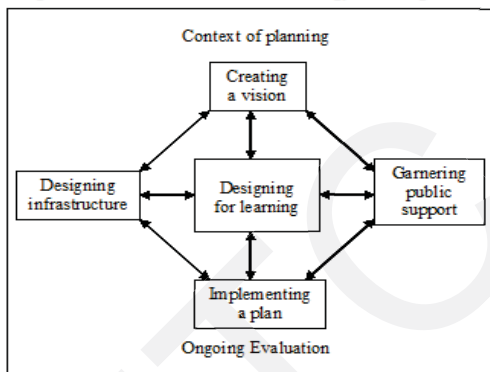
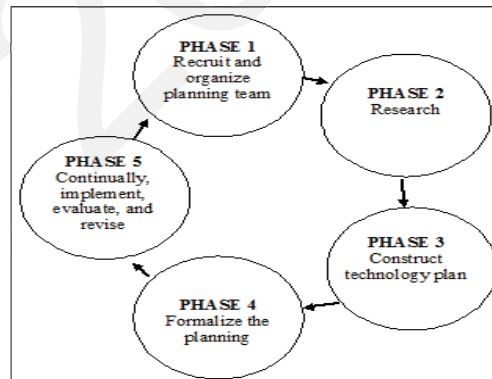


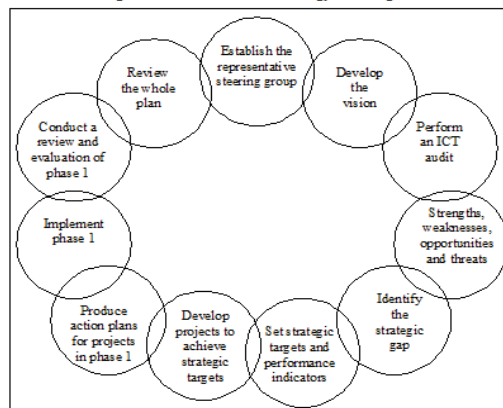
Figure 4: Anderson's (1996) Technology Planning Model



Jones' (2005) School Technology Planning Model

Jones' (2005) School Technology Planning Model consists of eleven interconnected steps (see Figure 5): (1) Establishing the representative steering committee. (2) Developing the vision (i.e. a concise statement about where the school community wants to be at some point in the future). (3) Performing an ICT audit (i.e. establishing a snapshot of the school and its community as it is now). (4) Identifying the strengths, weaknesses, opportunities and threats in the school. (5) Identifying the strategic gap that the technology plan must bridge. (6) Setting strategic targets and performance indicators (i.e. turning the vision into measurable achievements). (7) Developing possible projects to achieve strategic targets. (8) Producing action

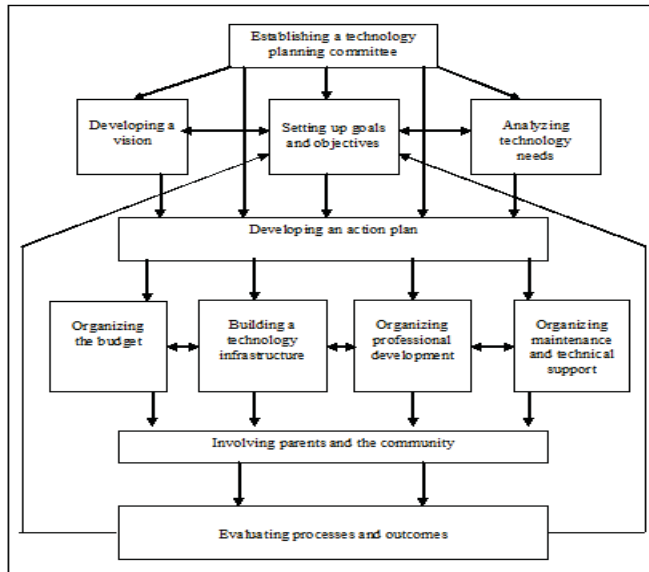
Figure 5: Jones' (2005) Technology Planning Model



plans for projects in the phase 1 of the technology plan. (9) Implementing the phase 1 of the technology plan. (10) Conducting a review and evaluation of the phase 1. (11) Reviewing the whole technology plan based on the achievements in the phase 1 and doing it all over again.

The Eclectic School Technology Planning Model

Figure 6: The Eclectic School Technology Planning Model



The “Eclectic School Technology Planning Model” (see also Saban, 2006) is composed of 11 interconnected dimensions (see Figure 6). They include the following: (1) Establishing a technology planning committee, (2) Developing a vision, (3) Setting up goals and objectives, (4) Analyzing technology needs, (5) Developing an action plan, (6) Organizing the budget, (7) Building a technology infrastructure, (8) Organizing professional development, (9) Organizing maintenance and technical support, (10) Involving parents and the community and (11) Evaluating processes and outcomes. (Note: The ninth dimension was not included in the above five reviewed models and so it was added by this researcher).

The Technology Integration Profile of Private Esentepe Elementary School

Establishing a Technology Planning Committee

As part of its total quality management process, in November 2004 Esentepe formed a “Technology/Project Development and Implementation Committee” composed of the school’s computer teacher, the principal and five relatively technology-competent teachers. Since then this committee has been responsible for organizing professional development activities related to the use of technology and for providing technical support to the staff members who need it. However, this committee has not aimed to develop a comprehensive technology plan for the school. As the computer teacher stated:

“At present, Esentepe does not have a comprehensive technology integration plan. For this reason, the school’s technology integration efforts have been piecemeal and are unrelated with each other. They are also not systematic in that they are not connected to the wider school reform efforts that are taking place at Esentepe like the implementation of the Multiple Intelligences Theory.”

Developing a Vision

Before Esentepe started its education in the 2000-2001 school year, all the teaching staff participated in a one-month professional development program in August 2000. The purpose of this program was to get staff members acquainted with one another and make preparation for the upcoming academic year, but it also resulted in development of the school vision. According to this vision (see <http://www.esentepe.k12.tr>), Esentepe aims for preparing its students who will (1) be successful in all academic areas of study, (2) speak and write in Turkish effectively, (3) learn at least one foreign language, (4) be healthy in terms of cognitive, emotional, social and physical well-being, (5) be an active critical thinker and problem solver, (6) be able to use the technology of modern era, (7) communicate and interact with others successfully, (8) appreciate the national and international cultural values, (9) learn how to learn and be responsible for his/her own learning, and (10) be self-confident. It is clear that Esentepe seems to be dedicated to develop technologically competent individuals who can use technology in their daily lives successfully. Yet, Esentepe does not have a technology vision that is in accord with the school vision. Thus, Esentepe needs to develop a technology vision that focuses on the successful integration of information technology into the school curriculum with an emphasis on improving student learning as well as detailing the strategies that will make this possible.

Setting Up Goals and Objectives

Like all other public and private schools, Esentepe implements a standardized curriculum developed by the Ministry of Education (with the exception of additional coursework in some disciplines, like foreign language). Hence, Esentepe has already been teaching the technology standards and performance indicators set forth for the students from kindergarten to grade eight. Yet, these standards need to be revised and updated based on the technology standards and performance indicators set by the International Society for Technology in Education (ISTE) (see <http://www.iste.org>).

Analyzing Technology Needs

In the May 2005 study, Esentepe’s major technological infrastructure needs were identified as follows:

The **computer lab** still has the same 24 computers bought when the school was opened in 2000 (with the Windows 98 operating system and Office 97 software programs). These computers are out of date and are not in production anymore. They cannot be upgraded without spending a great amount of money, which indeed can be used to buy new and more functional computers. Hence, updated technology (in terms of both hardware and software) is needed in the computer lab to meet the needs of students as well as the staff.

The school still has only one ADSL (**internet connection**) line obtained from the Turk Telekom, which is being used by a total of 60 computers in the school. As can be seen, this single ADSL line is inadequate for the existing number of computers and causes the internet to work in a very low speed with frequent interruptions. As one teacher reproved: “When I do a search on the internet or try to inform parents by the e-mail, I lose a lot of time because of the low speed of the internet. This situation bores me very much and makes me angry very often”. The school’s internet problem may be solved in the following three alternative ways: (1) The speed and the capacity of the available ADSL line can be increased. (2) A new internet connection line can be purchased. (3) A wireless internet connection system can be established.

Presently, there is a computer and a projection device only in the science lab. Both computers and projections devices as well as LCDs should be set up in the **other labs** (such as foreign language, art, drama, etc.) **and the regular classrooms** as well. In fact, each classroom in the school ought to have at least one computer with internet connection and a projection device so that teachers and students would be able to view the course materials obtained from the internet, share their own course materials with others via the internet and perhaps more importantly participate in virtual teaching and learning activities.

Table 1 presents Esentepe teachers’ levels of technology use in teaching (based on their self-judgment). According to Table 1, although there seems to be an improvement between May 2005 and January 2010, more than half of them still remain in the first three levels.

Table 1. Esentepe teachers' levels of technology use in their teaching

| Level | f(%) 2005 | f(%) 2010 |
|---|-----------|-----------|
| Entry (teachers who are just starting to use technology for learning) | 13 (36.1) | 5 (10.9) |
| Adoption (teachers who have some comfort level with using technology in teaching) | 14 (38.9) | 4 (8.7) |
| Adaptation (teachers who are shifting toward more project-based learning by using a variety technology tools) | 7 (19.4) | 15 (32.6) |
| Appropriation (teachers who are very comfortable with technology integrated throughout all the learning activities) | 1 (2.8) | 13 (28.3) |
| Transformation (teachers who create new ways to use technology tools for real-world applications) | 1 (2.8) | 9 (19.6) |

Developing an Action Plan

Esentepe has not yet developed an official action plan about the integration of technology into its curriculum. Although the minutes of the "Technology/Project Development and Implementation Committee" may be considered as the technology action plans, they lack the features of effective action plans, such as the tasks to be accomplished, the starting and the ending times for the tasks, the names of the persons who will be responsible for accomplishing the tasks, their estimated costs, and how the necessary funds will be provided, etc. These factors are all vital and must be included in an effective action plan.

Organizing the Budget

Esentepe has been founded by the Selcuk University Foundation and thus all of its expenditures are met by this Foundation. Yet Esentepe also uses some fund-raising activities, such as organizing a kermes and a science festival at the end of each school year.

Building a Technology Infrastructure

As of January 2010, Esentepe's technological infrastructure is composed of the following hardware and software facilities:

- 40 desktop computers (two in science and music labs; 25 in the computer lab, one in the library, 11 in the administration/management offices, and one in the conference hall).
- 40 fiber-optic cabled internet connection and wireless internet link in the whole school building, including its garden.
- 20 computer-connected LCD televisions (13 in the classrooms for grades 1-5 and 7 in the labs).
- 50 laptops (48 for teachers and two for "computer" and "project development" labs)
- 7 projection devices (three in the conference hall and four in the labs)
- 7 laser printer (one in the library, three in the administration/management offices, one in the computer lab, one in the counselor office, and one in the teachers' room)
- 1 scanner (in the teachers' room)
- 1 video camera
- 1 DVD player (in the conference hall)
- VCDs and tapes in each classroom

It appears that Esentepe meets the technological infrastructure requirements suggested by educators except that the school needs to purchase more computers in each classroom for student use (at least one computer for every four or five students) and more LCDs for grades 6-8.

Organizing Maintenance and Technical Support

Table 2 shows the ways that Esentepe staff members used to learn how to use information technology. According to Table 2, the vast majority of staff members learned how to use information technology through the "trial and error through" method (63.9% in the 2005 data and 80.4% in the 2010 data). This also indicates that teachers at Esentepe do not have adequate professional development opportunities provided in or out of the school.

Table 2. The ways that Esentepe staff members used to learn how use information technology

| | f(%) in 2005 | f(%) in 2010 |
|--|--------------|--------------|
| Self-taught by experimenting with the equipment | 23 (63.9) | 37 (80.4) |
| Through school in-service programs | 17 (47.2) | 16 (34.8) |
| By attending conferences and seminars | 8 (22.2) | 12 (26.1) |
| In higher education courses | 7 (19.4) | 12 (26.1) |
| With assistance from peers | 12 (33.3) | 15 (32.6) |
| By consulting the computer teacher in the school | 11 (30.6) | 12 (26.1) |

Table 3 shows the types of sources that Esentepe teachers apply when they need technological help. According to the Table 3, teachers do not have enough collaboration with one another regarding technology. In terms of the technological help, most teachers use the computer teacher (91.7% in the 2005 data and 84.8% in the 2010 data) as the technical support person when they encounter with technological problems at the school. However, this situation takes a lot of time and energy of the computer teacher, who spends most of his time in the computer lab teaching students computer skills. Thus, Esentepe might employ a technology coordinator to provide technical support for its staff members.

Table 3. The types of sources that Esentepe teachers apply when they need technological help

| | f(%) in 2005 | f(%) in 2010 |
|--|--------------|--------------|
| Computer teacher | 33 (91.7) | 39 (84.8) |
| Colleagues | 11 (30.6) | 10 (21.7) |
| Librarian | 2 (5.6) | ----- |
| Administrator | 3 (8.3) | 1 (2.2) |
| Students in the classroom | 4 (11.1) | 3 (6.5) |
| Others (spouse, friend, experts outside of the school) | 5 (13.9) | 7 (15.2) |

Organizing Professional Development

In order to identify Esentepe staff members' professional development needs regarding technology, they were asked to judge their levels of achievement in 13 competencies (see Table 4). According to Table 4, although there seems to be an improvement between May 2005 and January 2010, most of the staff members still need training especially in the competency areas of "spreadsheet", "graphics" and "photography", "desktop publishing", "digital video", "graphic organizers", "web publishing on the internet" and "multimedia projects".

Table 4. Esentepe teachers' professional development needs regarding technology

| | Level 1 | f(%) | Level 2 | f(%) | Level 3 | f(%) | Level 4 | f(%) | Level 5 | f(%) |
|--------------------------------------|--|----------------------|---|----------------------|--|---------------------|--|--------------------|--|--------------------|
| | | 2005-2010 | | 2005-2010 | | 2005-2010 | | 2005-2010 | | 2005-2010 |
| Basic computer use | I do not use a computer. | 8(22.2) 3(6.5) | I run only one computer program. | 14(38.9) 14(30.4) | I run two programs simultaneously. | 9(25) 19(41.3) | I trouble-shoot computer problems. | 2(5.6) 3(6.5) | I help others solve computer problems. | 3(8.3) 7(15.2) |
| File management | I cannot save my documents. | 8(22.2) 3(6.5) | I select, open and save documents. | 15(41.7) 12(26.1) | I create my own folders to keep files. | 6(16.7) 9(19.6) | I move files between folders and drives. | 3(8.3) 13(28.3) | I assist others to manage their files. | 4(11.1) 9(19.6) |
| Word processing | I do not use word processor. | 10(27.8) 7(15.2) | I occasionally use word processor. | 14(38.9) 17(37) | I use word processor for all my work. | 8(22.2) 13(28.3) | I integrate word processing into student tasks. | 3(8.3) 6(13) | I help others with advanced features of word processor. | 1(2.8) 3(6.5) |
| E-mail | I do not have an e-mail account. | 11(30.6) 7(15.2) | I can send messages to people. | 13(36.1) 10(21.7) | I use e-mail regularly. | 9(25) 14(30.4) | I am a member of one or more email lists. | 1(2.8) 10(21.7) | I successfully mentor others via e-mail lists. | 2(5.6) 5(10.9) |
| Internet use | I rarely use the internet. | 7(19.4) 4(8.7) | I access websites to retrieve information. | 17(42.2) 13(28.3) | I use a range of search techniques to find quality internet resources. | 6(16.7) 13(28.3) | I teach students how to use the internet effectively. | 4(11.1) 9(19.6) | I help others with critical analysis and evaluation of internet resources. | 2(5.6) 7(15.2) |
| Spreadsheet | I do not use a spreadsheet. | 21(58.3) 18(39.1) | I can create simple spreadsheets and charts. | 6(16.7) 15(32.6) | I use spreadsheets for a variety of record-keeping tasks. | 7(19.4) 9(19.6) | I teach students to use spreadsheets. | ---- 2(4.3) | I assist others with using complex spreadsheets. | 2(5.6) 2(4.3) |
| Technology presentation (PowerPoint) | I do not use computer presentation programs. | 14(38.9) 9(19.6) | I use templates or wizards to create a presentation. | 15(41.7) 16(34.8) | I produce original presentations incorporating multimedia elements. | 4(11.1) 14(30.4) | I integrate presentation skills into classroom tasks. | 1(2.8) 1(2.2) | I assist others to create original and effective presentations. | 2(5.6) 6(13) |
| Graphics and photography | I do not use graphics. | 20(55.6) 15(32.6) | I open, create, and place simple graphics or photos. | 7(19.4) 12(26.1) | I create, scan and edit graphics and photos using a variety of programs. | 7(19.4) 11(23.9) | I have students create and use graphics in a range of situations. | 1(2.8) 5(10.9) | I assist others to develop critical graphic techniques. | 1(2.8) 3(6.5) |
| Desktop publishing | I do not use a publishing program. | 25(69.4) 14(30.4) | I use templates to create a published document. | 6(16.7) 17(37) | I create original publications from a blank page. | 4(11.1) 10(21.7) | I design completely professional looking publications. | ---- 3(6.5) | I assist others to create quality publications. | 1(2.8) 2(4.3) |
| Digital video | I have never tried to make any kind of video. | 21(58.3) 13(28.3) | I have used a video camera but never edited a film. | 11(30.6) 17(37) | I have used a digital video camera and done some editing on computer. | 2(5.6) 12(26.1) | I have completed digital video projects with my students. | 1(2.8) 1(2.2) | I produce educationally valid videos used by others. | 1(2.8) 3(6.5) |
| Graphic organizers | I do not use graphic organizers at all. | 21(58.3) 19(41.3) | I use graphic organizers with paper and pencil. | 10(27.8) 16(34.8) | I use graphic organizers such as Inspiration. | 4(11.1) 8(17.4) | I use graphic organizers regularly with my students. | ---- 1(2.2) | I advocate the use of graphic organizers and help others use them. | 1(2.8) 2(4.3) |
| Web publishing on the internet | I have not created any kind of hyperlinked document. | 28(77.8) 27(58.7) | I have created a few simple pages with text, graphics and hyperlinks. | 6(16.7) 11(23.9) | I have created a multi page website and used it on the Internet | 1(2.8) 5(10.9) | I create, maintain and upload my own website with extensive links. | ---- 1(2.2) | I assist others in creating web pages. Other educators use my web pages. | 1(2.8) 2(4.3) |
| Multimedia projects | I have never worked on multimedia projects | 24(66.7) 23(50) | I have worked on projects involving media. | 9(25) 12(26.1) | I have worked on projects involving more than one media. | 1(2.8) 4(8.7) | I use multimedia projects in my teaching. | ---- 4(8.7) | I help others in creating multimedia projects. | 2(5.6) 3(6.5) |

Parents are the natural member of the “School-Parent Association” at Esentepe. The main aim of this association is to act as a bridge between parents and school administration, organize communication among parents and provide parental support to Esentepe’s educational activities. Through this association, parents have been involved in making decisions about “personnel recruitment”, “student services”, “scholarship and wage policies”, “in-service training/seminar topics” and so on. On the other hand, parents have not taken part in making decisions about Esentepe’s “technology integration process”. For example, there is no one parent member in the “Technology/Project Development and Implementation Committee” at present. Thus, the school administration should make the necessary arrangements to make parents and other stakeholders participate more in all of the school’s activities including the planning of technology integration.

Evaluating Processes and Outcomes

Table 5 shows the types of changes achieved at Esentepe because of the technology integration process. According to Table 5, Esentepe’s staff members in general have positive attitudes towards technology. They think that because of technology, students are more “physically active”, “conscious about their own learning”, “participating in group work”, “willing towards problem-solving activities”, “creative in their work”, and “careful and thoughtful in their work”. They also believe that students’ projects include visual materials more and their work is shared by different individuals more. These results are important because they indicate that Esentepe staff members are aware of the impact of technology on student learning.

Table 5. The types of changes achieved at Esentepe because of the technology integration process

| | <i>f</i> (%) in 2005 | <i>f</i> (%) in 2010 |
|--|----------------------|----------------------|
| Students are more physically active | 33 (91.7) | 44 (95.7) |
| Students are more conscious about their own learning | 35 (97.2) | 43 (93.5) |
| Students are more participating in group work | 31 (86.1) | 43 (93.5) |
| Student projects include visual materials more | 31 (86.1) | 44 (95.7) |
| Students are more willing towards problem-solving activities | 34 (94.4) | 44 (95.7) |
| Students are more creative in their work | 35 (97.2) | 44 (95.7) |
| Students are more careful and thoughtful in their work | 30 (83.3) | 39 (84.8) |
| Student work is shared by different individuals more | 32 (88.9) | 40 (87) |

CONCLUSION

In light of the study findings, it can be postulated that Private Esentepe Elementary School is relatively in a good position in terms of technology integration. On the other hand, when Esentepe’s technology integration process is associated with the 11 dimensions of the Eclectic School Technology Planning Model (introduced and implemented in this study), it can be understood that this process is not systematic and that it is carried out more through an individual effort on the part of some teachers. This study concludes that Esentepe should develop its own official technology integration plan and form a representative committee to be responsible for carrying out this plan. Equally important, the technology plan should be tied to the aspects of other reform efforts that undertake at Esentepe like curriculum (e.g., constructivist theory), pedagogy (e.g., the multiple intelligences theory), or assessment (e.g., portfolio evaluation).

REFERENCES

- Anderson, L.S. (1996). *Guidebook for Developing an Effective Instructional Technology Plan Version 2.0*. Available: <http://www2.msstate.edu/~lsa1/nctp/Guidebook.pdf>.
- Apple Computer Inc. (2005). *Technology Planning Guide*. Available: <http://www.apple.com/education/planning/>.
- Bracci, R. (1999). It’s in the plan. *American School & University*, 71(11), 36-38.
- Jones, B. (2005). *ICT Integration Guidebook - 2005*. Available: <http://ictpd.net/techplan2005/>.
- Knuth, B., Hopey, C., & Rocap, K. (1996). *Guiding Questions for Technology Planning: Version 1.0*. Available: <http://www.ncrtec.org/capacity/guidewww/gghome.htm>.
- McNabb, M.L., Valdez, G., Nowakowski, J., & Hawkes, M. (1999). *Technology Connections for School Improvement: Planners’ Handbook*. North Central Regional Educational Laboratory, USA. (ERIC Document Reproduction No: ED 437908).
- Saban, A (2006). Okul Teknoloji Planlaması: İlköğretim Okulları İçin Uygulamalı Bir Model Önerisi ve Öğretmen Yetiştirme Sistemi Açısından Sonuçları. *Yayınlanmamış Doktora Tezi*, S.Ü. Sosyal Bilimler Enstitüsü.
- Üşür, İ. (2001). Teknoloji felsefesi üzerine ya da tarihin tanrısı teknoloji midir? *Mülkiye*, 25(230), 7–26.

THE EFFECT OF ANIMATION FILM APPLICATION UPON THE STUDENTS' SUCCESS AND ATTITUDE IN THE PROCESS OF HISTORY LESSON

Asst. Prof. Dr. Kadir ULUSOY
Mersin University Faculty of Education
ulusoykadir@gmail.com

Abstract

The aim of this study is to determine whether the application of animation effects the academic success of the students and their attitude towards history or not and to ascertain the students' view about practising animation films in the process of lesson. This research is a semi-experimental study. In the research, experimental figure's pretest-posttest method is used. In the research quantitative data are added together with "Attitude Scale" and "Achievement Test" and qualitative data are added together with "open-ended question" in the qualitative side "open ended questions" are used. Before any process to the experimental group and control group a preliminary test was performed and then the process is transferred into practise. Post test was performed to the students to whom animation film is practised and to whom not. In the study, while the attitudes of the students in the control group are higher than the students in the experimental group in the preliminary test, after animation film visualisation there occurred a great significant difference in the attitudes of the experimental group to the control group. According to the findings attained from the Achievement test; experimental group's post-test achievement mark is higher than the control group's. As a conclusion what seemed is that using animation film in the history lesson gives effective results in the attitudes and success of the students. It will be beneficial in popularizing similar practises.

Key Words: History subjects, history lesson, social studies, animation, animation film, student success, student attitude

INTRODUCTION

In modern educational concept, the will be having lesson must be student, centered. Because the student takes place in the quite centre, focal point of the education. For this reason, all the methods, techniques and will-be-used materials should be developed in a form which can help to the students' better understanding way of the subject. Especially in social fields, lessons should not be explained only with presentations. According to Fahy (2004); in teaching, presentation is widely used.

Along with the presentation, if there will be used another proof, there must be benefited from the technological products. Because in the lessons usage of educational technologies is very important. The teacher must be qualified about this matter, must use the technology effectively and the students must be close to the usage of the technology. In educational fields digital materials and items must be used. If educationalists want to benefit from digital improvements, they should understand the nature of the digital technology and they should follow the latest technological improvements closely (http:1). In the light of the latest technological improvements, in education the processes in which multimedia is used gains importance. According to McGreal ve Elliott (2004) multimedia is to combine the usages of text, graphic, video and animations for a purpose in the computer. As it is seen the simultaneous usage of technological items such as voice, image, writing, animation is called multimedia (Deren, 2008). According to Rosenborg, Green, Hester, Knovles, Wirsching (1993) multimedia can also be accepted as the combination of text, graphic, voice, animation and video elements in the synthesised computer environment. On the other hand, multimedia can also be used as an adjective which defines the practises and documents developed by the addition of voices, animation or videos one by one or together.

As Akpınar (1999) mentioned, multimedia has some advantages that it provides to teaching and learning processes. These advantages are:

- ✓ Facilitating to experiment, analyse, discover and search the information.
- ✓ Being able to give feedback in different ways
- ✓ Answering to the needs of individual learning and study as in the other qualified computer-aided software.
- ✓ Permitting to analyse interactive video programmes by giving permission to control it in suitable speed and way.
- ✓ Supporting traditional learning materials.
- ✓ Attracting the attention and interest of the student and improving the motivation
- ✓ Orientating, controlling and evaluating the learning activities
- ✓ Permitting the communication of individuals in different palaces by integrating video conferencing

Kul (1995) mentioned that the education with interactive actualises 80% of learning (in the activities practised by seeing and hearing). According to Rose ve Fernlund (http) multimedia programmes help students and teachers to use more than one material (photograph, video, animation film, documentary, and series, texts about subjects with pictures and graphics, sounds and graphics). Besides the sources of these knowledges, video disks, printing materials, CD-ROM, Internet, web sites, phonoscopes, scanned images and digital camera slides are also used in education. In this sense, a Powerpoint presentation, a film on television a sound animation prepared on computer can be exemplified to the multimedia (Akkoyunlu and Yılmaz 2005). Technological developments have taken its place in educational field and will go on. There must not be afraid of from the usage of technology in education and there must be waited teachers and students to accommodate with it. With the developing technology different materials, methods and techniques are started to be used, and by this means the attention of the students' to the lesson is tried to be attracted. The usage of technology in history is not a thing that must be frightened of, on the contrary there will be positive results if effective, related and logical studies are done with the usage of technology (http:1). Köstüklü (1999); Özcelik (2001); Stradling (2003) and Safran (2006) indicated that the usage of different materials in the history lesson will be useful and applicable methods and techniques will change the attitude of the students towards the history lesson. History teachers must be administered about having history lessons based on computer and about the effective usage of the course books (Safran, 2002; Öztaş 2007).

According to Martorella (1998); Mason vd. (2000) Van Fossen, (1999); Warren (2000); Whitworth and Berson (2003); various social studies education researchers suggest technological materials integrated with each other, especially web-based technologies in social studies classes to make students have active lessons (transferred by: Lee, Doolittle and Hicks, 2006). If technological materials are prepared for the purpose of helping students in a way which meets students' needs, it will supply a great advantage to the social studies lessons. For instance; historical images, various maps, famous speeches, photographs, interviews, expressions that are done by the use of printed materials will be really effective. The students can understand the faraway periods and abstract subjects using visual materials and audio sources and they can transform them into knowledge (Rose and Fernlund, http). In multimedia, which is very beneficial for the use of it in teaching and learning

environments, the usage of animation is highly effective to make teaching and learning process active. In today's world in which information technology takes an important part the animation that is one of the most important parts of the multimedia has a very important role. As Arıcı and Dalkılıç (2006) mentioned; due to the educational softwares in which animation technique is used, the hardness of concretizations of abstract subjects and existences and animation in mind can be abolished. So that there can be originated an affluent learnin environment.

ANIMATION

The role of visualizations, specifically pictures and animations, on learning have been studied largely in different disciplines in recent years (Lowe, 2003; Schnotz & Lowe, 2008). Animation has started with the developments in technology in the twentieth century (Terra & Metoyer, 2007). According to Stephenson (1973) animation, can be defined as the art of giving life and aliveness to an object (transferred by: Arıcı and Dalkılıç, 2006; 422). According to Meyer, Rasch & Schnotz (2009) there has been a significant amount of research studies on learning by using animations in recent years. Hortola (2010) stated that animations are widespread tools for scientific research and education in recent years. Hegarty (2005) has defined the animations as tools that are used to point out the dynamic nature of the subject matter. On the other hand, Morrison, Tversky and Betrancourt (2000) have defined animations as attractive graphic devices. Considering the findings of research studies, it has been emphasized that using animations are much more effective than the static pictures and graphical representations (Schnotz, Boeckheler, & Grzondziel, 1999; de Koning, Tabbers, Rikers, Paas, 2009). Meyer, Rasch & Schnotz (2009) stated that animations are more conducive for learning than static pictures. These researchers also stated that animations have additional information that does not exist in the static pictures or graphs. According to Hoban and Ferry (2006), since animations include colorful characters and catchy visual presentations accompanied by enjoyable sounds and songs, they have been an incredible source of attraction especially for children. Merrill (1996) also emphasized that screen motion and animated movement are very powerful in attracting attention. Therefore educators have long been interested in using animations for teaching all kinds of subject matters. Schwartz (2003) stated that animations are more likely to capture attention and makes things more noticeable than static pictures or graphics. Therefore animations have been used in teaching various subject areas. Haydn (2006) stated that history teachers have been largely using graphic animations in schools. In addition, Bishop and Cates (2001) emphasized that animations can increase the remembering the information presented in the lesson. Many research studies (Rieber, 1990; Schnotz, Boeckheler, & Grzondziel, 1999; Stith, 2004; Giraldo, 2002) have reported that using animations increases learners' positive attitudes, motivation and comprehension in different subject areas. For example, Carpi (2003) stated that over 89% of students responding to the class survey (N=121) identified the animations as "helpful" and 60% identified them as "very helpful" in his study about designing effective instructional web pages. There are also some studies underlined the positive effect of animations on reduction of study time (Szabo, 1998 in Fahy, 2004).

As Steven and Phillip (1994) mentioned; besides it helps students to understand lesson subjects as perceptibly animations also helps students to improve creative thinking, to emphasise on probabilities and to attempt to various experiments, so that both an interactive learning environment can be offered and an individual environment can be provided. Besides abolishing the dullness of the traditional class environment to a great extent animations also make learning activities pleasant (transferred by: Arıcı and Dalkılıç, 2006; 423).

According to Muth and Guzman (1999), the advantages of animation in education can be listed as below:

- ✓ Well-arranged animation content makes learning effective, lowers costs.
- ✓ Animations can be used instead of risky expensive materials.
- ✓ It provides to receive feedback related to the understanding of the subject.
- ✓ It enables students to own too much information quickly.
- ✓ It helps students to develop hypothesis and analyse these hepothesis.
- ✓ It provides students to meet interaction in the highest level.
- ✓ It concretizes abstract subjects seperating it from the most important parts and presents the simplest version of authenticity.
- ✓ It standardized the pedagogic learning period.
- ✓ It can provide students to take active part in scientific researches.
- ✓ It minimizes ambiguity, and it helps to create a correlation among the systems and recognition of complicated structures.
- ✓ It encourages and improves problem solution. (transferred by: Çalıřkan, 2002).

Thompson and Riding (1990) have conducted a research study investigating the effects of using animation on learners' performance. They found that animation facilitates learning when it presents detailed steps of processes that static graphics do not present. They taught the Pythagorean Theorem to junior high school students. The lesson showed the use of shears and rotations to depict the equivalence of area of three different figures. One group received a paper with a static graphic; a second group saw a discrete animation of the steps shown on the paper graphic, and a third group saw a continuous animation of the steps. The group viewing the continuous animation outperformed the other two graphic groups. The authors explicitly state that the information on the paper graphic was equivalent to the discrete animation, but not equivalent to the continuous animation. The continuous animation depicted all the detailed steps, while that information had to be inferred from both of the other graphics.

PURPOSE OF THE STUDY

The aim of this study is to define whether the usage of animation film in history subjects effects the success of the students and their attitudes towards the history or not and to determine the students' views about the actualisation of animation film application while the history subjects are being had.

METHOD

This research is a quasi-experimental study. In the research experimental motive's pre-test post-test method is used (Karasar, 2009). In the study, there composed a 34-people control group and 34-people exxperimental group from Adiyaman Cumhuriyet Primary School 6th class students. In the study that is carried out in 2009–2010 academic year's first term, the students who have 5 or close-to-5 grade point average are chosen by taking their academic successes into consideration..

Collecting Data

In the study quantitative data are collected with "Attitude Scale" and "Achievement Test" and qualitative data are collcted with "open ended question". In the study, in Social Studies le 6th class lesson "Turkish People on the Silkroad" (it analyses the emergence of Islam by the help of visula and written materials) unit there made a process associated with acquisition. To the experimental group, the subject of "Birth of Islam" is processed supported with 6th Social Studies course book which was made to be prepared by the Ministry of National Education and animation film usage; to the control group the lesson was processed with the usage of 6th class Social Studies lesson course book which was

made to be prepared by the Ministry of National Education. Before the lesson "Attitude Scale" and "Achievement Test" are applied to both of the groups as preliminary test, and at the end of the application, post-test which was formed with the same questions was applied.

In the study, qualitative and quantitative data are collected. Qualitative data are acquired with "Attitude Scale" and "Achievement Test" aimed at the usage of animation film in history lesson, and quantitative data are acquired with "open-ended question". The "Attitude Scale" which was used in the study is developed to define the attitudes of the students towards the lesson with the usage of animation film in the history lesson. While the Attitude scale is being developed; there benefited from Demircioğlu's (2007) "Benefits and Restraints of Film application in History lesson" part of his book; from Oztas's work of (2007) History Teaching and Films "The Effect of Film Usage upon Students' Success in History Lesson", Oztas's (2008) study of "History Teaching and Films", Safran's (1993) study of "a study upon Attitudes Related to History Lesson in Different Learning Levels", Ozturk and Baysal's (1998) study of "The Attitude of 4th and 5th Class Students Towards the History Lesson" and Ozturk and Unal's (1998) study of "The Attitude of History Teachers Towards the Social Studies Lesson". In the Attitude Scale 5 point likert style is used. In equal interval scale which takes place in data collection tool; positive expressions are evaluated as "I strongly agree=5; I agree=4; I am Neutral=3; I don't agree=2 and I strongly disagree=1" points. Negative expressions are evaluated as "I strongly agree=1; I agree=2; I am neutral=3; I disagree=4; I strongly disagree=5" points. To form necessary clauses for the test, there applied confidence study upon 68 students who had the subject of "the Birth of Islam" in 2008-2009 academic year, at the end of this study as conclusion the Cronbach Alfa reliability co-efficient of the 29-claused Attitude Scale is found as 0,87. While the minimum point which a student can take as a result of "Animation Film Usage Attitude Scale" is 22, the maximum point is 110.

For developing the test before starting to the application related to the "Achievement test" first a field scanning is done and opinions of some experts are received. "Achievement Test" consists of 20-claused multiple-choice questions. There given 4 choices for each question and the students are demanded to tick the answer which is the most correct one according to them. In formation of clause which are necessary for the test the acquisition in the "Birth of Islam" has been taken into consideration. Experimental study has been practised to the 62 students who had this lesson in 2008-2009 academic year.

38 clauses' difficulty and distinctiveness indexes which were obtained from the achievement test by applying item analysis are figured out, the clauses whose distinctiveness index is below 20 and which are deficient for acquisition and expressional deficiency are taken out from the text. As a result of this proceeding, there formed a 29-claused achievement test. Besides preliminary test's KR₂₀ reliability co-efficiency is figured out by the help of item co-variants and KR₂₀ reliability co-efficient is obtained with "86" figure. Being 0.70 or higher of the reliability co-efficient is found adequate for test marks' reliability (Buyukozturk, 2005). In qualitative part; there used "open-ended question". There studied with 3 social studies lesson teachers, and 4 history teachers and 3 academicians who are expert in the field of social studies field and their opinions are taken. After forming experimental and control groups; there practised a preliminary test application by giving attitude scale and achievement test. At the end of the study, "Attitude Scale" and "Achievement Test" are practised ad post-test application. Then, in order to take the opinions of the experimental group's students about the history lesson which was processed with the use of animation film, they were demanded to fill in the form in which there are open ended questions.

Grades of the Study's Processes:

In the study, there made a process which lasted for 9 lesson hours for 3 weeks to bring the acquisition in to the control and experimental group. There applied a attitude scale application to the control and experimental group before starting to the lesson process.

A. Process Grades of the Experimental Group:

Before giving lesson to the experimental group there given 20 minutes' time to Express what they know about the birth of Islam. During this time, 5 students expressed what they know about "The Birth of Islam". Then, the question which takes place in the introduction of "The Birth of Islam" unit that is between 76-79 pages was asked. After 2 students answered the question, the dialogue which takes place in the Picture in the page were made them read and the students are demanded to read the text in the page. This section was made them read, the time badge was made to analysed. The drawing on page 77 was made to analysed. The question about the drawing was asked to the students and students were demanded to answer this question. There made a 6-lesson process by the help of instructions in the Teacher guide book and an activity called "Map Game". After this process, the students were watched the animation film of "Muhammad: The Last Prophet". After students' wathing of the film "attitude scale" and "achievement test" were handed out. Then, the students were given a form in which "What do you think about the demonstarion of animation film?" question was written, the students were given 20 minutes to answer the question.

B. Process Grades of the Control Group:

There made a 6-hours application before the control croup is being watched the animation film. There given an extra 20 minutes to make them express what they know about "The Birth of Islam" before the lesson is being given. During this time 4 students expressed what they know about "The birth of islam".

Then the question Then, the question which takes place in the introduction of "The Birth of Islam" unit that is between 76-79 pages of The Turkish Ministry of Education's course book was asked. After 2 students answered the question the dialogues which are in the picture in the page were read to the students, then the students were demanded to read the text in the page. This section was made to read, the time badge was made analysed during the process. The drawing on page 77 was made to analysed. The question about the drawing was asked to the students and students were demanded to answer this question. There made a 6-lesson process by the help of instructions in the teacher guide book and an activity called "Map Game". The application which was made to the control group was simple expression, reading, question-answer based. After the process "attitude scale" and "achievement test" were handed out.

Data Analysis

The data obtained from this study have been analysed in two grades. In the first grade, the pre and post application analysis of attitude scale and achievement test's which were applied to the control and experimental group was made. In the data analysis "t-test" was used from statistical processes. Statistical processes were made using SPSS 11.0 programme. Whether the obtained data is meaningful or not was tested in 0.05 meaningfulness level. For qualitative data "Descriptive Analysis Technique" was used. By this means, data were summarised and commented according to the themes and direct quotes were done (Batu, 2004; Yıldırım ve Şimsek, 2005). In this study, the data related to the question in open-ended question form were analysed. The frequency distributions of the answers that each attendant gave were defined.

FINDINGS

In this section, first quantitative then qualitative findings were allowed.

A. The Findings that are related to the Study's Quantitative Dimension

A1. Findings that are related to the Attitude Scale

Table 1. "t" Score Related To Preliminary Test Scores Of Experimental And Control Groups.

| | N | Ss | df | t | p |
|--------------------|----|-------|-------|----|-------------|
| Experimental Group | 34 | 73.73 | 3.014 | | |
| Control Group | 34 | 74.56 | 5.253 | 66 | 2.125 0.334 |

When the Table 1 is analysed for the question of "Is there a significant difference between the point averages that the control group and experimental group had?" there not seen a significant difference between the attitude pre-test grades of the control group and the attitude pre-test grades of the experimental group. ($t_{66} = 2.125, p < 0.334$). The attitude pre-test grade average of the experimental group students ($= 73.73$) are lower than the attitude pre-test points of control group students ($= 74.56$). As it is seen on the table, the pre-test grades of experimental group students and control group students are close to each other. According to this result, there not seem a significant difference among the students.

Table 2. "t" Scores Related To Experimental Group And Control Group

| | N | Ss | df | t | p |
|--------------------|----|-------|-------|----|-------------|
| Experimental Group | 34 | 97.00 | 4.642 | | |
| Control Group | 34 | 80.40 | 8.294 | 66 | 3.589 0.000 |

When Table-2 was analysed for the question of "Is there a significant difference between the point averages that the control group and experimental group had from the post-test?" there seen a significant difference between the attitude post-test grades of the control group and the attitude post-test grades of the experimental group. ($t_{66} = 3.589, p < 0.000$). The attitude post-test grade average of the experimental group students ($= 97.00$) are lower than the attitude post-test points of control group students ($= 80.40$). According to this result, the attitudes of the students who have taken place in in this study have changed after the use of animation film. As it is seen in the table, the average points that control group and experimental group students take from the post-test are considerably different. While the attitudes of the control group students is higher in the pre-test, after animation film demonstration there seen a significant difference in the attitudes of the experimental group students. According to this result, what can be said is that animation film usage in the history lesson is reacted positively with its visual, hearing lesson process and reading, explaining, question answer based process.

A2. Findings related to the Achievement Test

Table 3. Findings Related To Pre-Test Grades That Control Group and Experimental Group Students Have Taken

| | N | Ss | df | t | p |
|--------------------|----|-------|-------|----|-------------|
| Experimental Group | 34 | 15.40 | 6.875 | | |
| Control Group | 34 | 14.25 | 8.664 | 66 | 1.890 0.657 |

The average points of control group and experimental group that they took from the pre-test "experimental group=15.40", "control group=14.25" are close to each other. Since the average points of pre-test marks of the control group and the experimental group are approximate values shows that there is a significant difference among the pre-test grades that are related to the subject of "The Birth of Islam". Then, in order to define the effectiveness of animation film application, there analysed whether a significant is seen among the post-test grades of control group and experimental group students or not.

Table 4. Findings Related To the Post-Test Grades That the Control Group and the Experimental Group Students Have Taken

| | N | Ss | df | t | p |
|--------------------|----|-------|-------|----|-------------|
| Experimental Group | 34 | 26.82 | 4.031 | | |
| Control Group | 34 | 22.85 | 9.276 | 66 | 4.002 0.039 |

The average points of post-test marks that the experimental group and control group students have taken "experimental group=26.82", "control group=22.85" shows considerably significant difference.

When the experimental group and control group students' post-test grades are analysed the average point of the experimental group is higher than the average point of the control group. In the t-test which was done to define if there is a significant difference between the control and experimental groups' post-test average points, there found a significant difference on 0.5 level of significance ($p < 0.05$). According to this result, the post-test achievement grade of the experimental group is higher than the control group's. In other words, while the history subjects are being had animation film usage can show effective results to increase students' success.

B. The Findings that are related To the Study's Qualitative Dimension

Table 5: Students' Opinions Related to the Use of Animation Film

| Student Views | Frequency |
|--|-----------|
| I had great time. | 29 |
| The lesson was very efficient. | 29 |
| I had emotional moments while watching the film. | 27 |
| I would like to watch such films in every parts of the history. | 25 |
| I watched a historical animation film for the first time, it was very good. | 22 |
| It was an interesting experience. | 19 |
| If we had lesson, we would get bored in such a long time; but thanks to the animation film I couldn't understand how the lesson ended. | 19 |
| I prefer learning the birth of Islam by the help of this film instead of the course book. | 17 |
| Animation was very qualified. | 16 |

| | |
|---|---|
| The image could be clearer. | 8 |
| It could be better if it wasn't foreign production. | 7 |
| I would like it to be directed by a Muslim person. | 7 |
| It was directed by a Non-muslim person but it expressed the birth of Islam very well. | 4 |
| What effected most was the Americans prepared such a film. | 4 |
| The film was very successful, there must be done more films that narrates our prophet and his exemplary character. | 4 |
| The film was made in the USA, but the dubbings are Turkish. Was it dubbed as in the original? I have some suspects about it. | 2 |
| During the years of the birth of Islam there must also be done animations that narrate the lives of the people who worked for the spreading of the Islam. | 2 |
| It was a great deficiency not to give place to some important sahab. | 1 |
| I saw that some islamic rules are taken into consideration; for instance, the face of our prophet has not been showed. | 1 |

The students are generally happy with having the lesson with animation according to the answers they have given. Especially, watching for 86 minutes without going out "consider that a lesson is only 40 minutes" shows that their interest and motivation is very high. The answers that students gave gather around the following views. "We had greta time, I didn't understand how the time ended, The lesson was very effective, I had emotional moments while I was wathing the film,I would like to watch such films in all history subjects, I watched animation film for the first time, it was very beautiful, it was an interesting experience, if we had lesson, we would get bored in such a long time, I couldn't understand how the lesson ended, I prefer learning the birth of Islam by the help of this film instead of the course book". These expressions show that the answers that students in the experimental group gave in the quantitative part supports each other with the answers in the qualitative part. According to this result, the students believe that having history subjects with animation film application will be more beneficial.

DISCUSSION AND CONCLUSION

Formwalt (2002) indicates that new technologies are needed to be used for an effective history teaching and ideas and thoughts which cannot be gained by reading can be gained by using film. According to Yang and Huang (2007) computer and internet technologies creates positive effects upon history teaching by improving students' computer literacy, critical thinking, forming positive motivation, and improving searching abilities. In computer-based history teaching various data must be collected and the history must be commented. Hillis (2002) defined that in history teaching, history softwares can be effective to improve students' inquisition, research, critical thinking; the student-teacher interaction will be better. He emphasises that softwares should include elements in within the concept of film and animation, photographs, written sources, data bases. The study showed that an extra activity which is practised beyond the course and study book can effect the lesson in a positive way. This situation matches up with Formwalt's (2002) these expressions: "A film can be an effective way to attract the attention of the students, but since it cannot be used every time in teaching it shoul be used in correct times. He mentions to use a film which will be a related source for the subject, to take feedbacks from the students in necessary points by stopping the film where it is considered as necessary .While watching the film ,when history students catch the excitement they understand the meaning of the past better and they motivate.

Tekeli (1998) mentions that the studies and researches that are done related to the history teaching shows that the usage of film in history lessons is not used adequately. This situation is a great deficiency of our modern world. Making up this deficiency will supply having history lessons better and more effective. The animation film application practised in this study attracted the students' interest and provided the subject studied in a more effective and successful way. This situation matches up with Oztas's (2007) determination of students' having positive thoughts to the history lesson with the usage of film activity in the lesson.

At the end of the study;

The target of "students are needed to be learn the birth of Islam with visual materials" is achieved which is indicated for the subject of "The Birth of Islam" (it analyses the birth and spread of Islam benefiting from visual and written materials) in the unit of "Turkish People on the Silk Road" of the 6th class course book. However; Ancak when the materials are scanned the thing which is precipitated is that since there is no visul materials, first hand proofs that belongs to the birth and spread period of Islam the best material which can be used is the studies similar to the animation film. In the study, there seemed that the lesson with animation film is more effective that the lesson which has been processed with simple narration, question-answer, course book and practise book based lessons. This difference effects both the success and attitude of the students. Before practising, there seem no significant difference among the control group and experimental group students as a result of pre-test attstude scale and achievement test; but there occurred a significant difference in post-test achievement gradeswhich was done after having "The Birth Islam" subject. Experimental group students are defined more successful than the control group students after having a lesson with an animation film. In the same way, the lesson with animation film proves that the experimental group students developed a better attitude toward the history lesson than the control group students. In other words, by the support of animation films in history lesson effects history teaching in a positive way.

As a result, history subject which are taught to the students with animation film has an positive effect upon attitudes of the students against the history lesson and students' success. It will be useful to popularize such applications. Besides;

- In the teaching environments that comes to fruition related to the Constructivist Approach, animation film applications must be absolutely used.
- The chosen animation must be in a quality which confronts the subject and the acquisition.
- The teachers are needed to have a sub-structure that will be helpful to watch an animation film. For this reason, it will be useful to give information in in-service courses related to the computer usage.

REFERENCES

- Akkoyunlu, B., Yılmaz, M. (2005). Türetimci Çoklu Öğrenme Kuramı. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, (28), (9-18).
- Akpınar, Y. (1999). Bilgisayar Destekli Öğretim ve Uygulamalar, Ankara: Anı Yayıncılık.
- Arıcı, N., Dalkılıç, E. (2006). Animasyonların Bilgisayar Destekli Öğretime Katkısı: Bir Uygulama Örneği, *Kastamonu Eğitim Dergisi*, 14, 2, (421-430).
- Batı, A. H. (2004). Nitel Araştırma Yöntemleri, http://halksagligi.med.ege.edu.tr/seminerler/2003-04/NitelAraştırmaYontemleri_HB.pdf (erişim tarihi:12.10.2009)
- Bishop, M. J., & Cates, W. M. (2001). "Theoretical foundations for sound's use in multimedia instruction to enhance learning". *Educational Technology Research and Development*, 49(3), 5-22.
- Büyüköztürk, Ş. (2005). Sosyal Bilimler İçin Veri Analizi El Kitabı: İstatistik, Araştırma Deseni SPSS Uygulamaları ve Yorum, Ankara: Pegem A Yayıncılık.
- Carpı, A. (2003) "Designing Effective Instructional Web Pages," in Simon, E. J. (ed.) Teachers Using Technology: Practical Ideas from the Classroom, New York: Kluwer Academic/Plenum Publishers. <http://web.visionlearning.com/pdf/Visionlearning-TeachersUsingTechnologyreprint.pdf> (visited: 13.10.2009).
- Çalışkan, S. (2002). "Uzaktan Eğitim Web Sitelerinde Animasyon Kullanımı" http://aof20.anadolu.edu.tr/bildiriler/Sabahattin_Caliskan.doc 23-25 Mayıs 2002, Eskişehir. (visited: 02.08.2009).
- de Koning, B.B., Tabbers, H. K., Rikers, R. M.J.P., Paas, F. (2009). Attention guidance in learning from a complex animation: Seeing is understanding? *Learning and Instruction*, XX (1-12).
- Deren, Ş. K. (2008). "İlköğretim 8. Sınıf Genetik Ünitesinin 5 E Modeline Göre Tasarlanan Multimedya Destekli Öğretimin Öğrencilerin Erişi ve Tutumlarına Etkisi", Yayınlanmamış Yüksek Lisans Tezi, Muğla Üniversitesi Fen Bilimleri Enstitüsü.
- Demircioğlu, İ., H. (2007). Tarih Öğretiminde Filmlerin Yeri ve Önemi, *bilig*, 42 (77-93).
- Fahy, P. J. (2004). Media Characteristics and Online Learning Technology, in Terry Anderson & Fathi Elloumi, Editors: Theory and Practice of Online Learning (137-171). Athabasca: Canada Printed at Athabasca University, http://cde.athabascau.ca/online_book/ch6.html (visited: 11.08.2009).
- Formwalt, L. W. (2002). Seven Rules for Effective History Teaching or Bringing Life to the History Class OAH Magazine of History, Organization of American Historians, <http://www.oah.org/pubs/magazine/www1/formwalt.html> (visited: 12.11.2009).
- Giraldo J. (2002), "Using animations in the teaching of calculus concepts". In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference* (pp. 1078-1079). Chesapeake, VA: AACE.
- Haydn, T. (2006). *Multimedia, interactivity and learning: some lessons from the United Kingdom*, http://www.formatex.org/micte2006/Downloadable_files/oral/Multimedia.pdf (visited:07.09.2009).
- Hegarty, M. (2005). *Multimedia learning about physical systems*. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (pp. 447-465). New York: Cambridge University Press.
- Hillis, P. (2002). Multi-Media and History Education: A Partnership to Enhance Teaching and Learning', *Educational Media International*, 39:3, (307- 315).
- Hoban, G. & Ferry, B. (2006). "Teaching science concepts in higher education classes with slow motion animation (slowmation)". *E-Learn 2006 World Conference on E-Learning in Corporate, Government, Healthcare & Higher Education* (pp. 1641-1646). Chesapeake, VA, USA: Association for the Advancement of Computing in Education.
- Hortola, P. (2010). Generating 3D and 3D-like animations of strongly uneven surface microareas of bloodstains from small series of partially out-of-focus digital SEM micrographs, *Micron*, 41-1, (1-6).
- Karasar, N. (2009). Bilimsel Araştırma Yöntemi. Ankara: Nobel Yayın Dağıtım.
- Köstüklü, N., (1999) Sosyal Bilimler ve Tarih Öğretimi, Konya: Günay Ofset.
- Kul, İ., (1995). 2000'li Yılların İletişim Teknolojisi ve Multimedya, İstanbul: Türkmen Kitabevi.
- Lee, J. K. (2003). *Digital history in the history/social studies classroom*. The history Teacher [Online serial], 35(4), <http://www.historycooperative.org/journals/ht/35.4/lee.html>. (visited: 16.09.2009).
- Lee, J. K., Doolittle, P. E. ve Hicks, D., (2006). Social Studies and History Teachers' Uses of Non-Digital and Digital Historical Resources, *Social Studies Research and Practice* 1, 3, (291-311).
- Lowe, R. K. (2003). Animation and learning: Selective processing of information in dynamic graphics, *Learning and Instruction* 13, (157-176).
- Merrill, P. F. (1996). Software evaluation. In P. Merrill, K. Hammons, B. R. Vincent, P. L. Reynolds, & L. B. Christensen, *Computers in education*, (pp. 109-119). Needham Heights, MA: Allyn & Bacon.
- Meyer, K., Rasch, T., Schnotz, W. (2009). Effects of animation's speed of presentation on perceptual processing and learning, *Learning and Instruction* XX (1-10) www.elsevier.com/locate/learninstruc
- McGreal, R., & Elliott, M. (2004). Technologies of online learning (elearning). In T. Anderson & F. Elloumi (Eds.), Theory and Practice of Online Learning (pp. 115 - 136). Athabasca, AB: Athabasca University. Retrieved from http://cde.athabascau.ca/online_book/pdf/TPOL_chp05.pdf [50%]
- Morrison, J. B., Tversky, B. & Betrancourt, M. (2000). Animation: Does It Facilitate Learning?, <https://www.aaai.org/Papers/Symposia/Spring2000/SS-00-04/SS00-04-009.pdf> / AAAI Technical Report SS-00-04. Compilation copyright © 2000, AAAI (www.aaai.org)
- Özçelik, İ., (2001). Tarih Araştırmalarında Yöntem ve Teknikler, Ankara: Gündüz Eğitim Yayınları.
- Öztaş, S. (2007). Tarih Öğretimi ve Filmler "Tarih Öğretiminde Film Kullanılmasının Öğrenci Başarısı Üzerine Etkisi" Yayınlanmamış Doktora Tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.
- Öztaş, S. (2008). Tarih Öğretimi ve Filmler, *Kastamonu Eğitim Dergisi*, 16, 2 (543-556).
- Öztürk, C., Baysal, N., (1998). İlköğretim 4-5. Sınıf Öğrencilerinin Sosyal Bilgiler Dersine Yönelik Tutumu, *Pamukkale Üniversitesi Eğitim Fakültesi, Özel Sayı*, (6), <http://egitimdergi.pamukkale.edu.tr/>
- Öztürk, C., Ünal, S. (1998). "Sınıf Öğretmenlerinin Sosyal Bilgiler Dersine Karşı Tutumu", Pamukkale Üniversitesi Eğitim Fakültesi, Özel Sayı 6, <http://egitimdergi.pamukkale.edu.tr/>
- Rieber, L. P. (1990). Using computer animated graphics with science instruction with children, *Journal of Educational Psychology*, 82, (135-140).
- Rose, S. A. & Fernlund, P. M., (http). *Using Technology for Powerful Social Studies Learning*, National Council for the Social Studies. <http://www.learner.org/workshop/socialstudiespdfsession55.UsingTechnologyLearning.pdf> (visited:02.09.2009).
- Rosenborg, V., Green, B., Hester, J., Knovles, W., Wirsching, M. (1993). A Guide to Multimedia, Carmel, IN: New Riders Publishing.

- Safran, M. (1993). Değişik Öğrenim Basamaklarında Tarih Dersine İlişkin Tutumlar Üzerine Bir Araştırma. *Eğitim Dergisi*, 4, (35-40).
- Safran, M., (2006). Tarih Eğitimi, Makale ve Bildiriler, Ankara: *Gazi Kitabevi*.
- Schwartz, N. (2003). *The Impact of Animation and Sound Effects on Attention and Memory Processes: Preliminary Results*. Paper presented at the International Communication Association Annual Conference, San Diego, CA.
- Schnotz, W., Böckheler, J., & Grzondziel, H. (1999). Individual and co-operative learning with interactive animated pictures. *European Journal of Psychology of Education*, 14, (245-265).
- Schnotz, W., & Lowe, R. K. (2008). *A unified view of learning from animated and static graphics*. In R. K. Lowe, & W. Schnotz (Eds.), *Learning with animation: Research implications for design* (pp. 304-356). New York: Cambridge University Press.
- Sosyal Bilgiler 6. Ders Kitabı, Komisyon (2008). Ankara: *MEB. Devlet Kitapları, Semih Ofset*.
- Stith, B. J. (2004). "Use of animation in teaching cell biology", *Cell Biology Education*, 3, (181-188). <http://www.lifescied.org/cgi/content/full/3/3/181> (visited: 13.09.2009).
- Stradling, R., (2003). 20. Yüzyıl Avrupa Tarihi Nasıl Öğretilmeli? İstanbul: *Türkiye Toplumsal ve Ekonomik Tarih Vakfı Yayını*.
- Tekeli, İ. (1998). Tarih Bilinci ve Gençlik, İstanbul: *Tarih Vakfı Yayınları*.
- Terra, S. C. L., Metoyer, R. A. (2007). A performance-based technique for timing keyframe animations, *Graphical Models* 69, (89-105).
- Thompson, S. V., & Riding, R. J. (1990). The effect of animated diagrams on the understanding of a mathematical demonstration in 11- to 14-year-old pupils. *British Journal of Educational Psychology*, 60, (93-98).
- Yang, S. C., Huang, L.-J. (2007). Computer-mediated critical doing history Project, *Computers in Human Behavior* 23 (2144-2162).
- Yıldırım, A. ve Şimşek, H. (2005). Sosyal Bilimlerde Nitel Araştırma Yöntemleri Ankara: *Seçkin Yayınevi*.
- (http:1): History Education in New Media: Effective History Educators Need Not Fear Change, <http://historyarthistory.gmu.edu/documents/hist-field-statements/saltzgeber-applied-field-statement.pdf> (visited: 02.09.2009).

THE EFFECT OF PEDAGOGICAL AND ANALOGICAL MODELS IN TEACHING OF ELECTRICS SUBJECT TO THE SUCCESS OF STUDENT

Niğmet Köklü¹, Ahmet Sarıkoç²

¹Selçuk University, Technical Science Vocational High School, TÜRKİYE. nkoklu@selcuk.edu.tr

²Selçuk University, Ahmet Keleşoğlu Education Faculty, TÜRKİYE. asarikoc@selcuk.edu.tr

Abstract

In this study, the objective is to research the effect of the pedagogical-analogical models at the teaching of the electric subjects on the success of the student. This study has been done by taking care of the pre-knowledge, logical thinking abilities and talents of the students that can affect concepts of the related subject. This study was applied to 185 students of 4 different primary class branches of Technical Science Vocational High School placed in Selçuk University during 6 weeks at 2008-2009 for semester. Two of branches were determined as control groups whereas the other two branches were determined as examination groups. Electric subject was performed with traditional teaching approach and pedagogic - analogical models in control and experiment group respectively. Pre-test had been applied to the student before the subject was performed. Achievement test that measure the levels of the pre-knowledge of the students about the electric was analyzed. Achievement test (final test) had been reapplied to the students after electric subject was performed. T-test and Anova analysis were implemented for evaluation of the results of the test that were applied to the students. It has been observed that the experiment groups that were thought with pedagogical-analogical models were more successful than the control groups that were thought with traditional model and there were significant differences in the favor of examination groups.

Keywords: Pedagogical - Analogical models, Modeling, Physics education.

1. INTRODUCTION

Instead of transferring the current information to the student, the purpose of our education system should be to improve the skills upon attaining information. The lessons which come first in gaining these skills are science and physics. Rather than classic education and staying dependant on just the teacher and the book, give place to an education system where the teachers and also the students have an active role, produce, research, compare, argue and evaluate. (Günbatır, 2003)

Analogies, which have an important part in teaching science use abstract techniques like imagining, test organization and sorting field studies, configuring scientific presentations, they play an important role in terms of suggesting new ideas (Glynn ve Duit, 1995; Demirci Güler, 2007).

Researchers express modelling as a nature event or a physical concept developed in a particular form in the human mind. The research carried out puts forward that imitating the model causes positive structural development when the mind is brought closer to the events and concepts hardly understood. Also it's determined that using the model-imitating procedure the topics being explained and the knowledge understood is more lasting. In science, due to some topics being abstract especially in Physics educations there are difficulties faced when transferring to the students and teaching them. When teaching these abstract topics, especially in solving problems, the interesting examples the teacher gives becomes more important in maintaining motivation and focusing the mind (Kaya, 2001).

In the education and training environment it is expected from the teacher to take the student from a passive state to an active state, to teach the student how to attain knowledge and to ensure to enjoy the lesson. For these to become a reality the choosing the most precise method and techniques and it is essential to use them in an appropriate manner. For the students to understand the abstract and the difficult new concepts the physics subjects are filled with, for them to understand one of the best ways is to use the "model and imitation" technique. The usage of this technique, improves the learning degree and bearing in the mind in a good way. It has been explained in neurological terms that the events, concepts, cases the individual knows already the stimulus are transmitting in a more rapid way (Lawson and Lawson, 1993) The parts of memories key points are these; the memory recognizes by connecting new objects or situations with the records of similar objects. It's the brains ability to transfer very important experiences to the long-term memory, it allows to find past experiences and digests the new ones. If experiences same as the new one can be found, digestion and bearing in mind takes place. If it can't be found, new experiences will be forgotten. According to the classic method it has been observed that the topics which were taught using the imitation technique the students were more successful (Lawson and Lawson, 1993, Günbatır, 2003).

For the benefit of the students analogies can be helpful in developing explanatory models. Analogies have important advantages in developing concepts. Analogical help the knowledge at the level of intuition to reach the level of conscious model by getting it richer and intensifying (Brown, 1993).

According to Gürdal (2001) students, by using imitations about the topic new explanations have been made, they had the chance to correct the concept errors that they used to have. It was observed that by the help of imitations they integrated their mixed pre-knowledge. By using the analogies ensured the students concept knowledge to increase. Students who wished to clarify the subject by using imitations put forward meaningful new problems about the subject. This way the fore-knowledge the students had but had difficulty remembering came about. According to Gürdal, Şahin and Çağlar analogies, support learning, help, provide the summary of the subjects, attracts the attention of the learner and motivates them, easifies reaching knowledge, increases creativity and brings the unknown into an acceptable state (Duru, 2002). Instead of just solving problems for the students analogies provide the opportunity to find problems, develops the prediction ability, it makes them see the value of their ideas and it also shows that how temporary scientific explanations are and how open they are for changes (Wong, 1993).

In physics education the importance of the use of analogy has been explained by educators in different ways. Educators agree on the matter that analogies simplify learning, that it achieves meaningful and proper learning and that it is effective on restoring wrong learning (Duru 2002). Analogies, when emphasizing the similarities between a familiar situation and an unfamiliar situation, the examples used shows the qualities of the concept (Treagust vd., 1992).

The use of analogy is useful in learning the concepts and internalizing them, it easifies learning, not just the target situation but it also develops the analog situation, it is helpful in overcoming concept errors, it makes the invisible into visible. Learning develops step by step

and by the broadening of knowledge, the new concept is associated with the previous known ones. In this sense analogies are valuable learning tools. The analog and target situation are symmetrical to one another, they can change each others roles. In every use the analog and target situation can expand (Treagust vd., 2002).

Using the pedagogical-analogical models during teaching, helps to understand abstract and difficult to understand concepts better and helps the lesson to become more visual and an amusing state. For this reason in this research the problem sentence was determined and the effect of pedagogical – analogical models on the students’ success in teaching electric subjects was studied.

The studies sub problems were these:

1. In teaching electric topics is there a meaningful difference in experiment and control group students success before the practice?
2. In teaching electric topics is there a meaningful difference in experiment and control group students success after the practice?

2. PROCEDURE

In the first semester of 2008-2009 Academic year, 4 branches were chosen among the primary classes at Selçuk University Technical Science Vocational High School, two of these branches was organized as experimental group while the other two as control group. Before instructing the subject, an achievement test that measures what level the students’ anticipation in the electric topic was applied. The test consisted of 20 questions. During the evaluation and analysis, each correct answer was graded as 1 point. The total score to get from the test is 20. The final score the students got from the test was evaluated over 100 after converted to success percentage. The highest score that the students will be able to get is 100. The success percentage in pre-tests and final-tests for all groups was found calculating with equation 1.

$$\text{Successpercentage} = \frac{\bar{X}}{20} \times 100 \quad (\text{Equation 1})$$

The electric topic was taught using the classic method in the control group whereas in the experiment group the pedagogical-analogical model was used. After teaching the topics to the experiment and control groups an achievement test was applied again. To evaluate the results of test applied to the students, t-test and one-way Anova test were done. The relationship between the achievement tests was evaluated statistically. The experimental groups and research figures were shown below:

Table 1. Groups and research figures

| Branch | Group | Pre Achievement Test | Subject Instruction | Final Achievement Test | N |
|---------------------|--------------|----------------------|------------------------------------|------------------------|----|
| Morning Education A | Control 1 | 1.Application | With the Classic method | 2. Application | 45 |
| Morning Education B | Experiment 1 | 1. Application | With Pedagogical-Analogical models | 2. Application | 40 |
| Evening Education A | Control 2 | 1. Application | With the Classic method | 2. Application | 50 |
| Evening Education B | Experiment 2 | 1. Application | With Pedagogical-Analogical models | 2. Application | 50 |

For this research, the analogy about the electric topic, to enrich the explanations of the topic with the aid of the Macromedia Flash program animations and simulations were prepared by our part. To support the explanations of the topics animations and simulations a web page was formed. This website can be reached by from the “<http://www.nigmetkoklu.com/fizik/>” website.

The researchers sample groups were formed of a total of 185 1. Grade students of the 2008-2009 fall academic years studying at Selçuk University Technical Vocational high School Computer Technologies and Programming department. The experiment groups were comprised of 90, the control groups were comprised of 95 students. To be used in this research an achievement test has been prepared. For this test the questions from the exam done for university entrance the student selection examination (ÖSS)

Even though the reliability of the questions were done by ÖSYM (Student Selection and Placement Center) the 1st grade (Morning and Evening Education) students at Selçuk University Technical Education Faculties Computer Systems Teaching already had seen the topics taking place in the application was applied to a group of 63 students as 25 questions. The cronbach alpha reliability coefficients (Cra) of the achievement tests data was calculated using the SPSS 16.0 (Statistical Package for Social Scientists) program. By taking out the 5 questions which were under the reliability Cra 0,80 the achievement test was decreased to 20 questions. The remaining 20 questions alpha coefficient was calculated at the end of the Cra analysis has been given in Table 2.

Table 2. Reliability Cronbach alpha (Cra) result

| Question Numbers | Cronbach alpha |
|------------------|----------------|
| 20 | 0.85 |

3. FINDINGS AND INTERPRETATIONS

In this section of the research the electric subject taught in the Technologies Scientific Principles lesson at Vocational Schools, the success effect the classic method and pedagogical-analogical method has on the students were compared and at the end of this researches analysis the findings obtained are presented in tables and have been interpreted (Köklü, 2009).

3.1. The Comparison of the Groups Pre-Test Results

First of all to all the groups (control and experiment groups) an achievement test composed of 20 questions was applied. After that for the control groups the topic was taught using the classic method and for the experiment groups the pedagogical-analogical model was used.

At the end of this researches analysis the findings obtained are presented in tables and have been interpreted. The results of the applied achievement test (pre-test) for the control and experiment groups are as in Table 3.

Table 3 The findings obtained in the pre-test

| | Control 1 | Experiment 1 | Control 2 | Experiment 2 |
|---------------------------|-----------|--------------|-----------|--------------|
| Student Numbers | 45 | 40 | 50 | 50 |
| Mean | 5,15 | 5,25 | 5,64 | 5,46 |
| Success Percentage | 25,75 | 26,25 | 28,20 | 27,30 |
| Standard Deviation | 1,22 | 1,10 | 1,33 | 1,32 |
| Variance | 1,49 | 1,21 | 1,78 | 1,76 |

According to Table 3 the mean point the control 1 and control 2 groups got from the pre-test in order is 5,15 and 5,64; it was found that the average point experiment 1 and experiment 2 groups got from the pre-test were in order 5,25 and 5,46.

To understand whether the average point the experiment and control groups got in the pre-test is meaningful or not hypothesis 1 has been established.

Hypothesis 1:

H₀: There isn't a meaningful difference between the applied groups in the research.

H₁: There is a meaningful difference between the applied groups in the research.

In this hypothesis, it is controlled whether the state of the students' readiness is equivalent. For this, the right answers the students gave in the pre-test was evaluated in the Anova analysis; the results have been given in Table 4.

Table 4 The pre-test results Anova results between the test and control groups

| | Sum of Squares | df | Mean Square | F | (p) | Meanful Difference Groups |
|-----------------------|----------------|-----|-------------|------|------|--|
| Between Groups | 6,62 | 3 | 2,20 | 1,39 | 0,24 | Control 1 Experiment 1 Control 2 Experiment 2 |
| Within Groups | 287,35 | 181 | 1,58 | | | |
| Total | 293,97 | 184 | | | | |

% 5

According to the analysis results in Table 4, there isn't a meaningful difference in the students pre-test average points according to the groups. [$F_{(3-181)}=1,39$, $p>0.05$]. According to this H₀ hypothesis has been accepted H₁ hypothesis has been rejected. In other words, a meaningful difference wasn't found between the groups (Köklü, 2009).

3.2. The Comparison of the Groups Final Test Results

The electric topic was taught to the control groups using the classic method and to the experiment groups using the pedagogical-analogical models. The achievement test which was applied to the all of the groups previously was applied again. The groups achievements in the final test are as in Table 5.

Table 5. Findings obtained in the final test

| | Control 1 | Test 1 | Control 2 | Test 2 |
|---------------------------|-----------|--------|-----------|--------|
| Student Numbers | 45 | 40 | 50 | 50 |
| Mean | 10,60 | 13,12 | 11,54 | 13,74 |
| Success Percentage | 53,00 | 65,60 | 57,70 | 68,70 |
| Standard Deviation | 1,54 | 2,34 | 1,41 | 1,66 |
| Variance | 2,38 | 5,49 | 2,00 | 2,76 |

To understand whether the average point the experiment and control groups got in the final test is meaningful or not hypothesis 1 has been established.

Hypothesis 2 :

H₀: Pedagogical – Analogical models don't have an effect on the students' success.

H₁: Pedagogical – Analogical models have an effect on the students' success.

For the purpose of testing the hypothesis, the data obtained from the questions of the pre-test and the final-test that was applied to the groups was first compared with its own results and then with the other groups. For this, the right answers the students gave was evaluated with the one way Anova analysis and the answers have been given in Table 4.4.

Table 6. The final test results, Anova results between the experiment and control groups

| | Sum of Squares | df | Square Average | F | Meaningfulness Degree (p) | Meaningful Difference Groups |
|----------------|----------------|-----|----------------|-------|---------------------------|------------------------------|
| Between Groups | 289,35 | 3 | 96,45 | 31,55 | 0,00 | Control 1 |
| In group | 553,21 | 181 | 3,05 | | | Experiment 1 |
| Total | 842,56 | 184 | | | | Control 2 |

% 5

According to the analysis results in Table 6, there is a meaningful difference in the students' pre-test mean points according to the groups. [$F_{(3-181)}=31,55$, $p<0.05$]. According to this H_0 hypothesis has been rejected H_1 hypothesis has been accepted. In other words, pedagogical-analogical models do have an effect on the students' success. **This research has been presented as a master thesis** (Köklü, 2009).

4. CONCLUSION AND DISCUSSION

According to the pre-test results it is seen that in the research there isn't a meaningful difference in the experiment and control group students' success level. The research results show that the lessons taught with the pedagogical-analogical models were more successful according to the lessons taught with the classic method. According to this it can be said that the concepts of the electric subjects is understood better by the students with the pedagogical-analogical model being more efficient and more beneficial for the students than the classic method.

Due to the quantity of the abstract concepts, it is more difficult to teach and understand the physics lesson. Especially the electric topic contains a lot of abstract concepts. The explanation of abstract concepts is simplified a little and the lesson becomes more visual and more amusing when using the pedagogical-analogical models.

Also in this research, this information can be suggested:

- Similar studies should be applied and done to the other topics of physics and model development should be assured,
- When teaching abstract concepts which are difficult to understand pedagogical-analogical models should be frequently taken advantage of,
- The importance of the pedagogical-analogical models should be mentioned to the teacher candidates studying at the universities teacher training faculties and teacher candidates should be educated on this topic,
- Course books should give more places to pedagogical-analogical models,
- It was considered that the pedagogical-analogical models used in the lessons should be more understandable,
- It should be avoided that students get the wrong idea about the concept.

5. REFERENCES

- Brown, D., (1993). "Refocusing Core Institutions: A concretizing Role For Analogy in Conceptual Change", *Journal of Research in Science Teaching*, 30 (10), 1273-1290.
- Demirci Güler M. P. (2007). "Fen Öğretiminde Kullanılan Analogiler, Analoji Kullanımının Öğrenci Başarısı, Tutumu ve Bilginin Kalıcılığına Etkisinin Araştırılması", *Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Doktora Tezi, Ankara.*
- Duru, N., (2002). "Fizik Dersinde Analoji Kullanımının Öğrenmeye ve Öğrenci Başarısına Etkilerinin Araştırılması", *Yüksek Lisans Tezi, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü, İstanbul.*
- Glynn, S. M. and Duit, R. (Ed.) (1995). "Learning Science In The School Research Reforming Practice", Lawrence Erlbaum Associates, Inc.160, U.S.A New Jersey.
- Günbatar, S. (2003). "Fizik Eğitiminde Elektrik ve Manyetizma Konularındaki Anlaşılması Zor Kavramlar için Model ve Benzetme Geliştirilmesi", *Yüksek Lisans Tezi Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.*
- Gürdal, A., Şahin, E. Çağlar, A. (2001). *Fen Eğitimi; İlkeler, Stratejiler ve Yöntemler.* Marmara Üniversitesi Atatürk Eğitim Fakültesi Yayınları, İstanbul.
- Kaya Ş. 2001, "Fen Bilimleri Öğretiminde Modellerle Öğretimin Önemi", *Atatürk Üniversitesi Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, Erzurum.*
- Köklü, N., (2009). "Elektrik Konularının Öğretiminde Pedagojik-Analitik Modellerin Öğrenci Başarısına Etkisi", *Selçuk Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, Konya.*
- Lawson, David and Anton Lawson. (1993). "Neural Principles of Memory and a Neural Theory of Analogical Insight", *Journal of Research in Science Teaching*, 30 (10), 1327-1348.
- Treagust, F. David. Gail Chittleborough and Mamiala L. Thapelo. (2002). "Student' s Understanding of The Role of Scientific Models in Learning Science", *International Journal of Science Education*, 24 (4), 357-368.
- Wong, E. D., (1993). "Understanding the Generative Capacity of Analogies as a Tool for explanation", *Journal of Research in Science Teaching*, 30, 1273-1290.

THE EFFECT OF TWO DIFFERENT METHODS ON STUDENT SUCCESS IN THE TEACHING OF SUBCUTANEOUS INJECTION

Deniz Öztürk, RN, MSN, Research Assistant, Gazi University Faculty of Health Sciences Nursing Department deniz_genc@hotmail.com
Hülya Bulut, Msn, Ph.D., Assistant Professor, Gazi University Faculty of Health Sciences Nursing Department, hulyadenizbulut@hotmail.com

Abstract

This is an experimental study aiming to determine the effect of two different methods on student success in the teaching of subcutaneous injection (SI). Of 77 students attending the principles of nursing class in the academic year of 2006–2007, 59 were included in the study (study group 31 and control group 28). After preparing the “Lesson content of the practice of SI” and the “SI practice CD,” data were collected by an independent observer using the “SI practice control list” and the “SI practice test.” Results showed no significant difference between the students who were trained with the CD and those who were educated using existing methods. It was determined that students educated using the CD were more successful especially in administering the injection. It was also found that the students in the study group had higher success scores and a favorable opinion of CD use.

INTRODUCTION

Education is basically an activity of behavioral modification. This activity aims not only to change individuals’ externalized behavior, but also the mental structure underlying this behavior that is associated with knowledge, attitude, and skills. These behavior modifications within the educational process are accomplished using certain training techniques and methods (Öğüt, et al., 2004). Today educators uphold the use of training tools that respond to the expectations of societies and the information requirements of the times. This requirement is observed to grow progressively, especially taking into consideration the rapid development in technology (Anaç, 2001; Görpeli, 2003; Karalar, 2006). Studies show that information technologies and, in this context, computers, can help improve creativity and the ability to think critically, enrich the learning environment, and create changes in the quality of education (Lynch, 2000; Rainbow & Sadler, 2003; Özmen & Kolomoç, 2004).

Nursing education is one where many cognitive and psychomotor skills need to be imparted to the student. However, adverse conditions like the lack of clinical lab buildings, crowded classes, a dearth of expert educators, and limited materials lead to restrictions in creating the desired behavior during both in-class lectures and laboratory practice (Bauer & Huynh, 1997; Souers, 1998). On the other hand, nursing education is a discipline that requires precision in practice. In particular, students are expected to correctly perform each procedure that requires psychomotor skills before they can be allowed to practice in a hospital setting. Therefore, a well-planned education enhanced by audiovisual components is essential to ensure that students acquire the desired gains from in-class lectures and laboratory practice.

The literature includes studies with differing conclusions on the use of computers in nursing education. Souers (1998) compared use of interactive video against the demonstration technique of the instructor, and determined that a highly cognitive learning occurred in the group who learned through interactive video display. Similarly Botris et al. (2004) used a computer simulation of the physiology of the respiratory system in nurse education, and found the practice to be a contributing factor in student success. Lowdermilk and Fishel (1991) determined that computer-assisted education caused a significant increase in students’ decision-making process and practical scores, and that the clinical success of these students was also greater.

In contrast to the findings of this study, Patricia (1997) compared traditional learning with interactive learning on videodisc, and found no significant difference between the groups. Engum et al. (2003) developed a computer simulation of intravenous catheterization and compared the results of this method with those of traditional laboratory experience. In both groups there was progress in student satisfaction and cognitive learning, but no differential was noted in the students’ demonstration of their skills.

In Turkey, however, the introduction of computers into nursing education is fairly recent. Nevertheless, it is observed that difficulties like scarcity of instructors, crowded classes, and limited supplies are experienced in giving psychomotor skills to students in nursing education. Further, it was also observed that the inclination to use traditional supplementary training tools continued because of inadequacy of the number of instructors with the knowledge and skills of computer use (Dinc, 1995).

In this study it is believed that CD use alone will increase both cognitive and psychomotor skills of students, and will bring a new perspective to nursing education in Turkey.

METHODOLOGY

Research Design, Sample, And Participants

This is an experimental study aiming to determine the effect of two different methods on student success in the teaching of subcutaneous injection. The study was carried out in a nursing college affiliated to a university. Of 77 students attending the principles of nursing class in the academic year of 2006–2007, 59 were included in the study (study group 31 and control group 28). All of the students voluntarily agreed to participate in the study. Students were assured that this activity was not a test and would not affect their educational standing in any way.

Instrument and Data Collection

The 24-item “Subcutaneous Injection Practice Control List” (CL) examining in detail the steps of subcutaneous injection at the psychomotor level, and the “Subcutaneous Injection Practice Test” consisting of 15 questions related to the performance of subcutaneous injection, were used as data collection tools.

The “Lesson content of the practice of SI” CD, which contained the necessary information for the administration of subcutaneous injection, was first prepared for the study, and based on this content, the “SI practice CD” was developed. Lesson Content of the Practice of Subcutaneous Injection was developed by the researcher by reviewing relevant literature (Potter & Perry, 2005; Ulusoy & Görgülü, 2001; Kozier, et al., 2002) and by obtaining expert opinion on the subject. The Subcutaneous Injection Practice CD was prepared based on the Lesson Content of the Practice of Subcutaneous Injection and is composed of three parts: One is, Theoretical explanation of subcutaneous injection; second is, Rationale-oriented explanation of the steps of subcutaneous injection on a model and the third is, Exercise questions on administering subcutaneous injection.

Intervention

The study and control groups formed using the Simple Random Table of Numbers were admitted into classes in two groups. Information on the research was provided to the students in both the study and the control groups before implementation. The students in the study group were placed in the computer-equipped classroom where each student was assigned one computer. It was explained to the students that they were to study the CD alone with the presence of an observer, and they could restudy the parts they did not understand clearly. Instruction of the students in the control group started simultaneously with the study group, and the same lesson content as in the Subcutaneous Injection Practice CD was transferred to the control group. The lecture was given by using expression, question-answer, and demonstration methods by using a projector. Additionally, all of the questions asked by the control group students about the unit were answered. When the control group students completed the lesson at the end of 25 minutes, the class of the study group was also terminated. Following completion of the delivery of the lesson, the classroom was arranged to allow the students to practice subcutaneous injection. Subsequently the students were readmitted singly to the classroom to perform the procedure. While the students practiced on a model, they were monitored by an independent observer who was not involved in the study. The data were formed by marking the behavior noted by the independent observer on the control list. Each student completing practice was released from the classroom after taking the Subcutaneous Injection Practice Test. Following the practical session, the students in the study group were asked 15 open-ended questions in order to determine their views on learning by using a CD. After all stages of practice were completed, in order to fulfill the principle of justice as an element of ethical concern, the topic of subcutaneous injection was explained to the students in the study group, using same teaching methods while it was ensured that the control group students worked in the computer classroom, with one student per computer.

Data Analysis

Data obtained from the study were divided under expert advice into three groups of preparatory stage (items 1-5), the stage of performing the injection (items 6-16), and the stage of terminating the injection (items 17-24) to facilitate statistical evaluation, and were assessed by computer using an SPSS software package. The presence in categorical data of a differential between the study and control groups in terms of Subcutaneous Injection Practice items (steps) was evaluated using the Chi-Square test, and the students' success score averages, using the Mann-Whitney U-test. One score point was allocated to each correct answer given to the test. The significance level was set as 0.05.

RESULTS

The data are presented under the headings, the following stages of subcutaneous injection practice: Preparatory stage, Making the injection and Terminating the injection.

No meaningful difference was noted between the students in the study and control groups in the practice of the steps of the preparatory stage of subcutaneous injection. However, the students in the control group were observed to have performed the step of "Checking doctor's order" listed under "Checking Patient Information" in greater proportion than the study group ($p=0.041<0.005$) (Table 1).

A greater proportion of the students in the study group were noted to perform the steps of "Correctly positioning the injection site" ($p=0.0001<0.05$), "Grasping the skin with the thumb and forefinger of the free hand and separating the subcutaneous tissue from the muscle" ($p=0.001<0.05$), "Aspirating the needle by slightly withdrawing the pump of the syringe" ($p=0.032<0.05$), "Slowly infusing the drug into the tissue if no blood is sighted in the neck of the syringe" ($p=0.011<0.05$), "If blood has entered the syringe, terminating the procedure without injecting the drug" ($p=0.027<0.05$) than the control group (Table 2).

For the final stage of subcutaneous injection practice, no significant difference was noted between the students in the study and control groups except in the steps of "Removal of used materials from the environment and Proper disposal" ($p=0.035<0.05$) (Table 3). A look at the success score point averages of the study and control groups shows a success point average of 14.42 for the study group, compared with 10.78 for the control group (Table 4).

DISCUSSION

In this study conducted to investigate the effect on student success of CD use in subcutaneous injection training, the differential was found to be significant in terms of student success in eight steps out of a total of 24, while 16 steps reflected no such difference. However, students in the study group were found to do better than the control group especially in the dexterity-based stage of giving the injection. It is believed that the opportunity the students had for reviewing the CD in their own time increased their success. The students explained the reasons for this in their own words, as follows: *"The subject was better grasped because it was visual. It was interesting because it was out of the ordinary. That it was both visual and audial helped with better grasp of the subject"*.

Similarly, Botris et al. (2004) used a computer simulation model to explain the functions of the respiratory system to their students, and determined that this practice was effective on student success. Further, studies have reported that the addition of visual elements to the skill training of students makes the imparted behavior more permanent (Orgun, 1999; Bauer & Huynh, 1998; Rouse, 2000). Lowdermilk and Fishel (1991) reported from a study that computer-assisted education increased the decision-making ability and practice scores of students, and that clinical success was greater among these students as well. Engum, et al. (2003) also reported heightened skills application among students when an interactive computer simulator and traditional laboratory experience were used concomitantly.

Besides studies indicating the effectiveness of CD use in education on student success (Fasce, et al., 1995; Nalpz & McCanse, 1994; Schare, et al., 1991), the literature includes efforts that have determined the reverse to be the case (Frazier, 1997). For example, Rehberg (2003) has reported that use of computers did not create a statistical differential in terms of students' knowledge tests and psychomotor skills. Similarly, the present study did not identify differences in student success in 16 procedural steps. In fact, in the case of some items, the control group students were found to be more successful than their peers in the study group. The literature indicates that when students educated on computers are not steered by an educator, their success rate declines, and that students therefore should be guided (Gibbons, et al., 1999; McNeil, et al., 2003). For instance, in Engum, et al.'s study (2003), students who received their education through the traditional method stated that they preferred studying with an educator to computer-assisted education, because they received assistance from the educator. During the study, one of the students expressed this need with the statement, *"There should still be a teacher beside us so that we can ask about points we don't understand."*

In addition, the success scores of the students in the study group were found to be significantly higher than the control group's. It is thought that self-pacing by the students of their learning and re-viewing of the CD were effective factors in this outcome (Table 3). Results from previous studies are also parallel to this finding (Bektaş, 2003; Rouse, 2000; Souers, 1998). For example, Souers (1998) found that students

learning with the assistance of computers received higher cognitive grades. The following examples from statements made by the students in our study are illustrative of their satisfaction with studying individually and using a CD: "I got a better understanding by going back to the parts I didn't understand. Before having a computer, 60 of us were only listening to the instructor in the classroom. I felt I was studying individually while on the computer".

In conclusion, the students stated that "retention of the subject was higher," "they could visualize the procedure," and "they learned the subject better" with the CD. Additionally, the students using the CD stated that although they were happy with this practice, support from an instructor was also necessary.

LIMITATIONS

This study has certain limitations. Primarily, the study was conducted in a nursing college and cannot be generalized to other schools. Further, the study entailed delivery of a single psychomotor skill through CD. Another limitation is the belief that the students in the study group had increased success scores because the sample tests were included following the chapter in the CD.

CONCLUSIONS AND IMPLICATIONS

In the study of the effect of CD use on student success in the administration of subcutaneous injection, although meaningful differences were lacking in the acquisition of psychomotor skills by the students in the study and control groups, it was found that those students who learned by CD alone were successful especially during the performance of the procedure, and had high success scores of cognition. Additionally, students using the CD reported satisfaction with this practice. It is believed that augmentation of existing methods with CD use while training students on psychomotor skills would be useful in imparting psychomotor skills to nursing students when used simultaneously with guidance by the instructor, especially in schools where there is a shortage of expert faculty.

TABLES

Table 1 Status of Performing the Steps of the Preparatory Stage of Administering Subcutaneous Injection in the Study and Control Groups

| Steps in the Preparatory Stage | Study (n=31) | | Control (n=28) | | X ² p value |
|--|--------------|-----------------|----------------|-----------------|--|
| | Performed | Did not perform | Performed | Did not perform | |
| 1. Verbalization of placement of materials on the medication tray | 23 | 74,2 | 8 | 25,8 | X ² =0,541 p=0,462>0,05 |
| 1a. Medication card | 26 | 83,9 | 5 | 16,1 | X ² =0,368 p=0,544>0,05 |
| 1b. Medication drawn into the syringe | 31 | 100,0 | 0 | 0 | ** |
| 1c. Cotton tampon saturated with antiseptic solution | 30 | 96,8 | 1 | 3,2 | X ² =0,005 p=0,942>0,05 |
| 1d. Waste container | 29 | 93,5 | 2 | 6,5 | X ² =1,870 p=0,171>0,05 |
| 1e. Gloves | 28 | 90,3 | 3 | 9,7 | X ² =0,868 p=0,352>0,05 |
| 2. Washing hands | 29 | 93,5 | 2 | 6,5 | X ² =1,870 p=0,171>0,05 |
| 3. Verbalization of checking patient information | 9 | 29,0 | 22 | 71,0 | X ² =2,719 p=0,099>0,05 |
| 3a. Identification information | 24 | 77,4 | 7 | 22,6 | X ² =0,048 p=0,827>0,05 |
| 3b. Doctor's order | 14 | 45,2 | 17 | 54,8 | X ² =4,157 p=0,041<0,05* |
| 3c. Dosage of drug | 22 | 71,0 | 9 | 29,0 | X ² =0,067 p=0,796>0,05 |
| 4. Informing the patient about the procedure and receiving consent | 30 | 96,8 | 1 | 3,2 | X ² =0,005 p=0,942>0,05 |
| 5. Putting on gloves before the procedure | 30 | 96,8 | 1 | 3,2 | X ² =0,468 p=0,494>0,05 |

* Found to be statistically significant.

** Not evaluated statistically.

Table 2 Status of Performing the Steps in the Stage of Making Subcutaneous Injection in the Study and Control Groups

| Steps during the stage of making the injection | Study (n=31) | | Control (n=28) | | X ² p value |
|--|--------------|-----------------|----------------|-----------------|--|
| | Performed | Did not perform | Performed | Did not perform | |
| 6. Correctly positioning the injection site | 23 | 74,2 | 8 | 25,8 | X ² =27,087 p=0,0001<0,05* |
| 7a. Swabbing the injection site with cotton tampon, starting from the injection site and working outward with a circular motion while applying slight pressure | 29 | 93,5 | 2 | 6,5 | X ² =0,345 p=0,557>0,05 |
| 7b. Discarding the cotton tampon in the waste container | 28 | 90,3 | 3 | 9,7 | X ² =2,855 p=0,091>0,05 |

| | | | | | |
|--|-------------|------------|-------------|------------|---------------------------------|
| 8. Waiting briefly for the skin to dry | 17 54,8 | 14 45,2 | 15 53,6 | 13 46,4 | $X^2=0,010$ $p=0,922>0,05$ |
| 9. Placement of cotton tampon between the ring and little fingers of the hand holding the syringe | 24 77,4 | 7 22,6 | 22 78,6 | 6 21,4 | $X^2=0,011$ $p=0,915>0,05$ |
| 10. Removal of the needle from its protective cover without touching any surface and stabbing the hand | 31 100,0 | 0 0 | 28 100,0 | 0 0 | ** |
| 11. Grasping the skin between the thumb and index finger of the free hand, and separating the subcutaneous tissue from muscle | 18 58,1 | 13 41,9 | 27 96,4 | 1 3,6 | $X^2=11,964$ $p=0,001<0,05*$ |
| 12. Holding the syringe with the open end of the needle pointing up | 10 32,3 | 21 67,7 | 4 14,3 | 24 85,7 | $X^2=2,626$ $p=0,105>0,05$ |
| 13. Stabbing the needle quickly but gently into the tissue at an angle of 45°-90° | 25 80,6 | 6 19,4 | 27 96,4 | 1 3,6 | $X^2=3,505$ $p=0,061>0,05$ |
| 14. Releasing the pinched skin | 30 96,8 | 1 3,2 | 26 92,9 | 2 7,1 | $X^2=0,468$ $p=0,494>0,05$ |
| 15. Aspirating the needle by slightly withdrawing the plunger of the syringe | 28 90,3 | 3 9,7 | 19 67,9 | 9 32,1 | $X^2=4,583$ $p=0,032<0,05*$ |
| 16. a. If no blood is visualized in the neck of the syringe, infusing the medication slowly into the tissue by using the free hand | 29 93,5 | 2 6,5 | 19 67,9 | 9 32,1 | $X^2=6,402$ $p=0,011<0,05*$ |
| 16. b. If blood has entered the syringe, terminating the procedure without injecting the drug | 20 64,5 | 11 35,5 | 10 35,7 | 18 64,3 | $X^2=4,883$ $p=0,027<0,05*$ |

* Found to be statistically significant.
** Not evaluated statistically.

Table 3 Status of Performing the Steps in the Completion Stage of Subcutaneous Injection in the Study and Control Groups

| Steps in the termination stage of injection | Study Performed | (n=31) Did not perform | Control Performed | (n=28) Did not perform | X^2 p value |
|---|--------------------|------------------------------|----------------------|------------------------------|--------------------------------|
| 17. Removal of the needle from the tissue quickly but gently, without losing the angle of entry | 31 100,0 | 0 0 | 28 100,0 | 0 0 | ** |
| 18. Applying slight pressure on the injection site with cotton tampon | 31 100,0 | 0 0 | 26 92,9 | 2 7,1 | $X^2=2,292$ $p=0,130>0,05$ |
| 19. Positioning the patient as required by her/his condition | 27 87,1 | 4 12,9 | 24 85,7 | 4 14,3 | $X^2=0,024$ $p=0,877>0,05$ |
| 20. Removing gloves | 30 96,8 | 1 3,2 | 27 96,4 | 1 3,6 | $X^2=0,005$ $p=0,942>0,05$ |
| 21. Verbalization of recording the injection | 1 3,2 | 30 96,8 | 2 7,1 | 26 92,9 | $X^2=0,468$ $p=0,494>0,05$ |
| 21a. Date and time of administration | 17 54,8 | 14 45,2 | 13 46,4 | 15 53,6 | $X^2=0,416$ $p=0,519>0,05$ |
| 21b. Area of injection | 15 48,4 | 16 51,6 | 7 25,0 | 21 75,0 | $X^2=3,441$ $p=0,064>0,05$ |
| 21c. Name of drug | 8 25,8 | 23 74,2 | 13 46,4 | 15 53,6 | $X^2=2,729$ $p=0,099>0,05$ |
| 21d. Dosage of drug | 16 51,6 | 15 48,4 | 14 50,0 | 14 50,0 | $X^2=0,015$ $p=0,902>0,05$ |
| 21e. Side effects, if any | 9 29,0 | 22 71,0 | 13 46,4 | 15 53,6 | $X^2=1,904$ $p=0,168>0,05$ |
| 21f. Reactions of the patient | 12 38,7 | 19 61,3 | 12 42,9 | 16 57,1 | $X^2=0,105$ $p=0,746>0,05$ |
| 22. Removal of used materials from the environment and proper disposal | 19 61,33 | 12 38,7 | 24 85,7 | 4 14,3 | $X^2=4,440$ $p=0,035<0,05*$ |

| | | | | | |
|--|-------------|------------|------------|------------|---------------------------------------|
| 23. Washing hands after the procedure | 19 61,33 | 12 38,7 | 15 53,6 | 13 46,4 | X ² =0,359 p=0,549>0,05 |
| 24. Evaluation of the patient for the effects/side effects of the drug | 24 77,4 | 7 22,6 | 22 78,6 | 6 21,4 | X ² =0,011 p=0,915>0,05 |

* Found to be statistically significant.

** Not evaluated statistically.

Table 4 Subcutaneous Injection Administration Success Score Averages of the Study and Control Groups

| Groups | \bar{x} | Median | Minimum | Maximum | Sd | Status of Significance |
|---------|-----------|--------|---------|---------|-------|--------------------------------------|
| Study | 14,42 | 15 | 11 | 15 | 0,823 | M.W U=33,001 p=0,0001<0,05 |
| Control | 10,78 | 11 | 7 | 14 | 2,02 | |

REFERENCES

- Anaç, A. (2001). Ders yazılımı hazırlamada kullanılan yazarlık sistemlerinin ders yazılımı yardımıyla öğretimi. Master thesis. Ankara: Ankara Üniversitesi.
- Bauer, MD., & Huynh MV. (1998). Nursing student' blood pressure measurement following CD-ROM and conventional classroom instruction: a pilot study. *International journal of medical information*. 50, 103-109.
- Bektaş, A. (2004). Hemşirelik öğrencilerinin kuramsal ve uygulamalı eğitimde yaşadıkları güçlükler ve öğretim elemanlarından beklentileri. *Hemşirelik Forumu*. Eylül-Ekim Sayısı, 45-54.
- Botris, T., Halkiotis, SC., & Kourlaba, G. (2004). Computer simulation of the human respiratory system for educational purposes. *Computers, Informatics, Nursing*. 22 (3): 162-170.
- Diñç, L. (1995). Bilgisayarın hemşirelik eğitimi ve hizmetlerindeki yeri. *Hacettepe Üniversitesi Hemşirelik Yüksekokulu Dergisi*. 2(2): 47-50.
- Engum, SA., Jeffries, P., Fisher, L. (2003). Intravenous catheter training system: computer-based education versus traditional learning methods. *The American Journal of Surgery*. 186: 67-74.
- Fasce, E., Ramirez, L., Ibanez, P. (1995). Evaluation of a computer-based independent study program applied to fourth year medical students. *Revista Medica De Chile*. 123(6): 700-5.
- Frazier, SH. (1997). A comparison study of educational instructional delivery methods. Master thesis. Louisville, Kentucky: Bellerme College.
- Gibbons, C., Bachulis, A., Allen, G. (1999). A Comparison of a Computer and Pencil and Paper Assignment. *Computers in nursing*. 17(6): 286-290.
- Görpeli, T. (2003). Biyoloji öğretiminde bilgisayar destekli öğretim ile geleneksel öğretim yöntemlerinin öğrenci başarısına etkisi. Master thesis. Ankara: Gazi Üniversitesi.
- Karalar, H. (2006). Microsoft Excel programında formül yazımı öğretiminin, bilgisayar destekli öğretim yöntemi ve geleneksel öğretim yönteminin kullanıldığı gruplardaki öğrencilerin erişimleri ve kalıcılık düzeyleri üzerine etkisi. Master thesis. Muğla: Muğla Üniversitesi.
- Kozier, B., Erb, G., Berman, A., Snyder, S. (2002). Techniques in clinical nursing. 5th Ed. New Jersey: Banta Company.
- Lowdermilk, DL., Fishel, AH. (1991). Computer simulations as a measure of nursing students' decision-making skills. *Journal of Nursing Education*. 30(1): 34-9.
- Lynch, L. (2000). Computer-assisted reading intervention in a secondary school: an evaluation study. *British Journal of Educational Technology*. 31(4): 333-348.
- McNeil, JB., Elfrink, LV., Bickford, JC., Pierce, TS., Beyea, CS., Averill, C., Klappenbach, C. (2003). Nursing information technology knowledge. *Survey, Journal of Nursing Education*. 42: 341-349.
- Napholz, L., Mccanse, R. (1994). Interactive video instruction increases efficiency in cognitive learning in a baccalaureate nursing education program. *Computers in Nursing*. 12(3):149-53.
- Orgun F. (1999). Hemşirelik eğitiminde bireysel öğretim yönteminin etkililiğinin incelenmesi. Master thesis. İzmir: Ege Üniversitesi.
- Öğüt, H., Altun, A., Sulak, S., Koçer, E. (2004). Bilgisayar destekli, internet erişimli interaktif eğitim cd'si ile e- eğitim. *The Turkish Online Journal of Educational Technology*. 3 (1). Article 10. Elektronik adresi: <http://www.tojet.net/articles/3110.doc>
- Özmen, H., Kolomuç, A. (2004). Bilgisayarlı öğretimin çözümler konusundaki öğrenci başarısına etkisi. *Kastamonu Eğitim Dergisi*. 12(1): 57-68.
- Patricia, AD. (1997). Interactive Videodisc Instruction is an Alternative Method for Learning and Performing a Critical Nursing Skill. *Computers in nursing*; 15(3): 155-158.
- Potter, PA, Perry, AG. Fundamentals of nursing, 5th ed, St. Louis-Missouri: Mosby Inc; 2005.
- Rainbow, S., Sadler-Smith, E. (2003). Attitudes to computer-assisted learning amongs business and management students. *British Journal of Educational Technology*. 34 (5): 615-624.
- Rehberg, RS. (2003). Classroom versus computer-based CPR training: a comparison of the effectiveness of two instructional methods. Doctor of philosophy. Touro University International University.
- Rouse, DP. (2000). The Effectiveness of Computer-Assisted Instruction in Teaching Nursing Students About Congenital Heart Disease. *Computers in nursing*. 18(6): 282-287.
- Schare, BL., Dunn, SC., Clark, HM., Soled, SW., Gilman, BR. (1991). The effects of interactive video on cognitive achievement and attitude toward learning. *Journal of Nursing Education*. 30(3):109-13.
- Souers, C. (1998). A comparison of two teaching strategies for nursing skill acquisition. Master of science in nursing. Louisville, Kentucky: Bellarmine College.
- Ulusoy, MF., Görgülü, RS. (2001). Hemşirelik esasları: temel kuram, kavram, ilke ve yöntemler. 5. Baskı. Ankara: TDFO Ltd Şti.

THE EFFECTIVENESS OF INSTRUCTION BASED ON INTERACTIVE COMPUTER SIMULATIONS ON ACADEMIC ACHIEVEMENT AND REASONING ABILITY

Serhat Uzunel Özlem Koray

Karaelmas University, College of Education, Department of Elementary Education
Zonguldak, Turkey

Abstract

The purpose of this study was to investigate the effectiveness of instructions based on interactive computer simulations within the context of “Buoyant Force in liquids and gases” subject on academic achievement and reasoning ability. The study was conducted with a quantitative methodology via non-equivalent groups quasi-experimental design. The sample of 54 students enrolled in two eighth grade classes of a public middle school in Turkey was included in this study. One of these classes was randomly assigned as experimental group and instructed by means of IBICS, whereas the other class was assigned as control group and instructed by means of traditionally designed instruction. In order to measure academic achievement and reasoning ability of the students, Academic Achievement Test and The Test of Logical Thinking were used as pre- and post- tests in both control and experimental groups. The results of MANCOVA showed that the students in interactive computer simulations learning environment had significantly higher mean scores on academic achievement and reasoning ability.

Key Words: Interactive Computer Simulations, Elementary Science Education, Buoyant Force in Fluids and Gases, Reasoning Ability.

1. Introduction

Recent technological developments have made computer simulations more feasible for supporting adaptive learning, as computers can provide visualization of dynamic phenomena. According to Alessi and Trollip (1991); simulation is a powerful technique that teaches about some aspect of the world by imitating or replicating it. Students are not only motivated by simulations, but learn by interacting with them in a manner similar to the way they would react in real situations. Especially, in science classrooms, simulation can play an important role in creating virtual experiments and inquiry. At the same time, simulations might contribute to conceptual change, provide open-ended experiences for students; provide tools for scientific inquiry and problem solving experiences (Sahin, 2006). Visualization of complex concepts is not, however, the only feature of computer simulations. Computer simulations are ‘interactive’ software programs that allow students to explore complex interactions among dynamic variables that model real-life situations. Computer simulations can also provide benefits over printed graphics if the system reacts according to a student’s input (Park et al, 2009). In this context, some researchers (as cited by Park et al, 2009 from de Jong & van Joolingen, 1998; Lee, Plass, & Homer, 2006; Rieber, Tzeng, & Tribble, 2004) have pointed out that computer simulations are particularly effective for the learning of complex tasks and the study of phenomena that are not easily observable in real space, impossible to realize in a traditional learning situation, or not inherently visual objects. By using simulations, students can perform a set of experiments in order to check the reliability of the obtained results and arrange the data in different organizers such as tables and graphs. All these activities require students to have practical and formal high cognitive skills (as cited by Hupert et al., 2002 from Maor, 1991).

Previous research has demonstrated the effectiveness of computer simulations in science learning. A good number of these studies have focused on the acquisition of specific content knowledge and reasoning skills. Akpan and Andre (2000) found that students who used a simulated frog dissection learned significantly more anatomy than those who performed actual dissections. In another study carried out by Monaghan and Clement (2000), it was found out that high school science students who have been exposed to a simulation program that provided feedback with animations in the solution of problems about relative motion are more successful than those provided with numeric feedback. Additionally, Huppert, Lomask, and Lazarowitz (2002) found that 10th-grade biology students who used a computer simulation on the growth curve of microorganisms attained greater achievement on content-based objectives than those in a control group. Jimoyiannis and Komis (2001) have reported that, students in computer simulations learning environment exhibited significantly improved achievement rates. The authors stated that working with computer simulations helped students overcome their cognitive constraints and effectively apply the concept of instantaneous velocity and acceleration. Most recently, Chang, Chen, Lin, and Sung (2008) compared Taiwanese high school physics students who completed a traditional optics lab exercise to those who completed a similar simulated lab in terms of learning and abstract reasoning abilities. Results indicated that students who used the simulation outperformed students who completed the traditional lab. According to the results of another study carried out by Kiboss, Ndirangu and Wekesa (2004), the use of well-designed computer simulations learning environments can be effective in improving pupils’ knowledge and performance in the biology course on cell theory.

As shown in the studies cited in previous paragraph, computer simulations have a positive effect in increasing academic achievement and reasoning ability. Thus, one of the best things to do to induce students’ learning of buoyancy is to make the subject concrete with visual means of interactive computer simulations. As such, use of interactive computer simulations has potential to increase academic achievement and reasoning ability of elementary students.

2. Method

The study was conducted with a quantitative methodology by using a non-equivalent groups quasi-experimental design. For purpose of the study, IBICS applications were conducted in two intact classes of an elementary school in Zonguldak, Turkey.

2.1 Sample

The sample of this research consisted of 54 students (27-experimental group, 27-control group) enrolled in two eighth grade classes of a public middle school in Zonguldak, Turkey. The mean age of the students was 14 and majority of the students were from middle-class families in terms of socio-economical status. One of the classes was randomly assigned as experimental group and instructed by means of interactive simulations, whereas the other class was assigned as the control group and instructed by means of common instructional approach. The applications made in both groups were done by teacher of the classes.

2.2 Instruments

In this study, two instruments; Academic Achievement Test and The Test of Logical Thinking were utilized.

2.2.1 Academic Achievement Test (AAT)

In order to measure academic achievement of the students, academic achievement test (AAT) was developed by the researcher. Initially, AAT included 45 multiple-choice items to measure the students' academic achievement. Multiple choice items in the test were related to buoyant force in fluids and gases and related factors. Content validity of each item in the test was determined by a group of experts in physics, physics education, science education, and measurement and evaluation. The AAT was piloted by administering it to 98 students. Then, analysis of the data was conducted by using ITEMAN program. Based on the results from this administration, 3 questions were omitted. The final form included 42 items on buoyant force in gases and fluids and related factors. The resulting 42-item instrument yielded a KR-20 reliability coefficient of .82 and was utilized as a pre-test and post-test. The completion time for the whole test was approximately 40 minutes.

2.2.1 The Test of Logical Thinking (TOLT)

The Test of Logical Thinking (TOLT) developed by Roadrangka, Yeany and Padilla (1982) and adapted by Korkmaz (2002) was used to measure formal reasoning ability of the students. The test included 18 multiple choice and three open ended items. Students respond to each item by selecting a response and also their reason for selecting that response. For an item to be scored correct, the student must give both the best answer and the best justification. TOLT measured 6 logical processes. These processes are conservation (1 item), mass (1 item), length (1 item), volume (1 item), proportional comparison (6 item), controlling the variables (4 item), consolidative comparison (3 item), probabilistic comparison (2 item) and relational comparison (2 item).

According to the study of Korkmaz (2002), the test was found to be appropriate for students at 6th grade level and above. The time required for completion of the test was 45 minutes. The alpha reliability of the test was 0.77. In the scoring process, one point was given to each true answer and satisfactory reason for the first 18 items, and one point was given to each true answer for the other questions.

2.3 Treatment

A total of 54 eighth grade students, enrolled in science courses of two in middle schools, were involved in the study. The study was carried out for four weeks during 2009-2010 fall semester (total number of hours for unit =16 hours). The instruction period for each class was four 40-minute sessions per week.

Three interactive computer simulations were prepared: buoyant force in fluids, buoyant force in gases and other factors on which buoyant force depends. They were applied in the computer laboratory, giving each student a computer so that they can use the simulation in an interactive way. As the students worked with the simulations, in the first one they observed the buoyant force the fluid applied on the object in an interactive way. In the second one, the students observed the difference between the buoyant force applied to a stone in an airless globe and the buoyant force applied on a stone in an environment where there is air. In the last simulation, they observed the change in the buoyant force of the fluid with the mass and volume of the object by making some experiments on their own (Appendix 1).

Before the students started working on these simulations, the teacher made a demonstration about how to use the simulations. As the study begins, the teacher introduced the students with the simulations. For a 40-minute period, teacher showed the first one and discussed about buoyancy. By doing this, students are engaged and got more eager to discover these simulations. As the students worked on these simulations, they were trying to find a solution about the problems and questions asked by the teacher. While they are interacting with simulations they helped each other and discussed about the situations.

In the control group, conventional method has been used during the study time. The learning environment is teacher-centered and lessons have been taught by considering objectives of the units with lecture and question-answer techniques. The units are the same with those for experimental group. The students have been asked to be prepared for the units before the lessons and question-answer technique has been used as beginning activity to teach the unit. Pre-knowledge levels of them have been determined and the studies on the unit have been presented with lecture and question-answer approaches. After that activity, the students have been asked to study on the subjects. The control group students have experienced an instruction in which explanations and questions of the teacher are focus and knowledge-centered approach has been conducted. In this process, the direction of communication between student and teacher is from teacher to students.

2.4. Data Analysis

In the study, three variables; two dependent and one independent, have been investigated. For analyzing of the data, MANCOVA technique has been utilized for its appropriateness to control family-wise Type-I error rate.

Results

The results of this study are presented under this title. Table 1 shows descriptive statistics for the scores of the students in the experimental and control groups by combining the scores of experimental and control groups separately.

Table 1. Descriptive Statistics for AA and RA Scores

| | Experimental Group | | Control Group | |
|----------------------|--------------------|------|---------------|------|
| | M | SD | M | SD |
| Academic achievement | 45.74 | 9.91 | 33.69 | 6.35 |
| Reasoning ability | 4.52 | 2.19 | 3.85 | 2.59 |

Mean scores and Standard Deviations for experimental and control groups with respect to academic achievement and reasoning ability were given Table 1. As shown in table 1, students in experimental group appeared to have higher scores on variables.

Multivariate Analysis of Covariance (MANCOVA) was conducted to investigate the effect of PBL and traditional instruction on eight grade students' academic achievement and reasoning ability. Pre-test scores on reasoning ability was set as covariate based on its moderate correlation with post-test scores ($r_{\text{pre-ach-pre-reas.}}=0.374$, $p=0.005$; $r_{\text{post-ach-pre-reas.}}=0.306$, $p=0.024$; $r_{\text{post-reas.-pre-reas.}}=0.532$, $p=0.00$) After the treatment, results of the analyses showed a statistically significant mean difference between the experimental and control groups with respect to dependent variables of academic achievement and performance skills in favor of the experimental group (Wilks' Lambda=0.70, $F(2,49)=10.32$, $p=0.00$). The multivariate η^2 based on Wilk's Lambda showed that 30% of multivariate variance of the dependent variables was associated with the treatment.

In order to determine the effect of the treatment on academic achievement and reasoning ability separately, univariate ANCOVAs were run. (see Table 2).

Table 2. Univariate ANCOVA results

| Source | Dependent variable | df | F value | P value |
|-----------|----------------------|----|---------|---------|
| Treatment | Academic achievement | 1 | 11.60 | 0.001 |
| | Reasoning ability | 1 | 8.03 | 0.007 |

The results of ANCOVA on the academic achievement scores showed statistically significant difference between the groups in favor of the experimental group ($F(1,50)=11.60$, $p=0.001$, $\eta^2=.19$) and the reasoning ability scores showed statistically significant difference in favor of the treatment group ($F(1,50)=1.39$, $p=0.24$, $\eta^2=0.14$). When the mean scores on academic achievement, reasoning ability scores were examined, it was found that the students in the experimental groups had higher mean scores when compared with those in the control groups (see Table 1). Therefore, the students in experimental groups (IBICS classes) appeared to gain statistically significantly higher scores on academic achievement and reasoning ability than those in the control groups.

4. Discussion

This study compared the effectiveness of IBICS and common instructional approach on elementary students' academic achievement at the context of "buoyant force in fluids and gases and related factors" by subject and reasoning ability. Academic achievement is more related to acquiring content knowledge while performance skills are related to ability of using relevant information at addressing problem, articulating uncertainties, organizing concepts, and interpreting information. In the effectiveness of the instruction based on interactive computer simulation was thought to be contributor and facilitator to gain content knowledge. In addition, for the role of interactive computer simulations, it can be said that abstract concepts and principles might be converted into more concrete subjects by the simulations. Thereby, gaining concrete information about the buoyancy concept, which is one of the difficult to learn concept as She (2005) suggests, the students in the IBICS group in this study, had the opportunity of understanding the concept, finding out relationship other concepts, and identifying facts associated with the concept on their own. The literature also shows that the use of simulations has resulted in increased learning; this is in line with the result of this study. As Hupert and his colleagues (2002) point out; computer simulations have been found to enhance students' active involvement in the learning process, enabling them to apply principles more often, and helped students to meet the learning unit goals. As stated by Sahin (2006), simulations can contribute to conceptual change, provide open-ended experiences for students; provide tools for scientific inquiry and problem solving experiences. The results of this investigation support previous work (Geban *et al.*, 1992; Yalcinalp *et al.*, 1995; Hupert *et al.*, 2002), in which these studies demonstrated positive effects of computer simulations on students' science achievement. The same effect of the simulation might have been valid for the increase in reasoning ability. By working with computers, students learn how to think about what their research is all about, to connect ideas from different sources, building on what they know, and so the computer is an extension of the thinking and making processes (Goldman-Segall 1998). In addition, use of simulations by interacting with the content might have increased perception and meaningful learning of concepts by students. As a result of increased learning higher order thinking abilities of the students might have also been increased. As Hupert and his colleagues (2002) point out; computer simulations have been found to enhance students' active involvement in the learning process, enabling them to apply principles more often, and helped students to meet the learning unit goals. The students in the simulated computer assisted learning environment exhibited a complex and integrative reasoning, which often proves to be very difficult for the 10th grade students, in laboratory work.

The results of this study have importance in science education. First, the study has been providing empirical evidence for effectiveness of IBICS at the level of elementary students. The use of the interactive computer simulations is another important aspect of this study, because the abstract concepts of physics have been converted into more concrete objects

Suggestions

In the purpose of deeply understanding the effectiveness, teacher reflections on the process can be studied with the same design. Also, the other mostly studied variables in relation to academic achievement; attitude, motivation and permanence can be studied with the same level group. In addition to these, a study about the simulation developers' attitudes on educational simulations and how the simulation developing process should be, can be done.

REFERENCES

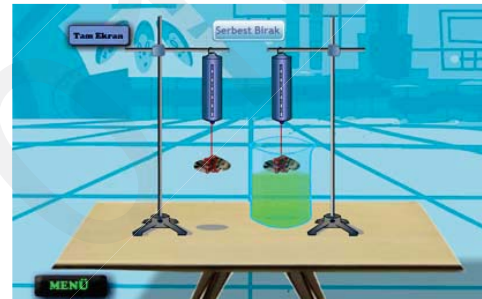
- Abd-El-Khalick, F., Boujaoude, S., Duschl, R., Lederman, N. G., Mamlok-Naaman, R., Hofstein, A., Niaz, M., Treagust, D., & Tuan, H. L. (2004). Inquiry in science education: International perspectives. *Science Education*, 88(3), 397– 419.
- Barak, M., Ben-Chaim D. & Zoller, U. (2007). Purposely teaching for the promotion of higher-order thinking skills: A case of critical thinking. *Research in Science Education*, 37, 353-369.
- Bentley, D. & Watts, M. (1989). Section 4. Problem Solving (80-83) *Learning and Teaching in School Science. Practical Alternatives* Open University Press, Milton Keynes,
- Chin, C. & Chia, L. (2004). Implementing project work in biology through problem-based learning. *Journal of Biological Education*, 38(2), 69-75.
- Dahlgren, M.A. & Öberg, G. (2001). Questioning to learn and learning to question: Structure and function of problem-based learning scenarios in environmental science education. *Higher Education*, 41, 263-282.
- Dori, Y.J., Tal, R.T. & Tsaushu, M. (2003). Teaching biotechnology through case studies-can we improve higher order thinking skills of non-science majors?, *Science Education*, 87, 767– 793.
- Korkmaz, H. (2002). The effects of project based learning in science education on creativity, problem solving and academic risk taking. Unpublished Doctoral Dissertation. Hacettepe University, Social Science Institute, Ankara, Turkey.
- Lawson, A.E., Banks, D.L. & Logvin, M. (2007). Self-Efficacy, Reasoning Ability, and Achievement in College Biology, *Journal of Research in Science Teaching*, 44, (5), 706-724.
- Sahin, S. (2006). Computer simulations in science education: Implications for distance education, *Turkish Online Journal of Distance Education*, 7, (4), 132-146.

APPENDIX

1. Examples of Simulations

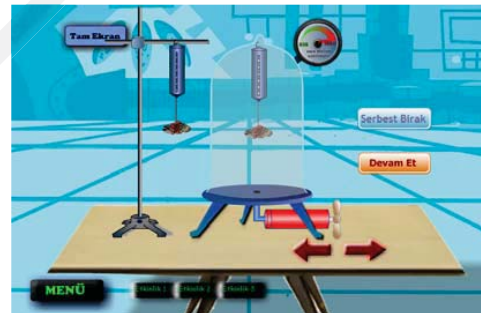
Screen 1.

The student doesn't observe any changes until he interacts with the simulation. When the "release" button on the simulation is pressed, both objects tied to the two dynamometers are released. As one of the objects drops into the liquid in the beaker glass, the other remains in the same atmosphere (in the air). As buoyant force is applied to the object in the liquid, the value read on the dynamometer decreases considerably.



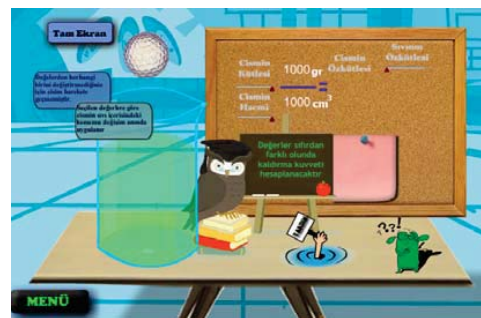
Screen 2.

The objects inside the glass globe and in the atmospheric environment which are tied to dynamometers are released when the "release" button is pushed. In addition, in order to empty the air in the glass globe, the amount of air inside the glass globe is adjusted by clicking the arrows near the cylinder. When the arrow which points to the right is clicked, the cylinder comes out and the air inside the globe is emptied. If it is emptied (on condition that the cylinder is already out) as the arrow which points to the left is clicked, the cylinder goes in and the globe is filled with air. The air in the globe can be checked via the gauge connected to the globe. If the user has emptied the air inside the globe with the help of the cylinder, when released, the objects are balanced in a state in which the object inside the globe is lower. If the air inside the globe hasn't been emptied, both objects are balanced at the same level.



Screen 3.

In the section where the variables which buoyant force is dependent on except gravitational acceleration are analyzed, the user can adjust the mass and volume of the object and the density of the liquid as desired. The density of the object is not displayed until the mass and volume of the object take a numeric value. The information as to how the user is going to change these variables is represented by the balloon which appears when the user puts the cursor on the names of sliders. Similarly, the value of the buoyant force appears on the screen when the density of the liquid is adjusted. The simulation doesn't make any calculations until the user defines values for all the variables. When all the variables on which buoyant force have been defined, the value of the buoyant force is presented by the simulation. When any change on the variables is made, the object immersed into the liquid is affected by these changes, and the location of the object is updated according to the interaction between, the density of the object and that of the liquid. This update process is animated in the animation and the object moves in a way close to real. Numeric values are provided on the panel about the immersed part of the object. To get information about the location of the object, the pointer is moved on the object, information about the location is provided in the speech balloon that appears on the screen. When the help icon on the table is clicked, a help screen about the simulation appears.



THE EFFECTS OF BRAIN BASED LEARNING IN TERMS OF ACHIEVEMENT AND ATTITUDE IN BIOLOGY LESSON

Eda DEMİRHAN

Sakarya University Faculty of Education
edemirhan@sakarya.edu.tr

Şenol BEŞOLUK

Sakarya University Faculty of Education
sbesoluk@sakarya.edu.tr

Abstract

The purpose of this study is to determine the effect of brain based learning on students' biology achievement, subject examinations and attitude towards in biology. The study was an experimental research in which pre-test – post-test design with control group was applied. The study was conducted in spring term of 2008-2009 academic year with 65 second year students of Elementary Science Education Department at Sakarya University, 30 students of those were chosen as the experimental group and the other 35 as the control group. The data are collected by “Achievement test”, “Subject Examinations”, “Biology Attitudes Scale (BAS)” and “Kolb Learning Style Inventory-III (KLSI-III)”. Activities which were based on *Brain based learning* has been applied to the experimental group and *Traditional teaching* has been applied to the control group. Results are showed that there is a significant difference between the achievement test results of experimental and control groups but when we use ANCOVA, it shows that the significant difference is not statically meaningful. So according to the result of achievement test in biology we can say brain based learning is as effective as traditional teaching. And also there aren't any statically significant differences between the results of attitude towards biology.

Key Words: Brain based learning, Learning style, Biology education, Attitude

INTRODUCTION

Neuroscience is a branch of biology about brain and nerve system provides various data and related views (Tascioglu, 1994). Recent studies on neuroscience provide new description of learning which is different from the other theories. In respect to these studies, learning is to form new dendrites or new brain structure. Putting simply, people learn because brain can change its neural circuits (Weiss, 2000; Strickland, 2003; Wolfe, 2004).

In 1990s as the “Decade of the Brain” new researches were begun to increase about how the brain functions and learns (Roberts, 2002). Yet interest in brain-based learning has intensified in recent years witnessed by the flood of articles and books published on the connection between brain research and education. For example, between 1998 and 2000, the *Educational Leadership* journal was published a series of articles on the impact of advances in brain research on teaching (Wong, 2008). To set out these researches brain-based learning was developed to help children while they are learning.

Brain-based learning can be defined as an interdisciplinary answer to the question of “what is the most effective way of the brain's learning mechanism” (Jensen, 1998). Caine and Caine (2002) define brain-based learning as “recognition of the brain's codes for a meaningful learning and adjusting the teaching process in relation to those codes.” Pool (1997), defines the brain based learning, in understanding how the brain works best and how we can increase the learning at the highest level and tell to people.

Brain based learning depends on how the brain learns and works. At the same time, it depends on the theory of being able to be learned by anybody. The brain learns the new patterns while creating its own patterns. As lots of trainers, brain based trainers adopt constructive and active learning models (Bruer, 1999). Brain-based learning aims to enhance the learning potential and, in contrast to the traditional approaches and models, provides a teaching and learning framework for educators (Materna, 2000).

The principles of brain-based learning provide a theoretical framework for the effective learning and teaching process, seeking the best conditions in which learning takes place in the brain. Based in neurobiology, these principles guide educators to select and prepare learning environments. Caine and Caine (2002) list these principles as follows:

- Brain is a parallel processor,
- Learning engages the entire physiology,
- The search for meaning is innate,
- The search for meaning occurs through patterning,
- Emotions are critical to patterning,
- Every brain simultaneously perceives and creates parts and wholes,
- Learning involves both focused attention and peripheral attention,
- Learning always involves conscious and unconscious processes,
- We have at least two types of memory systems: spatial and rote learning
- The brain understands and remembers best when facts and skills are embedded in natural spatial memory
- Learning is enhanced by challenge and inhibited by threat,
- Every brain is unique.

The principles of brain-based learning propose that effective learning could occur only through practicing real life experiences. Learning becomes more expressive when the brain supports the processes in search of meaning and patterning. Accordingly, it enables the learners to internalize and individualize learning experiences. Therefore, it is essential that learners be encouraged to participate in the learning and teaching process actively and that teaching materials be chosen according to their learning preferences (Ozden & Gultekin, 2008). Brain research indicates that the brain does not act as a computer, in a linear fashion, as some educators previously thought. Rather, the brain uses multiple strategies to create meaning (Caulfield et al., 2000).

Jensen (2000) explained that the proper environment is important for learning to occur. *Environment's color*, visual stimuli and students' psychological stimuli, hydration can influence learning. And also seasons, temperatures, music, noise and day light can effect the students' learning. Teachers should provide learners with a secure classroom atmosphere which has a rich learning environment challenging learners to

learn. To that end, the classrooms should have a bulletin board, an aquarium, various models, computer technology and simulations (Mangan, 1998). Listening to music engages the entire brain (Jensen, 1998). The intentional use of music in the classroom will set the scene and learning atmosphere to enhance teaching and learning activities. Furthermore, using music for learning makes the process much more fun and interesting (Brewer, 2007). For this reason classrooms ought to involve enriched environments.

Brain-based classrooms are called "brain friendly places." These classrooms are the learning environments where the brain's functions and their roles in learning are regarded in terms of teaching and learning process. These classes also have an emotionally enriched environment where learners are immersed into challenging experiences. The best learning comes true with making use of the variety of experience which is intensively stimulated, music, role-playing, drama, art, colors, graphics, figures and metaphors (Sylwester, 1995; Jensen, 2000; Dhority and Jensen, 1998; Sousa, 2000). Finally, in brain-based classrooms, it is believed that learners are unique and that former knowledge serves as a baseline for new learning (Fogarty, 2002).

PURPOSE OF THE STUDY

The main goal of the present study is to figure out the effectiveness of brain based learning activities, with regard to the learners' achievement and attitudes toward in biology. Concerning the above aim, following research questions are posed;

1. Is there any significant difference between the learners' achievement in the experimental group, which used teaching materials that designed regarding the principles of brain based learning, and control group, which used traditional teaching materials in biology lesson?
2. Is there any significant difference between achievement in subject examinations in the experimental group, which used teaching materials that designed regarding the principles of brain based learning, and control group, which used traditional teaching materials in biology lesson?
3. Is there any significant difference between the learners' attitudes in the experimental group, which used teaching materials that designed regarding the principles of brain based learning, and control group, which used traditional teaching materials in biology lesson?

METHOD

The Research Model

The study is an experimental research in which pre test-post test design with control group has been used. Two groups were randomly selected as experimental and control groups, and the learners in both groups were examined through pre and post tests. The process of the research method is shown in Table 1.

Table1. The Research Model

| Groups | Pre-tests | Process | Post-tests |
|-----------------------|---|----------------------|---|
| Experiment Group (EG) | <ul style="list-style-type: none"> ▪ Achievement test ▪ Biology Attitudes Scale | Brain Based Learning | <ul style="list-style-type: none"> ▪ Achievement test ▪ Biology Attitudes Scale |
| Control Group (CG) | | Traditional Teaching | |

Besides achievement test and biology attitude scale (between pre and post tests), after every subject, subject examinations were applied both experimental group and control group. The subject examinations are shown in Table 2.

Table2. Subject Examinations

| | |
|--------------------------------------|-----------------------------------|
| 1. Embryonic Development Examination | 5. Circulatory System Examination |
| 2. Nervous System Examination | 6. Respiratory System Examination |
| 3. Hormone System Examination | 7. Excretory System Examination |
| 4. Reproductive System Examination | 8. Immune System Examination |
| | 9. Digestive System Examination |

Except these tests "Kolb Learning Style Inventory-III (KLSI-III)" was used for defining each of the students learning styles. And before the study, all of the students were informed about their learning styles to increase their performance.

Participants

The study was conducted on 65 second year students of Elementary Science Education Department at Sakarya University. There were two classes which called A and B. Class A which has 30 students, the experimental group and class B which has 35 students as the control group. Activities which were based on *Brain based learning* was applied to the experimental group and *Traditional Teaching* was applied to the control group. The data was collected in spring term of 2008-2009 academic year.

Research Instruments

- **Achievement Test:** In this study, achievement test which consisting of 61 multiple-choice questions were used. Questions were build up from 2000-2008 years' "Student Selection and Placement Exam (OSYM)'s Biology Part" questions in the direct of the experts suggestions. Because our sample was learned Biology Lessons which is related to these subject, last in high school.
- **Subject Examinations:** At the end of the each subject, subject examinations which were prepared by the researcher were applied. While the subject examinations were prepared, experts' suggestions were considered. Embryonic Development subject contains of 19, Nervous System subject contains of 20, Hormone System subject contains of 18, Reproductive System subject contains of 15, Circulatory System subject contains of 17, Respiratory System subject contains of 12, Excretory System subject contains of 11, Immune System subject contains of 15, Digestive System subject contains of 14 questions. Exams are composed of open-ended questions, blank filling, short answer and multiple choice questions.
- **Biology Attitudes Scale (BAS):** Biology Attitudes Scale was applied for measuring interest and attitudes of students towards biology. BAS was developed by Geban in 1991 and the reliability of was .96. BAS was included 15 questions, 10 positive and 5 negative. Scale was applied as pre-test and post-test in the experiment and control group's students.

- **Kolb Learning Style Inventory-III (KLSI-III):** KLSI-III was used for defining each of the students learning styles. Kolb Learning Style Inventory was developed by Kolb (1971) and was adapted in Turkish by Gencel (1999). Scale consists of 12 close test questions.

The Analysis and Interpretation of the Data

The mean scores and standard deviations of the grades obtained via pre-test and posttest administered to both groups were calculated. Results from Independent Samples t-test and Man Mithney U test were used to compare the achievement and attitude levels of the experiment and control groups. The SPSS 11.5 software program was used in the statistical data analysis procedure and “p” value was determined as .05 for the cutoff level of significance.

Experimental Process

The experimental process conducted between February 02 and May 08, 2009 as four class hours per week. Throughout the experimental process, the experimental group practiced the brain-based learning, whereas the control group practiced the traditional teaching. For both groups, instructions were carried out by same lecturer.

At the beginning of the study, all of the participants were informed about their learning styles and the experimental group of students took a lesson about brain based learning and how the brain learns.

Posters, pictures were hung and models were used to guarantee the success, to give meaning to the content of the lesson, to animate the learning's in students' thoughts. Presentations and slide shows were made and also animations and short videos were used for each subject.

After each subject, subject examinations were applied to the experimental and control group at the same time. Each of the exams was applied to the outside of the class hours. And also to relieve students of experimental group music was used some part of the lessons during the study. Lessons were thought with text book and lecturer's expressions in control group. And just colorless pictures were used with overhead projector.

RESULTS AND DISCUSSIONS

In this section, findings of statistical analysis of the collected data and discussions of these findings are presented. The results of the analyses and discussions are as stated below.

Whether any important difference occurred or not between the achievement test mean scores of the experimental and control groups was analyzed with Independent Samples t-test. The results of the analysis are given in Table 3.

Table3. Biology Achievement Pre-test Results of Independent Samples t-test

| Test | Groups | N | \bar{X} | S | sd | t | p |
|---------|--------|----|-----------|-------|----|------|-------|
| Pretest | EG | 30 | 42.10 | 9.01 | 63 | 2.59 | 0.01* |
| | CG | 35 | 49.29 | 12.64 | | | |

According to the data in Table 3, there is a statistically significant difference between the achievement test score means of the students in favour of the control group ($t_{(63)}=2.59$, $p<.05$) in biology lesson prior to the study. The control group's mean scores ($\bar{X}=49.29$) are higher than the experimental group's mean scores ($\bar{X}=42.10$) of the pretest. To check the significance of the difference in post test mean scores ANCOVA analysis was conducted. The results of the ANCOVA analysis are given in Table 4 and 5.

Table4. Achievement Test's Descriptive Statistics

| Group | N | Post-test achievement | |
|-------|----|-----------------------|----------------|
| | | Mean | Corrected Mean |
| EG | 30 | 54.53 | 56.60 |
| CG | 35 | 60.14 | 58.36 |

Table5. The Results of Achievement Test with ANCOVA

| Source | Sum of Squares | df | Mean Square | F | p |
|---------------|----------------|----|-------------|-------|------|
| Pre-test Reg. | 2235.93 | 1 | 2235.93 | 28.90 | .000 |
| Group | 45.212 | 1 | 45.212 | 0.585 | .447 |
| Error | 4795.82 | 62 | 77.35 | | |
| Total | 222849.00 | 65 | | | |

According to ANCOVA analysis results, the control groups' means are higher than the experimental groups' means but the significance of the difference is not statistically meaningful [$F_{(1,62)}=0.585$, $p>.05$].

Whether any important differences occurred or not between the subject examinations scores of the experiment and control groups were analyzed. The results of the analysis are given in from Table 6 to Table 14.

Table6. Independent Samples t-test Result of Embryonic Development Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|-----------------------|--------|----|-----------|------|----|------|-------|
| Embryonic Development | EG | 30 | 69.73 | 8.06 | 63 | 2.59 | 0.01* |
| | CG | 35 | 64.06 | 9.39 | | | |

There is a statistically significant difference in favour of experimental group with the subject of Embryonic Development Examination scores ($t_{(63)}=2.59$, $p<.05$). The experimental group's mean scores ($\bar{X}=69.73$) are higher than the control group's mean scores ($\bar{X}=64.06$) of Embryonic Development Examination.

Table7. Independent Samples t-test Result of Nervous System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|----------------|--------|----|-----------|------|----|-------|------|
| Nervous System | EG | 30 | 59.47 | 8.87 | 63 | -1.21 | 0.22 |
| | CG | 35 | 62.17 | 9.01 | | | |

According to the data in the Table 7, there is not a statistically significant difference between the mean scores of Nervous System Examination of the groups ($t_{(63)}=-1.21, p>.05$).

Table8. Man Whitney U test Result of Hormone System Examination

| Hormone System | N | Mean Rank | Sum of rank | U | p |
|----------------|----|-----------|-------------|--------|------|
| EG | 30 | 33.90 | 1017.00 | 498.00 | .722 |
| CG | 35 | 32.23 | 1128.00 | | |

According to Man Whitney U test Result in the Table 8, there is not a statistically significant difference between the mean scores of Hormone System Examination of the groups ($U=498.00, p>.05$).

Table9. Independent Samples t-test Result of Reproductive System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|---------------------|--------|----|-----------|-------|----|-------|------|
| Reproductive System | EG | 30 | 66.03 | 15.76 | 63 | -1.48 | 0.14 |
| | CG | 35 | 71.20 | 12.28 | | | |

According to data in the in the Table 9, there is not a statistically significant difference between the mean scores of Reproductive System Examination of the groups ($t_{(63)}=-1.48, p>.05$).

Table10. Independent Samples t-test Result of Circulatory System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|--------------------|--------|----|-----------|-------|----|-------|------|
| Circulatory System | EG | 30 | 65.20 | 10.27 | 63 | -1.11 | 0.26 |
| | CG | 35 | 68.23 | 11.42 | | | |

According to data in the Table 10, there is not a statistically significant difference between the mean scores of Reproductive System Examination of the groups ($t_{(63)}=-1.11, p>.05$).

Table11. Independent Samples t-test Result of Respiratory System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|--------------------|--------|----|-----------|-------|----|------|------|
| Respiratory System | EG | 30 | 62.77 | 11.01 | 63 | 1.81 | 0.07 |
| | CG | 35 | 57.91 | 10.51 | | | |

As we can observe in the Table 11, there is not a statistically significant difference between the mean scores of Respiratory System Examination of the groups ($t_{(63)}=1.81, p>.05$).

Table12. Independent Samples t-test Result of Excretory System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|------------------|--------|----|-----------|-------|-------|-------|------|
| Excretory System | EG | 30 | 48.33 | 12.03 | 59.31 | -0.63 | 0.52 |
| | CG | 35 | 50.74 | 18.26 | | | |

According to data in the Table 12, there is not a statistically significant difference between the mean scores of Excretory System Examination of the groups ($t_{(63)}=-0.63, p>.05$).

Table13. Independent Samples t-test Result of Immune System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|---------------|--------|----|-----------|-------|----|-------|-------|
| Immune System | EG | 30 | 43.07 | 14.00 | 63 | -2.43 | 0.01* |
| | CG | 35 | 52.40 | 16.50 | | | |

Table 13 shows that there is a statistically significant difference between the mean scores of Immune System Examination of the groups ($t_{(63)}=-2.43, p<.05$). The control group's mean scores ($\bar{X}=52.40$) are higher than the experimental group's mean scores ($\bar{X}=43.07$) of Immune System Examination.

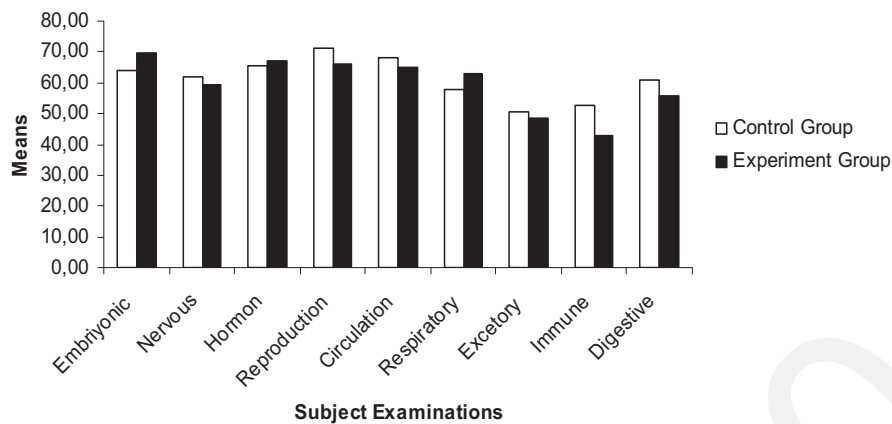
Table14. Independent Samples t-test Result of Digestive System Examination

| Subject | Groups | N | \bar{X} | S | sd | t | p |
|------------------|--------|----|-----------|------|----|-------|-------|
| Digestive System | EG | 30 | 55.90 | 9.72 | 63 | -2.12 | 0.03* |
| | CG | 35 | 60.97 | 9.46 | | | |

Table 14 shows that there is a statistically significant difference between the mean scores of Digestive System Examination of the groups ($t_{(63)}=-2.12, p<.05$). The control group's mean scores ($\bar{X}=60.97$) are higher than the experimental group's mean scores ($\bar{X}=55.90$) of Digestive System Examination.

Figure 1 shows that the students of experimental and control groups' score means with subject examinations which were done at the end of the each subject.

Figure1. Chart of Subject Examinations Results



Whether any important differences occurred or not between the scores of the experiment and control groups in the attitudes towards biology of Likert Type test questions with 5 choices was analyzed. The results of the analysis are given in Table 15.

Table15. Biology Attitudes Scale Pre-test Results of With Man Whitney U Test

| | N | Mean Rank | Sum of rank | U | p |
|----|----|-----------|-------------|--------|------|
| EG | 30 | 36.48 | 1094.50 | 420.50 | .168 |
| CG | 35 | 30.01 | 1050.50 | | |

According to the data in Table 14, there are not any significant differences with pretest means between attitudes of experiment and control groups ($U=420.50$, $p>.05$) regarding the biology lesson.

Table16. Biology Attitudes Scale Post-test Results of Independent Samples t-test

| Test | Groups | N | \bar{X} | S | sd | t | p |
|----------|--------|----|-----------|------|----|-------|------|
| Posttest | EG | 30 | 56.36 | 8.79 | 63 | -.011 | .991 |
| | CG | 35 | 56.34 | 8.31 | | | |

As a result, there aren't any significant differences either pre or post test means about attitudes towards biology. This also shows that the results of the pre and posttest of the two groups are not different from each other.

CONCLUSION

According to achievement pre-test results there is a significant difference in favour of the control group. But post-test results are shown that there aren't any statically significant differences. McFadden (2001) was reported that the same result about brain based learning in Math according to the students' achievement test. But Cengelci (2005) and Wortock (2002) were reported that brain based learning is more effective than the traditional teaching.

When the subject examinations results were compared, there is only Embryonic Development unit exam is a significant difference in favour of the experimental group. According to Nervous System, Hormone System, Reproductive System, Circulatory System, Respiratory System and Excretory System subjects examination results, there aren't any significant differences between the experimental and control group. But in Immune system and Digestive System subjects, there is a significant difference between subject examinations score means of the students in favour of the control group. While at the beginning of the study statically significant difference was found in favour of the experimental group, the last units of the study statically significant differences were found in favour of the control group. This will be primarily because of the control group's higher average grade from the lesson as it approached that in the end of the year to move towards a more concentrated the lesson. And also, at the beginning of the study lessons were done at nights in the experimental group while the air was dark. But in the end of the lesson due to the seasonal changes the experimental group was began to work before the nightfall. This may have an effect to the experimental group's learning.

Attitude levels' of the experimental and the control groups' students, there aren't statistically significant differences. And the attitude scale results towards General Biology II lesson are shown similarities with Solmaz (2008)'s research results. Bayındır (2003)'s research results about the students' views brain based learning in English Composition II, all students were developed positive emotions against the brain based learning and they feel themselves safe and relaxed in this lesson.

The findings of this study suggest that brain-based learning appears to be as effective as the traditional teaching in General Biology II in terms of improving students' academic achievement. Further work would contribute to a better understanding of the subject and help to its wider applicability.

REFERENCES

- Bayındır, H. (2003). *An Investigation of Students' Attitudes Towards Brain- Based Applications in English Composition Skills II Course: A Case Study*. Unpublished master's thesis, Middle East Technical University, English Language Training.
- Brewer, C. (2007). Music and Learning: Integrating Music in the Classroom, *New Horizons for Learning, 2000*. Retrieved December 12, 2009, from <http://www.newhorizons.org/strategies/arts/brewer.htm>.
- Bruer, J. T. (1999). In search of... brain based education. *Phi Delta Kappan, 80*(9), 648-657.
- Caine, R. N. & Caine, G. (2002). *Beyin temelli öğrenme*. (Interpreter Edit: Gulden Ulgen). Ankara: Nobel Yayinlari.
- Caulfield, J., Kidd, S. & Kocher, T. (2000). Brain-based instruction in action. *Educational Leadership, 58*(3), 62-65.
- Cengelci, T. (2005). *The Effects of Brain-Based Learning to Success and Retention in Social Studies*. Unpublished master's thesis, Anadolu University, Institute of Educational Sciences, Eskisehir.
- Dhority, L.F. & Jensen, E. (1998). *Joyful Fluency Brain Compatible Second Language Acquisition*. San Diego: He Brain Stone, Inc.
- Geban, O., Askar, P. & Ozkan, I. (1991). Effects of Computer Simulations and Problem Solving Approaches on High School Students. *Journal of Educational Research*.
- Gencil, E., I. (2006). *Oğrenme Stilleri, Deneyimsel Öğrenme Kuramına Dayalı Eğitim, Tutum ve Sosyal Bilgiler Program Hedeflerine Erişim Düzeyi*. PhD Thesis, University of Dokuz Eylül, Institute of Education, Izmir.
- Jensen, E. (1998). *Introduction to brain compatible learning*. CA: The Brain Store Inc.
- Jensen, E. (2000). *Brain Based Learning, Brain Store Publishing, USA*.
- Mangan, M. A. (1998). *Brain compatible science*. Arlington Heights: Skylight Professional Development.
- Materna, L. E. (2000). *Impact of concept-mapping upon meaningful learning and metacognition among foundation-level associate-degree nursing students*. Retrieved February 11, 2005, from <http://proquest.umi.com/pqdweb?did=728371591&sid=1&Fmt=2&clientId=41947&RQT=309&VName=PQD>
- McFadden, K. S. (2001). *An Investigation of Attitudes, Anxiety and Achievement of College Algebra Students Using Brain-Compatible Teaching Techniques*, Ph. D. Thesis, Tennessee State University, Tennessee.
- Ozden, M. & Gultekin, M. (2008). The Effects of Brain-Based Learning on Academic Achievement and Retention of Knowledge in Science Course. *Electronic Journal of Science Education, 12* (1).
- Pool, C. R. (1997). Maximizing Learning: A Conversation with Renate Nummela Caine. *Educational Leadership, 54* (6).
- Roberts, J. (2002). Beyond Learning By Doing: The Brain Compatible Approach. *The Journal of experimental Education, 25*(2). p281-285.
- Solmaz, A. (2008). *Beyin Temelli Öğrenme Kuramına Dayalı Biyoloji Öğretiminin Akademik Başarı, Tutum, Üzerine Etkisi*. Master Thesis, Gazi University, Institute of Educational Sciences, Ankara.
- Sousa, D., A. (2000). *How the brain learns*. Second edition, Corwin press, inc. Thousand Oaks, California.
- Strickland, K. (2003). *Brain Compatible Learning in a High School Classroom*, Master of Arts in Leadership and Training, Royal Roads University, British Columbia, Canada.
- Sylwester, R. (1995). *A celebration of neurons: An educator's guide to the human brain*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Tascioglu, A. (1994). Beyin İşlevlerinin Aydınlatılmasında Yeni Görüntüleme Teknikleri, *Bilim ve Teknik Dergisi, TÜBİTAK*, January (314).
- Weiss, R., P. (2000). The Wave of the Brain, *Training & Development*, July, 21-24.
- Wolfe, P. (2004). Brain Research and Education: Fad or Foundation?, Retrieved April 29, 2004, from <http://www.patwolfe.com/index.php?pid=100>.
- Wong, J. (2008). Growing Dendrites: Brain-Based Learning, Governmentality and Ways of being a Person. *The International Journal of the Humanities, 5* (12).
- Wortock, J. M. M. (2002). *Brain-based learning principles applied to the teaching of basic cardiac code to associate degree nursing students using the human patient simulator*. Retrieved March 23, 2005, from <http://proquest.umi.com/pqdweb?did=765069251&sid=7&Fmt=2&clientId=41947&RQT=309&VName=PQD>

THE EFFECTS OF COMBINING WEBLOG AND FACE-TO-FACE INSTRUCTION: ENGLISH FOR HOSPITALITY AND TOURISM COURSE

Ru-Chu Shih

National Pingtung University of Science and Technology, Taiwan

vincent@npust.edu.tw

Abstract

With the advent of information technology and the prevalence of globalization, the English language has become more important for second-language (L2) learners. This study aimed to establish a blended model combining face-to-face (F2F) instruction for the English for Hospitality and Tourism course. The research method was a combination of qualitative and quantitative approaches, including peer and instructor feedback, interviews, and the learning satisfaction survey. A total of 44 college sophomore students participated in the study. The results of the study showed that this model could contribute to learning effectiveness and satisfaction when the course is well planned, the equipment is sufficient and supportive as well as students are familiar with related applications. Most importantly, peer and the instructor's feedback and the characteristics of the weblog, including free access, ease of revision, and interesting material, were major factors that motivated students to learn effectively and enhanced their satisfaction with the course.

INTRODUCTION

In the past years, second language (L2) education in Taiwan has been shifted from solely traditional instruction approach into more computer-assisted instruction and e-learning. In addition, blended learning combines several delivery methods to provide the most efficient and effective teaching and learning experiences (Cortizo et al., 2009; Harriman, 2004). With both the advantages of traditional instruction and e-learning as part of blended learning, the researcher (the course instructor) decided to administer a blended approach to the English for Hospitality and Tourism course at a technological university in southern Taiwan. The major purposes of this study were (1) to establish an effective weblog-based blended model for the English for Hospitality and Tourism course, (2) to investigate the effects of using a blended model on the course, and (3) to explore students' learning satisfaction with the weblog blended learning.

The Internet allows lower-cost language instruction, providing more opportunities for educational institutions to offer courses online (Godwin-Jones, 2003). Additionally, e-learning may increase flexibility of access, eliminate geographical barriers, and improve convenience of use and effectiveness of collaborative learning as well as associated with a consistently higher level of student satisfaction. Thus, e-learning works best when blended with traditional learning techniques rather than being used as a replacement for those techniques (Howlett et al., 2009). Web-based teaching and learning activities have continued to expand as an alternative to traditional face-to-face teaching and learning. In addition, computer-assisted language learning can promote collaborative, learner-centered knowledge construction and offer a more comfortable and less face-threatening environment for interaction than do instruction and discussion in a traditional classroom setting (Dickson et al., 2008). Weblogs can be used as a collaborative tool for student groups, while instructors can use them as a medium for such tasks as delivering news, messages, and resources, encouraging discussion, and giving feedback and comments (Well, Pegler, and Mason, 2005). Blended learning (BL) is effective in facilitating online collaborative learning. Cooperative learning allows students to reflect and evaluate their work in the group, as well as to provide suggestions for improvement (Liao, 2006). Both face-to-face instruction and electronic feedback, including asynchronous feedback and discussion, can facilitate the productive overall use of feedback (Hyland and Hyland, 2006). As a result, the form of weblogs can be used in an ESP/EOP/EAP course for L2 learners at the college level to enhance student learning motivation and satisfaction and to improve the instructor's teaching effectiveness.

RESEARCH METHOD

The research method consisted of a mix of quantitative and qualitative approaches. Data collected from panelist reviews were analyzed using quantitative methods. Comments and responses to the weblog learning satisfaction survey questionnaire (WLSSQ), and interview were analyzed.

Research participants

The participants in this study were 44 sophomore students enrolled in an elective ESP course named “English for Hospitality and Tourism.” at a four-year public university in southern Taiwan. In addition, there were 7 students, 4 males and 3 females, who volunteered to participate in the interview process during the last week of class. The students were coded as S1-M, S2-F, S3-M, S4-M, S5-F, S6-F, and S7-F (M represents male student; F represents female student).

Research instruments

The research instruments include students’ weblog short films, the Weblog Learning Satisfaction Survey Questionnaire, and the student interview questionnaire.

Students’ short films and weblogs

At the beginning of the class, the 44 students were separated into 7 groups. Each one of them was to make a film related to the course subjects and to upload it to his or her weblog. The length of the film was limited for less than five minutes. The file size of each film was not to be overly large. Neither the layout nor the pattern of each weblog and film was subject to limitations. However, a comment and discussion board was a requirement for each. The weblog was to allow upload and download of films, easy access, and easy revision (Figure 1).



Fig 1. An example of students’ weblog of the English for Hospitality and Tourism course

The Weblog Learning Satisfaction Survey Questionnaire (WLSSQ)

The WLSSQ contains a total of 44 questions and open-ended question. A five-point (5 to 1) Likert scale, from “strongly agree” to “strongly disagree,” was employed to obtain students’ opinions and attitudes toward the statements on the survey questionnaire. A total of 43 valid responses were collected and analyzed.

Implementation

The implementation of the English for Hospitality and Tourism course was divided into four phases (as shown in Figure 2). This arrangement was intended to facilitate a combination of blended learning and face-to-face (F2F) instruction. Each phrase was last about 4 weeks but the instructor adjusted the length and instructional contents based on students’ needs and course schedule.

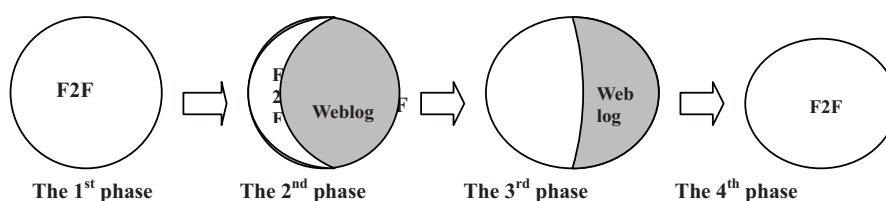


Figure 2 The process of arranging a weblog-based blended teaching and learning model for English for Hospitality and Tourism course

Student Interview Questionnaire

In order to obtain more in-depth information on students' opinions about this blended learning course, a student interview was conducted and the interview questions are (1) "what do you think of the blended model used in this course that combined weblog film with face-to face instruction in class?" (2) "what do you want to suggest that the teacher improve?" and (3) "which part of this course did you like most, and which did you dislike most?"

DATA ANALYSIS AND DISCUSSION

The data analysis and results section contains a qualitative evaluation of the students' progress and of student responses to the interview questionnaires; it also features a statistical analysis of the peer and instructor comments on the films and a statistical analysis of the responses to the survey questionnaire.

Results of the students and the instructor's comments on the weblog film

The 44 students in the 7 groups were required to make comments about their group members' films. After all group members had commented on each other's films, the instructor also reviewed all films and gave comments for students to improve their films and performance. Most of the students' and the instructor's comments on the group members' films were very alike, such as issues of enunciation, posture, gesture, and background noise. In sum, the comments on the weblog films show that weblog learning can provide opportunities for improvement in terms of not only professional skills but also familiarity with weblog applications.

Analysis and discussion on the responses to the weblog learning satisfactory survey questionnaire

The responses to the survey questionnaires were analyzed using SPSS descriptive analysis. One response was invalid. Thus, the researcher only computed the results for 43 questionnaires. The mean scores of the 37 questions ranged from 3.07 to 3.574 with acceptable standard deviations; thus, all students displayed moderate to high level of agreement regarding the statements in the survey questionnaire. For the design of the weblog platform and film section, Question 4 "Position of the uploaded film may influence my weblog learning willingness of English for Hospitality and Tourism course" obtained the lowest mean score of 3.09 among the seven questions, indicating the position of the uploaded film only less influenced students' learning motivation. Q3 "Color and fonts of the weblog interface may influence my weblog learning willingness" and Q7 "Topic of the film may influence my weblog learning willingness" obtained mean scores of 3.51 equally, indicating colors, fonts, and topics may influence students' weblog learning motivation.

For "Opinions toward the weblog platform," Q18 "Free of charge for using weblog to learn the course is a great advantage" obtained the highest mean score of 3.72 among the seven questions, indicating students were more concerned about the charge of using the weblog platform. Q13 "System stability of weblog can be the advantage for learning the course" obtained the lowest mean score of 3.07, indicating system stability was not a major issue for them.

In Part III "Learning attitude toward weblog," all the eight questions obtained means scores ranging from 3.21 to 3.37, indicating students possess moderate learning attitude toward the weblog. In Part IV "Learning effectiveness of weblog application," the 15 questions obtained mean scores ranging from 3.16 to 3.74. Notably, Q33 "Reviewing my own films can help me understand my own strengths and weaknesses of learning the course" obtained the highest mean score among the 37 questions of the survey questionnaire, indicating students highly agreed with the function and effectiveness of using weblog to learn English for Hospitality and Tourism course. Meanwhile, Q37 "Through weblog learning English for Hospitality and Tourism course, it can also improve my interpersonal skills and relationship with classmates" obtained the lowest mean score of 3.16 in this section, indicating learning the course through weblog did not affect their interpersonal skills and relationship with their classmates. In sum, students were satisfied with integrating the weblog film with the traditional face to face (F2F) instruction based on the statistical results of the survey questionnaires. In addition, students agreed that the weblog film was effective in learning the course of English for Hospitality and Tourism.

Student Interview

The researcher interviewed seven volunteer students to obtain in-depth information about the weblog blended learning class. The interview questions are listed as follows, followed by the students' responses and discussions.

1. "What do you think of the blended model for this course, being half weblog film and half in-class presentations?"

I think the blended model for the course can improve students' participation in this course, and give them chances to display real situations. (S1-M)

I think that it good for students to learn more. They can have more resource to use. (S3-M)

According to the students' interview responses, the seven students all possessed positive attitudes toward the weblog-based blended teaching and learning approach to teaching English for Hospitality and Tourism course. They all strongly agreed about the effectiveness of weblog applications for teaching public speaking.

2. "What do you want to suggest that the teacher improve?"

I think teacher should teach students how to use software related to the film such as transforming the format. (S6-F)

I think having weblog film is better than in class presentation. ...hope teachers can continue this kind of course. (S4-M)

Maybe teacher can give students more chances to visit the hotel if the time is ok. The teacher can. (S5-M)

Students mentioned that the instructor's comments and suggestions were very useful and beneficial to them, helping to improve their public speaking performance. In addition, students suggested that on-site visitation to hotels can be arranged and it will be very beneficial for them.

3. "What parts of this course did you like and dislike most?"

I like to take the videos, but I also dislike doing it. It takes me so much time, but I can have a chance to practice my English ability about the rules for hotels and restaurants. (S2-M)

I think I like most of parts because I can use some useful vocabulary, patterns, and others to deal with some problems in every situation (in the hotel, restaurant, on the road, etc.). I don't have any parts I dislike most. (S7-F)

What most of the students liked most in the course was that the blended approach was interesting and fun. On the other hand, weblog-based blended approach may consume a lot of time for students to make the film, which can be a notable issue for instructors when designing a weblog-based blended instruction course.

Conclusion and Suggestions

The results of this study show that such educational goals have been achieved, confirming the effectiveness of the weblog-based blended model for the English for Hospitality and Tourism course. The findings of the study are discussed and presented as follows.

1. A blended model combining weblog and face-to-face instruction can be an effective teaching and learning approach for L2 learners and instructors of Hospitality and Tourism related courses.
2. Students' professional skills were improved through this blended approach, such as enunciation, facial expressions, posture, gestures, multimedia software usage, and filming applications.
3. Students could benefit from the processes of self-autonomous, collaborative learning, reviews of their peers' and their own films, and the instructor's feedback.

On the other hand, to implement this type of successful blended ESP course, the suggestions are:

1. Computer equipment and internet speed are extremely important for students when filming and uploading their films.
2. On-site visitations to hotels or travel agencies should be arranged for students in order to make this course more thorough and complete as well as to increase the effectiveness of the English for Hospitality and Tourism course.
3. In class presentations and model practices are as equally important as weblog learning for students to learn the course effectively.

References

- Cortizo, J. L., Rodriguez, E., Vijande, R., Sierra, J. M., and Noriega, A. (2009). Blended learning applied to the study of mechanical couplings in engineering. *Computers & Education*. Doi:10.1016/j.compedu.2009.10.006.
- Dickinson, M., Eom, S., Kang, Y., Lee, C. H. & Sachs, R. (2008). A balancing act: how can intelligent computer-generated feedback be provided in learner-to-learner interactions? *Computer Assisted Language Learning*, 21 (4), 369-382.
- Godwin-Jones, R. (2003). Emerging technologies. Tools for distance education: Toward convergence and integration. *Language Learning & Technology*, 7(3), 18-22.
- Harriman, G. (2004). *What is blended learning? E-learning resources: blended learning*. http://www.grayharriman.com/blended_learning.htm Retrieved Jan 28, 2010.
- Howlett, D. et al. (2009). Blended online techniques with traditional face to face teaching methods to deliver final year undergraduate radiology learning content. *European Journal of Radiology*, doi:10.1013/j.ejrad.2009.07.028.
- Liao, Y. L. (2006). *A comparative study of responses of teachers and students in middle schools to a cyber fair program*. The 23rd International Conference on English Teaching and Learning in the Republic of China: Changes, chances, and challenges in English teaching and learning proceedings, 2, pp.786-802.
- Well, M., Pegler, C., & Mason, R. (2005). Use of innovative technologies on an e-learning course. *Internet and Higher Education*, 8, 61-71.

THE EFFECTS OF LEARNER'S CHARACTERISTICS ON THE EVALUATION OF A VIRTUAL SEMINAR¹

Melek YAMAN,

Hacettepe University, Ankara, Turkey, myaman@hacettepe.edu.tr

Dittmar GRAF

The University of Technology Dortmund, Germany, dittmar.graf@uni-dortmund.de

Abstract

In the scope of this study, an international virtual seminar was developed for students training to be biology teachers. The class focussed on issues related to the didactics of biology. The sample comprised students training to be biology teachers at the Technische Universität Dortmund and the Hacettepe University in Ankara. Being a typical blended learning scenario, the course included phases of both online work and class attendance for participants in both countries. The subjective evaluation of the virtual seminar was analyzed with respect to the participants' learning characteristics. The focus was on media specific interest and learning preferences. For the evaluation of learning preferences, three different learning methods (individual work, lectures and group work) were considered. Results show that media specific interest was decisive factors for evaluation. Learners with a high interest in computers also had a higher interest in the virtual seminar.

Key Words: virtual education, blended learning, prospective teacher, biology education, interests, learning preference

1. INTRODUCTION

The rapidly increasing globalisation tendency across the world, importance attached to lifelong learning and rapid developments in information and communication technologies have commenced the process of restructuring in educational institutions; especially in universities. The mentality of evaluating the quality of education in this process based on international standards is adopted. The European Union support programmes provide students with educational opportunities in certain periods in differing countries, and thus make international sharing of knowledge, experiences and social as well as cultural values widespread. However, it is evident that geographical mobility may be actualised through limited number of students. Opportunities offered by the medium of computers and the internet are the alternatives to support geographical mobility (Kommission der europäischen Gemeinschaften (2001).

Lecturers and students of various universities have opportunities to cooperate, share their knowledge and experiences, discuss and conduct shared projects via computers and the internet; in other words, the educational and research process has been globalising. Virtual education programmes can also be completed by students living in a location different from the location of the educational institution today. Some of the post-graduate programmes which are supported by the European Union and which can be completed in the virtual medium (Master of Business Administration) award internationally recognised diplomas, and serve as an alternative to traditional education (Schenker-Wicki & Demont, 2006).

Undoubtedly, such developments pose disadvantages beside many advantages. The most commonly stated disadvantages concerning education conducted in virtual medium are lack of social communication and its negative effects on the efficiency of education. Alternative methods are searched so as to remove the disadvantages. One of the recent alternatives is blended learning (Allen & Seaman, 2003; Gallenstein, 2001; Sauter, Sauter & Bender, 2002). Blended learning is form of learning in which face-to-face education is connected with online education in the classroom environment in order to increase efficiency and to reduce costs. While it enables participants to be informed, to make revisions and to communicate with friends in the group and with the person in charge of the course independently of time and place online, it enables them to communicate socially in the classroom environment in the process of face-to-face education.

Although blended learning applications are relatively new, they have been increasingly tried by researchers of differing disciplines through various applications. Three important factors should be considered in order for studies to attain their goals, as in other methods offered by information and communication technologies. They are the institutional properties, learners' properties and the properties of the learning environment (Bürg & Mandl 2004).

An application of virtual education is designed in this research for prospective teachers attending the biological education programmes in Turkey and in Germany, and the application was performed in both countries in line with the concept of blended learning. Following the application, the concept was evaluated by students, and thus the effects of learners' properties on the evaluation were examined. The participants' interest in computers and their learning preferences were taken for granted as learners' properties in this research.

2. METHOD

The study group was composed of 95 prospective teachers attending the biology teaching department of Hacettepe University and Dortmund Technical University in the 2008-2009 academic year. The applications were done for the course "Teaching Biology", which is common to both universities. The course instructors jointly determined the course content to be covered in two months and the activities to be conducted. The language of instruction is German. The course process includes face-to-face and online parts, in line with the concept of a typically blended learning project in both countries. In the process of online education, claroline software (www.claroline.net) was used. Claroline is an open source e-learning platform. The students had the opportunity to have access to the content, the assignments and the announcements and to communicate with peers and with the instructors at <http://www.biologie.uni-dortmund.de/claroline>. They did homework on the internet throughout the course. The assignments were types of homework which required individual work, discussion and group work. During the group work, the groups were formed by the instructors in charge of the course, and special care was given so that each group included students from both countries.

The data were collected through two questionnaire forms administered prior to and following the application. The questionnaire given prior to the application consisted of questions to find out the extent to which the participants had interest in computers and their learning preferences (individual, in groups, with teacher's support). In order to determine their interest in computers, a scale developed by Yaman, Nerdel & Bayrhuber (2008) was employed. Having completed the process, participants' views concerning the course as well as their evaluations for various parts of the course, for online communication vehicles and for groupwork were obtained. A 5-pointed Likert type scale was used in

¹ This Project is sponsored by Alexander von Humboldt foundation. We are grateful for their support.

evaluations (5: I strongly agree/very useful/I am pleased, 1: I strongly disagree/not useful/I am not pleased). The data obtained were analysed in terms of learner properties.

Kruskal Wallis H test was used in multiple comparisons whereas Mann Whitney U test was used in binary comparisons.

3. FINDINGS

In order to see how students with differing interests in computers and learning preferences evaluated the process of blended learning, the participants were firstly grouped according to their learning preferences through clustering analysis. Accordingly, three levels of interest-namely, low (Group0, n=16, intermediate (Group1, n=51), and high (Group2, n=28)- were detected. The participants were grouped into two on the basis of their learning preferences. The first group was composed of participants preferring learning in groups and with the teacher's support (Group 1 n=40) whereas the second group consisted of participants with individual learning preferences (Group 2 n=55). The findings concerning the participants' evaluations of the process of blended learning are presented below.

3.1 participants' views of the course based on their levels of interest in computers

Table 1 shows findings on whether or not any statistically significant differences are available between participants' views of the course on the basis of levels of their interest in computers. Accordingly, the top averages for all three interest levels belong to the item "I liked learning independently of time in the online parts of blended learning". No significant differences were found here among groups with low, intermediate and high levels of interest. In all the items apart from that, the difference between groups' average values is statistically significant. On examining the average values, it was found that as the level of interest in computers increased the views concerning the course became more positive.

Table 1. Findings concerning participants' views of the course on the basis of their levels of interest in computers, and intergroup differences

| | Interest in computer | M | SS | Chi-Square | df | P | Groups with differences* |
|--|----------------------|------|------|------------|----|------|--------------------------|
| I found this lesson, which was conducted through blended learning, enjoyable | low | 2,69 | ,87 | 7,839 | 2 | ,020 | 0-1 0-2 |
| | intermediate | 3,35 | ,89 | | | | |
| | high | 3,50 | ,96 | | | | |
| I believe what I learn in classes will be permanent | low | 3,25 | ,86 | 7,504 | 2 | ,023 | 0-2 1-2 |
| | intermediate | 3,24 | ,81 | | | | |
| | high | 3,75 | ,93 | | | | |
| I also wish to join blended learning classes in the future | low | 2,63 | 1,02 | 13,637 | 2 | ,001 | 0-2 1-2 |
| | intermediate | 3,14 | ,78 | | | | |
| | high | 3,68 | ,94 | | | | |
| That class, which was conducted via blended learning, had variety/was not monotonous . | low | 3,00 | 1,32 | 17,668 | 2 | ,000 | 0-2 1-2 |
| | intermediate | 3,31 | ,88 | | | | |
| | high | 4,14 | ,76 | | | | |
| After joining this class, I am thinking of joining similar classes more often. | low | 2,56 | ,89 | 14,338 | 2 | ,001 | 0-2 1-2 |
| | intermediate | 2,88 | ,84 | | | | |
| | high | 3,64 | ,99 | | | | |
| The course increased my interest in interactive learning on the internet | low | 2,38 | 1,15 | 17,716 | 2 | ,000 | 0-2 1-2 |
| | intermediate | 2,76 | 1,01 | | | | |
| | high | 3,68 | ,82 | | | | |
| I can think of learning other topics also through blended learning. | low | 2,63 | 1,09 | 7,177 | 2 | ,028 | 0-2 |
| | intermediate | 3,20 | ,92 | | | | |
| | high | 3,50 | 1,07 | | | | |
| I find learning through blended learning interesting. | low | 2,56 | 1,15 | 12,438 | 2 | ,002 | 0-2 1-2 |
| | intermediate | 2,98 | 1,01 | | | | |
| | high | 3,68 | 1,01 | | | | |
| After this class, I began to think that I learn more easily and better through blended learning. | low | 2,31 | 1,01 | 11,846 | 2 | ,003 | 0-2 1-2 |
| | intermediate | 2,57 | ,85 | | | | |
| | high | 3,32 | 1,06 | | | | |
| I liked learning independently of time in the online parts of blended learning. | Low | 4,00 | ,97 | 1,178 | 2 | ,555 | - |
| | intermediate | 3,92 | ,93 | | | | |
| | high | 4,11 | 1,03 | | | | |

*p< 0.017 Bonferroni correction was taken into consideration.

3.2. An evaluation of parts of the course based on the levels of interest in computers

The participants' evaluations of the course on the basis of their levels of interest in computers and findings concerning the differences between groups are shown in Table 2.

Table 2 Findings Concerning participants' evaluations of the parts of the course on the basis of their levels of interest in computers, and intergroup differences

| | interest in computer | M | SD | Chi-Square | df | p | Groups with differences* |
|--|----------------------|------|------|------------|----|------|--------------------------|
| face to face education | low | 4,04 | 1,15 | 8,785 | 2 | ,012 | 0-2 |
| | intermediate | 3,73 | 0,70 | | | | |
| | high | 3,13 | 0,90 | | | | |
| Online parts | low | 2,75 | 0,86 | 15,772 | 2 | ,000 | 0-2 1-2 |
| | intermediate | 3,26 | 0,92 | | | | |
| | high | 3,86 | 0,85 | | | | |
| Individual learning through online materials | low | 3,00 | 1,03 | 5,492 | 2 | ,064 | 0-2 |
| | intermediate | 3,51 | 1,16 | | | | |
| | high | 3,85 | 1,03 | | | | |

| | | | | | | | |
|--|--------------|------|------|-------|---|------|---|
| Group activities | low | 2,44 | 1,15 | 1,882 | 2 | ,390 | - |
| | intermediate | 2,75 | 1,15 | | | | |
| | high | 2,96 | 1,26 | | | | |
| Exercise and application | low | 3,19 | 0,91 | 4,132 | 2 | ,127 | - |
| | intermediate | 3,49 | 0,90 | | | | |
| | high | 3,79 | 0,92 | | | | |
| Discussion and exchange of information | low | 3,13 | 1,20 | 7,885 | 2 | ,019 | - |
| | intermediate | 2,88 | 1,03 | | | | |
| | high | 3,61 | 0,96 | | | | |

*p< 0.017 Bonferroni correction was taken into consideration.

Considering the participants' interest levels, a significant difference was found between groups' evaluations of the items "face to face education", "online parts" and "individual learning via online materials". Students with low interest in computers evaluated face to face parts more positively than those with high interest in computers. The items "online parts" and individual learning through online materials" were evaluated most positively by those who had high interest in computers. No statistically significant differences were found between groups in items "Group activities", "Exercise and application", discussion and exchange of information".

3.3 . An evaluation of online communication vehicles based on the levels of interest in computers

Participants evaluations of online communication vehicles according to their levels of interest in computers and findings on whether or not any differences are available are shown in Table 3. According to Kruskal Wallis Test results given in Table 3, a statistically significant difference is available between groups in evaluation of all the items. According to the results of Man Whitney U test, which was conducted so as to determine groups with differences, a statistically significant difference was available between groups with low and high level interests in terms of the items "Overall, the use of online communication tools improved relations with my classmates." and "Overall, I learnt more in this class due to the use of online communication tools.". Groups with high interest levels evaluated both items more positively. A significant difference was found between groups with low and high and between groups with intermediate and high interest levels in items "Overall, the use of online communication tools in this class improved mentoring by lecturers." and "I would like future classes of this kind to make stronger use of online communication tools". On examining the average values, it was found that participants evaluation became more positive as their levels of interest increased.

Table 3. Participants' evaluations of online communication vehicles according to their levels of interest in computers and findings concerning intergroup differences

| | interest in computer | M | SD | Chi-Square | df | p | Groups with differences* |
|---|----------------------|------|------|------------|----|------|--------------------------|
| Overall, the use of online communication tools in this class improved mentoring by lecturers. | low | 2,67 | 0,90 | 16,119 | 2 | ,000 | 0-2 1-2 |
| | intermediate | 3,30 | 0,91 | | | | |
| | high | 3,89 | 0,79 | | | | |
| Overall, the use of online communication tools improved relations with my classmates. | low | 2,38 | 1,09 | 7,766 | 2 | ,021 | 0-2 |
| | intermediate | 2,92 | 1,07 | | | | |
| | high | 3,26 | 0,86 | | | | |
| Overall, I learnt more in this class due to the use of online communication tools. | low | 2,44 | 0,89 | 9,881 | 2 | ,007 | 0-2 |
| | intermediate | 2,98 | 0,82 | | | | |
| | high | 3,43 | 1,03 | | | | |
| I would like future classes of this kind to make stronger use of online communication tools. | low | 2,63 | 1,09 | 13,698 | 2 | ,001 | 0-2 1-2 |
| | intermediate | 3,28 | 1,01 | | | | |
| | high | 3,82 | 0,94 | | | | |

*p< 0.017 Bonferroni correction was taken into consideration.

3.4. Evaluations of the parts of the course on the basis of learning preferences

Findings concerning the participants' evaluation of the parts of the course according to their preference of individual learning, in-group learning and learning with the teacher's support are shown in Table 4. Accordingly, no significant differences were found between students preferring learning in groups and with the teacher's support in parts of the course apart from "online parts" and "face to face education parts" (Group I) and students preferring learning individually (Group II). In items where significant differences were available, the differences were in favour of Group I. That is to say, the online and face to face parts of the course were evaluated more positively by students preferring learning in groups and with the teacher's support.

Table 4. Findings Concerning evaluations of parts of the course on the basis of learning preferences and intergroup differences

| | Group | M | SD | Mann-Whitney U | Wilcoxon W | Z | p |
|--|---------|------|------|----------------|------------|--------|------|
| Face to face education | Group 1 | 4,00 | 0,68 | 761,500 | 2301,500 | -2,782 | ,005 |
| | Group 2 | 3,50 | 0,97 | | | | |
| Online parts | Group 1 | 3,65 | 0,83 | 778,000 | 2318,000 | -2,579 | ,010 |
| | Group 2 | 3,13 | 0,99 | | | | |
| Individual learning through online materials | Group 1 | 3,44 | 1,12 | 997,000 | 1817,000 | -,807 | ,420 |
| | Group 2 | 3,58 | 1,13 | | | | |
| Group activities | Group 1 | 3,03 | 1,14 | 871,000 | 2411,000 | -1,777 | ,076 |
| | Group 2 | 2,56 | 1,18 | | | | |
| Exercise and application | Group 1 | 3,68 | 0,94 | 935,500 | 2475,500 | -1,308 | ,191 |
| | Group 2 | 3,42 | 0,90 | | | | |
| 6. Discussion and exchange of information | Group 1 | 3,20 | 1,11 | 1050,000 | 2590,000 | -,392 | ,695 |
| | Group 2 | 3,09 | 1,06 | | | | |

3.5. Evaluations of communication and groupwork throughout the course on the basis of learning preferences

Findings concerning the communication with instructors and peers as well as groupwork during the course are shown in Table 5. Accordingly, the significant difference is available between Group I and Group II only in the item “it was easy to communicate with the course instructor”, and the difference was in favour of Group I. No statistically significant differences were found between groups in other items.

Table 5. Findings concerning evaluations of communication and groupwork on the basis of learning preferences and intergroup differences

| | Group | M | SD | Mann-Whitney U | Wilcoxon W | Z | p |
|---|---------|------|------|----------------|------------|--------|------|
| it was easy to communicate with the course instructor | Group 1 | 3,93 | 0,86 | 811,000 | 2296,000 | -2,163 | ,031 |
| | Group 2 | 3,46 | 1,06 | | | | |
| My group and I discussed intensively the work done on our assignment. | Group 1 | 3,08 | 0,86 | 901,000 | 2386,000 | -1,437 | ,151 |
| | Group 2 | 2,81 | 1,01 | | | | |
| We developed strategies to complete the assignments together. | Group 1 | 3,35 | 1,00 | 935,500 | 2475,500 | -1,303 | ,193 |
| | Group 2 | 3,13 | 0,90 | | | | |
| I received responses to my messages. | Group 1 | 3,45 | 1,04 | 895,000 | 2435,000 | -1,621 | ,105 |
| | Group 2 | 3,18 | 0,92 | | | | |
| Over time, my online communication skills improved. | Group 1 | 3,30 | 1,07 | 895,000 | 2435,000 | -1,614 | ,107 |
| | Group 2 | 2,91 | 1,04 | | | | |
| We developed questions and ideas concerning the assignment as a group. | Group 1 | 3,00 | 1,09 | 1097,500 | 2637,500 | -,020 | ,984 |
| | Group 2 | 2,98 | 0,87 | | | | |
| I enjoyed working with students from other countries. | Group 1 | 3,18 | 1,26 | 865,500 | 2405,500 | -1,815 | ,069 |
| | Group 2 | 2,69 | 1,23 | | | | |
| I had the impression that my classmates participated actively. | Group 1 | 3,25 | 1,03 | 926,000 | 2411,000 | -1,227 | ,220 |
| | Group 2 | 2,96 | 1,05 | | | | |
| For the completion of the assignments, we set common goals and succeeded in realizing them. | Group 1 | 3,15 | 1,05 | 989,000 | 2474,000 | -,730 | ,466 |
| | Group 2 | 2,96 | 0,93 | | | | |
| I compared the results of our assignments to others' and evaluated my own work. | Group 1 | 3,35 | 1,10 | 911,500 | 2396,500 | -1,337 | ,181 |
| | Group 2 | 3,04 | 1,13 | | | | |

4. DISCUSSION

Today learning environments can go beyond the classical classroom environment thanks to the opportunities offered by information and communication technologies. Thus, it is possible to organise nationally and internationally educational programmes which can be conducted with students of various regions; and consequently globalisation of education is accelerated. It is pointed out that learner properties such as interests, attitudes, prior knowledge and cognitive learning styles beside other properties play a determining role in obtaining the expected performance in those programmes (Back. & Bursian, 2003; Hartley & Bendixen, 2001). An international virtual seminar was designed in this research and the effects of participants' interest in computers and their learning preferences on their views of the course and their evaluations were investigated.

The group of students with high level of interest in computers stated more positive views than those with intermediate and low level interest. The results for the online parts of the course, for individual learning through online materials, and for evaluation of online communication materials used throughout the course were also similar. The findings signal the importance of conducting such activities with participants having interest in computers. Interest is a concept including epistemic, affective and value-related components (Krapp, 1992). Considering such components, it is assumed that students who do not have adequate knowledge on computer use, who dislike working with computers and who prefer working with other devices are available in the group with low interest in computers. One or all of those components are influential in evaluating the concept. Which components determining the interest are influential in evaluation of similar concepts may be determined through prospective research studies to be conducted.

5. REFERENCES

- Allen, E. I., & Seaman, J. (2003). Sizing the opportunity: The quality and extent of online education in the United States, 2002 and 2003. Retrieved June 25, 2008, from http://www.aln.org/resources/sizing_opportunity.pdf.
- Back, A. & Bursian, O. (2003). Managerial aspects of corporate e-learning: Insights from a study of four cases. *ScmS: New Media in Education*, 1, 1-22.
- Bürg, O. & Mandl, H. (2004). Akzeptanz von E-Learning in Unternehmen. (Forschungsbericht Nr. 167). München: Ludwig-Maximilians-Universität.
- Gallenstein, C. (2001): From Brick to Click: Blended learning für die Integration von E-Learning und Classroom Training. In W. Kraemer & M. Müller (Hg.), *Corporate Universities und E-Learning*. (pp. 259-285). Wiesbaden: Gabler.
- Hartley, K. & Bendixen, L. D. (2001). Educational Research in the Internet Age: Examining the role of individual characteristics, *Educational Research*, 53, 22-25.
- Kommission der europäischen Gemeinschaften (2001). Aktionsplan eLearning. Gedanken zur Bildung von morgen. Retrieved November 25, 2008, from http://ec.europa.eu/education/archive/elearning/annex_de.pdf.
- Krapp, A. (1992). Das Interessenkonstrukt. Bestimmungsmerkmale der Interessenhandlung und des individuellen Interesses aus der Sicht einer Person-Gegenstands-Konzeption. In A. Krapp & M. Prenzel (Hrsg.), *Interesse, Lernen, Leistung. Neue Ansätze einer pädagogisch-psychologischen Interessenforschung* (pp. 297-329). Münster: Aschendorff.
- Sauter, W., Sauter, A. M. & Bender, H. (2002): *Blended Learning. Effiziente Integration von E-Learning und Präsenztraining*. Neuwied: Luchterhand.
- Schenker-Wicki, A. & Demont, M. (2006): Business-Modelle von MBA-Programmen. *Die Zeitschrift für Erwachsenenbildung*, 2, 32-34.
- Yaman, M, Nerdel, C. & Bayrhuber, H. (2008). The effects of instructional support and learner interests when learning using computer simulations. *Computers & Education*, 51, 1784-1794.

THE EFFECTS OF TECHNOLOGY USE ON STUDENTS' SUCCESS IN ENGLISH LESSONS

Ramadan Eyyam and Hüseyin S. Yaratan (a, b)

^aEastern Mediterranean University, Educational Sciences Department, NORTH CYPRUS

^bEastern Mediterranean University, School of Foreign Languages, English Preparatory School, NORTH CYPRUS

ramadan.eyyam@emu.edu.tr, huseyin.varatan@emu.edu.tr

Abstract

Instructional Technology provides teachers with a wide range of media and practicality so it is commonly used in language classrooms. However, some teachers doubt whether there is an effect of technology use on the success of students in language learning. Therefore, this study aims to investigate whether there is an effect of technology use on students' success in English lessons. This study took place in Famagusta, North Cyprus. Seventh grade students at Eastern Mediterranean College were selected as participants. English was taught for one month with the use of technology to the experiment group and without the use of technology to the control group. Two pre-tests and two post-tests were given to both groups in the experiment. The progress of the two groups was evaluated by using the SPSS program. It was found out that there might be a significant effect of technology use on students' success in English lessons.

Keywords: *technology use, student success, English lessons, experiment group, control group*

INTRODUCTION

Instructional Technology is often used in language classrooms since it is believed that it provides teachers with a wide range of media and practicality. When instructional technology is used effectively, it helps students learn better, understand the lessons, and increase the success rate and motivation of students towards the lessons. As Grabe and Grabe (2007) stated, the use of technology in classroom activities provides students a learning environment that engages the thinking, decision-making, problem-solving, and reasoning behaviors of students. As Smaldino, Russell, Heinich and Molenda (2005) stated, in the developing world the roles of both teachers and students are changing and the reason for this is the effect of technology in class. Teachers become a facilitator rather than the authority and they engage students in learning.

The use of instructional technology enhances meaningful learning that is not very possible with the traditional educational tools. Instructional technology provides different means of instruction, engages a wider range of intelligences, connects school life with the real world, and supports collaborative learning (Ashburn and Floden, 2006). In other words, educational technologies help to create a collaborative learning environment that was not possible in the past. As a result, Wiske, Franz and Breit (2005) suggests that the effective integration of instructional technology into the curriculum becomes related to both the learning process and how to use it as only the use of instructional technology does not solve the problems in education.

When teachers use technology in their classes, this causes changes in their perceptions and beliefs. Some teachers claim that they need to change their pedagogical beliefs in order to be able to use technology in class. However, this is the essential element to make the challenges double for teachers while using technology for meaningful learning. Even, some others argue that there is no effect of technology use on the success of students especially in language classrooms (Ashburn and Floden, 2006). As Newby, Stepich, Lehman and Russell (2006) pointed out, the meaningful integration of technology is to know when, how, and why technology is used in the teaching-learning process. The ability of planning and selecting the best technology together with the knowledge and the skill to implement it into the curriculum, and evaluate its effectiveness are needed for the successful use of technology in class.

On the other hand, Newby et al. (2006) pointed out that when technology is used in class with the necessary abilities and knowledge, it increases the success rate of students since it serves different needs of each and every student. As Whitehead, Jensen and Boschee (2003) indicated "technology can enhance student achievement", Cradler (1995) listed the benefits of technology use on student achievement as increasing performance, improving learning attitude and confidence, providing essential instructional opportunities, increasing student collaboration, increasing mastery of vocational skills, emphasizing problem solving, improving writing skills, providing instant feedback, creating immediate adjustment of task difficulty, and providing access for students to advanced or enriched programs.

There has been limited research about the effectiveness of technology use in class on students' achievement. Therefore, some teachers question whether technology use is correlated with students' achievement since it is not clear for them. However, Whitehead et al. (2003) pointed out that there is evidence which shows the positive impact of technology use on students' achievement if it is implemented appropriately and these are improving problem solving skills significantly, enhancing the quality and quantity of writing processes and content, facilitating independent work, teamwork, and collaborative inquiry, increasing performance in basic skills learning, especially in math and reading, widening the scope of instructional opportunities, increasing mastery of vocational and workplace skills, promoting higher student retention rates, encouraging higher-order thinking skills (organizing, analyzing, and communicating complex information), and serving students with special needs effectively and efficiently.

The research has revealed that the use of instructional technology helps to improve restructuring the classrooms with activities that increase collaboration and provides a perfect place for student motivation, exploration, and instruction in a more successful way (Barron, Ivers, Lilavois and Wells, 2006). Russel and Sorge (1999) also focus on the fact that the use of instructional technology makes students have more control on their learning and makes gaining the analytical and critical thinking skills easier. In other words, the use of instructional technology in class supports student-centred instruction instead of teacher-centred instruction (Pitler, Hubbell, Kuhn and Malenoski, 2007).

METHODOLOGY

Participants

The participants of the study were 82 7th Grade students who study at Eastern Mediterranean College. They were studying in 5 different groups and in each group there were around 17 students. For each group, there was a different teacher so there were 5 English teachers in the study. One of them was male and the others were female.

Procedure

English subject was selected for this study in order to see the effects of technology use on language learning. Students were considered as two major groups. One of them was the experiment group and the other one was the control group. The aim was to teach the experiment group by using instructional technology and resume the control group with normal instruction to see whether the use of instructional technology increases learning. As the students had already been put in 5 different groups according to their level of

English, the researchers first considered three groups as the experimental group and left the rest two groups in the control group. Students were taught English by using instructional technology in the experiment group and without using any technology in the control group for 15 days and after 15 days the groups were changed. The experiment group became the control group and the students in the control group went into the experiment group so all students got benefit from technology. Before the instruction started in both groups, a pre-test was given to all students and after the completion of the first fifteen-day instruction, a post-test was given and the results of the pre and post tests were correlated. The experiment completed in one month and after 15 days the groups changed in order to provide all participants the instruction with technology. Thus, two pre-tests and two post-tests were given to the students.

Instruments

Classroom Materials

During the study, all the prepared materials were based on the course book for 7th Grades which was "Objective PET" (Hashemi and Thomas, 2008). The researchers have designed various new materials based on the activities in the course book in order to reach the different types of intelligence of students. During the preparation of these materials it was mainly aimed to increase visualization and help learners understand the language better; therefore, Powerpoint slides which were enriched by videos, pictures and other visuals were prepared on the computer. Moreover, flashcards and various cards were prepared for group work activities in the experiment group. The teachers teaching the experiment group were asked not to use the main book during the experiment but use the materials prepared by the researchers. Besides Powerpoint slides on the computer, various activities were designed to be used in the experiment group to ensure the active participation of students. However, normal instruction -without the use of technology- resumed in the control group throughout the experiment.

Tests

All the materials that students were supposed to study during the experiment were reviewed by the researchers and the basic vocabulary and grammar points were taken into consideration while the pre- and post-tests were prepared as the course book was an exam preparation book. Additionally, as it was mentioned earlier, there were two pre-tests and two post-tests in this study.

Pre-test

There were 30 multiple choice questions in the pre-test. 20 of them were dedicated to the vocabulary and 10 of them were dedicated to the language features in the related book chapters. Students were asked to choose the best alternative from the five choices given. This test had been given to both experiment and control group students before the first and second fifteen-day instruction started.

Post-test

There were 30 multiple choice questions in the pre-test. 20 of them were dedicated to the vocabulary and 10 of them were dedicated to the language features in the related book chapters. Students were asked to choose the best alternative from the five choices given. This test was given to both experiment and control group students after the end of the first and second fifteen-day instruction.

RESULTS

The Results for the Experiment Group

The first three groups of participants were considered as the experiment group at the beginning of the study. In the first two-week period, the students in these three groups were instructed by using instructional technology. Before the actual teaching started, they had taken a pre-test, and after the two-week period had been completed, they have taken a post-test. Then, in the second two-week period, these students in the experiment group were instructed normally without the use of instructional technology. In addition, before and after this period, they have taken a pre-test and a post test on the related topics.

Table 1 shows the means of pre-test and post-test results of the experiment group in the first two-week period. During this period, participants (N=46) had lessons with the use of instructional technology. Before the treatment, they had taken the pre-test and the mean of their results was 17.04; and after the treatment, they took a post-test and their results were 18.06. There was an increase in the grades of the students. The correlation between the first pre-test and the first post-test results of the experiment group was significant and it was 58.5%.

Table 1 First two – week period Pre-test and Post-test results of the Experiment group

| | | Mean | N | Correlation | Sig. |
|--------|-----------|---------|----|-------------|------|
| Pair 1 | PRETEST1 | 17,0435 | 46 | ,585 | ,000 |
| | POSTTEST1 | 18,0652 | 46 | | |

When the difference between pairs were taken into consideration, the difference was not found significant $t(45) = -1,875$, $p < .05$ because the p value in the study was .067.

Table 2 The Correlation of Paired Differences in the Experiment group during the 1st two-week period

| | Paired Differences | | | | T | df | Sig. (2-tailed) |
|----------------------|--------------------|----------------|-----------------|---|--------|----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | |
| | | | | Lower Upper | | | |
| PreTest1 – PostTest1 | -1,02174 | 3,69678 | ,54506 | -2,11955 ,07607 | -1,875 | 45 | ,067 |

Table 3 shows the means of the results of the experiment group in the second two-week period. For pre-test, the mean was 11.85 and for the post-test, the mean was 15.17. There was a significant correlation between the pre-test and the post-test at level $p = .01$ and the correlation was %57.7.

Table 3 Second two – week period Pre-test Post-test results of the Experiment group

| | | Mean | N | | |
|--------|-----------|---------|----|-------------|------|
| | | | | Correlation | Sig. |
| Pair 1 | PRETEST2 | 11.8511 | 46 | ,577 | ,000 |
| | POSTTEST2 | 15.1702 | 46 | | |

As Table 4 shows the difference between pairs, it was found significant since $t(45) = -4.547, p < .01$.

Table 4 The Correlation of Paired Differences in the Experiment Group During the 2nd Two-Week Period

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|----------------------|--------------------|----------------|-----------------|---|----------|--------|----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| PreTest1 – PostTest1 | -3.319915 | 5.00481 | .73003 | -4.78862 | -1.84968 | -4.547 | 46 | .000 |

The Results for the Control Group

Two groups of the participants were considered as the control group in the first two-week period of the study. Before the lessons started they had taken a pre-test, and after the two-week period had been completed, they have taken a post-test. Then, in the second two-week period, they were instructed by using different types of instructional technology and before and after this period, they have taken a pre-test and a post test on the related topics.

Table 5 shows the means of the pre-test and post-test of the control group in the first two-week period. During this period, the participants (N=36) had lessons as regular instruction. Before the treatment, they had taken the pre-test and the mean of their results was 22.14; and after the treatment, they took a post-test and their results were 23.11. There was an increase in the grades of the students. The correlation between the first pre-test and the first post-test results of the control group was significant and it was 68.8%.

Table 5 First two – week period Pre-test Post-test results of the Control Group

| | | Mean | N | | |
|--------|-----------|---------|----|-------------|------|
| | | | | Correlation | Sig. |
| Pair 1 | PRETEST1 | 22.1389 | 36 | ,688 | ,000 |
| | POSTTEST1 | 23.1111 | 36 | | |

When the difference between pairs were taken into consideration, the difference were found significant at the level of $p < .000$ and it was $p = .032$.

Table 6 The Correlation of Paired Differences in the Control Group during the 1st two-week period

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|----------------------|--------------------|----------------|-----------------|---|--------|--------|----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| PreTest1 – PostTest1 | -,9722 | 2,61300 | ,43550 | -1,85633 | ,08811 | -2,232 | 35 | ,032 |

Table 7 shows the means of the results of the control group in the second two-week period. For pre-test, the mean was 18.92 and for the post-test, the mean was 21.08. There was a significant correlation between the second pre-test and the second post-test at the level of $p = .01$ and the correlation was %72.7.

Table 7 Second two – week period Pre-test Post-test results of the Experiment group

| | | Mean | N | | |
|--------|-----------|---------|----|-------------|------|
| | | | | Correlation | Sig. |
| Pair 1 | PRETEST2 | 18.9167 | 36 | ,727 | ,000 |
| | POSTTEST2 | 21.0833 | 36 | | |

Table 8 shows the difference between pairs and the difference was found significant as $t(45) = -1,875, p < .01$.

Table 8 The Correlation of Paired Differences in the Control Group during the 2nd two-week period

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|----------------------|--------------------|----------------|-----------------|---|---------|--------|----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| PreTest1 – PostTest1 | -2.16667 | 3.09377 | .51563 | -3.21345 | -.11988 | -4.202 | 35 | .000 |

DISCUSSION

When the results were examined, it can be stated that there was a significant difference between the pre-test and the post-test results of the students. However, the results revealed that the use of technology was not the main reason of the difference as both groups with technology had significant differences in their results. For the control group, the results were more significant and one of the reasons of this might be the level of the students. In the study, students were not distributed heterogeneously as the students with better English results were in the same groups which were considered as the control group at the beginning of the study and the less successful students with lower exam results were in the same groups which were considered as the experiment group in the first half of the study. Considering the results of the first experiment group with less successful students, it can be seen that the difference of the pre-test and post-test results were not significant when they were exposed to the use of instructional technology in class. On the other hand, considering the results of the students with high grades in the first control group, the difference of the pre-test and post-test results were significant.

REFERENCES

- Ashburn, E., A., & Folden, R. E. (2006). *Meaningful Learning Using Technology*. New York: Teachers College Press
- Barron, A., E., Ivers, K. S., Lilavois, N., & Wells, J. A. (2006). *Technologies for Education*. (5th ed.). Connecticut: Libraries, (Chapter 1)
- Cradler, J. (1995). Summary of Current Research and Evaluation Findings on Technology in Education. Retrieved on April 02, 2010, from www.wested.org/techpolicy/refind.html.
- Grabe, M., & Grabe, C. (2007). *Integrating Technology for Meaningful Learning*. (5th ed.). New York: Houghton Mifflin Company.
- Hashemi, L. & Thomas, B. (2008). *Objective PET*. Cambridge: Cambridge University Press.
- Newby, T. J., Stepich, D. A., Lehman, J. D. & Russell, J. D. (2006). *Educational Technology for Teaching and Learning*. (3rd ed.). New Jersey: Pearson Merrill. Prentice Hall.
- Pitler, H., Hubbell, E. R., Kuhn, M., & Malenoski. (2007). *Using Technology with Classroom Instruction that Works*. Virginia: ASCD
- Ringstaff, C., & Kelley, L. (2002). *The learning return on our education technology investment: A review of findings from research*. San Francisco: WestEd. RTEC.
- Russel, J., & Sorge, D. (1999). Training facilitators to enhance technology integration. *Journal of Instruction Delivery Systems*, 13(4), 6.
- Smaldino, S. E., Russell, J. D., Heinich, R. & Molenda, M. (2005). *Instructional Technology and Media for Learning*. (8th ed.). New Jersey: Pearson Merrill. Prentice Hall.
- Whitehead, B., M., Jensen, D. F. N., & Boschee, F. (2003). *Planning for Technology*. California: Sage Publication.
- Wiske, M., S., Franz, K. R., & Breit, L. (2005). *Teaching for Understanding with Technology*. San Francisco: Jossey-Bass, (Chapter 1)

THE EFFICIENCY OF THE COMPUTER-ASSISTED LEARNING IN THE CASE OF A CHILD WITH DOWN SYNDROME

Ioana Iacob, "Tibiscus" University of Timisoara, e-mail: consulatm@yahoo.com,
Corina Musuroi, "Tibiscus" University of Timisoara, e-mail: cornus1@yahoo.com
Alexandra Spataru, The Infantil Autism Association of Timisoara. "A.A.I.T", e-mail: alexandra.nl@gmail.com

Abstract

This paper describes a case study that aimed at enhancing the language, the reading and number skills, and the memory of a child with free homogenous trisomy 21. For this purpose, we applied a computer-assisted learning program designed on the principles of structured learning, based on the practice of positive reward. The training strategies addressed the visual memory, as we used visual materials on paper or digital support. The significant progress registered during a one year period demonstrates the necessity and utility of implementing computer-assisted learning programs in the therapy of children with trisomy 21, considering the specificity of their visual learning strengths.

INTRODUCTION

The present case study analyses the way in which the computer assisted learning can enhance the language development and can train the memory, the reading and number skills of a child with Down syndrome. The subject is a nine-year boy diagnosed at birth with free homogeneous trisomy 21. At the age of eight the child was almost completely non-verbal. His expressive language consisted of few words, mainly nouns referring to family members, cartoon characters, objects from the familiar environment. However he would display avoidant behavior when asked to pronounce one of the words he had already mastered. He would hardly imitate sounds or words and he used to become nervous when he was prompted to repeat sounds or words. The boy used to have dramatic psycho-somatic reactions including vomiting and panic attacks when attending therapy settings outside his home. He was assessed to have a high level of anxiety when he was directly asked to perform a task. His eye contact was very poor and he would manifest reactions of frustration such as screaming, hitting the others, covering his ears and auto stimulation whenever he encountered new learning situations, especially involving the use of expressive language.

AIM AND SCOPE OF THE STUDY:

The goal of this case study is to assess the efficiency of the computer-assisted learning program applied to an eight-year boy with Down syndrome. The study emphasizes the effectiveness of a program consisting of structured activities, supported by the practice of positive reward. Each new item was visually presented both by an image and by the written word. We noticed that the child responded better to the computer-assisted activities; therefore we have assumed that the computer as instruction means represents a reward in itself.

METHOD AND MATERIAL:

Starting with March, 2009, the child was integrated in an experimental therapy, at his home. At the beginning, in order to monitor the child's development during intervention program, the **Portage checklist** was applied with the following results: the socialization area: 4 years old, language area: 2 years and 5 month, self-help area: 2 years and 6 months, cognitive area: 2 years and 6 months old and motor area 2 years and 6 months old. According to Portage Checklist the child's mental age was of 2 years and 8 months old (2.72 score). The IQ was 35.

A program was designed to approach all the child's the deficient areas. The program was based on the practice of ABA therapy (the Applied Behavior Analysis), combined with a consistent visual support for each new learning task. During one session the child got through 18 programs twice a day. The first program included the training of the eye-contact, of the imitation skills, of paying attention to the stimulus and adequately responding to it. The tasks were based on matching, sorting categories, doing puzzles, imitation, understanding oppositions and sequencing. Each new learned item was generalized by identifying it in the familiar environment and by independent toy play settings. The learning strategy was that of **step-by-step activities**. The boy was introduced gradually into the learning task in order to make it approachable and to decrease the child's anxiety by exposing him to constant success in achieving the task. Until August 2009 the child had a three-hour program from Monday to Friday. Since September the program has been of four hours every week day. He interrupted the therapy for a period of 6 weeks (1st of August – 15th of September).

DISCUSSIONS AND RESULTS

The learning program was design to address the specific learning profile of children with Down syndrome. Recent studies conducted by Sue Buckley emphasized the fact that children with Down syndrome have very good strengths in visual learning and that they may benefit from a program build on relevant visual materials. Moreover the program *See and learn* developed by Down Syndrome Education International starting from Sue Buckley's research demonstrated that children with Down syndrome own the ability of learning language by reading. Therefore we introduced in our program relevant images associated with the written word. The images were flashcards or thematic slideshows or educational computer games. The child proved a good understanding of different categories of images: reality-like images, symbolic or cartoonish images.

The programs were changed periodically as soon as the child mastered the taught tasks. The child has had a quick pace in acquiring words and concept. For example he mastered the concept of "the same-different" in just two sessions. He learnt to use the pronoun "I" - "you" also in two sessions. During the programs, attention has been paid to ways of increasing the child's motivation to stay longer in the required task. He responded positively to subjective rewards, such as being praised, listening to a song, emphasizing success by funny gestures (hands clapping, dancing, arms rising). Eventually, we discovered that the programs assisted by the computer were the child's favorites. His frustration, boredom or avoidant behavior have been never manifested with a computer assisted training. The causes may be various: firstly, the child himself can control the computer, thus he feels in charge. Also the computer is not critical and the child feels he is not watched and assessed permanently. It should be underlined that our subject used to become annoyed when he was intensively watched. We believe that his self-confidence and self-esteem being poor, he did not feel comfortable to be observed. As the child has become more confident due to his success in learning and in using the expressive language, his eye-contact improved and at the present moment he has no negative reaction if he is observed during his activities. His anxiety decreased significantly and he is much more cheerful.

The child developed very good skills in using the computer, by memorizing the written words, such as: *start, back, restart, print*. He can also use the Internet independently, accessing by himself sites with educational games. Though his fine motor skills are still impaired when manipulating the pencil, scissors or the spoon, he is very skillful in using the mouse and the keyboard and his performance is comparable to that of children of his age. We assume that the computer has been a strong enough motivation to encourage the child to develop such skills.

Our subject enjoys music, sounds, and hearing pleasant voices. As the multimedia educational programs are a very attractive mixture of appealing images and sounds, the child has found pleasure in doing and repeating the programs done on the computer. The computer has had an important role in generalizing many of the items learnt in the therapy. Because of the child anxiety it is difficult to offer him living situation such as going to the hospital, to the dentist, to the zoo, or even shopping in crowded areas. Therefore, the child was exposed to various visual pieces of information regarding such themes. He learned to name the objects and actions involved for example in a "Going to the doctor" situation. He has become able to anticipate the things happening in a doctor's office. He could see a lot of images with children seen by a doctor, their reactions, their emotions and the consequences of being safe and healthy. Thus, when he was in the situation of going to the doctor he could control his reactions better.

The multimedia learning programs have the following advantages: the child can learn or revise independently, he can insist on the themes he is more interested in, the quantity of images accompanied by sounds is larger, and much more various than what flashcards or books could provide. It is also cost-efficient and adjustable to the child's changing needs

After one year, the child was assessed again by applying the same Portage checklist with the following results: the socialization area: 5 years and 5 months old, language area: 3 years and 11 months old, self-help area: 4 years old, cognitive area: 5 years and 6 months old and motor area 4 years and 2 months old. According to Portage Checklist the child's mental age was of 4 years and 7 months old (4.59 score) and the chronological age 9 years old. The IQ is of 51.

The area in which the child made the best progress was the cognitive one: he gained 3 years in this area, which reveals the fact that the child has a good learning capacity, yet he needs an approach adapted to his psychological profile. In the other areas, during a 10-month therapy we have registered a progress of 1 year and 5 months in the socialization area, 1 year and six months in the language area, 1 year and 4 months in the self-help area, 1 year and 8 months in the motor area, and one 1 year and 11 months for the boy's mental age. His IQ score changed from a severe retard (30-39, his IQ was 35) to a mild retard (40-54, his present IQ is 51).

CONCLUSIONS

Because of the significant learning difficulties among children with Down syndrome, it is imperative to elaborate effective intervention strategies. This study supports the use of intensive intervention to address children with Down syndrome's learning deficits. Our subject had scarcely made any progress before he started an intensive intervention program. Our goal has been to constantly increase the child's motivation in solving the tasks during a three or four-hour daily program. The most successful strategies have been: ensuring the child's success in solving the task, using a lot of visual materials, and using the computer to learn and generalize the new items.

In this study, we have explored teaching a child with Down syndrome by alternating the use of flashcards with the use of the computer. We have noticed that sometimes the child is frustrated during the programs based on the use of flashcards. However, when the same task is operated on the computer, the child always participates enthusiastically and he is more active in doing what he is asked to. Results support the use of an intensive intervention approach to address the specific learning profile of children with Down syndrome. Further examination of the use of computer-assisted intervention to increase children with Down syndrome's motivation and success in learning would be warranted.

REFERENCES

1. Buckley, S.J., Bird, G., Byrne, A. (1996) *The practical and theoretical significance of teaching literacy skills to children with Down syndrome*. In: Rondal JA, Perera J, editors, *Down Syndrome: Psychological, psychobiological and socio educational perspectives*. London, England: Whurr. p.119-128.
2. Buckley, S.J. (2003) *Literacy and language*. In: Rondal JA, Buckley S, editors, *Speech and language intervention in Down Syndrome*. London, UK: Whurr.; p.132-153.
3. Cunningham, C.C., Glenn, S.M., Wilkinson, P. & Sloper, P. (1985) *Mental ability, symbolic play and receptive expressive language of young children with Down syndrome*, *Journal of Child Psychology and Psychiatry*, 26 (2) 255-265.
4. Jarrod, C., Baddeley, A.D. (2001) *Short-term memory in Down syndrome: Applying the working memory model*, *Down Syndrome Research and Practice*. 2001:7:17-21.
5. MacKenzie, S. & Hulme, C. (1987), *Memory span development in Down syndrome, severely subnormal and normal subjects*, *Cognitive Neuropsychology*, 4, 303-319.
6. Marcell, M.M. & Armstrong, V., (1982) *Auditory and visual sequential memory of Down syndrome and non-retarded children.*, *American Journal of Mental Deficiency*, 87 (1).86-95.
7. Meyers, L. (1988) *Using computers to teach children with Down syndrome spoken and written language skills*. In Nadel, L. (Ed):*The Psychobiology of Down Syndrome*. New York: NDSS.
8. Miller, J. (1987) *Language and communication characteristics of children with Down syndrome*. In Pueschel, S.M. et al. (Eds) *New Perspectives on Down Syndrome*. Baltimore: Paul Brookes.
9. Pueschel, S. (1988) *Visual and auditory processing in children with Down syndrome*. In Nadel, L. (Ed) *The Psychobiology of Down Syndrome*. New York: NDSS.
10. Roberts, J.E., Price, J., Malkin, C. (2007) *Language and communication development in Down syndrome*. *Mental Retardation and Developmental Disabilities Research Reviews*, 13(1):26-35.

THE EVALUATION OF PRIMARY SCHOOL STUDENTS' EDUCATIONAL SOFTWARE INTERFACE DESIGN CHOICES

*Dr. Ümit DEMİR

Dokuz Eylül University Education Sciences Phd Grade, Izmir, Turkey
umit.demir@deu.edu.tr

Abstract

The purpose of this research is to explore the educational software interface design choices of primary school students and make suggestions for educational software designers. Computer Aided Instruction (CAI) applications have some limitations to meet the requirements and individual needs of the students. In addition, CAI applications, which provide students to arrange learning environment according to their needs, are thought to be more qualified. In this context, educational software interface designs should be flexible/manageable. In this research, students had the chances of designing interfaces, which are appropriate and comfortable for themselves. 390 students of two primary schools of Karabağlar in İzmir formed the population of the research. Primary school students of 2010 Spring term were chosen as the sample. A software to determine the instructional software interface design choices was developed in Adobe Flash software. Participants had opportunities to create their own interface designs. As a result, participants mostly chose light and pastel background colors and dark and cold text colors. "Oblique Oval" buttons were mostly chosen from different designed buttons. Participants mostly chose buttons located on top location.

Keywords: Computer Aided Instruction, Educational Software Interface Design

INTRODUCTION

Computer Aided Instruction offers superior facilities in supplying individualized learning environment and motivation. Therefore, controllable / changable interface design is important. *Flexible designs* can provide students' interest and willingness on learning material. Because in desired learning environment, students feel comfortable and confident (Uludağ ve Odacı, 2002). Students can learn the material well by knowing their strengths and weaknesses and learning styles and making changes up to these properties (Arabacı, 2005, 24). An environment which adheres to aesthetic principles may do much to enhance the learning experience (Haag & Snetsinger, 1993). Student based learning should encourage students' cognitive and physical active participation by highlighting the visual quality and drawing attention to the learning activities during the learning process (Özer, 2007: 48).

To provide Individuality in CAI, the interface design of software must be individualized and interactive. In this process, the user should be able to control the presentation and interface design of content that provides effective visual elements (color, images, graphics, tables, etc..). Because of the learning environment of electronic information to be accessible individually, with different forms (visual and auditory materials) (Knuth ve Cunningham, 1993). Moreover, by determining the student's learning style to make the necessary arrangements will improve student achievement. Each student has learned the best way, is their learning style (Ekici, 2003; Sünbül, 2004). As a result, this research aims users to design software interfaces for themselves. In this context, users can change the background color, text color, font style, button type and button location of educational software.

METHODOLOGY

As a descriptive research design, "the process of correlating model" was used in this study. The data were collected by particular and computer using experience questionnaires and Educational Software Interface Design Selection Program (ESIDSP). ESIDSP's reliability and structure validity were tested by Department of Computer Education and Instructional Technology academicians of Dokuz Eylül and Ege Universities. ESIDSP was developed by using Adobe Flash program. Users had chances to make changes on education software interface design. In figure 1, text color and font type selection screen shot is shown. At ESIDSP, users also have chances to change button type and location of the software. Selection screens final shot is shown at figure 2. Software interface design which arranged according to preferences is shown at picture 3. In the process of Data collection, questionnaire was given to the participants' to determine their personal information and educational software and computer using experience. After questionnaire application participants' used ESIDSP to determine interface design.

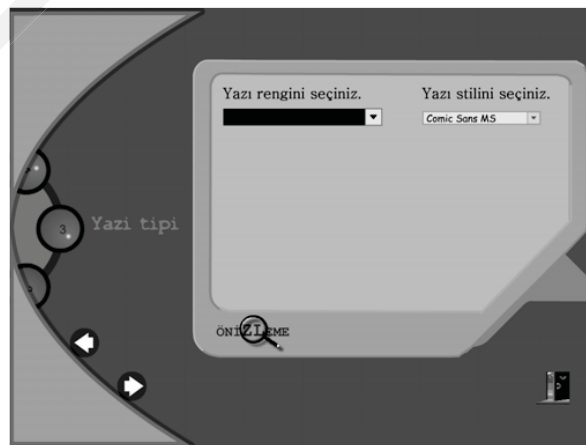


Figure 1. Educational Software Interface Design Selection Program (ESIDSP)



Figure 2. ESIDCP Selection Result Screen Shot

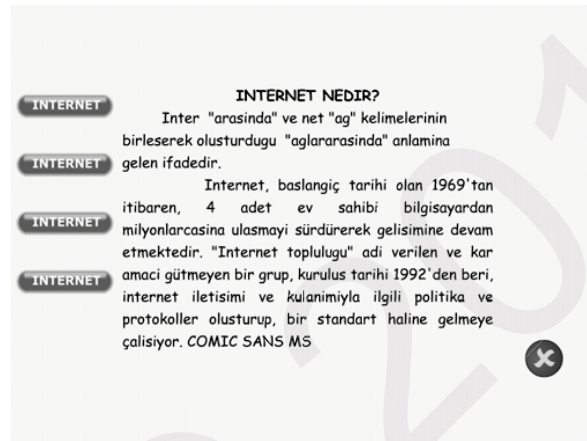


Figure 3. ESIDCP Selection Interface Screen Shot

RESULTS

Participants' education software interface design choices are explained below by background/text color button type and button location result tables.

Educational Software Background Color Choices of Primary School Students

Primary school students' background color choices are explained in Table 1 by frequency and percentage values. *Yellow* (13,9%), *orange* (11,5%), *green* (9,5%) and *blue* (9%) were mostly chosen background colors by participants as seen in Table 1. The least chosen background colors were *grey* (1,03%), *light orange*(1,03%) and *light yellow*(1,03%). As a result, students chose *primary colors* (*yellow, green, red*) more than the others. *Grey color and its tones* (1%), *light color tones* as light orange (1%), light yellow (1%), light green (1,4%) were the least chosen colors by students. Participants' background color choices are similar to the research results of Burdurlu et al. (2006), Demir (2004), Demirci (2006). Demir (2004) found out that 7th grade students mostly chose blue, light blue, yellow, red and orange. These research results are similar by this research.

Table 1. Primary School Students' Educational Software Background Color Choices

| Color | f | % |
|-----------------|-----|-------|
| Grey | 4 | 1,03 |
| Light Orange | 4 | 1,03 |
| Light Yellow | 4 | 1,03 |
| Light Green | 6 | 1,54 |
| Sea Green | 8 | 2,05 |
| Dark Grey | 9 | 2,31 |
| Turquoise | 9 | 2,31 |
| Light Pink | 9 | 2,31 |
| Bordo | 12 | 3,08 |
| White | 16 | 4,10 |
| Pistachio Green | 17 | 4,36 |
| Blue | 18 | 4,62 |
| Light Blue | 20 | 5,13 |
| Pink | 26 | 6,67 |
| Red | 27 | 6,92 |
| Black | 30 | 7,69 |
| Dark Blue | 35 | 8,97 |
| Green | 37 | 9,49 |
| Orange | 45 | 11,54 |
| Yellow | 54 | 13,85 |
| Total | 390 | 100 |

Participants mostly chose warm and dark colors as background colors. They rarely chose cold and light colors. Warm colors make text easier to read and bring them out the front to the background of software. *Grey* and its tones were the least chosen color group. Because, *grey* makes text less noticeable and difficult to read. Participants' gender may effect their background colors choices to be *pink* and *blue* color values.

Educational Software Text Color Choices of Primary School Students

Primary school students' text color choices are explained in Table 2 by frequency and percentage values. *Black* (34,1%), *yellow* (12,6%), *orange* (8,7%) and *red* (8%) were mostly chosen text colors by participant as seen in Table 2. *Pink* and *yellow* were the other popular text colors. The least chosen text colors were *grey* (0,8%) and its tones *light brown* (1,03%), *sea green* (0,8%) and *bordo* (0,8%). As a result, students mostly chose *dark colors* as text color. *Dark text* colors are easy readable and eye catching on light and pastel colors. *Grey* and its tones were the least chosen color group. Because, *grey* is a hard readable color. In Table 1 and 2 it occurs that participants' background and text color choices are similar to the research result of Scharff and Hill (1997), Demir (2004), and Altun et al. (1999). Scharff and Hill (1997) alike found out *yellow*, *black* and *dark* text color choices. Braun et al. (1995), Altun et al. (1999), Shieh and Lin (2000), Demir (2004) found out *black* is the most noticeable and easy-readable color on background. Wu and Yuan (2003) had results that dark colors ease reading.

**Table 2. Primary School Students' Educational Software Text Color Choices
Frequency and Percentage Values (Ascending Sort).**

| Color | f | % |
|-----------------|------------|------------|
| Dark Grey | 3 | 0,77 |
| Sea Green | 3 | 0,77 |
| Bordo | 3 | 0,77 |
| Light Grey | 4 | 1,03 |
| Light Pink | 4 | 1,03 |
| Light Yellow | 6 | 1,54 |
| Blue | 6 | 1,54 |
| Turquoise | 6 | 1,54 |
| Light Green | 7 | 1,79 |
| Light Orange | 8 | 2,05 |
| Light Blue | 8 | 2,05 |
| Pistachio Green | 14 | 3,59 |
| Dark Blue | 16 | 4,10 |
| Gren | 17 | 4,36 |
| White | 18 | 4,62 |
| Pink | 20 | 5,13 |
| Red | 31 | 7,95 |
| Orange | 34 | 8,72 |
| Yellow | 49 | 12,56 |
| Black | 133 | 34,10 |
| Total | 390 | 100 |

Educational Software Font Style Choices of Primary School Students

Primary school students' font style choices are explained in Table 3 by frequency and percentage values. 34,9% of participants chose "*Comic Sans MS*" as the most preferred font style. *Arial* (13,6%) and *Calligraphy* (9,7%) were the other chosen font styles. *Givonni* (0,3%), *Sylfaen* (0,3%), *Poor Richard* (0,3%) were the least chosen font style by the participants. "*Comic Sans MS*" font style is similar to handwriting. So, it may be chosen mostly. Bernard et al. (2001), similarly found out "*Comic Sans MS*" and "*Arial*" were mostly preferred font styles.

**Table 3. Primary School Students' Educational Software Font Style Choices
Frequency and Percentage Values (Ascending Sort).**

| Font Type | f | % |
|------------------------|------------|------------|
| Giovanni | 1 | 0,26 |
| Sylfaen | 1 | 0,26 |
| Poor Richard | 1 | 0,26 |
| Coruier New Tur | 2 | 0,51 |
| Trebuchet MS | 2 | 0,51 |
| Papyrus | 3 | 0,77 |
| Tahoma | 3 | 0,77 |
| Perpetua | 3 | 0,77 |
| Verdana | 5 | 1,28 |
| Garamond | 5 | 1,28 |
| Bookman Old Style | 6 | 1,54 |
| Times New Roman | 8 | 2,05 |
| Franklic Gothic Medium | 9 | 2,31 |
| Impact | 10 | 2,56 |
| Arial Unicode MS | 11 | 2,82 |
| Book Antiqua | 12 | 3,08 |
| Century Gothic | 12 | 3,08 |
| Batang | 13 | 3,33 |
| Monotype Corsiva | 16 | 4,10 |
| Georgia | 17 | 4,36 |
| Century | 23 | 5,90 |
| Calligraphy | 38 | 9,74 |
| Arial | 53 | 13,59 |
| Comic Sans MS | 136 | 34,87 |
| Total | 390 | 100 |

Educational Software Button Type Choices of Primary School Students

Primary school students' button type choices are explained in Table 4 by frequency and percentage values. 48,5% of participants chose "Curved Oval" button style. "Circle" (26,9%) and "Capsule" (16,7%) were the other button types. "Rectangular" (7,9%) was the least button type by the participants.

Table 4. Primary School Students' Educational Software Button Type Choices
Frequency and Percentage Values (n=390)

| ButtonType | f | % |
|--------------|-----|-------|
| Rectangular | 31 | 7,9 |
| Capsule | 65 | 16,7 |
| Circle | 105 | 26,9 |
| Oblique Oval | 189 | 48,5 |
| Total | 390 | 100,0 |

Educational Software Button Location Choices of Primary School Students

Primary school students' button location choices are explained in Table 5 by frequency and percentage values. 40,5% of participants chose "Top" location. "Right" (24,4%) and "Bottom" (18,5%) were the other button locations. "Left" (16,7%) was the least chosen button location by the participants. Similarly, Bernard and Hamblin (2003) found out horizontal menus on top location preferred by users.

Table 5. Primary School Students' Educational Software Button Location Choices
Frequency and Percentage Values (n=390)

| ButtonType | f | % |
|------------|-----|-------|
| Left | 65 | 16,7 |
| Bottom | 72 | 18,5 |
| Right | 95 | 24,4 |
| Top | 158 | 40,5 |
| Total | 390 | 100,0 |

CONCLUSION AND IMPLICATIONS

As a result, it is found out that primary school students had different color button choices. Participants chose color combinations that are creating positive contrast (dark background/light text color). Students text/background color choices verified research results (Scharff and Hill, 1997; Braun et al., 1995: 179; Wu and Yuan, 2003: 617; Hall and Hanna, 2004, Shieh and Lin, 2000; Lin, 2003: 65-72). They chose color combinations creating positive contrast and easing reading. Students chose "Comic Sans MS" and "Arial" font styles which are easy to read and notice (Bernard et al., 2001). Students mostly chose top location for buttons. Up location is more useful for users (Bernard and Hamblin, 2003).

It is found out that users' of educational softwares have different software design choices. So, designers should avoid from designs which shows their own color and design selections. They should create designs which are in accordance with computer assisted instruction. Because interface is one of the most important structure that makes software user-friendly (Atasoy, 2004: 31). In addition, the reading text of education softwares which are supported by visual aids as video, animation, graphic etc. and audio will be more successful education software designs. Because different changement opportunities at software affect student motivation on positive direction (Mayer, 1997; Mayer and etc., 1999; Özdenir and Erdoğan, 2001: 111-112). This changement control may give users chances to select suitable design and visual aids for themselves. Design control level may change up to the computer and education software experience. For example, primary school students or inexperienced computer/education software users may only have rights to change text and background color. Experienced users may have opportunities to change interface design and learning materials.

REFERENCES

- Altun, E.; Ünal, Ö.; Uysal, E., Göktaş, S; Harmanlı Z. (1999). **Elektronik Ekranda Renk ve Biçem Tasarımı: Farklı Cinsiyet ve Kişilikteki Öğrencilerin Renk, Metin, Grafik Boyut ve Biçemi Tercihleri**. 14-16 Ekim 1999, Uludağ University: I. The International Participation In Education Information Technology Services Symposium, Bursa.
- Atasoy, B. (2004). **Bilgisayar Destekli Öğretim Ortamlarında Farklı Bilişsel Stillere Sahip Öğrencilerin Öğrenme Stratejilerini Kullanma Durumlarının Akademik Başarılarına Etkisi**. Publish The High Graduate Thesis, Gazi University Education Sciences Institute, Ankara.
- Bernard, M.; Frank, T.; McKown, J.; Mills, M. (2001). **Which Fonts Do Children Prefer to Read Online?** *Usability News, January-2001*, 3(1).
- Bernard. M.and Hamblin, C.(2003). **Cascaded Versus Indexed Menu Design**. *Usability News, February-2003*, 4(2).
- Braun C.; Mine P.B.; Silver, N.C. (1995). **The Influence of Colour on Warning Label Perceptions**. *International Journal of Industrial Ergonomics*, 15(3), 179.
- Burdurlu, B., Elibol C.; Kılıç, Y. (2006). **Okul Öncesi Çocuk Oyuncaklarının Malzeme Kullanımı ve 4-6 Yaş Çocuklarının Renk Tercihleri**. *The Family and Community Education Culture and Research Magazine*. 3(9), 35-43
- Demir, Ü. (2004). **İlköğretim 7. Sınıf Öğrencilerinin Eğitsel Yazılım Ekran Tasarımı Seçimlerinin ve Ekran Tasarımında Dikkat Ettikleri Noktaların Değerlendirilmesi**. Publish The High Graduate Thesis, Dokuz Eylül University Education Sciences Institute, İzmir.

Haag, B.B. and Snetsigner, W. (1993). Aesthetics and screen design: An integration of principles. *Readings from the Annual Conference of International Visual Literacy Association*, 92-97

Lin, C. (2003). **Effects of Contrast Ratio and Text Color on Visual Performance With TFT-LCD.** *International Journal of Industrial Ergonomics*, 31(1), 231-239.

Shieh, K. and Lin, C. (2000). **Effects of screen type, ambient illumination, and color combination on vdt visual performance and subjective preference.** *International Journal of Industrial Ergonomics*, 23(2), 91-99.

Uludağ Z. and Odacı H. (2002). **Eğitim Öğretim Faaliyetlerinde Fiziksel Mekan.** *MEB Publishing*, 153-154

Wu, J. H. and Yuan Y. (2003). **Improving Searching and Reading Performance: The Effect of Highlighting and Text Color Coding,** *Information & Management*, 40(7), 617.

INTERNET REFERENCES

Hall, H. H.; Hanna, P. (2003). **The Impact of Web Page Text-Background Color Combinations on Readability, Retention, Aesthetics, and Behavioral Intention.**

<http://campus.umn.edu/lite/tech_reports/LITE-2003-04.pdf> (The Last Access Date: 15.03.2010)

Scharff, L and Hill, A. (1997), **Readability of screen displays with various foreground/background color combinations, font styles, and font types.** *Proceedings of the Eleventh National Conference on Undergraduate Research*, 742-746.

<<http://hubel.sfasu.edu/research/survreslts.html>>, (The Last Access Date: 15.03.2010)

THE EVALUATION OF THE USAGE OF INSTRUCTIONAL TECHNOLOGY IN LEARNING ENVIRONMENTS BY PRIMARY SCHOOL CHILDREN

Özge AYVA^a, Sibel Zeytin TORUN^b

^a İELEV Özel 125. Yıl İ.Ö.O, Çekmeköy, İSTANBUL oayva@ielev.k12.tr

^b İELEV Özel 125. Yıl İ.Ö.O, Çekmeköy, İSTANBUL szeytin@ielev.k12.tr

Abstract

In this research the aim is to analyse primary school children's approach towards the instructional technology and their perspectives regarding the significance of this technology used in learning environments. The scanning modeled research is limited to data acquired as a result of surveys and interviews carried out with eighty five students from 4th, 5th and 6th grades studying at IELEV 125'th Private Primary School in 2009-2010 academic year. In the first part of the survey 1-to-5 rating likert scale is used and in the second part six open ended questions are used. Semi structured interview was applied to students in order to testify acquired data. In the first part, the data acquired from closed ended questions have been analysed through data analysis. In the second part data acquired from open ended and interview questions have been analysed through content and descriptive analysis. Research demonstrates that majority of the students have developed a positive attitude by the usage of instructional technology in learning environments and they find the learning environments sufficient.

Key words: *Instructional Technology, Learning Environment*

INTRODUCTION

Within the 21. Century, the path taken in science and technology has brought great acceleration to development and alteration in all the institutions. In the first quarter of this century where we are dwelling in the era of globalisation, the existence of all the social systems is only possible with their renewability and their respond against altering conditions. Their inability to adaptation automatically put an end to their existence. Because, as the systems become non-functional, the reason of their existence fades out. (Ozden, 2005, p.11). In this context, the education system that takes probably the most important place along all the social systems should functionalize its internal dynamics in the national level with the coordination of external dynamics in the universal level. This functionality can be applicable only if the alterations take place in order to respond of needs and expectations.

As stated by Isman and Gurgun (2008, p.178), the scientific enhancement also increase the speed of technology. As we spot the deviations in technological enhancements with a wider perspective on the basis instructional technology, it is observed that the modifications of the definitions in the instructional literature demonstrate the distance taken so far. For instance, Engler (from p.59 cited by Demirel, Seferoglu and Yagci 2003, p.12) was describing the instructional technologies as television, moving pictures, cassettes, discs, books and writing boards, Aktepe et. (2008, p.1-2) indicates that the typewrites that were used twenty years ago, have replaced by computer-based word processors, spreadsheets and databases, also points out other technologies that are to be used in the provision and distribution of course materials to the students as CDROM, DVD's, hypertextes, hypermedia and multimedia tools, as well as graphics and desktop publishing softwares. By complying the alterations in the area of instructional technology, Karademirci (2010) who points out that the occurring enhancement is very slow, also indicates that the alterations in education field are controlled by many factors in which the social events, scientific and technological developments, instructors, students, school managers, researchers, politicians are also involved.

The activity area of the students in the teaching and learning environment which is one of these factors is the sole element that creates the internal dynamics of the schools. Because, the human beings are the income and outcome of education. The realization of efficient and effective teaching process can only be possible by converting the income into qualified outcome (Reaves, 1993: cited from 243 by Bastepe, 2009, p.77). The instructional technology admittedly has the great significance in the upgrading of qualitative and quantitative manners of qualified outcome.

Aim of Research

The aim of this research is to determine the thoughts of the primary school children towards the instructional technologies used in learning environments.

The Significance of Research

The most important problem faced in the learning-teaching environments is the overlook of student's opinions while generating these environments. That is why, a survey that is believed to participate further to the instructional technology usage, has been conducted in order to determine the students opinions upon the instructional technologies used in the learning environments

Constraints

This research is constrained by; the researchers that prepared the survey and interview and the students of 4th, 5th and 6th grades studying at IELEV 125'th Private Primary School in 2009-2010 education period.

Assumptions

The assumptions of the research are given as;

- The students replied the survey by the true and sincere manner
- The student expressed their true opinions during the interviews.

METHOD

Research Method

According to the scanning method (Arlı and Nazik, 2003, p.5) that aims to identify the situation that occurred in past or still occurring without any amends and as it is, two different methods as quantitative and qualitative have been used in this research. While determining the opinions of students, the quantitative dimension of research has been realized by closed ended survey question, the qualitative dimension of research (Geray, 2004, p.54) has been realized by the interview and open ended survey questions.

Space and Sample

The 4th, 5th and 6th grade primary school students in Istanbul constitute the space of the research. Eighty five students from 4th, 5th and 6th grades studying at IELEV 125th Private Primary School located in Cekmekoy province constitute the sample of the research.

Data Collection Tools

In this research, the survey about the usage of instructional technology in learning environments by primary school children is taken as the quantitative data collection technique and semi-structured interview form is taken as qualitative data acquisition technique.

Data Analysis

In this research, the survey results that comprise both quantitative and qualitative attributes have been analysed by quantitative methods and SPSS statistical computer program (Büyüköztürk, 2003).

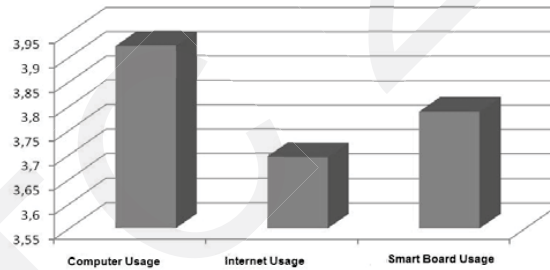
The quantitative data that is acquired by interview is classified in categories by the predetermined criteria and the frequency of the categories is determined by the categorical analysis (Tavsancil and Aslan 2001, p.90). Likewise, the open ended survey questions are analyzed by being classified by the categories. The data that is acquired from the open ended questions listed in interview and survey forms and the answers that are extracted from the data analysis method "Content Analysis" (Tavsancil and Aslan 2001, p.19) which is used in qualitative researches is digitized and coded according to the certain criteria.

FINDINGS AND COMMENT

Findings from Survey

Although the sampling group comprise 85 student, since the answers of 14 students to the closed end questions are consired as uncoded formation, SPSS study had been conducted on the 71 students. It is observed that, %58 of the students attending the research are male and the rest of % 42 are female, also %56 of the students are 10 years old, %20 of the students are 11 years old and %24 of the students are 12 years old.

Figure 1. The Usages of instructional Technologies



As the assessments relating to the use of instructional technology are examined, it is observed that computer is most widely used and smart board and internet are the followers. As the assessments for the differentiation of the genres according to the use of instructional technologies are examined, the assessments relating to the use of instructional technologies demonstrate a meaningful variance. ($p>0,05$). It is observed that the male and female students's assessments are also similiar. As the assessments for the differentiation of the ages according to the use of instructional technologies are examined, the assessments relating to the use of instructional technologies demonstrate a meaningful variance per ages. ($p<0,05$). As the difference between the averages is examined, the internet use of 10 years old students is more than 11 years old students. The assessments relating to the use of computer and smart boards demonstrate a meaningful difference per ages. ($p>0,05$) As the assessments for the differentiation of the achievement points according to the use of instructional technologies are examined, the assessments relating to the use of instructional technologies demonstrate a meaningful variance per achievement points. ($p>0,05$). It is observed that assesments of the students with different achievement points are also similiar.

Table 1. Relations Between the Use of Instructional Technologies

| Dimensions | Dimensions | N | R | P |
|-------------------|----------------|----|-------|-------|
| Internet Usage | Computer Usage | 71 | 0,565 | 0,000 |
| Smart Board Usage | Computer Usage | 71 | 0,678 | 0,000 |
| Smart Board Usage | Internet Usage | 71 | 0,511 | 0,000 |

As the relations of the student's assesments related the use of intructional technologies, to the sub-dimensions are examined, there exists, positive oriented (%57) meaningful relation between internet and computer use, positive oriented (%68) meaningful relation between smart board and computer use and positive oriented (%51) meaningful relation between smart board and internet use.

Findings from Open-Ended Survey Questions

The frequencies of the answers of the students taken from the interview, to the first open ended question related to instructional technology is provided as in table.

Table 2. The opinions of students about the instructional technologies used in school effectively
The opinions of students about the instructional technologies used in school effectively (N=85)

| The expression | f |
|---------------------------|------------|
| Smart Board | 76 |
| Computer | 55 |
| Projection | 23 |
| Compact Disc (type-radio) | 23 |
| Internet | 20 |
| Real Objects and Models | 8 |
| Total | 205 |

According to Table 2, the smart board and computer are mostly used expressions of the students related to the instructional technologies used in school indicated by the answers to open ended survey questions. According to these results, there is compliance between the answers to the open ended questions and closed ended questions.

Table 3. The opinions of students to the difference of the instructional technologies used in school

| | Smart Board | Computer | Internet | Compact Disc | Projection | Real Objects and Models |
|------------------------|-------------|-----------|-----------|--------------|------------|-------------------------|
| | f | f | f | f | f | f |
| Turkish Language | 5 | 9 | 1 | - | 3 | 2 |
| Mathematics | 45 | 12 | - | - | 3 | 2 |
| Science and Technology | 15 | 17 | 7 | 2 | 3 | 9 |
| Social Sciences | 39 | 23 | 5 | 1 | 3 | 3 |
| Foreign Languages | 2 | 1 | 1 | 17 | 2 | 4 |
| Other | 2 | 2 | - | - | 1 | 4 |
| Total | 108 | 64 | 14 | 20 | 15 | 24 |

According to Table 3, the opinions of the students extracted from the open ended survey questions regarding the difference of instructional technologies in school per lesson indicate that Smart Board is used in Mathematics and Social Sciences lessons, computer and internet are used in Science and Technology and Social Sciences lessons, compact disc is used in Foreign Languages lessons, projection is used in Turkish, Mathematics and Science and Technology lessons, real objects and models are used in Science and Technology lessons. According to these results, the used instructional technologies differ in correlation with the content and application aspects of the academic lessons.

Table 4. The opinions of students to the attitude towards the lessons of the instructional technologies used in school

| Categories | f |
|---|----|
| The increase of academic success | 80 |
| The increase of interest and motivation | 60 |
| The realization of permanent learning by easy understanding | 39 |
| Learning with joy | 31 |
| The provision of active contribution to the lessons | 23 |
| Not affecting the academic success | 5 |

According to Table 4, the students indicate that their attitude towards lessons of the instructional technologies provides the increase of academic success, the increase of interest and motivation, permanent learning by easy understanding, learning with joy and the active contribution to the lessons. According to these results all the expressions comply with each other.

Findings from Interviews

The descriptive analysis of the answers of the students given to the questions in the interview is summarized in the table given below

Table 5: The findings from the Interviews (N=10)

| Statements | Used Expressions |
|---|---|
| The first thoughts about the instructional technology are, | <i>Devices to facilitate the course... Smart board, computer, internet, television, projection, camera..</i> |
| The usage of instructional technologies in our school are, | <i>The usage of instructional technologies in our school is sufficient since our school is constructed by paying attention to the latest developments in education.</i> |
| My opinions to the difference of the instructional technologies used in lectures are, | <i>The use of technology varies according to course subjects... Despite they are used in almost every courses, the smart board and computer are mostly used in Mathematics, Social Sciences and Science and Technology... The smart board is not needed in the lectures of Turkish and foreign languages as they are lectured in both verbal and written. Compact disc is more widely used in these lectures as well as in music lecture...</i> |
| The use of instructional technology favours my achievement in class, because, | <i>All the students are willing to use smart board in order to solve problems... It is more vivid in my mind and more memorable when it is lectured visually.. The smart board appeals to the intelligence.. Never bored during the lectures.. Easily concentrate on the lecture.. We are learning with joy.</i> |
| My understanding of the relation between "academic excellence" as one of the values of IELEV corporate and instructional technologies is, | <i>As we use instructional technologies, we become the better than ever.. As we learn from smart board visually, our attention to the lectures escalates and this facilitates our learning process, so we remember more during the tests. Our lecture success increases by lectures with computers and smart boards.</i> |
| I would resemble my school to the followings if none of the instructional technologies exist in our school. | <i>A land without population... An abandoned building.. A small village school.. A house without television.. Emptiness.. An empty brain.. A school with black boards</i> |

As summarized in Table 5, it is observed from the student's answers that the smart board and computer which are two mostly used instructional technologies used in IELEV 125th Private Primary School, encourage the students to grow a positive attitude towards the lectures and facilitates the learning process so that permanent and efficient learning becomes possible. The expressions of the students used in the interviews comply with the answers to the closed and open ended survey questions.

Thus, the figure 1 and 2, examples of comics, that are drawn by the students in return of the open ended survey questions, are the expressions of the students about the use of instructional technology. In figure 1, in a lecture where the smart board is used, it is demonstrated that all the students are raising hands in order to answer the question asked by the teacher. The school without technology, which is made up of stones, represents the primitivity. In figure 2, the student comment on the figure as "The more usage of black color in the lecture which is based on instructional technology, indicates that my understanding of the subject is much better."

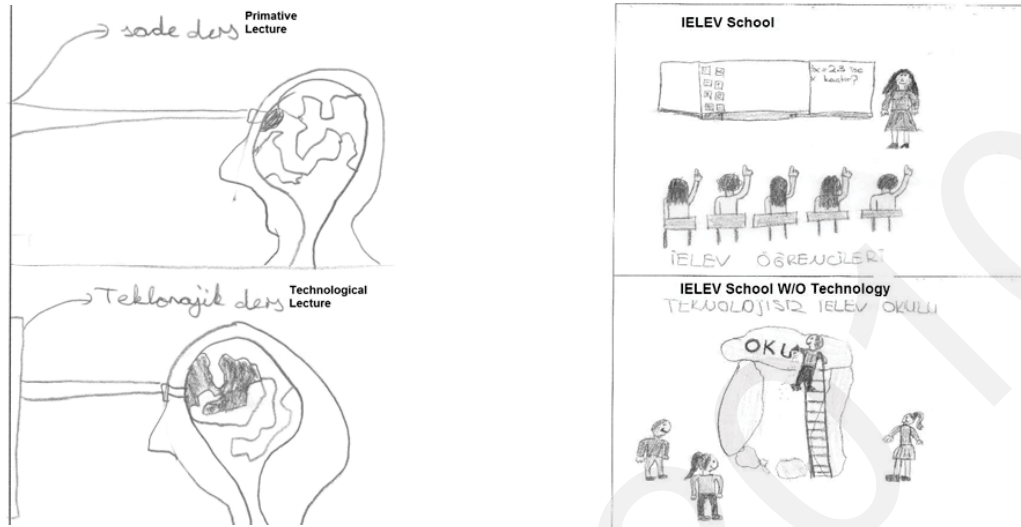


Figure 2. Some examples of cartoons

Among with the total of 170 cartoons that the students have drawn by themselves, the presence of smart board and computers are more significantly mentioned. The least significant instructional technologies drawn by the students are compact disc, real objects and models. The reason for this can be explained as the ongoing research has been conducted in a school which is highly equipped with smart boards and computers. However, it is observed that, the students are more conscious about the reason for the difference of the instructional technologies used in lectures and the contribution to the academical achievements.

4. RESULT AND RECOMMENDATIONS

The results acquired in this research can be summarized -likewise the sentences that the students expressed about the benefits of instructional technologies during the interviews- as; the instructional technologies provides;

- High motivation to students for learning in the process of learning – teaching,
- Positive contribution to academic achievement by admitting that visual and audio facilitates the student perception.
- Facilities and permanent learning.

These aspects are also subjected by Isman and Gurgun (2008, p.178), it is stated that 4th, 5th, 6th, 7th and 8th grade student have developed a positive attitude by using internet. Also Acikalin and Duru (2005, p.23) state that the use of computer technologies in the classroom intensifies high level thinking skills of the students. In accordance with the above-mentioned results, the following suggestions may be submitted.

- It is interpreted that the use of instructional technology provides positive change in academic achievements and attitudes of students towards the lectures.
- Higher concern should be granted to the arrangement of technologic structuring in order to provide variance in instructional technologies used in class environment
- The teacher and teacher candidates should put both theoretical and practical infrastructure upgrades well together. Besides, the deficiencies of the teachers for not knowing how to use instructional technology should be eliminated during the in-service seminars.

REFERENCES

- Açıkalm M. ve Duru, E. (2005). The Use Of Computer Technologies In The Social Studies Classroom. *The Turkish Online Journal of Educational Technology* (18-26). April TOJECT.
- Akteke, B., Öztürk, F., Kubus, O., Gürbüz, T. ve Çağıltay, K. (2008). *Öğretim Teknolojileri Destek Ofisleri ve Üniversitedeki Rollerini*. "Akademik Bilişim Konferansı", Çanakkale.
- Arlı, M. ve Nazik, M., H. (2003). *Bilimsel Araştırmaya Giriş*. Ankara: Gazi Kitabevi.
- Baştepe, İ. (2009). *Etkili Okulun Eğitim-Öğretim Süreci ve Ortamı Boyutlarının Nitelikleri*, *Elektronik Sosyal Bilimler Dergisi*. YAZ-2009 C.8 S.29 (076-083) ISSN:1304-0278
- Büyüköztürk, Ş. (2003). *Sosyal Bilimler İçin Veri Analizi El Kitabı / İstatistik, Araştırma Deseni SPSS Uygulamaları ve Yorum*. Ankara: Pegem-AYayıncılık.
- Demirel, Ö., Seferoğlu S.,S. ve Yağcı, E. (2003). *Öğretim Teknolojileri ve Materyal Geliştirme*. Ankara: Pegem-A Yayıncılık.
- Geray, H. (2004). *Toplumsal Araştırmalarda Nicel ve Nitel Yöntemlere Giriş-İletişim Alanından Örneklerle*. Ankara: Siyasal Kitabevi.
- İşman, A. ve Gürgün S. (2008). *Özel Okullarda Öğrenim Gören İlköğretim Öğrencilerin İnternete Yönelik Tutum ve Düşünceleri (Acarkent Doğa Koleji Örneği)*. 8th International Educational Technology Conference. Anadolu Üniversitesi, Eskişehir.
- Karademirci, Arzu H. (2010). *Öğretim Teknolojileri: Tanımı ve Tarihsel Gelişimine Yeniden Bakmak*. Akademik Bilişim'10 Konferansı, Muğla.
- Özden, Y. (2005). *Öğrenme ve Öğretme*. Ankara: Pegem-A Yayıncılık.
- Tavşancıl, E. ve Aslan, E. (2001). *Sözel, Yazılı ve Diğer Materyaller İçin İçerik Analizi ve Uygulama Örnekleri*. İstanbul: Epsilon Yayınevi.

THE EVALUATION OF UNIVERSITY STUDENTS' EDUCATIONAL SOFTWARE INTERFACE DESIGN CHOICES: THE CASE OF EDUCATION FACULTY

*Dr. Ümit DEMİR

Dokuz Eylül University Education Sciences Phd Grade, Izmir, Turkey,
umit.demir@deu.edu.tr

**Assoc. Prof. Dr. Eralp ALTUN

Ege University, Faculty of Education, Department of Computer Education and Instructional Technologies, 35040 Bornova-Izmir, Turkey
eralp.altun@ege.edu.tr

Abstract

The purpose of this research is to explore the educational software interface design choices of university students and make suggestions for educational software designers. Computer Aided Instruction (CAI) applications have some limitations to meet the requirements and individual needs of the students. In addition, CAI applications, which provide students to arrange learning environment according to their needs, are thought to be more qualified. In this context, educational software interface designs should be /flexible/manageable. In this research, students had the chances of designing interfaces, which are appropriate and make them comfortable. Students of Faculties of Education of Çanakkale 18 Mart, Dokuz Eylül and Ege Universities formed the population of the research. 545 Faculty of Education students of 2008 Spring term were chosen as the sample. "Correlative Investigation Model" was used in this research. Arithmetic average, standard deviation, χ^2 test were used while analysing the data. A software to determine the instructional software interface design choices was developed in Adobe Flash software. Participants had opportunities to create their own interface designs. As a result, participants' interface design choices differed according to their gender, education departments at university and education field at SSE (Student Selection Exam). While females mostly chose warm and pastel background color tones as pink, light pink and light blue; males mostly chose cold colors as blue and black as neutr colors. Moreover, while males mostly chose table, females mostly chose graph as visual aid.

Keywords: Computer Aided Instruction, Educational Software Interface Design

1. INTRODUCTION

Computer Aided Instruction offers superior facilities in supplying individualized learning environment and motivation. Therefore, controllable / changable interface design is important. *Flexible designs* can provide students' interest and willingness on learning material. Because in desired learning environment, students feel comfortable and confident (Uludağ and Odacı, 2002). Students can learn the material well by knowing their strengths or weaknesses, learning styles and making changes up to these properties (Arabacı, 2005, 24). Course materials and tools should be organized demanding incentive and stimulus to learn. Student based learning should encourage students' cognitive and physical active participation by highlighting the visual quality and drawing attention to the learning activities during the learning process (Özer, 2007: 48).

To provide individuality in CAI, the interface design of software must be individualized and interactive. In this process, the user should be able to control the presentation and interface design of content that provides effective visual elements (color, images, graphics, tables, etc.). In order to create a personalized accessibility, different forms of information should be presented/developed (Knuth ve Cunningham, 1993). Moreover, making arrangements according to the difference in learning styles of the students, improve their success. Each student has his own learning style (Ekici, 2003; Sünbül, 2004). As a result, the aim of this research is to design software interfaces suitable for users. In this context, users can change the background, the text color and visual elements of educational software.

2. METHODOLOGY

As a descriptive research design, "the process of correlating model" was used in this study. The data were collected by computer using experience questionnaires and Educational Software Interface Design Selection Program (ESIDSP). ESIDSP's reliability and structure validity were tested by Department of Computer Education and Instructional Technology academicians of Çanakkale 18 Mart and Ege Universities. ESIDSP was developed by using Adobe Flash program. Users had chances to make changes on education software interface design. In figure 1, background/text color selection screen shot is shown. At ESIDSP, users also had chances to change visual aid (table, graph, picture) of the reading text. Visual aid selection screen shot is shown at figure 2.

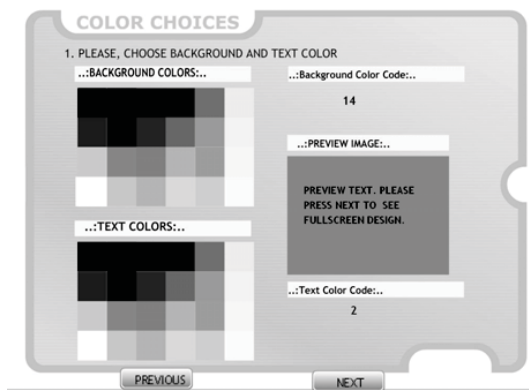


Figure 1. Educational Software Interface Design Selection Program (ESIDSP) Screen Shot

İNTERNET KULLANICILARININ DEĞİŞİMİ
Ülkemizdeki İnternet kullanıcı sayısında 2000-2005 döneminde sürekli artan bir ivme yakalanmıştır. 2000 yılında 2,5 milyon olan kullanıcı sayısının, 2005 yılı sonunda 16 milyona ulaştığı hesaplanmaktadır. (Telekomünikasyon Kurumu 2005 Faaliyet Raporu). 2000-2005 yılları arasındaki abone sayısının değişimini gösteren tablo, resim veya grafiği incelemek için sol alt bölümde yer alan düğmeleri kullanabilirsiniz.

| Yıllar | Kullanıcı Sayısı | Bir Önceki Yıla Göre Artış Oranı (%) |
|--------|------------------|--------------------------------------|
| 2000 | 2.500.000 | 25,00 |
| 2001 | 3.200.000 | 28,00 |
| 2002 | 4.300.000 | 34,38 |
| 2003 | 6.000.000 | 39,54 |
| 2004 | 10.220.000 | 70,33 |
| 2005 | 16.000.000 | 56,55 |

İnternet Kullanıcı Sayılarının Yıllara Göre Değişimi Tablosu

PREVIOUS NEXT

Figure 2. ESIDCP Visual Aid Selection Screen Shot

During the process of Data collection, questionnaires were given to the participants to determine their personal information, educational software and computer using experience. After questionnaire application, ESIDSP was used to determine interface design. Based on findings obtained from independent variables (personal characteristics) and also dependent variables (interface design choices), the differences between these two variables were investigated.

3. RESULTS

Choices of educational software interface design were explained below by background/text color and visual aids (table, graph, picture) result tables. In this research, relationship between independent factors and students' interface design choices was queried. As a result, a significant difference ($p < 0,05$) was found out between students' gender and their software interface choices. No significant difference was found out between students' interface choices and other demographic features as age, computer and educational software using experience. Therefore, only choices and factors which had significant correlation were explained.

3.1. Educational Software Background Color Choices of University Students

University students' background color choices were explained in Table 1 by frequency and percentage values.

**Table 1. University Students' Educational Software Background Color Choices
Frequency and Percentage Values (n=545).**

| Color | RGB Code | f | % |
|--------------|----------|-----|------|
| Goldenrod | #CC9933 | 1 | 0,2 |
| Light Brown | #CC9966 | 1 | 0,2 |
| Brown | #CC6600 | 2 | 0,4 |
| Yellow | #FFFF66 | 4 | 0,7 |
| Dark Blue | #000033 | 5 | 0,9 |
| Dark Green | #003300 | 5 | 0,9 |
| Grey | #333333 | 6 | 1,1 |
| Moss Green | #66FFCC | 7 | 1,3 |
| Beige | #FFCC66 | 7 | 1,3 |
| Claret Red | #990000 | 10 | 1,8 |
| Light Grey | #CCCCCC | 12 | 2,2 |
| Light Yellow | #FFFF99 | 12 | 2,2 |
| Cream | #FFF6CC | 12 | 2,2 |
| Dark Yellow | #FFFF00 | 23 | 4,2 |
| Light Green | #00FF00 | 29 | 5,3 |
| Turquoise | #00FFFF | 29 | 5,3 |
| Blue | #0000FF | 33 | 6,1 |
| Red | #FF0000 | 33 | 6,1 |
| Black | #000000 | 37 | 6,8 |
| White | #FFFFFF | 41 | 7,5 |
| Green | #009900 | 49 | 9 |
| Pink | #CC66CC | 58 | 10,6 |
| Light Pink | #FF99FF | 59 | 10,8 |
| Light Blue | #3399FF | 70 | 12,8 |
| Total | | 545 | 100 |

Light blue (12,8%), light pink (10,8%), pink (10,6%) were mostly chosen background colors by participants as seen in Table 1. The least chosen background colors were brown (0,4%) and its tones light brown (0,2%), territorial color (0,2%). As a result, students chose light and pastel tones more than the others. Dark colors as dark blue, dark green and grey were the least chosen colors by students. Participants' background color choices are similar to the research results of Scharff and Hill (1997), Demir (2004), Wu and Yuan (2003), Hall and Hanna (2004). Scharff and Hill (1997) found out pink, blue and white as the most popular background colors. Altun et al. (1999), made a research to find out students color, text style, text size choices. They found out light blue and white as popular background color choices. These color choices were similar to this study. Wu and Yuan (2003) found out that light and pastel backgrounds make reading easier. Hall and Hanna (2004) found out that blue and white backgrounds were mostly chosen and these choices made reading easier. Demir (2004) found out that 7th grade students mostly chose blue, light blue, yellow, red and orange. These research results are similar to this research.

Participants mostly chose warm and light colors as background color. They rarely chose cold and dark colors. Light and warm colors make text easier to read and bring them out the front to the background of software. Brown and its tones were the least chosen color group. Because, brown is a color tone between warm and cold colors. Therefore it makes text less noticeable and difficult to read. Participants' gender may effect their background colors choices to be pink and blue color values. Also these colors' relaxing effect may cause these choices. Light colors are easy to read. Because light colors make text more noticeable.

3.2. Educational Software Text Color Choices of University Students.

University students' text color choices are explained in Table 2 by frequency and percentage values. *Black* (25,7%), *white* (10,8%), *blue* (9,2%) and *dark blue* (6,8%) were mostly chosen text colors by participants as seen in Table 2. *Dark yellow* and *red* were the other popular text colors. The least chosen text colors were *brown* (0,6%) and its tones *light brown* (0,2%), *territorial color* (0%). As a result, students mostly chose *dark colors* as text color. *Dark text* colors are easy readable and eye catching on light and pastel colors. Brown and its tones were the least chosen color group. Because, *brown* is a tone between warm and cold colors. In Table 1 and 2 it occurs that participants chose light and pastel colors as background color and dark and cold colors as text color. Participants' background and text color choices are similar to the research result of Scharff and Hill (1997), Demir (2004), and Altun et al. (1999). Scharff and Hill (1997) alike found out *yellow*, *black* and *dark blue* and *white* as popular text color choices. Also, *pink* and *green* were the least chosen text colors in this research. Braun et al. (1995), Altun et al. (1999), Shieh and Lin (2000), Demir (2004) found out black is the most noticeable and the easiest readable color on background. Wu and Yuan (2003) had results that dark colors ease reading. As a result from background and text color combination choices, participants chose background colors according to their gender. Pink and blue were the most chosen background colors. Text color choices form positive contrast (dark text color on light background color) with background choices that support literature researches.

Table 2. University Students' Educational Software Text Color Choices Frequency and Percentage Values (Ascending Sort).

| Color | Color Code | f | % |
|--------------|------------|-----|------|
| Goldenrod | #CC9933 | 0 | 0 |
| Light Brown | #FFFF66 | 1 | 0,2 |
| Brown | #CC9966 | 1 | 0,2 |
| Yellow | #FFCC66 | 3 | 0,6 |
| Dark Blue | #CC6600 | 4 | 0,7 |
| Dark Green | #FFFF99 | 7 | 1,3 |
| Grey | #CCCCCC | 9 | 1,7 |
| Moss Green | #3399FF | 9 | 1,7 |
| Beige | #00FFFF | 9 | 1,7 |
| Claret Red | #FFF6CC | 9 | 1,7 |
| Light Grey | #66FFCC | 10 | 1,8 |
| Light Yellow | #00FF00 | 11 | 2 |
| Cream | #003300 | 18 | 3,3 |
| Dark Yellow | #009900 | 18 | 3,3 |
| Light Green | #CC66CC | 18 | 3,3 |
| Turquoise | #333333 | 19 | 3,5 |
| Blue | #FF99FF | 19 | 3,5 |
| Red | #990000 | 21 | 3,9 |
| Black | #FF0000 | 35 | 6,4 |
| White | #000033 | 37 | 6,8 |
| Green | #FFFF00 | 38 | 7 |
| Pink | #0000FF | 50 | 9,2 |
| Light Pink | #FFFFFF | 59 | 10,8 |
| Light Blue | #000000 | 140 | 25,7 |
| Total | | 545 | 100 |

3.3. Educational Software Visual Aid (Table, Graph, Picture) Choices of University Students.

University students' visual aid choices are explained in Table 3 by frequency and percentage values. 40% of participants chose *picture* as the most meaningful visual aid. *Graph* was the least chosen (28%) visual aid by the participants. *Picture* is the simplest way to present the knowledge. So, it can be chosen mostly. *Graphs* include complex ratio information. So, *graph* can be chosen less than the other visual aids. Learners' demographic differences may have effects upon these choices.

Table 3. University Students' Educational Software Visual Aid Choices Frequency and Percentage Values (n=545)

| Visual Aid | f | % |
|------------|-----|------|
| Table | 172 | 31,6 |
| Graph | 153 | 28,1 |
| Picture | 220 | 40,4 |
| Total | 545 | 100 |

3.4. The Relationship between Students' Demographic Features and Educational Software Interface Design Choices

A significant difference ($\chi^2_{(2)}=33,71$, $p<0,05$) was found out between students' interface design choices and gender. Students' background color choices chi-square test results between males and females were explained in Table 4.

Table 4. Gender and Background Color Choices Chi-Square Results

| | | Warm | Notr | Cold | Total |
|--------|---|------|------|------|-------|
| Female | n | 163 | 50 | 130 | 343 |
| | % | 47,5 | 14,6 | 37,9 | 100,0 |
| Male | n | 48 | 57 | 97 | 202 |
| | % | 23,8 | 28,2 | 48,0 | 100,0 |
| Total | n | 211 | 107 | 227 | 545 |
| | % | 38,7 | 19,6 | 41,7 | 100,0 |

$$\chi^2=33,71 \quad ss=2 \quad p=0,001$$

As seen in Table 4, the difference signifies that males chose cold colors (48%) more than females (38%). Females chose warm colors (48%) more than males (24%). The gender role given in childhood may affect males' choice black and blue as cold and dark background color. Females chose *pink* and its color tones. Females' choices also may be effected by given gender role. Parents' dress and toy choices may also have effects on the children starting from the early childhood. Participants' background color choices are similar to the research result of Scharff and Hill (1997), Demir (2004), Altun et al. (1999), Burdurlu et al. (2006), Kurniawan and Zaphiris (2006), Koca and Koç (2008). In these researches, females mostly chose pink and light blue as background color. Demir (2004) found out that male children mostly chose red and yellow following blue. But adults didn't choose red and yellow as much as children. Adult males did not choose warm colors as children. It may be effect of gender. Females' color choices do not change up to age terms. Pink, red and tones are generally the most chosen background colors. As a result, significant difference found out between males' and females' background color choices.

No significant difference found out between students' demographic features and text color choices. Males and females mostly chose cold and notr colors. Participants chose easily readable and noticable text colors. Both males and females chose positive color combinations including light background color and dark text color. As a result, males' and females' background and text color combination choices are similar. They mostly chose easy readable color combinations creating positive contrast. This result is similar to other color choices results (Braun et al., 1995; Hall and Hanna 2004; Lin, 2003; Scharff and Hill, 1997; Shieh and Lin 2000; Wu and Yuan, 2003). Students' visual aid choices, chi-square test results between males and females are explained in Table 5. As it can be seen in Table 5, there is significant difference ($\chi^2_{(2)}=9,27$, $p<0,05$) between males' and females' educational software visual aid choices. The difference signifies that males chose *tables* (34,7%) more than females (29,7%). Also, females (45,2%) choose *pictures* more than males (32,2%).

Table 5. Gender and Visual Aid Choices Chi-Square Results

| | | Table | Graph | Picture | Total |
|--------|---|-------|-------|---------|-------|
| Female | n | 102 | 86 | 155 | 343 |
| | % | 29,7 | 25,1 | 45,2 | 100,0 |
| Male | n | 70 | 67 | 65 | 202 |
| | % | 34,7 | 33,2 | 32,2 | 100,0 |
| Total | n | 172 | 153 | 220 | 545 |
| | % | 31,6 | 28,1 | 40,4 | 100,0 |

$$\chi^2=9,27 \quad ss=2 \quad p=0,01$$

Males and females visual aid choices are explained in Table 5. As it is seen in Table 5, females chose *picture* (45,2%) more than males (%29,7). Males mostly chose *table* (34,7%) as visual aid.

4. CONCLUSION AND IMPLICATIONS

In this research, it is found out that university students had different color and visual aid choices and gender affected their educational software interface choices. Females chose warm colors like pink and males chose cold colors like blue and notr colors like black as software background color. Participants' gender may affect their background colors choices to be pink and blue color values. Also the relaxing effect of these colors may cause these choices. Light colors used as background make the texts easy to read. Because light colors make text more noticeable. Brown and its tones are the least chosen color group. Because, brown is a tone between warm and cold colors. Participants chose color combinations that created positive contrast (light background/dark text color). Students' text/background color choices verified research results (Scharff ve Hill, 1997; Braun et al., 1995: 179; Wu and Yuan, 2003: 617; Hall and Hanna, 2004, Shieh and Lin, 2000; Lin, 2003: 65-72). They chose color combinations creating positive contrast and making easy to read. Males mostly chose tables as a visual aid whereas females chose pictures as a visual aid. Picture is the simplest way to present the knowledge. So, it may be chosen mostly by females as meaningful aid. Tables give categorized information to users. Males may gain more useful information from tables.

As a result, gender effects students' education software interfaces design choices. It is found out that users have different software design choices. So, designers should avoid from designs which show their own color and design selections. They should create designs which are correlated with computer aided instruction. Because interface is one of the most important structure that makes software user-friendly (Atasoy, 2004: 31). In addition, the reading text of education softwares which are supported by visual aids as video, animation, graphic, audio etc. will be more successful education software designs. Because different control opportunities at software affect students' motivation on positive direction (Mayer, 1997; Mayer and etc., 1999; Özdener and Erdoğan, 2001: 111-112). This management control may give users a chance to select suitable design and visual aids for themselves. Design control level may change up to the computer and education software experience. For example, elementary school or inexperienced computer/education software users may only have rights to change text and background color. Experienced users may have rights to change interface designs and learning materials.

REFERENCES

- Altun, E.; Ünal, Ö.; Uysal, E., Göktaş, S; Harmanlı Z. (1999). **Elektronik Ekranda Renk ve Biçem Tasarımı: Farklı Cinsiyet ve Kişilikteki Öğrencilerin Renk, Metin, Grafik Boyut ve Biçemi Tercihleri**. 14-16 October 1999, Uludağ University: 1. The International Participation In Education Information Technology Services Symposium, Bursa.
- Atasoy, B. (2004). **Bilgisayar Destekli Öğretim Ortamlarında Farklı Bilişsel Stillere Sahip Öğrencilerin Öğrenme Stratejilerini Kullanma Durumlarının Akademik Başarılarına Etkisi**. Publish The High Graduate Thesis, Gazi University Education Sciences Institute, Ankara.
- Braun C.; Mine P.B.; Silver, N.C. (1995). **The Influence of Colour on Warning Label Perceptions**. *International Journal of Industrial Ergonomics*, 15(3), 179.
- Burdurlu, B., Elilib C.; Kılıç, Y. (2006). **Okul Öncesi Çocuk Oyuncaklarının Malzeme Kullanımı ve 4-6 Yaş Çocuklarının Renk Tercihi**. *The Family and Community Education Culture and Research Magazine*. 3(9), 35-43
- Demir, Ü. (2004). **İlköğretim 7. Sınıf Öğrencilerinin Eğitsel Yazılım Ekran Tasarımı Seçimlerinin ve Ekran Tasarımında Dikkat Ettikleri Noktaların Değerlendirilmesi**. Publish The High Graduate Thesis, Dokuz Eylül University Education Sciences Institute, İzmir.
- Hibbing, A.N. and Erickson, J.L.R.(2003). **A Picture is worth a thousand words: Using visual images to improve Comprehension for middle school struggling readers**. *The Reading Teacher*, 56(8), 758-770.
- Koca, E. and Koç F. (2008). **Çalışan Kadınların Giysi Seçimleri ve Renk Tercihleri**. *Electronic Social Sciences Magazine, Spring-2008*, 7(24), 171-200.
- Kurniawan S. and Zaphiris P. (2006). **Advances in Universal Web Design and Evaluation: Research, Trends and Opportunities**. Idea Group Inc (IGI) Publishing, ISBN 1599040964, ISBN 13 9781599040967, USA.
- Lin, C. (2003). **Effects of Contrast Ratio and Text Color on Visual Performance With TFT-LCD**. *International Journal of Industrial Ergonomics*, 31(1), 231-239.
- Shieh, K. and Lin, C. (2000). **Effects of screen type, ambient illumination, and color combination on vdt visual performance and subjective preference**. *International Journal of Industrial Ergonomics*, 23(2), 91-99.
- Uludağ Z. and Odacı H. (2002). **Eğitim Öğretim Faaliyetlerinde Fiziksel Mekan**. *MEB Publishing*, 153-154
- Wu, J. H. and Yuan Y. (2003). **Improving Searching and Reading Performance: The Effect of Highlighting and Text Color Coding**. *Information & Management*, 40(7), 617.

INTERNET REFERENCES

- Hall, H. H.; Hanna, P. (2003). **The Impact of Web Page Text-Background Color Combinations on Readability, Retention, Aesthetics, and Behavioral Intention**.
http://campus.umn.edu/lite/tech_reports/LITE-2003-04.pdf (The Last Access Date: 01.03.2010)
- Scharff, L ve Hill, A. (1997), **Readability of screen displays with various foreground/background color combinations, font styles, and font types**. **Proceedings of the Eleventh National Conference on Undergraduate Research, Vol II, 742-746**.
<http://hubel.sfasu.edu/research/survsrlts.html>, (The Last Access Date: 01.03.2010)

THE EVALUATION OF USING SIMULATORS OF ARITHMETIC AND LOGICAL OPERATIONS IN TEACHING COMPUTER SYSTEMS

Nebojša Stanković

Technical Faculty Čačak, University of Kragujevac, Serbia
jack@tfc.kg.ac.rs

Abstract

The subject of this paper is the evaluation of using simulators for arithmetic and logical operations (ALO) in teaching computer systems. Intensive use of technology in various fields of human activity has resulted in computers becoming more and more used in the process of education. In order to make computer technology more approachable to students, it is necessary for them to become acquainted with computer architecture. This work presents the development and types of simulators for the operation of computer processor. Furthermore, it shows the evaluation of simulator implementation in teaching and results of the conducted evaluative research. A method with two small parallel groups of students attending lectures in computer systems has been applied: one group of students was taught about ALO in the traditional way, while the other group used simulator as an aid. Their proficiency in mastering ALO was measured in a test of knowledge. The students of both groups have evaluated the use of simulators in teaching.

The research results have shown that students are more motivated to learn with the aid of simulators. Finally, since computer simulators enable the visualization of computer architecture, students achieve better integration of practical and experiential knowledge.

Key words: arithmetic and logical operations, simulators, computer, evaluation.

1. INTRODUCTION

The original meaning of the word “technique” implies the skill in doing something, whereas **technology** denotes a set of skills and knowledge of various procedures and processes. The term “teaching technique” nowadays refers to a set of various tools used by both teachers and students in the teaching process (Bezdanov, 1995). As opposed to the teaching technique, in which the emphasis is on tools, teaching technology, as a broader term, primarily refers to the organization of the teaching process. The use of the term “educational technology” entails yet even a broader appreciation and understanding of this notion which, in addition to the organization of teaching, includes the realization and verification of both teaching and learning processes. It could be said that the term educational technology refers to the processes that are directed towards the achievement of education objectives. Therefore, it includes people (teachers, associates and students), ideas, organization, teaching bases, tools, forms and methods of teaching, as well as the procedures and techniques of evaluation of what has been achieved in the process of education.

The aim of educational process must introduce students to new concepts in an incremental fashion. The subject matter must be analyzed and a plan of delivery developed so that the learning threshold is at all times as low as possible. Low learning thresholds by no means exclude high learning expectations. It is essential that the teacher has the high expectations of the students’ learning, and communicates these to the students. Students perform to the expectations, since the high expectations bring out the best in achievement. These two aims are strongly related to the need to the structure of educational process to provide students with knowledge and skills at various levels (Osborne et al. 2002).

Since the aim is to achieve the high-quality educational standards, it is necessary to modernize educational technology and to apply the latest achievements of informational technology in the process of its implementation. The participants in the process (students and teachers) must be prepared to embrace these latest achievements, each in their own way. Contemporary educational technology should create new conditions for learning and teaching and new views on the role of the content of instruction in the students’ personality development and especially, in their cognitive development (Bezdanov, 1995).

Some of the preconditions for realizing modern educational processes involve studying educational goals and student learning outcomes and achievements. Today, high-quality education demands the system of evaluation activities (Milosević et al. 2009). “For some researchers and administrators, student evaluations of teaching (SETs) are a valuable tool designed to improve both the student learning outcomes and teaching performance” (Zabaleta, 2007: 55).

Evaluation in education is the process of monitoring, measuring and valorizing education (Bjekić et al. 2007). As the part of different evaluative procedures, the following aspects and dimensions of the teaching process are commonly investigated: content and organization of instruction (teaching in general); effects and ways of learning; teachers’ work; instruction technology; assessment criteria, testing, evaluation (Bjekić et al. 2007; Marsh, 1991; McKeichie, 1998). Zabaleta emphasized the formative impact of evaluation on instruction: “the process of evaluating teaching is useful as a tool to provide formative feedback to the instructor.” (Zabaleta, 2007: 68). The evaluation of educational product and educational process are fundamental strategies of educational evaluation. The both of these evaluative approaches are implemented in e-teaching/learning (Milosević et al. 2009).

The term “simulation” entails the imitation of real life conditions, through the formation of a model that is subjected to an adequate analysis. The aim of simulation is not only to examine the operation of the simulated system, but also to determine how that particular system would react if influenced by a different set of input values and parameters. However, real life situations are far more complex which makes the existence of a model with characteristics identical to those of the real system far-fetched and high-priced. It is of utmost importance to create equilibrium between managing costs on the one hand, and valid imitation on the other.

Fields in which simulations are most commonly exploited include work, education and play. As far as education is concerned, two major tasks are set as the aim of the education. The first is to provide the general review of modeling and simulating systems with or without computers. The second is to provide a thorough review of specific features of using computers in modeling and simulating. In order to achieve these tasks, alongside the development of computers, there evolved a simulation technique of its particular components with the aim of illustrating computer architecture, i.e. “how computer works”.

„Computer organization/architecture is recognized as a core requirement in standard computer science curricula“ (Yurcik et al. 2001). However, this important topic can be difficult to teach: students sometimes have trouble making the connection between theoretical knowledge and practical experience. Because of the “hardware-based” nature of the subject, instructors may be left with the choice of being too abstract (textbook-based only) or too specific (focusing on only one specific computer architecture). This does not always have to be the case. Graphical computer simulators provide visualization of internal computer operations such that educators now have a powerful active teaching tool that students can interact with in order to practice with a range of past, present and future computer architectures (Yurcik et al. 2001).

2. COMPUTER ARCHITECTURE SIMULATORS

In order to make computer technology more approachable to students, it is necessary to teach them how the computer works, in terms of both hardware and software or, in other words, they have to become acquainted with the basic computer architecture. „With IT technology developing so rapidly, is it really worth trying to teach something that will be out of date within a very short time?“ (Osborne et

al. 2002). The answer is affirmative, since the basic principles of computer architecture are the same as they were 60 years ago. Computer simulators enabled visualization of computer architecture operations so teaching students can establish an easier interaction between theoretical knowledge and practical experience of current and future computer architectures.

The problem of analyzing computer architecture involves the analysis of arithmetic and logical operations (ALO), input and output realization, work with memory locations and registers, and defining other functions that enable handling data on bit level. Realization of arithmetic and logical operations is done in arithmetic logic unit (ALU) and its role, as an integral part of the processor, will be explained hereinafter. The simulator of basic ALO will also be presented.

In the open literature there is a large number of simulators of computer systems that can be used as a support to the courses in computer architecture and organization. The analysis of available papers leads to the conclusion that existing simulators have been designed for various purposes and for various courses (Penfold et al. 2000). There are many different classifications of computer architecture simulators. One of them is classification according to the simulator type and the other according to the prior knowledge of users (i.e. students). According to the type, computer system simulators can be classified into seven different categories (Wolffe et al. 2002):

- Historical Machine Simulators
- Digital Logic Simulators
- Simple Hypothetical Machine Simulators
- Intermediate Instruction Set Simulators
- Advanced Microarchitecture Simulators
- Multi-processor Simulators
- Memory Subsystem Simulators

According to the previous knowledge that students have when encountering the problems of computer architecture, simulators can be classified into: simulators for beginners, simulators for users with certain pre-knowledge and simulators for users with considerable knowledge (Yurcik et al. 2001).

The simulator presented in this paper is aimed at students with certain pre-knowledge, and, according to the type, it belongs to the Simple Hypothetical Machine Simulators.

The computer architecture and organization is one of the most significant fields of computer sciences and the course on this field is high on the agenda in the education of students. Therefore, the question of how to organize such courses is of crucial importance (Clements, 2002). In order to achieve satisfactory results a certain criteria must be fulfilled. Teachers should call students' attention to the basic principles that must be taken into account when designing complex systems nowadays. On the basis of these principles students should learn how to design computer systems. The use of special simulators is the best way for students to gain necessary experience (Nikolić et al.).

The paradigm for all the later computer architecture simulators is Little Man Computer (LMC) (Figure 1) - <http://www.acs.ilstu.edu/faculty/javila/lmc/>. This simulator was created by Stuart Madnics, a professor at the MIT (Massachusetts Institute of Technology) in 1960s. The success of LMC paradigm has led to the expansion of computer architecture simulators. The choice of criteria for their evaluation is limited, since available simulators have very little in common. The criterias for simulator evaluation are (Nikolić et al.):

- GI - Graphic Interface (Y or N)
- SL - Simulation Level (PL - Program Level, IL - Instruction Level or CL - Clock level)
- SM - Simulation Mode (IC - Interactive execution or BC - Batch execution)
- DL - Distance Learning (Y or N)

Table 1 shows the evaluation of certain simulators, available in the open literature, according to the four criterias mentioned above (Nikolić et al.).

Table 1. Critical analysis of existing simulators used in computer architecture and organization courses

| Simulator name | Web site | University | GI | SL | SM | DL |
|----------------|--|--------------------------------|----|----|----|----|
| SPECS | http://rti.etf.bg.ac.yu/rti/ef2ar/labvezbe/index.html | Belgrade, Serbia | Y | CL | BC | N |
| HASE | www.icsa.informatics.ed.ac.uk/research/groups/hase | Edinburg, Scotland | Y | CL | IC | Y |
| ESCAPE | www.dec.ctu.edu.vn/cit/tailieu/books/archi_courses/index | Ghent, Belgium | Y | CL | IC | Y |
| DLXview | http://cobweb.ecn.purdue.edu/~teamaaa/dlxview/ | Purdue, Indiana | Y | CL | IC | N |
| SimpleCPU | csis.pace.edu/~bergin/itiscse99/simplecpu/index.html | Pace University, New York, USA | Y | CL | BC | N |
| RSIM | rsim.cs.uiuc.edu/rsim/dist.html | Illinois, USA | Y | CL | IC | N |
| CPU Sim | http://www.cs.colby.edu/djskrien/CPUSim/ | Colby College, Waterville, USA | N | CL | IC | N |

3. SIMULATOR ALO

Arithmetic logic unit is a multifunctional digital circuit. It performs basic arithmetic and logical operations with the data which retrieves from the operative memory. The type of operation performed and the data to be operated on are determined by the control unit (CU) through the control signals. All data, irrespective of the meaning, is written using the system of binary numbers (sequence of digits 0 and 1 – in bits) (Đorđević, 2003). Developed simulator operates on 16-bit signed binary numbers and simulates arithmetic operations: addition ("+" and subtraction ("-")); basic logical operations: logical multiplication (AND), logical addition (OR) and complementing (NOT), as well as logical operations NAND, NOR EX-OR and EX-NOR, derived by combining basic logical operations (AND, OR, NOT). The program was made using the programming language Microsoft Visual Basic 6.0.

Simulator should clarify to students how ALU performs ALO on a bit level which does not require prior acquaintance with the subject. The student first chooses one of the two options: Arithmetic operations or Logical operations. Selection of the first option opens the window (form) "Arithmetic operations" which shows simulation of basic arithmetic operations on a bit level. Selection of the second option opens the window (form) "Logical operations" which shows simulation of basic logical operations also performed on a bit level.

Both cases require the input of signed binary numbers (digit by digit) which are operated on. Positive numbers are input using the symbol "+", whereas symbol "-" is used with negative numbers.

The symbol is input on a highest value bit. It should be pointed out that no digits other than 0 or 1 can be input. The input is confirmed by pressing the button «Write» and then for a sign in the area of the most significant bits is written digit "0" for positive numbers, and digit "1" for negative numbers. When the operands are written, they are ready to be used.

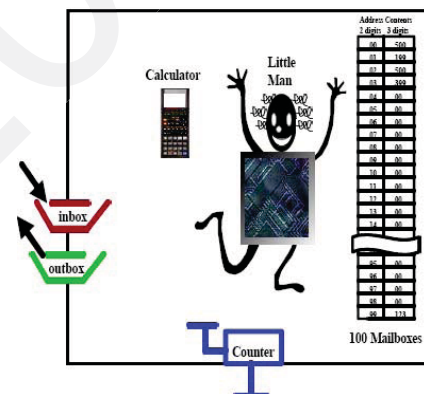


Figure 1. LMC Paradigm

3.1. Simulation of arithmetic operations

As far as arithmetic operations are concerned, students can choose one of the three operations available (addition – ADD, subtraction – SUB and multiplication – MUL). After the operation is chosen, the numbers are converted into the first, and then into the second complement. This is done by pressing a button «I complement», and then pressing a button «II complement». The method of conversion (bit by bit) is visually displayed to the user. The Figure 2 shows the displayed window after the conversion of input numbers (+22 and -45) into the second complement. The symbols C1[A] and C1[B] stand for the first complement of numbers, whereas C2[A] and C2[B] represent the second complement of the input numbers.

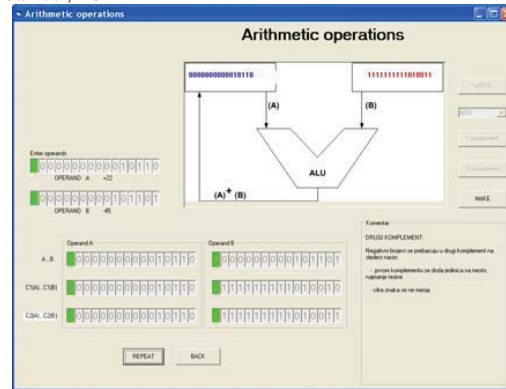


Figure 2. Arithmetic operations – Complementing

After that, pressing the button «MAKE» it starts the application (form) of the chosen arithmetic operation (in this case the form “Add numbers” – Figure 3). Addition/subtraction of two numbers is simulated in three steps, by confirming the buttons «STEP1», «STEP2» or «STEP3». In the first step, the numbers are written into the registry. In the second step, the digits with the same value are added together, including the transfer. At the beginning of the simulation the bit of the first operand is illuminated, as well as the bit of the same value of the result. The realized transfer is written down as well. After the completion of the second step the button «STEP3» is confirmed, which gives the layout of the final result. The final result is obtained by removing the transfer bit from the result whereupon it is checked whether any exceeding occurred. Exceeding can occur if the addition of two positive numbers gives a negative number, or if the addition of two negative numbers gives a positive number.

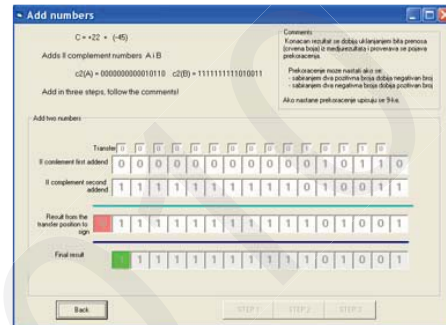


Figure 3. Arithmetic operation ADD, Final result

3.2. Simulation of logical operations

As far as logical operations are concerned, students should choose between the available logical operations. When the operation is chosen, the truth table and its graphic symbol are displayed. The simulation process is then ready to begin. The bit of the number (operand) A is illuminated whereupon the corresponding result of the selected logical operation from the table of truthfulness (column Z) is illuminated. Finally, the value equal to the previously illuminated result is written in the register Z. The Figure 4 shows the final result of logical operation OR. The result of the chosen logical operation is recorded in register Z.

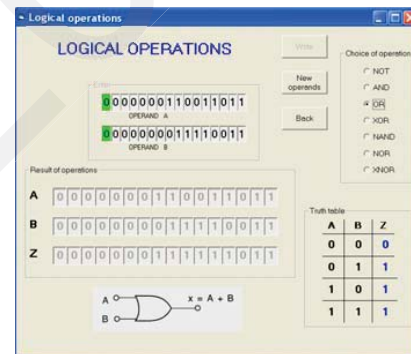


Figure 4. Logical Operation OR, Final result

4. RESEARCH ORGANIZATION

Taking into account the fact that curriculum materials pertaining to the field of computer architecture are followed within different study programmes, their complexity is adapted to the different professional needs of students. At the Technical Faculty in Cacak, students of electrical and computer engineering study this field on a much larger scale than students of industrial management. Therefore, the question arises as to how to teach curriculum materials so that they inspire interest and ensure satisfactory performance of students of different profiles. How to master basic concepts of computer architecture and establish a link between theoretical knowledge and practical experience? The answer lies in using computer simulators. This paper presents ALO simulator that clarifies to students the role of basic computer components (central processor, ALU, ALO) in a visual and simple manner.

The subject of research concerns the effectiveness of ALO simulator application in the courses on computer architecture. The aim of the research is to recognize the effectiveness of ALO simulator application and to guideline its future use in teaching. Students' attitude to teaching with the aid of ALO simulators (dependent variable) was observed in different teaching conditions (independent variable: traditional teaching and interactive teaching with the aid of simulators). Hypotheses: (1) students who master curriculum materials in the field of computer architecture with the aid of ALO simulators are more interested in the selfsame materials than students who master the aforementioned materials in a traditional way; (2) there is no difference in the level of knowledge acquired in various teaching procedures. An experimental research with two parallel groups of students has been conducted. Data collection technique: questionnaire. The data has been collected using an evaluative questionnaire, and qualitatively analyzed with the aid of descriptive statistics. Sample: II year students of Industrial management at the Technical Faculty in Cacak attending lectures in Computer systems. They were divided in two groups.

Research progress: the research was carried out during February 2010. Students' prior knowledge of ALO was evaluated in the first lesson by a test of knowledge. The two groups were balanced according to their test results (A and B). The group A attended a course of lectures on ALO in a traditional way (12 students), whereas the lectures for the group B were held with the aid of ALO simulator (11 students). The materials having been presented, there followed a test of knowledge to determine the level of their acquisition. The students assessed teaching effectiveness and their interest in an evaluative questionnaire. The questionnaire consisted of two separate parts:

- 1) In the first part of the questionnaire filled out by students, they evaluated (on a scale of 1 to 5): their prior knowledge of ALO; their interest in ALO; the level of class activity in accordance with their needs; how much they mastered basic ALO (by traditional teaching method or by the teaching method with the aid of simulator). They also gave an evaluation of the lectures delivered.
- 2) The second part of the questionnaire was completed only by the students in group B, who attended lectures presented with the aid of simulator. In it they estimated if curriculum materials were far more comprehensible with the use of simulators, and how interested they were to follow materials of similar nature in the same way (with the aid simulators).

5. RESULTS AND DISCUSSION

The research has confirmed the hypothesis that students who learned ALO curriculum materials with the aid of computer simulators (Group B) are far more interested and motivated for studying than their fellow students who followed the same materials in a traditional way (group A).

Table 2. The evaluation of students of both groups (A and B)

| Evaluation on a scale from 1 to 5 | Group A | Group B |
|--|---------|---------|
| | M | M |
| How much did you know about ALO before? | 2,08 | 2,18 |
| How interested are you in ALO curriculum materials? | 3,21 | 3,25 |
| Was the activity in class in accordance with your needs? | 3,75 | 4,09 |
| How much did this method help you to learn about basic ALO? | 3,25 | 3,64 |
| How many marks out of 5 would you give to the lessons delivered? | 4,33 | 4,73 |
| How comprehensible were the materials to you when studying with the aid of simulation? | | 4,64 |
| Would you like to study following materials with the aid of simulators? | | 4,55 |
| | N=12 | N=11 |

The second hypothesis has also been confirmed: students who studied ALO materials within traditional teaching methods and students who studied the same materials with the aid of computer simulators, have achieved an equal level of knowledge (group A: M = 8,5; group B: M = 8,6). This may be the consequence of the application of instant educational programme.

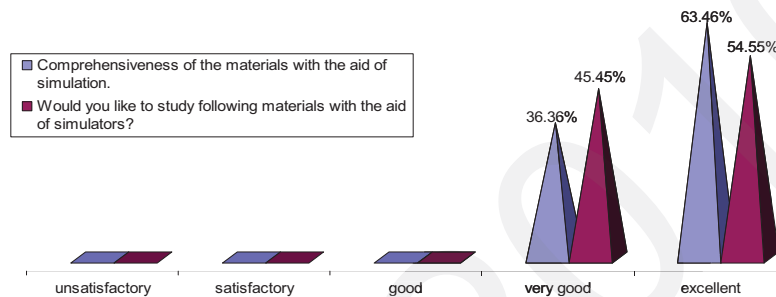


Figure 6. Graphic representation of the answers provided by students who followed ALO with the aid of simulators (group B)

Therefore, students who mastered the materials with the aid of simulators have given a higher estimation of the delivered lectures, they have a favorable opinion of using simulators in class as a teaching aid and they would gladly study following materials with the use of simulators (Figure 6). An increased awareness of innovations in teaching is the first step towards changing behavior and learning. The results of this research match the results of a research conducted by Key Lipson (1996) from Swinburne University of Technology (Melbourne, Australia) at the end of the XX century. In it he concludes that there is little difference in effectiveness between traditional teaching method and the method with the aid of simulators, but that the link between teaching and reality is far more obvious with the use of simulators.

6. CONCLUSION

This research explored the effects of simulator application in mastering computer architecture materials on the changes in students' interest and motivation. One group of students was taught traditionally, whereas with the other group an active teaching method with the aid of ALO simulators was employed. The research revealed that students who attended lectures with the aid of simulators have increased their interest in the subject after the experimental period.

7. REFERENCES

- Bezdanov, S. (1995). Sistem kvaliteta i standardizacija u obrazovanju prema zahtevima serije standarda JUS-ISO 9000, XIII, 4, 235–245. Inovacije u nastavi.
- Bjekić, D., Glamočak, S. Zlatić, L. Najdanović-Tomić, J. (2007). Approaches to the teachers' work evaluation (in Serbian), in: Špijunović, K. (ed). Teachers' education and in-service training—historical aspect, Užice-Serbia: Faculty of teacher education, 197-216.
- Clements, A. (2002). "The Undergraduate Curriculum in Computer Architecture," IEEE Micro, vol. 20, pp. 13-22.
- Đorđević, J. (2003). Arhitektura računara, Edukacioni računarski sistem, Arhitektura i organizacija računarskog sistema, ETF, Beograd, Srbija.
- Lipson, K. (1996). An Evaluation of Activities Designed to Develop an Understanding of The Sampling Distribution of a Proportion, Swinburne University of Technology, <http://www.stat.auckland.ac.nz/~iase/publications/8/12.Lipson.pdf>
- Marsh, H. W. (1991). Multidimensional Students' Evaluations of Teaching effectiveness: A Test of Alternative Higher-Order Structures, Journal of Educational Psychology, 83(2), 285-296.
- McKeachie, W. J. (1996). Students Ratings of Teaching, Occasional Paper No. 33: The Professional Evaluation of Teaching, American Council of Learned Societies, Retrieved 1998. from <http://www.acls.org>
- Milošević, D., Bjekić, D., Krmeta, R. (2009). Evaluation of Master Study of E-Learning: Case Study From Serbia, 5th International Conference on Open and Distance Learning ICODL 2009, Open and Distance Education for Global Collaboration & Educational Development, Athens, Greece, November 27-29, Proceedings on CD, 260-269, Available on http://artemis.eap.gr/ICODL2009/ICODL_5/My%20Webs/ICODL/B-PDF/B2/100.pdf
- Nikolić, B., Grbanović, N., Đorđević, N. Visual Simulators For Learning Computer Architecture And Organization, Journal of Automatic Control, University of Belgrade, http://rti.etf.bg.ac.yu/rti/13027/naucni_radovi/domaci_casopis.zip
- Osborne, H., Crossley, S., Mencak, J., Yurcik, W. (2002). Promoting Education in Computer Technology using an Openended Pedagogically Adaptable Hierarchy, 29th International Symposium on Computer Architecture, Proceedings of the 2002 Computer architecture education, Anchorage, Alaska
- Penfold, J., Flanagan, J. K. A First Year Computer Organization Course on the Web: Make the Magic Disappear, IEEE Computer Society, Technical Committee on Computer Architecture Newsletter, September 2000.
- Yurcik, W., Wolfe, G. S., Holiday, M. A. (2001). A Survey of Simulators Used in Computer Organization/Architecture Courses, Summer Computer simulation Conference, Orlando FL, July 2001., <http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/y/Yurcik:William.html>
- Zabaleta, F. (2007). The use and misuse of student evaluations of teaching, Teaching in Higher Education, 12(1), 55-76.
- Wolffe, G., Yurcik, W., Osborne, H., Holliday, M. (2002). Teaching Computer Organization/Architecture With Limited Resources Using Simulators, ACM SIGCSE 2002, February/March 2002, Northern Kentucky – The Southern Side of Cincinnati, USA

THE EXAMINATION OF UNIVERSITY STUDENTS ATTITUDE TOWARDS E-LEARNING

Serkan Mutluoğlu

Cyprus International University,
Guidance and Psychological Counseling PH. D. Programme Lefkosa-TRNC
palamut.palamut@hotmail.com

Abstract

The goal of this research to determine the level of the attitude towards e-learning of University students and if there is one to determine the difference of socio demographic character.

It has been chosen in Cyprus by university students as a universal study type. As a sample with a goal method, 60 % (n=72) female and 40 % (n=48) male in number 120 university students have been included in this research. As a datum collecting go-between developed by Dikbaş (2006) and Cronbach alpha trusted coefficient .87 has been used in e-learning as a attitude measure. In the analysis of data, t-test and ANOVA analysis techniques are used. The statistical significance level was accepted as .05 in the study.

As a result of this research the attitude aimed e-learning of university students showed as being on a good level, the socio demographic property showed as having meaningful differences.

Key Words: E-Learning, Attitude, University student.

INTRODUCTION

Using computer spread on a wide area. Features of the computers that can be used in education have been developed more; learning culture in which users can study freely (2005). Technology has affected all aspects of our lives and it has changed our thinking ways (Urdu and Weggen, 2000). Internet has changed individual's learning style as it has changed individual's interpersonal communication style.

In fact, online learning and e-learning concepts are the same. Appearance of e-learning does not depend on long time. E-learning concept came into existence as a result of the integration of Computer Based Education and computer wires (Gümüş, 2007).

E learning is usage of internet technologies that serve required options in order to increase knowledge and performance (Rosenberg, 2001). E-learning is an internet based educational programming whose distribution is realized by websites that are called program management systems and interactive technology tools, e-schools, bulletin boards etc. by means of electronic tools and web (Ex: Synchronous and asynchronous communication, multi-media and online searches) (Dikbaş, 2006).

E-learning provides student a chance to learn in his own way and style. Student saves time and he is responsible for his own learning. On the other hand, teacher can reach unlimited students through internet in the course. It provides having a lesson with various materials, sound and visuals (Andersen, 2001).

E-learning brings some problems while it provides many benefits. Technical problems in the computer and on the internet hinder both students and the teacher either the teacher or students cannot have adequate knowledge on computers (Ünsal, 2002).

In their research Kıyıcı and Yumuşak (2005) determined that computer based education is more effective than traditional education in increasing the success of students. Atıcı (2004) found that virtual learning develops students' more various aspects more than wanted and determined by emphasizing communication dimensions (teacher-student, student-student) in virtual learning. Özmen (2005) pointed out that virtual classroom application provides students not to break away from the courses, on the other hand applications take too much time.

The results of this study are thought to be a resource for studies in this field by providing determination of university students' level of attitudes towards e-learning and differences according to socio demographic characteristics.

The Aim of the Research

The aim of this research is to determine attitude level of the students towards e-learning according to socio-demographic characteristics.

The Research Question

The research question was expressed like this: "Do the attitudes of university students towards e-learning differentiate according to socio-demographic characteristics?"

Answers were sought to questions below suitable for this aim:

1. What are the levels of the university students' attitude towards e-learning?
2. Do the attitudes of students towards e-learning differentiate statistically meaningful according to gender?
3. Do the attitudes of students towards e-learning differentiate statistically meaningful according to having personal computer?
4. Do the attitudes of students towards e-learning differentiate statistically meaningful according to where they use the computer?
5. Do the attitudes of students towards e-learning differentiate statistically meaningful according to computer knowledge perception?
6. Do the attitudes of students towards e-learning differentiate statistically meaningful according to where they have learnt using computer?
7. Do the attitudes of students towards e-learning differentiate statistically meaningful according to internet usage knowledge perception?
8. Do the attitudes of students towards e-learning differentiate statistically meaningful according to internet usage duration?

METHOD

Research Model

This research was realized by survey model. Survey models are research approaches that aim to determine the situation that is existent now as it is. The case, event, individual or object that is the subject of the research are tried to be defined in their own conditions and as they are (Karasar 2006).

Universe and Sample

University students were selected as the universe of the research. Total 141 university students constituted the sample of the research. Students were selected by standard situation sampling method that is one of the purposeful sampling method and 66,7% (n=94) of them are females and 33,3% of them are males (n=47). This sampling method requires gathering data by determining a standard situation from many situations that are related to the research question in the universe. The fact in here is to choose a standard, medium situation that is not unusual (Büyüköztürk et al. 2008).

Data Collection Tools

“E-learning attitude scale” that was developed by Dikbaş (2006) and whose Cronbach-alpha reliability coefficient is 0.87, was used in the research. This scale is 5 itemed likert-type and it includes 36 propositions. The most positive answer to the propositions (completely agree) is “5” points, the least negative answer (completely disagree) is “1” point. “Neutral” score value is “I am neutral”. In scoring propositions that have negative meaning values were given in reverse. In order to find score range was divided into 3. Range value was 48. Good (\bar{x} =134-144), Medium (\bar{x} =85-133), weak (\bar{x} =36-84) score range can be expressed. “Personal information form” that was developed by the researcher and had 8 questions was applied in addition to the scale.

Analysis of data

In analysis of data mean, percentage, t-test and one-way variance analysis (ANOVA) were used. Significance level was accepted as .05.

FINDINGS

The first sub-question of the research was expressed as “What are the levels of the university students’ attitude towards e-learning?”. Mean scores and standard deviation were calculated in order to determine the attitude level of the students.

Table 1: Attitude level of the students towards e-learning

| n | Mean | Std. Dev. |
|-----|--------|-----------|
| 141 | 133,92 | 12,72 |

As it is seen in Table 1 mean score of 141 university students was found as 133.92. According to this value attitude level of the students can be said at “good level”.

The second sub-question of the research was expressed as “Do the attitudes of students towards e-learning differentiate statistically meaningful according to gender?”. In order to determine whether there is a statistically meaningful change among students’ attitude level towards e-learning according to gender t-test was used. University students’ attitude level towards e-learning according to gender does not show a meaningful differentiation. These finding shows that students’ attitude towards e-learning is similar.

Table 2: t-test results of students’ attitude level towards e-learning according to gender and having personal computer

| Demographic features | n | Mean | Std. Dev. | df | t | p | |
|--------------------------|--------|------|-----------|-------|-----|------|-------|
| Gender | Female | 94 | 132,80 | 13,07 | 139 | 1,47 | 0,140 |
| | Male | 47 | 136,14 | 11,80 | | | |
| having personal computer | Yes | 118 | 132,61 | 11,76 | 139 | 2,82 | 0,005 |
| | No | 23 | 140,60 | 15,41 | | | |

The third sub-question of the research was expressed as “Do the attitudes of students towards e-learning differentiate statistically meaningful according to having personal computer?”. In order to determine whether there is a statistically meaningful change among students’ attitude level towards e-learning in terms of having personal computer t-test was used. University students’ attitude level towards e-learning in terms of having personal computer show a meaningful differentiation ($t_{139}=2,82$ $p<.05$). Students who do not have personal computer (\bar{x} =140,60) have higher attitude level than students who have personal computer (\bar{x} =132,61). This finding can be interpreted that students who do not have personal computer have positive attitude towards e-learning.

The fourth sub-question of the research was expressed as “Do the attitudes of students towards e-learning differentiate statistically meaningful according to where they use the computer?”. In order to determine whether there is a statistically meaningful change among students’ attitude level towards e-learning according to where they use the computer F-test (ANOVA) was applied.

Table 3: ANOVA results of university students’ attitude level towards e-learning according to where they use the computer

| Source of the variance | Sum of squares | sd | Mean squares | F | p | Meaningful difference |
|------------------------|----------------|-----|--------------|------|------|-----------------------|
| Between Groups | 1256,94 | 4 | 314,23 | 1,99 | ,098 | - |
| Within Groups | 21397,19 | 136 | 157,33 | | | |
| Total | 22654,14 | 140 | | | | |

$p>0,05$

According to their computer usage place, score of the students who use computer at home is (\bar{x} =132,06), score of the students who use computer in an internet cafe is (\bar{x} =135,55), scores of students who use computer at school is (\bar{x} =138,02) and score of students who use computer in other places is (\bar{x} =146,00). As it is seen in Table 3, University students’ attitude level towards e-learning according to where they use computer does not show a meaningful differentiation ($F_{(4-136)}=1,99$ $p>.05$).

The fourth sub-question of the research was expressed as “Do the attitudes of students towards e-learning differentiate statistically meaningful according to computer knowledge perception?”. In order to determine whether there is a statistically meaningful change among students’ attitude level towards e-learning according to computer knowledge perception F-test (ANOVA) was applied.

Table 4: ANOVA results of university students’ e-learning scale scores according to computer knowledge perception

| Source of the variance | Sum of squares | sd | Mean squares | F | p | Meaningful difference |
|------------------------|----------------|-----|--------------|------|------|-----------------------|
| Between Groups | 22,21 | 3 | 7,40 | | | |
| Within Groups | 22631,93 | 137 | 165,19 | 0,04 | 0,98 | - |
| Total | 22654,14 | 140 | | | | |

$p>0,05$

According to computer knowledge perception of the university students, scores of students who are unsatisfying is (\bar{x} =133,88), score of students who are medium is (\bar{x} =134,35), score of students who are satisfying is (\bar{x} =133,72) and score of students who are very satisfying is (\bar{x} =133,07). As it is seen in Table 4, results of the analysis show that university students’ attitude level towards e-learning according to computer knowledge perception does not show a meaningful differentiation ($F_{(3-137)}=0,04$ $P>.05$).

The sixth sub-question of the research was expressed as “Do the attitudes of students towards e-learning differentiate statistically meaningful according to where they have learnt using computer?”. In order to determine whether there is a statistically meaningful change among students’ attitude level towards e-learning according to where they have learnt using the computer F-test (ANOVA) was applied. According to place where students have learnt using computer, score of students who have learnt using computer at home is (\bar{x} =133,91), score of students who have learnt using computer at school (\bar{x} =134,11), score of students who have learnt using computer in an internet café (\bar{x} =130,63) and score of students who have learnt using computer at his friends or relatives’ house is (\bar{x} =139,90).

Table 5: ANOVA results of university students' e-learning scale scores according to where they have learnt using computer

| Source of the variance | Sum of squares | sd | Mean squares | F | p | Meaningful difference |
|------------------------|----------------|-----|--------------|------|------|-----------------------|
| Between Groups | 633,09 | 3 | 211,03 | | | |
| Within Groups | 22021,04 | 137 | 160,73 | 1,31 | 0,27 | - |
| Total | 22654,14 | 140 | | | | |

$p > 0,05$

As it is seen from Table 5 results of the analysis show that university students' attitude level towards e-learning according to where they have learnt using computer does not show a meaningful differentiation ($F_{(3-137)} = 1,31$ $p > 0,05$).

The seventh sub-question of the research was expressed as "Do the attitudes of students towards e-learning differentiate statistically meaningful according to internet usage knowledge perception?". In order to determine whether there is a statistically meaningful change among students' attitude level towards e-learning according to internet usage knowledge perception F-test (ANOVA) was applied.

Table 6: ANOVA results of university students' e-learning scale scores according to internet usage knowledge perception

| Source of the variance | Sum of squares | sd | Mean squares | F | p | Meaningful difference |
|------------------------|----------------|-----|--------------|------|------|-----------------------|
| Between Groups | 126,36 | 3 | 42,12 | | | |
| Within Groups | 22527,78 | 137 | 164,43 | 0,25 | 0,85 | |
| Total | 22654,14 | 140 | | | | |

$p > 0,05$

According to internet usage knowledge, score of the students who are unsatisfying is ($\bar{x} = 136,55$), score of the students who are medium is ($\bar{x} = 134,62$), score of the students who are satisfying is ($\bar{x} = 133,29$) and score of the students who are very satisfying is ($\bar{x} = 133,05$). As it is seen in Table 6, results of the analysis show that university students' attitude level towards e-learning according to internet usage knowledge perception does not show a meaningful differentiation ($F_{(3-137)} = 0,25$ $p > 0,05$).

The eighth sub-question of the research was expressed as "Do the attitudes of students towards e-learning differentiate statistically meaningful according to internet usage duration?". In order to determine whether there is a statistically meaningful change among students' attitude level towards e-learning according to internet usage duration F-test (ANOVA) was applied.

Table 7: ANOVA results of university students' e-learning scale scores according to internet usage duration

| Source of the variance | Sum of squares | sd | Mean squares | F | p | Meaningful difference |
|------------------------|----------------|-----|--------------|------|------|-----------------------|
| Between Groups | 513,37 | 3 | 171,12 | | | |
| Within Groups | 22140,76 | 137 | 161,61 | 1,05 | 0,36 | |
| Total | 22654,14 | 140 | | | | |

$p > 0,05$

According to internet usage duration, score of the students who use internet 0-1 hour is ($\bar{x} = 141,37$), score of the students who use internet between 2-3 hours is ($\bar{x} = 134,51$), score of the students who use internet between 4-5 hours is ($\bar{x} = 133,37$), score of the students who use internet over 6 hours is ($\bar{x} = 133,08$)dir. As it is seen in Table 7, results of the analysis show that university students' attitude level towards e-learning according to internet usage duration does not show a meaningful differentiation ($F_{(3-137)} = 1,05$ $P > 0,05$).

Discussion and Results

In this research, university students' attitude level towards e-learning was found at "good" range. In his study Dikbaş (2006) found university students' attitude level towards e-learning positive. These results are consistent with each other.

As a result of the research, it was found that university students' attitude towards e-learning does not show a meaningful differentiation according to gender. According to this result, it can be said that male and female students have similar attitude.

University students' attitude towards e-learning differentiates meaningfully according to having personal computer. Students who do not have personal computer have higher attitude level than students who have personal computer. This situation can derive from affection to computer of students who do not have personal computer. University students' attitude level towards e-learning according to where they have learnt using computer does not show a meaningful differentiation according to where they use the computer, where they have learnt using computer, computer knowledge perception, internet usage knowledge perception, internet usage duration.

Suggestions:

E-learning will be more common as much as the productivity increase.

- If the courses at school supported by e-learning, course load of the students will decrease and they will save time.
- Various programs can be structured in order to develop e-learning in TRNC. The effects of them can be researched. With those studies quality in education can be increased.
- Syllabuses can be structured with e-learning in order to have conscious and beneficial learning. These programs can be changed according to time and place.

References

- Andersen, A. (2001). *Değişim.tr internetle gelişimde Türkiye*, İstanbul: Türkiye İş Bankası Kültür Yayınları.
- Atıcı, B. (2004). *Sosyal bilgi inşasına dayalı sanal öğrenme çevrelerinin öğrenci başarısı ve tutumlarına etkisi*. Yayınlanmamış Doktora Tezi. Fırat Üniversitesi Sosyal Bilimler Enstitüsü, Elazığ.
- Büyüköztürk, Ş. (2008). *Bilimsel araştırma yöntemleri*, Pegem Yayınevi, Ankara.
- Dikbaş, E. (2006). *Öğretmen adaylarının e-öğrenmeye yönelik tutumlarının incelenmesi*. (Yayınlanmamış Yüksek Lisans tezi). Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü.
- Karasar, N. (2005). *Bilimsel araştırma yöntemi*, Pegem Yayıncılık, İstanbul.
- Kıyıcı, G. & Yumuşak, A. (2005). Fen bilgisi laboratuvarı dersinde bilgisayar destekli etkinliklerin öğrenci kazanımları üzerine etkisi: asit-baz kavramları ve titrasyon örneği. *The Turkish Online Journal of Educational Technology (TOJET)*, 4 (4), 130-134.
- Özmen, Ş. (2005). Eğitimde sanal sınıf uygulamaları ve sonuçları. http://suleozmen.marmara.edu.tr/teblig_sunumlar/
- Rosenberg, M. S. (2001). E-learning: strategies for delivering knowledge in the digital age. www.lib.umi.com
- Gümüş, S. (2007). Çevrimiçi işbirliği ekiplerinde öğrenenlerin sorun çözerek öğrenmeyle ilgili tutum ve görüşleri, Anadolu Üniversitesi, Sosyal Bilimler Enst., Uzaktan Eğitim ABD, 2007. (Yüksek Lisans Tezi)
- Urdan, T. A. & Weggen, C. C. (2000). Corporate e-learning: Exploring a new frontier. www.lib.umi.com
- Ünsal, H. (2002). Web destekli eğitim, elektronik öğrenme ve web destekli öğretim programlarındaki çeşitli ders modelleri, Yakın Doğu Üniversitesi Tarafından Düzenlenen XI. Eğitim Bilimleri Kongresinde bildiri olarak sunulmuştur.
- Vesel, V. (2005). Virtual learning environment in the age of global infonetworks. <http://www.ercim.org/publication/ws-proceedings/DELOS9/Pap8.pdf>

THE FEASIBILITY STUDY OF USING ICT FEATURES IN IRANIAN SECONDARY SCHOOLS ACTIVITIES: THE CASE OF TEHRAN PROVINCE

Saadattalab, Ayat(MA) and Fathi Vajargah, Kourosh(PhD).
Department of Education, Shahid Beheshti University, IRAN
saadattalab2009@gmail.com

Abstract

This research has been conducted to study the feasibility assessment in implementing ICT features in Tehran city high schools. The mixed method (both qualitative and quantitative) has been employed by the research. Data collecting due to the nature of research included two stages: library and field study. For sampling the Cluster method has been used, included 362 subjects. Researcher-made questionnaire with 0.86 Alpha reliability coefficients is utilized in order to data collecting. Data analysis was done in two levels of descriptive and inferential statistic approaches (frequencies, T-test and priority setting by Li-Hi test). The results demonstrate that teachers' agreement on the types and features of ICT and they believe that current status of resources, facilities and conditions for implementing ICT in schools are not sufficient. Teachers confirmed the facilitating factors for ICT applications in secondary schools. which have been further discussed in the paper.

INTRODUCTION

In the new millennium, information and communication technology (ICT) is disseminated through the world quickly and affected the various aspect of human life. Advances in ICT helps to expand the learning opportunities, access to educational resources, expedite and facilitate the education process (Yaghma, 2001; Jalali and Abbasi, 2004). In the realm of ICT, training is the first and most important phenomenon influenced by this technology. (Kasal, 2007). Altering the style of learning, by using ICT, is something more than using computers in the classrooms. Real change is occurred when ICT expands the thinking horizon of all trainer and trainee by providing new skills and connect them to the new world, ideas and learning resource (Ontario, 2001; Fathi Vajargah and Sobhani Nejad, 2007). Garrison and Anderson (2003) acknowledged that the use of information and communication technology for achieving the objectives of qualitative learning for all is inevitable.

Preparation of teachers is an important factor for entrance of ICT into schools. Nevertheless; this preparation should not be limited to conventional computer literacy (Attaran, 2006). Teachers should try that student achieve information management strategies and required technical skills so that they can successfully live and work with technological tools in a shorter period of time (Cola, 2001).

Nowadays, education systems are expected not to restrict the teaching/learning process only into the context of textbooks, teacher or school environment. Instead, it should be involved universal education and leads to growing creativity and innovation. Development of ICT prepares the way for this issue (Farzin Poor, 2004).

Currently, the main problem is not why to use of ICT in schools, but it is how to achieve and utilize further, better and faster ICT in secondary schools. Furthermore, to what extent is the possibility of using ICT in secondary schools? Therefore, this research tries to investigate the realms of ICT. In addition, the conditions, facilities and resources (human, financial, and environmental) of different domains of ICT in secondary schools is studied. Finally, the facilitator factors and barriers of exploiting this technology is explored.

ICT EDUCATION: IRANIAN CONTEXT

Computer has been widely used during the past two decades in some schools, especially schools of cities such as Tehran and in non-profit schools, for administrative purpose. But according to the information, resources and existent functions, starting point of IT development along with design and implementing the comprehensive informatics system in the Ministry of Education was in 1990 and was established gradually. The objective of this plan, was establishment Management of Information System (MIS) via automation operation procedure and also application of modern information tools of planning, implementation and monitoring the expansion of qualitative and quantitative activities, of education which could be origin of basic change for entrance ICT within the education system in Iran. (Ebadi, 2005). Therefore, providing education and various projects in ICT failed with the private sector the technology of modern schools areas of different levels of education was developed. One of the significant indicators of ICT application development at schools, is computer- student ratio that according to 2006 year data, this ratio has been increased from one to 300 at secondary course to one to 48. Whereas, this ratio is under 10 among the EU countries (Council Strategic ICT, 2004). one of the actions that have been implemented by the Islamic republic of Iran government to developing of ICT is the strategic plan of ICT application development in education and the development of importance and consideration of Iranian competent authorities regarding the transition from traditional education to e- training and providing the Iranian infants and adolescents whit long term computer skills. Accordingly, context of Iranian informational community whit regard to basic institutions of education is affected by process of ICT development and improvement in the ministry of education of Iranian (Ayti, 2006). ICT is including a wide range from Ts such as cassette recorder, video, TV to recently modern computers amenities such as computer and internet processor that is considered an important tool in the collecting, recording and presenting of data in different ways (hernia *et al.* 2001; raies Dana2002; Mohammadi, 2002). ICT can be defined like application of computer systems to information conducting and communication supporting in classroom learning (Van Milla, 2005). ICT in education, is not a tool denoting hardware, but is a culture, a program and an active educational procedure that depicts the content of modern education to effective presence in the third millennium and naturally one of the constituent of this culture, is that hardware and must be efforted that profitability culture, exploitation and utility of these tools, being thought in educational environment prior to these action (Ebadi, 2004).

Effective use of ICT is accompanying by special advantages and profits to the student of various behaviours and motions. This technology contributes to the student learning process and increases their motives. In addition, foster the compete and enhances. Their self-confidence and self- esteem (Williams, et al, 2006). Lukard and abermez acknowledged that (2001) acknowledged that some of mentors resist computer while many commit to it. If there is a strong belief regarding the positive effect of let on students learning, causes that teachers use it without any witness in their (Van Milla 2005).

Williams et al (1998); Orhan (2004); Hakarynn and et al (2000); Attaran (2004); Qorban Zadeh and Mohammadi Moghadam (2004) report that the lack skills and preparation of teachers is the most important barricade to development of ICT in education and all successful activities have benn resulted from serious and purposeful effort to the training of the teachers.

"Davis", "Bagoozy", and "Varsaw" (1989) in their research that introduces " the acceptance of technology model" and " reasonable act theory" indicated that the mental implication of student regarding the effectiveness' and usefulness of the used technology has on decision to using completely, while the student mental interpretation of feasibility of using this technology, has low effect on decision to use it and during time its role has been weakened

Anderson and Rankowist Studies (1999); Jane Paul jin (2003) Hajj forush and Orangi (2004) study, indicate that there is a meaningful relation between the use of computer and web in training by teachers and learning progress of students. The teachers were more succeed by using of computer and access to network in addition, there was a significant progress in students learning and the decisions of ICT acceptance by teachers has been satisfactory.

Askylr (2002); Ghasemi Nejjad (2005) reports that there are some changes in curriculum structures, exist lesson reform, creation of new parts to lessons, change in tools measurement implications establishing of additional substructures and staff training has been necessary ideas such as staff participations in decision – making process, paving the way of development, and the way of these technologies progress and its future challenges should be identified.

RESEARCH QUESTIONS

Main questions:

To what extent the possibility of using ICT developments in secondary schools in Tehran are there?

Specific questions:

- 1 - What information ranges of ICT at secondary schools are applications?
- 2- How is the current circumstance at secondary schools to use of ICT?
- 3- What are conditions, equipments and resources (human, financial, material, environment) requiring to use of ICT at secondary schools involved?
- 4- What are the main barriers of using of ICT at secondary schools?
- 5 – What are main facilitating factors of using of ICT at secondary schools?

RESEARCH METHODOLOGY

A survey method has been used in the study. The research population included 6,431 high school teachers (male) in Tehran (2007-2008). The research sample has been selected using cluster sampling. For collecting data, a researcher-made questionnaire has been employed, with 0.86 Alpha reliability coefficients, this questionnaire includes 67 questions designed based on the Likert scale. Data analysis was done in two levels of descriptive and inferential statistic interpretations (frequencies, T-test and priority setting by Li-Hi test).

RESULT

The following tables show the main results have been found in the study:

TABLE (1) results of t-test related to applicable ranges of ICT at secondary schools

| Row | Indicator Text | frequency | Mean | Standard Deviation | Test value = 2 | | |
|-----|--|-----------|--------|-----------------------|----------------|-----|-----------------------|
| | | | | | t | df | significance level |
| 1 | Access digital library and collection of information on the website, in secondary schools | 362 | 2.5880 | .57697 | 19.130 | 361 | ... |
| 2 | Teachers allows students to create knowledge from the website to inform the website electronic timing Examination Program | 362 | 2.6160 | .53578 | 21.876 | 361 | ... |
| 3 | Allows teachers to create a website for electronic notification upgrade the status of your promotion | 362 | 2.4724 | .60061 | 14.964 | 361 | ... |
| 4 | Allows teachers to create a website for electronic job Procedures | 362 | 2.6796 | .52849 | 24.465 | 361 | ... |
| 5 | Produce digital educational resources (book, pamphlet, slide, problem solve, Newspaper etc.) for students | 362 | 2.4282 | .61521 | 13.242 | 361 | ... |
| 6 | Allows teachers to create a website for electronic notification of results job transfuse | 362 | 2.5249 | .57239 | 17.446 | 361 | ... |
| 7 | Allows teachers to create a website to determine electronic paperwork for students download assignments as well as students | 362 | 2.3260 | .58023 | 10.689 | 361 | ... |
| 8 | Allows students to create their website mail to inform them of the situation tuition & exams | 362 | 2.6630 | .54920 | 22.968 | 361 | ... |
| 9 | Parents Allows students to create them via the Internet to communicate with Electronics schools management. | 362 | 2.6878 | .49855 | 26.251 | 361 | ... |
| 10 | Teachers allow administrators to create website for mail communication with managers & other collages | 362 | 2.7541 | .47403 | 30.269 | 361 | ... |
| 11 | Opportunities hold exams online (Online) via the Internet and / or your collage network | 362 | 2.6436 | .53423 | 22.923 | 361 | ... |
| 12 | Assigning or encourage students to use software that in any way related to specific subjects are and / or do calculations better problem solving, draw the shape, type etc. is useful. | 362 | 2.4365 | .62947 | 13.193 | 361 | ... |

Considering the data depicted in table (1), especially the achieved value for t whit significance level of $\alpha = 0.05$, it can be concluded that there is a significant difference between theoretical and practical means and practical means are larger than the theoretical one. Therefore, it can be concluded that in teachers point of view ICT ranges are applicable intensively in secondary school.

TABLE (2): results of t-test related to current circumstances of using of ICT at secondary schools

| Row | Indicator Text | frequency | Mean | Standard Deviation | Test value = 2 | | |
|-----|---|-----------|--------|-----------------------|----------------|-----|-----------------------|
| | | | | | t | df | significance level |
| 1 | Access to digital libraries & information on the website. | 362 | 1.1685 | .49575 | -31.912 | 361 | ... |
| 2 | Careful planning of workshops for schools. | 362 | 1.2431 | .54850 | -26.255 | 361 | ... |
| 3 | Provide appropriate scientific journals educational workshops & computer in schools | 362 | 1.2155 | .49706 | -30.030 | 361 | ... |
| 4 | Equipped workshops to various types of computer hardware & computer knowledge required of teachers students | 362 | 1.2680 | .55950 | -24.894 | 361 | ... |
| 5 | Address range dedicated for teachers to create computer workshops | 362 | 1.3149 | .55225 | -23.603 | 361 | ... |
| 6 | Digital copyright material equipment in schools | 362 | 1.2348 | .52905 | -27.519 | 361 | ... |
| 7 | Facilities use the Internet for teachers in the educational environment | 362 | 1.3591 | .57490 | -21.210 | 361 | ... |
| 8 | schools need access to funding for the development of ICT | 362 | 1.3039 | .58744 | -22.547 | 361 | ... |
| 9 | Extensive network in the country | 362 | 1.2486 | .53577 | -26.683 | 361 | ... |
| 10 | The website for teachers (personal Web site for teachers) | 362 | 1.1989 | .50941 | -29.921 | 361 | ... |
| 11 | schools need access to funding for the development of IT. | 362 | 1.3895 | .60028 | -19.350 | 361 | ... |
| 12 | students, low-cost Internet facilities | 362 | 1.1740 | .48819 | -32.191 | 361 | ... |

Considering the data depicted in table (2), especially the achieved value for t whit significance level of $\alpha = 0.05$, it can be concluded that there is a significant difference between theoretical and practical means. and practical means are lower than the theoretical. Therefore, it can be concluded that in teachers point of view current circumstances of using ICT are not suitable in secondary school.

Table (3): results of t-test related to conditions, equipments and resources requiring for using of ICT at secondary schools

| Row | Indicator Text | frequency | Mean | Standard Deviation | Test value = 2 | | |
|-----|---|-----------|---------|--------------------|----------------|-----|--------------------|
| | | | | | t | df | significance level |
| 1 | Access to digital libraries & information on the website. | 362 | 2.58801 | .57697 | 19.130 | 361 | ... |
| 2 | Careful planning of workshops for schools. | 362 | 2.6160 | .53578 | 21.876 | 361 | ... |
| 3 | Provide appropriate scientific journals educational workshops & computer in schools | 362 | 2.4724 | .60061 | 14.964 | 361 | ... |
| 4 | Equipped workshops to various types of computer hardware & computer knowledge required of teachers students | 362 | 2.6796 | .52849 | 24.465 | 361 | ... |
| 5 | Address range dedicated for teachers to create computer workshops | 362 | 2.4282 | .61521 | 13.242 | 361 | ... |
| 6 | Digital copyright material equipment in schools | 362 | 2.5249 | .57239 | 17.446 | 361 | ... |
| 7 | Facilities use the Internet for teachers in the educational environment | 362 | 2.3260 | .58023 | 10.689 | 361 | ... |
| 8 | schools need access to funding for the development of ICT | 362 | 2.6630 | .54920 | 22.968 | 361 | ... |
| 9 | Extensive network in the country | 362 | 2.6878 | .49855 | 26.251 | 361 | ... |
| 10 | The website for teachers (personal Web site for teachers) | 362 | 2.7541 | .47403 | 30.269 | 361 | ... |
| 11 | schools need access to funding for the development of IT. | 362 | 2.6436 | .53423 | 22.923 | 361 | ... |
| 12 | students, low-cost Internet facilities | 362 | 2.4365 | .62947 | 13.193 | 361 | ... |

Considering the data depicted in table(3) ,especially the achieved value for *t* whit significance level of $\alpha=0.05$, it can be concluded that there is a significant difference between theoretical and practical means. and practical means are longer than the theoretical, Therefore, it can be concluded that in teachers point of view, for applying ICT in secondary schools., conditions, equipments and resources are required remarkably.

Table (4): results of t-test related to main barriers of using of ICT at secondary schools

| Row | Indicator Text | frequency | Mean | Standard Deviation | Test value = 2 | | |
|-----|---|-----------|--------|--------------------|----------------|-----|--------------------|
| | | | | | t | df | significance level |
| 1 | Teachers and students not familiar with computers hardware environment (perfect knowledge of hardware) | 362 | 2.4006 | .60221 | 12.655 | 361 | ... |
| 2 | Not holding introductory computer classes for teachers or students knowledge of their participation in this class | 362 | 2.5442 | .55148 | 18.775 | 361 | ... |
| 3 | Teachers lack motivation & propensity to use computers in education | 362 | 2.5663 | .58350 | 18.466 | 361 | ... |
| 4 | Not familiar with software that teachers can be teaching any form of help | 362 | 2.6022 | .53342 | 21.480 | 361 | ... |
| 5 | Students with knowledge of teachers familiar environment to use the Internet | 362 | 2.5580 | .56510 | 18.788 | 361 | ... |
| 6 | Teachers believe that the impact of IT on improving the training | 362 | 2.4392 | .65560 | 12.747 | 361 | ... |
| 7 | Lack of morale, motivation in university staff that necessary to enter new environment | 362 | 2.5718 | .55359 | 19.653 | 361 | ... |
| 8 | Lack of facilities such as digital copyright material reproduced on CD and university | 362 | 2.4144 | .58571 | 13.460 | 361 | ... |
| 9 | Lack of financial facilities for buying computer, video projector other necessary facilities | 362 | 2.6713 | .54157 | 23.583 | 361 | ... |
| 10 | Site was not suitable or equipped computer classes, video projector and other necessary facilities | 362 | 2.6492 | .52748 | 23.416 | 361 | ... |

Considering the data depicted in table (4) ,especially the achieved value for *t* whit significance level of $\alpha=0.05$, it can be concluded that there is a significant difference between theoretical and practical means. And practical means are longer than the theoretical, therefore, it can be concluded that in teachers point of view, the mentioned items as ICT impediments of using of ICT at secondary schools have a high effect.

Table (5): results of t-test related to facilitating factors of ICT application at secondary schools

| Row | Indicator Text | frequency | Means | Standard Deviation | Test value = 2 | | |
|-----|--|-----------|--------|--------------------|----------------|-----|--------------------|
| | | | | | t | df | significance level |
| 1 | Training courses to field familiar with Internet | 362 | 2.6050 | .54826 | 20.995 | 361 | ... |
| 2 | Training courses in such areas as familiar with: Word, Excel, Access, PowerPoint etc. | 362 | 2.6657 | .50084 | 25.291 | 361 | ... |
| 3 | Training courses in Introduction to Email (Email) | 362 | 2.6022 | .54371 | 21.073 | 361 | ... |
| 4 | Training courses in Introduction to Information Site Information | 362 | 2.5414 | .54156 | 19.022 | 361 | ... |
| 5 | Education correspondent visited the teachers knowledge in different fields of ICT | 362 | 2.6878 | .48731 | 26.856 | 361 | ... |
| 6 | Budget of teachers having sufficient financial resources | 362 | 2.5801 | .56239 | 19.626 | 361 | ... |
| 7 | Propensity students attend site (computer lab) and using the university environment | 362 | 2.6575 | .53551 | 23.359 | 361 | ... |
| 8 | Teachers familiar with software that can be involved in teaching any form of help | 362 | 2.6630 | .49059 | 25.712 | 361 | ... |
| 9 | Adequate funding for university building facilities equipped classrooms necessary hardware | 362 | 2.7928 | .42583 | 35.423 | 361 | ... |
| 10 | There are morale, motivation with university work necessary for entrance to new environment | 362 | 2.7956 | .45542 | 33.238 | 361 | ... |
| 11 | Careful planning for universities to use computer workshops | 362 | 2.7707 | .43391 | 33.795 | 361 | ... |
| 12 | Teachers students having knowledge of computer knowledge required | 362 | 2.7514 | .46371 | 30.830 | 361 | ... |
| 13 | Equipped workshops to various types of computer hardware universities computer knowledge required of teachers students | 362 | 2.7459 | .44851 | 31.640 | 361 | ... |
| 14 | Training courses in Introduction to Windows operating system | 362 | 2.7210 | .47316 | 28.992 | 361 | ... |

Considering the data depicted in table(5) ,especially the achieved value for *t* whit significance level of $\alpha=0.05$, it can be concluded that there is a significant difference between theoretical and practical means. and practical means are longer than the theoretical. Therefore, it can be concluded that in teachers point of view, the mentioned items as factors cause the facility of using of ICT at secondary schools are very effective.

Table (6): result of priority setting concerning ICT applications

| questionnaire Text | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| Research Questions | | | | | | | | | | | | | | |
| applicable ranges of ICT at secondary schools | 2 | 1 | 1 | 2 | 2 | 1 | 4 | 2 | 2 | 1 | 4 | 3 | | |
| current circumstances at secondary schools to use of ICT | 4 | 3 | 4 | 3 | 1 | 3 | 1 | 2 | 3 | 4 | 1 | 4 | | |
| conditions, equipments and resources requiring to use of ICT at secondary schools | 2 | 2 | 1 | 1 | 4 | 3 | 4 | 1 | 1 | 1 | 1 | 3 | | |
| the impediments of using of ICT at secondary schools | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 1 | 1 | | | | |
| factors cause the fissionability of using of ICT at secondary schools | 3 | 3 | 4 | 4 | 2 | 4 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 2 |

CONCLUSION

It is imperative to employ ICT in the education and learning due to widespread incorporation of this technology into various aspects of life. Inspection of researches and studies in this respect illustrates the expansive and deep effects of ICT in educational technology. The advantages of utilizing ICT in education make the policy makers pay more attention to developing this technology in schools; undertakings conducted around the world, including Iran, represent this fact. The effective use of ICT in schools requires that teachers believe in this technology; furthermore, they should be able to play another role in teaching/learning process: role of knowledge facilitator instead of a transmitter of knowledge. According to the results of this research, such awareness has been emerged among teachers of secondary schools in Iran. Moreover, it should be noted that the promotion of teacher's skills and knowledge, in addition of their point of view, is of utmost important. Furthermore, it is necessary to prepare the appropriate background and structure for employing this technology in order to decrease the current gap between the desired and current circumstances as much as possible. To do so, it is imperative to facilitate the using ICT in schools along with elimination of barriers. In this case, we can claim that exploiting ICT will provide an environment to foster creativity.

References

- Pasbaban Razavi, M. (2001). Parents, ICT, and education (in Persian), *Information Quarterly*, Volume 18., No. 1.
- Jaryany, A. (2002). ICT: a tools in education, ,(in Persian), *Educational technology*, No. 6.
- Jalali, A., & Abbasi, M. (2004). Information technology in education in other countries around the world, (in Persian), *Proceedings of curriculum in the age of ICT*, Aijh
- Javaherfroushzade, A. (2002). *A plan for improving teacher training system of Islamic Iran*,(in Persian) the M.S. thesis. Shiraz University.
- Hajjforoush, A.; Orangi, A. (2004). Investigation of the results of applying of ICT in Tehran's high schools, (in Persian) *Journal of Scientific Innovation and Research*, No. 3.
- Hassanzadeh, M. (2002). *Feasibility of distance education through Internet in Library & Information Sciences*, (in Persian) M.S. thesis, Tehran: Tarbiat Modarres University.
- Raees Dana, F. (2002). Educational technology: a framework for effective learning, (in Persian) *Presented conference on education reform*.
- Ebadi, R. (2005). *ICT and education*, (in Persian) The publication of institute for development of educational technology and smart schools, Second edition.
- Attaran, M. (2006). Teachers: core of IT development, (in Persian) *Quarterly Roshd*, Volume 2, No. 12.
- Attaran, M. (2004). *Information Technology: a platform of reform in educational system*. (in Persian) The publication of institute for development of educational technology and smart schools, First edition.
- Attaran, M., (2002). *Globalization, ICT, and education*, (in Persian) *Afatb Mehr*, First edition.
- Aghili, S. V. (2005). Communication and development in information age, (in Persian) *Journal of media research & study*, Vol XVI, No. IV.
- Fathi, K., & Sobhani-nejad, M. (2007). Investigation of development strategy and applying ICT in secondary school of Gilan province, (in Persian) *Journal of Education*.
- Ghasemi-nejad, A. (2005). Investigation of practical solution for activation of computer workshop in Isfahan's schools in 2005-2006. (in Persian) *Research council of ministry of education*.
- Larkyan, M. (2004). *Investigation of teacher's ability in employing ICT*, (in Persian). M.S. thesis, Teacher Training University.
- Mohammadi, F. (2002). Necessity of educational technology development, (in Persian) *Journal of educational technology development*
- Mohammadi, A., & Qorban zade. S (2002). Investigation of using creativity in teaching, (in Persian), *Conference of educational technology*, Tehran
- Niknam, M. (2000) Teaching the library users, (in Persian) *Quarterly of Ketaab*.
- Yaqma, Adel (2001) . The necessity of teaching technology in schools, (in Persian) *Roshd Journal*, No 143. Tehran: Ministry of education.
- Casal, R, C. (2007), *ICT for education and development*, Emerald Group Publishing, VOL.9 NO.4.
- Davis, F, D. Bagozzi, RP, & Warshaw, PR (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management*
- Garrison, D. R., and Anderson, T. (2003). *E-learning in the 21st century*. London: RoutledgeFalmer.
- Guttman, C. (2001). Time for schools to tune into the information age. *Unesco Courier*, 3 (54), 15-16
- Hakkarainen, K. Iiomäki, L. Lipponen, L. Muukkonen, H. ahikainen, M. Tuominen, T. Lakkala, M., and Lehtinen, E. (2000). Students' skills and practices of using ICT: results of a national assessment in Finland. *Computers & Education*, 2 (34), 103-117.
- Hakkarainen, K. Iiomäki, L. Lipponen, L. Muukkonen, H. ahikainen, M. Tuominen, T. Lakkala, M., and Lehtinen, E. (2000). Students' skills and practices of using ICT: results of a national assessment in Finland. *Computers & Education*, 2 (34), 103-117.
- Herne, Steve, John Jesse & Jenny Giffiths (2000) *Study to teach a guide to studying in teacher education*, London, New York.
- Kuala, M. (2001): *Singapore: Singapore's ICT Policy for the New Millennium: Implications for SMEs (small & medium enterprise)*, By James Jerome Lim.
- Locard, J., and Abrams, P. D. (2001). *Computers for twenty-first century educators (5th ed)*. New York: Longman.
- Orhun, E. (2004). International cooperation in training teacher educators to use ICT in education: the COG-TECH projects. In C. Crawford et al. (Eds.), *Proceedings of society for information technology and teacher education international conference 2004* (pp. 4224-4231). Chesapeake, VA: AACE.
- Paul jen-Hwa Hu, Theodore HKClark, Will W. Ma, (2003). Examining technology acceptance by school teachers: a longitudinal study. *Information & Management* 41 (2003) 227-241
- Schiller, J. (2002). Developing appropriate ICT competencies in trainee teachers: an Australian example. In C. Crawford, D. Willis, R. Carlsen, I. Gibson, K. McFerrin, J. Price, and R. Weber (Eds.). *Proceedings of society for information technology and teacher education international conference 2002* (pp. 1445-1446). Chesapeake, VA: AACE
- The Ontario Knowledge Network for Learning. (2001). *Strategic Directions for ICT in Education*. Toronto, ON: Author
- Van mella, E. P. (2005). Exploring the diffusion of innovation in teaching practices in higher education - the case of information and communication technology.
- Williams, DA, Wilson, K., Richardson, A., Tuson, J. and Coles, L. (1998) *Teachers' ICT skills and knowledge needs Report of a study conducted for the Scottish Office Education and Industry Department*. Aberdeen: The Robert Gordon University.
- Williams, P, Nicholas.D & Jamali. H (2006), *Using ICT with people with special education needs: what the literature tells us*, Emerald Group Publishing, Vol. 58 No. 4, 2006. pp. 330-345.

THE IMPACT OF SENSE OF COMMUNITY ON LEARNERS' ACHIEVEMENT AND ATTITUDES

Dr. Bünyamin Atıcı
Firat University Faculty of Education
batici@firat.edu.tr

Dr. Uğur BATI
Yeditepe University Faculty of Communication
batiugur@gmail.com

Abstract

Nowadays it has been widely seen that instructional applications evolving into online settings. Depending on this it can be given a special importance to examine the different variables impact on online learning environments. One of the key components is sense of community to be investigated. But it's a reality that the researches on sense of community especially implemented in higher education settings. So the main of this study is to research how elementary students develop the sense of community in online learning environments and the impact of it on their achievements. The sample of the research constituted of 60 sixth grade students which able to connect to internet at home studied in Kazım Karabekir and İstiklal elementary schools. The research implemented in six weeks according to one of the subjects of Science and Technology lesson. Moodle was used as an online learning environment as well as e-mail, chat, forums, blogs and news groups used as online tools. To determine the views of participants a questionnaire was developed and applied after the study. All the data gathered from the study examined statistically through SPSS.

Key words: Online learning settings, blog, Moodle, sense of community

Introduction

Many factors affect the behaviors of the students in the learning environments. One of these variables to be studied is the sense of community. Today, differing learning environments with the influence of the information and communication technologies also gives rise to the increase in the environments, which should be studied in terms of the sense of community. One of the most important elements affecting this situation is the obligation to take up the learning as a social and interactive activity in terms of the social constructivist points of view in particular (Levine, Laufgraben and Shapiro, 2004). In the structuring epistemology that is directed at the instructional applications, the concept of "community" has an important place. According to the psychologists working on the concept of community, the sense of community that is owned by the individuals is an important characteristic of the face-to-face communities (Obst and White, 2004; Fisher, Sonn and Bishop, 2002; Chipuer and Pretty, 1999; McMillan and Chavis, 1986). It is seen that a great importance is attached on the sense of community in the studies, which have been carried out on the virtual communities after the 2000's in particular (Blanchard and Markus, 2004; Koh and Kim, 2003; Obst, Zinkiewicz and Smith, 2002a; Roberts, Smith and Pollock, 2002).

The "sense of community" which is developed by McMillan and Chavis (1986) forms the feelings of membership, identity, belonging and commitment of the individuals concerning the group. The subjects such as the interaction, physical environment, demographic variables, environmental characteristics, academic support get importance in the studies in which many variables associated with the sense of community are studied in the face-to-face communities (Zaff and Devlin, 1998; Schuster, 1998; Obst et al, 2002; Garcı'a et al, 1999).

The sense of community is getting more and more important in the virtual environments as well (Blanchard, 2008). In the qualitative study, which is carried out by Roberts et al. (2002) concerning the formation and influence of the "sense of community" in these communities, it is found that the virtual communities differentiate from the face-to-face communities.

Obst, Zinkiewicz and Smith (2002b) revealed that the feelings of the participants concerning the membership are weak in the sense of virtual community in comparison with the sense of community. Blanchard and Markus (2004), who studied the sense of virtual community in the news groups, also pointed out the differences, which occur in these groups. The finding of Blanchard and Markus (2004) is compatible with the finding of Obst et al. (2002) that influencing and being influenced are not important in the sense of virtual community as much as in the sense of face-to-face community.

In addition to this, the researches that are carried out on the sense of community are also focused on the adults fundamentally (Wighting, 2006; Strahan and Layell, 2006; Sanchez, Colon and Esparza, 2005; Strike, 2004). If it is taken into consideration that the education application increasingly shift to the online environments at every stage, the examination of different variables affecting the online learning environments becomes also important. The purpose of this study specifies the influence of the sense of community developed in the online learning environments by the primary school students on their successes.

Method

The working field of the study is composed of the sixth grade students of Kazım Karabekir ve İstiklal Primary School, which is situated in Elazığ province; and the sample, is composed of 60 students the course success grade of whom is 3 and above and selected randomly. 40 students having internet access from home are specified as the experimental group and 20 students are specified as control group. In this direction, 20 students are selected for the experimental group 1 existing only in the online learning environment, 20 students are selected for the experimental group 2 existing in the blended learning environment and 20 students are selected for the control group existing only in the face-to-face learning environment. The study is carried out in four weeks as directed at the "Substance and heat" subjects of the Science and Technology course. In the scope of the study, a 25-item success test is developed and the reliability coefficient of the success test is determined as 0.73. Moodle is used as online learning environment and e-mail, e-chat, e-diary, forum and news groups are used as the online tools. A 12-item scale is developed by the researcher in order to determine the sense of community of the participants. The 12-item scale, which is formed by means of benefiting from the related literature and expert opinion, are applied firstly on 215 persons in order to determine the factorial validity. For determining the factor structure of the scale, it is benefited from the fundamental components analysis which is not rotated from the factor analysis methods but rotated according to the prime axes (varimax rotated). According to the analysis results, those with the factor load of 0.35 and above 0.35 are selected and total 8 items are seen in operable condition. The results of the fundamental components analysis rotated according to the prime axes showed that the scale is a single-dimension scale. The alpha reliability coefficient of the scale as a whole is calculated as .83.

Table 1.1 Factor Loads of the Items in the Attitude Scale concerning the Feeling of Community

| Factor Number | Item Number | Items | Factor Loads |
|---------------|-------------|---|--------------|
| 1 | 8 | I am proud of being a member of this community | .812 |
| 2 | 3 | I believe that being a member of this community teaches me a lot | .598 |
| 3 | 6 | I share the same targets with the persons taking part in this community | .709 |
| 4 | 1 | I trust on the persons taking part in this community | .742 |
| 5 | 5 | I feel happy for taking part in this community | .803 |
| 6 | 7 | I hate the persons taking part in this community | .735 |
| 7 | 4 | I believe that this community forms obstacle for my learning | .733 |
| 8 | 2 | I always believe the necessity of being a member of this community | .654 |

As a result of the factor analysis carried out, Barlett Test is found as 3432.211 and KMO=.83. According to the Barlett test, there is a correlation between the variables and the factor analysis is applied to these variables. Because the Cronbach Alpha reliability coefficient of the scale is found as 0.83 as a whole, it could be said that the scale is a reliable scale. According to this, the maximum point to be taken from the scale is 40 and the minimum point is 8. According to this, according to the arithmetic averages of the points obtained, the participants are listed as the students having high (3.99-5.00), medium (2.00-3.98) and low (0.00-1.99) level of sense of community.

Findings and Comments

55 percent of the participants is male (n=33) and 45 percent is female (n=27). 57.8 percent of the participants spend 0-2 hours in a day in internet, 42.2 percent between 2-4 hours. All of the participants stated that they did not benefit from the online education environments in the past. The data belonging to the attitude points concerning the sense of community of the groups are seen in the Table 2.

Table 2. Data belonging to the attitude points of the groups concerning the sense of community

| Groups | n | Range | Min | Max | \bar{X} | Median | sd |
|--------------|----|-------|-----|-----|-----------|--------|------|
| Exp. Group 1 | 20 | 16 | 20 | 38 | 30.45 | 30 | 4.64 |
| Exp. Group 2 | 20 | 18 | 22 | 38 | 32.00 | 34 | 5.15 |
| Control | 20 | 16 | 16 | 32 | 23.75 | 24 | 4.32 |

The average attitude point of the Exp. Group 1 that is only in the online learning environment is 30.45. When 30.45 which is the average attitude point is evaluated out of 5, it counts 3.81. The average attitude point of the Exp. Group 2, which is in the blended learning environment, is 32. When 32 which is the average attitude point is evaluated out of 5, it counts 4.00. The average attitude point of the control group that is only in the face-to-face learning environment is 23.75. When 23.75 which is the average attitude point is evaluated out of 5, it counts 2.97. According to these results, it could be said that the test groups are at positive level and the control group is at negative level concerning the sense of community. The variance analysis results concerning the attitude point averages of the test and control groups are seen in the Table 3.

Table 3. Variance Analysis Results concerning the Attitude Point Averages of the Experimental and Control Groups

| | df | Sum of squares | Mean square | F | Significance level |
|-----------------------|-----------|----------------|-------------|--------|--------------------|
| Between groups | 2 | 769.033 | 384.517 | 17.27* | p<.000 |
| Within groups | 57 | 1268.700 | 22.258 | | |
| Total | 59 | | | | |
| Levene statistic=.142 | Sig.=.868 | | | | |

A meaningful difference is found between the groups according to the Table 3. The LSD t test is applied in order to determine the groups which include the difference and it is determined that the difference is between the control group and other test groups. According to this, it can be said that the groups existing in the online and blended learning environments have more sense of community in comparison with the groups existing in the face-to-face learning environment. The arithmetic average and standard deviation points of the attitudes of the groups concerning the items are given in the Table 4.

Table 4. Arithmetic and standard deviation points of the groups concerning the items

| Items | Experimental Group 1 | | | Experimental Group 2 | | | Control Group | | |
|---|----------------------|-----------|------|----------------------|-----------|------|---------------|-----------|------|
| | n | \bar{X} | sd | n | \bar{X} | sd | n | \bar{X} | sd |
| I am proud of being a member of this community | 20 | 3.85 | .87 | 20 | 3.90 | 1.02 | 20 | 2.10 | .85 |
| I believe that being a member of this community teaches me a lot | 20 | 4.10 | .55 | 20 | 4.15 | .67 | 20 | 2.65 | .98 |
| I share the same targets with the persons taking part in this community | 20 | 3.70 | .92 | 20 | 3.80 | .61 | 20 | 3.20 | 1.15 |
| I trust on the persons taking part in this community | 20 | 3.75 | .71 | 20 | 4.10 | .78 | 20 | 2.95 | 1.05 |
| I feel happy for taking part in this community | 20 | 4.10 | .91 | 20 | 4.15 | .93 | 20 | 3.35 | 1.13 |
| I hate the persons taking part in this community | 20 | 1.16 | .50 | 20 | 1.15 | .37 | 20 | 2.75 | 1.25 |
| I believe that this community forms obstacle for my learning | 20 | 2.20 | 1.19 | 20 | 1.50 | .60 | 20 | 4.00 | .73 |
| I always believe the necessity of being a member of this community | 20 | 4.05 | .60 | 20 | 4.80 | .41 | 20 | 2.40 | 1.27 |

The matters affecting the sense of community in the test and control groups could be evaluated in terms of the items as follows:

- The group which takes part in the online learning environment ($\bar{X}=3.85$) and the group which takes part in the blended learning environment ($\bar{X}=3.90$) are proud of being a member of the community.
- The group which takes part not only in online ($\bar{X}=4.10$) but also in the blended learning environment ($\bar{X}=4.15$) stated that being a member of the community teach them a lot.
- The groups in the online ($\bar{X}=3.70$) and blended learning environment ($\bar{X}=3.80$) believe that they share the same targets with the persons in the community much more.
- The rate of confidence in the Exp. Group 1 ($\bar{X}=3.75$) and Exp. Group 2 ($\bar{X}=4.10$) for the persons taking part in the community is higher than the control group ($\bar{X}=2.95$)
- The rate of sense happy because of taking part in the community is high in the Exp. 1 ($\bar{X}=4.10$) and Exp. 2 ($\bar{X}=4.15$) groups.
- The level of hating the persons taking part in the community is low in all of three groups.
- The rate of believing that the community poses an obstacle in front of learning is realized at a higher level ($\bar{X}=4.00$) in the control group.
- The rate of believing that it should be always a member of such a community in the Exp. 1 ($\bar{X}=4.05$) and Exp. 2 ($\bar{X}=4.80$) groups realized in much higher level.

The single-way variance analysis is performed in order to determine the influence of the sense of community of the groups on their successes. The variance analysis results concerning the success point averages of the test and control groups are seen in the Table 5.

Table 5. Variance Analysis Results concerning the Achievement Point Averages of the Experimental and Control Groups

| | df | Sum of squares | Mean square | F | Significance level |
|-----------------------|----|----------------|-------------|--------|--------------------|
| Between groups | 2 | 118.300 | 59.150 | 14.11* | p<.000 |
| Within groups | 57 | 238.950 | 4.192 | | |
| Total | 59 | 357.250 | | | |
| Levene statistic=.090 | | Sig.= .914 | | | |

Meaningful differences are found between the groups according to the Table 5. LSD t test is applied in order to determine between which groups there is a difference and then it is determined that the difference is between the control group and other experimental groups. However, depending on the purpose of the study, it is important to determine whether there is any difference between the groups having high sense of community. For this purpose, all of three groups are classified again at the high, medium and low levels in terms of the sense of community (Table 6).

Table 6. Classification of the groups according to the levels of sense of community

| Sense of community Groups | High | | | Medium | | | Low | | |
|------------------------------|------|-----------|-----|--------|-----------|-----|-----|-----------|------|
| | n | \bar{X} | sd | n | \bar{X} | sd | n | \bar{X} | sd |
| Exp. Group-1 | 9 | 4.00 | .87 | 7 | 3.57 | .78 | 4 | 1.25 | .50 |
| Exp. Group-2 | 12 | 4.33 | .88 | 4 | 3.75 | .96 | 4 | 1.75 | .96 |
| Control | 6 | 4.16 | .98 | 5 | 3.40 | .89 | 9 | 1.33 | 1.00 |

According to the Table 6, 27 persons took part in the group with high sense of community, 16 persons took part in the group with medium sense of community and 17 persons took part in the group with low sense of community. The results of the variance analysis that is carried out concerning the success averages of the groups having high sense of community are presented in the Table 7.

Table 7. Results of the Variance Analysis concerning the Achievement Point Averages of the Groups having High Sense of Community

| | df | Sum of squares | Mean square | F | Significance level |
|-----------------------|----|----------------|-------------|------|--------------------|
| Between groups | 2 | 5.741 | 2.870 | 1.48 | p>.248 |
| Within groups | 57 | 46.556 | 1.940 | | |
| Total | 59 | 52.296 | | | |
| Levene statistic=.660 | | Sig.= .526 | | | |

According to this, no difference is found in terms of achievement between the groups having high sense of community.

Conclusion

Today, the learning-teaching environments are increasingly getting different with the influence of the information and communication technologies. With getting different of these environments, it becomes compulsory to examine several different variables as well. In this study, it is aimed to determine whether there is any difference between their successes in terms of the sense of community of the groups existing in the online, blended and face-to-face learning environments. As a result of the experimental applications performed, it is determined that the groups in the online and blended learning environments differentiate from the groups in the face-to-face learning environment in terms of achievement. However, the groups existing in all of three environments are classified at the point of determining whether there is any difference in terms of the success between the groups having high sense of community depending on the purpose of the study. It is determined that there is not any difference in terms of success between the online (n=9), blended (n=12) and face-to-face groups (n=6) which include the individuals having high sense of community. In relation to this, it could be said that what is important is the sense of community of the individuals rather than the environment. When it is looked from the perspective of the sense of community, it is seen that this study that is performed on the primary school students is compatible with the findings of the other studies carried out on different areas (Obst et al, 2002a; Obst et al, 2002b; Blanchard and Markus, 2004; Shea et al, 2006; Bostock and Lizhi, 2005; Hiltz and Shea, 2005)

Taking into consideration the face-to-face, virtual and blended learning environments of the “sense of community” which makes it easier to understand the levels of connection of the individuals with the community will be important at the point of determining the effectiveness of these environments. Another important point is to realize the qualitative studies to be carried out on the “sense of community” on the primary school level in particular.

References

- Blanchard, A. L., Markus, M. L. (2004). The experienced sense of a virtual community: Characteristics and processes. *The DATA BASE for Advances in Information Systems*, 35(1), 65–79.
- Blanchard, A.T. (2008). Testing a model of sense of virtual community. *Computers in Human Behavior* 24 (2008) 2107–2123
- Bostock, S., Lizhi, W. (2005). Gender in students' online discussions. *Innovations in Education and Teaching International*, 42(1), 73–86.
- Chipuer, H. M., Pretty, G. H. (1999). A review of the sense of community index: Current uses, factor structure, reliability and further development. *Journal of Community Psychology*, 27, 643–658.
- Fisher, A. T., Sonn, C. C., Bishop, B. J. (2002). *Psychological sense of community: Research, applications and implications*. New York: Kluwer Academic/Plenum Publishers.
- García, I., Giuliani, F., Wiesenfeld, E. (1999). Community and sense of community: The case of an urban barrio in Caracas. *Journal of Community Psychology*, 27, 727–740.
- Hiltz, R., Shea, P. (2005). The student in the online classroom. In S. Hiltz & R. Goldman (Eds.), *Learning together online: Research on asynchronous learning networks* (pp. 145–168). Mahwah, NJ: Lawrence Erlbaum.
- Koh, J., Kim, Y.G. (2003). Sense of virtual community: A conceptual framework and empirical validation. *International Journal of Electronic Commerce*, 8(2), 75.
- McMillan, D. W., Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14, 6–23.
- Obst, P., Smith, S. G., Zinkiewicz, L. (2002). An exploration of sense of community, Part 3: Dimensions and predictors of psychological sense of community in geographical communities. *Journal of Community Psychology*, 30(1), 119–133.
- Obst, P., White, K. M. (2004). Revisiting the sense of community index: A confirmatory factor analysis. *Journal of Community Psychology*, 32(6), 691–705.
- Obst, P., Zinkiewicz, L., Smith, S. G. (2002a). Sense of community in science fiction fandom, part 1: Understanding sense of community in an international community of interest. *Journal of Community Psychology*, 30(1), 87–103.
- Obst, P., Zinkiewicz, L., Smith, S. G. (2002b). Sense of community in science fiction fandom, part 2: Comparing neighborhood and interest group sense of community. *Journal of Community Psychology*, 30(1), 105–117.
- Roberts, L. D., Smith, L. M., Pollock, C. M. (2002). *MOOing till the cows come home: The sense of community in virtual environments*. In C. C. Sonn (Ed.), *Psychological sense of community: Research, applications, implications*. New York: Kluwer Academic/Plenum.
- Sanchez, B., Colon, Y., Esparza, P. (2005). The role of sense of school belonging and gender in academic adjustment of latino adolescents. *Journal of Youth and Adolescence*, 34 (6), 619-628.
- Shea, P., Li, C.S., Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses *Internet and Higher Education* 9 (2006) 175–190
- Schuster, E. (1998). A community bound by words: Reflections on a nursing home writing group. *Journal of Aging Studies*, 12(2), 137–148.
- Strahan, D.B., Layell, K. (2006). Connecting caring and action through responsive teaching: How one team accomplished success in a struggling middle school. *The Clearing House*, 79 (3), 147-153.
- Strike, K.A. (2004). Community, the missing element of school reform: Why schools should be more like congregations than banks. *American Journal of Education*, 110, 215-232.
- Wighting, M.J. (2006). Effects of computer use on high school students' sense of community. *Journal of Educational Research*, 99 (6), 371-379.
- Zaff, J., Devlin, S. (1998). Sense of community in housing for the elderly. *Journal of Community Psychology*, 26, 381–398.

THE IMPACT OF TEACHERS' ATTITUDES AND BELIEFS ON ADOPTING BLENDED LANGUAGE TEACHING

Zuhal Okan
Çukurova University
okanzu@cu.edu.tr

Meral Şeker
Çukurova University
sekerm@cu.edu.tr

Abstract

Along with many other institutions adopting technology-enhanced foreign language teaching, Centre for Foreign Languages at Çukurova University introduced online courses for students at preparatory classes to supplement weekly English classes. By adopting a blended learning approach, defined as the combination of online learning and classroom learning (Williams, 2002), the center aims to provide additional practices to students and to assist them towards autonomous learning. To have a better understanding of this process, this study aims to focus on teachers' beliefs and attitudes toward using technology in classes before the application of computer-assisted English learning and to find out any possible changes following the one-year application. Previous to the application, 36 teachers at the centre were given *Attitudes Toward Computer Technology Questionnaire* (Albirini, 2006) to determine their initial attitudes. Three of the teachers received *Repertory Grid* to have an in-depth insight to their beliefs regarding the integration of computer technology in language teaching.

1. INTRODUCTION

A growing number of research in the field of information technology have strongly supported the idea that the use of technology in language learning classes brings countless benefits both for the learners and for the instructors themselves (e.g. Abrams, 2002; Al-Jarf, 2004; Schwienhorst, 2004). The study conducted by Doughty (1987), for instance, revealed positive correlations between using computer-assisted materials and students' performance in grammar tests. Following the pioneering studies, many others have been conducted to find out the influence of technology-enhanced learning on language development (e.g. Blasszauer, 2001; Brandl, 2002; Weininger & Shield, 2003). The studies have revealed that the use of technology in SLA contexts has positive effects on writing skills (Knight, 1994; LeLoup, 1997; Hertel, 2003; Yang & Chen, 2007), leads to improved reading comprehension (Lunde, 1990), increases confidence in speaking (Sanaoui & Lapkin, 1992; Beauvois, 1994), provides equal opportunity to all learners (Everett & Ahern, 1994; Pratt & Sullivan, 1994; Ortega, 1997; Warschauer, 2000), suits individual differences (Chun and Payne, 2004), and provides effective feedback to individual learners (Chapelle, 2004).

This fast change towards technology-assisted teaching conditions, on the other hand, led researchers and educators to reform the existing education standards and to shape teaching methodologies and techniques accordingly (e.g. Kelm, 1992; Lee, 1997; Hellebrandt, 1999). In this respect, many schools have volunteered to adopt technology assisted teaching approaches. However, this brought another variable into question, namely teachers. Since any change within classrooms is mainly determined by teachers, they have to become efficient agents in the implementation of any innovation (Albirini, 2006). The studies conducted to find out the correlation between teachers' attitudes toward computer use and the classroom outcome have shown strong relationship between the two variables (e.g. Kersaint et al., 2003; Bullock, 2004). In line with the correlation between teachers' attitudes and the classroom application, Antonietti and Colombo (2008) highlight the importance of teachers' beliefs in investigating the effects of computer assisted language learning. They advocate that teachers need to revise their personal ideas and modify them since they are the operators of this new tool, namely technology.

For any change in teachers' belief systems to occur, first, teachers should be given the opportunity to reflect on their ideas and to be aware of their own teaching beliefs. In parallel with this assumption, this research started by determining teachers' personal theories about using technology in their classes; then, it attempted to track the process that teachers undergo to achieve transformation, if there is any, in their viewing and practicing technology usage in their classes.

1. METHOD

The aim of this study is to explore teachers' attitudes toward using technology in language classes and to find out any possible impact of implementing blended learning on their beliefs regarding the use of technology in language classes. Considering its scope and aim, the study was designed as a longitudinal study as the data were collected at the beginning of the term previous to online class application and at the end of the term following the first-year application.

2.1. Setting

Ç.Ü. School of Foreign Languages (YADYO) prepares students –graduate and undergraduate- for their academic study in the faculties and vocational training schools of the university. The English Language Preparatory Program aims at bringing students' level up to the basic minimum required for study in their chosen faculties and schools.

Following the technological innovations in education, many institutions in Turkey introduced the use of technology in classrooms. In this respect, YADYO has also adopted blended language learning in 2008. In addition to 24-hour weekly face-to-face language learning provided for preparatory students, online individual courses, which are provided by Longman-Pearson Education as a supplementary course to texts books at A1, A2, B1, and B2 levels, were introduced.

In the virtual classes, a main course book was followed and the online class was designed as a complementary material to the course book. The aim of the online class was to help students to study autonomously by providing further English language practice in all skills. Since it was fully integrated to the syllabus, teachers were required to give assignments after covering specific items. Students were expected to do their online assignments outside the class. They could also use the two

language laboratories in YADYO. Teachers were also expected to check their students' progress and to give feedback. The online work was compulsory for students and it comprised 5 % of the achievement grade at the end of each term.

In order to prepare teachers for such a redevelopment of the program, two-week workshops were organized on how to use the online course. They were designed to provide the teachers with information on communicating via the net, giving assignments and feedback, evaluating, and grading. The online course, then, was integrated to the curriculum and the results of students' performances have been evaluated.

2.2. Participants

In this study, 36 teachers working at YADYO received the attitude questionnaire. 35 of them are female and one is male. The teachers' ages varied from 27 to 49 with a teaching experience between 7 and 21. All the teachers were trained in ELT and most of them, F=22, had only bachelor degree. Of 36 teachers, 12 had up to few days of training on the use computers in language classes previous to this study. Their income differed between 1500 and 3000 Turkish Lira, which corresponds to middle-class.

Among these teachers, three of them volunteered for further participation. They were given the rep grid and interviewed at the end of the term to identify any transformation in their beliefs. However, due to space limits, only one case is presented in this study.

2.3. Instruments

(a) Attitudes Toward Computer Technology Questionnaire

The participants were asked to respond to "Attitudes Toward Computer Technology" (ATCT) questionnaire adapted from Albirini (2006). ATCT consists of Linkert type statements in five sections. Each section is directed to measure a different domain, namely, attitudes toward computer technology (20 statements), computer attributes (18 statements), cultural perceptions (16 statements), computer competence (15 statements), and computer access (3 statements) respectively. However, due to the space limit, only the results of the section related to attitudes toward computer technology are presented and discussed in this study.

(b) Repertory Grid

In order to get a deeper insight, three volunteer teachers were given the repertory grid questionnaire. The method used to elicit teachers' beliefs and opinions on the use of technology in English teaching was repertory grid analysis from George Kelly's (1955) Personal Construct Psychology, which mainly proposes that reality is subject to many alternative constructions. The Rep-Grid was utilized to identify the teachers' perceptions of technology usage in language classes prior to their involvement in online English teaching practice and following their involvement to specify any potential changes in their perceptions. The grid creates a basic number pattern of ordinal ratings of elements on dichotomous constructs. The elements come from a pool of elements with which participants are familiar during their experiences at the school they have been working. The constructs are bipolar descriptors, which are produced by participants from comparisons of elements (i.e. different teachers).

(c) Interviews

Following the rep grid applications at the end of the term, three participants were interviewed. The interview served two aims: clarifying the ambiguous points in the grids and asking for their comments on online teaching experience they had. These interviews took place in teachers' offices and recorded with audiotape and then transcribed.

3. RESULTS

3.1. Results from the Questionnaire

The analysis for the section dealing with attitudes toward computer technology IN ATCT shows that the participants mostly agreed or strongly agreed to the statements directed to find their positive attitudes toward computer usage (80 %). The percentage of total responds to Strongly Agree is 41.9 % and to Agree is 38.05 %. Although some of the participants agreed (30.6 %) or strongly agreed (8.3 %) to the item that claims *students must use computers in all subject matters*, relatively high percentage of them were neutral (36.1 %) or some even disagreed (25 %) to it. This may indicate that, in spite of having the desire to use computers and being aware of they are beneficial in teaching and learning, a considerably high percentage of them do not think that computers are suitable for learning all subject matters. Another controversial statement was being scared of computers. Again here, some participants stated that computers do scare them (Disagree = 22.2 %, Strongly Disagree = 2.8 %) while some others remained neutral (22.2 %). This shows that almost half of the participants (F=17) do not feel comfortable using computers.

As for the items directed to find participants' negative attitudes toward computer usage in teaching and learning, the majority of the responses are towards disagreement. Of the 360 responses in total, 292 (81 %) were disagreement (Strongly Disagree = 46.3 % and Disagree = 34.7 %). Most of the participants strongly disagreed to the statements given in the questionnaire. Therefore, it can be claimed that some of the participants (13.6 %) were still hesitant about using computers for reasons such as being uncomfortable using them, preferring doing things by hand, or believing that computers cause more harm than good.

Overall results from the attitude toward computer scale definitely suggest that participants mostly had positive attitudes towards computers on the affective (items 1-6), cognitive (items 7-15), and behavioral (items 15-20) domains. The respondents' positive attitude was mostly evident for cognitive and behavioral domains, but was slightly lower for affective domain. This may suggest that although most of the participant teachers knew that computers are beneficial for teaching and learning and so believed that it would be better to integrate them to their teaching, some of them still didn't feel comfortable using them. To put it differently, considerable per cent of them still preferred traditional way of doing things and were worried about the possible disadvantages of computers.

3.2. The Results of Teachers Beliefs from Repertory Grids

The data gathered from Repertory Grids was analyzed utilizing Focus and Exchange analyses of the Repertory Grid computer program package (Rep-Grid Manual, 1993). FOCUS analysis provided the relationship among the constructs and the elements recorded on the grid. At the end of these analyses, the obtained constructs of the participants were sorted out into a linear order in such a way that the closest constructs were grouped together and hierarchically arranged. As a result of analysis, if constructs are linked at 80 % cut off point; this indicates that the participant perceives a connection between the constructs in either synergistic or negating fashion. In case of two constructs are linked, this forms a pair. When more than two constructs are linked, then we have a cluster. The match level between or among constructs can be loose or strong depending on the ratings of the participant. The higher the match level is, the stronger is the connection between the constructs. Exchange analysis, on the other hand, displayed only the same constructs in the first and second grids with the implication of the differences in their ratings. This allowed us to find if the participant had only different constructs at the end of the year or the same constructs with different ratings. Displaying the element links, Exchange analysis showed the links among the elements indicating the place of self and ideal. This gave the researchers the chance of comparing the positions of self and ideal elements in the groupings done in both grids.

3.2.2. Case 1: Nilay

Nilay is an English teacher with 16 years of experience teaching adults at YADYO. She is a graduate of ELT and holds a masters degree in the same field. She didn't have any training on the usage of technology in language classes previous to this study. She expressed her desire to integrate technology to her teaching and thus was willing to participate in the study.

(a) The Content and Structure of Nilay's Personal Theories at the Beginning of the Study

Nilay's grid data consists of 7 constructs and 11 elements. The FOCUS grid shown in Figure 1 presents the construct and element links. Figure 1 shows the links formed at 50 % cut-off point. However, only the links at 80 % cut-off point and higher are considered to be significant.

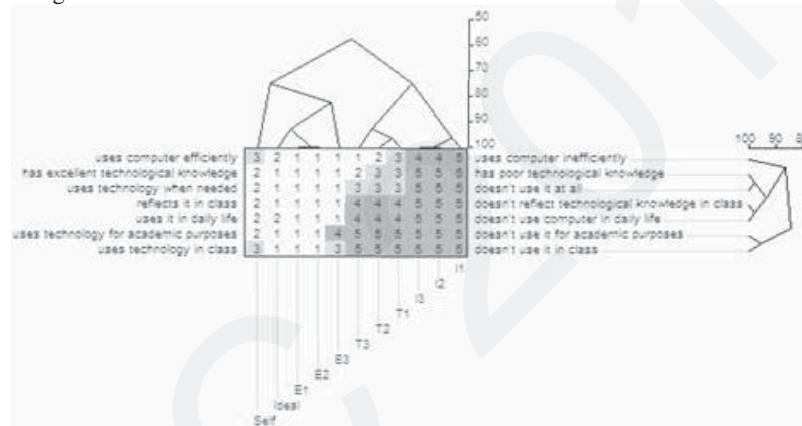


Fig. 1. Nilay's 1st FOCUS grid

Construct Links

The construct links formed one main cluster including all constructs. Within the cluster, there are three pairs. The first pair has *has excellent technological knowledge* and *uses technology when needed* matched at 98 %. So, for Nilay, a teacher can use technology when she has excellent technological knowledge. This pair is linked to another pair which includes *reflects technological knowledge in class* and *uses computer in daily life* formed at 98 % match level. The construct *uses computer efficiently* is linked to these pairs at 86 % match level. This tree of four constructs indicate that if a teacher has good technological knowledge and can use computer efficiently, she will use computer in her daily life, reflect her knowledge in classroom practices and use technology whenever needed. This suggests that, according to Nilay, the first step of integrating technology to teaching is to have a good knowledge of technology. The last pair consists of *uses technology for academic purposes* and *uses technology in class* linked at 96 % match level. This association indicates that having academic studies where technology is used is a necessity to be able to adopt a blended way of teaching.

The overall links among her constructs indicate that to be able to integrate technology into language teaching depends on having good technological knowledge and using technology for academic purposes. According to Nilay, a teacher with these qualities will also reflect her knowledge and outside-class practices in the class if she uses technology outside the class in her daily life. The high links among constructs with no isolated ones suggests that Nilay had attached meaning to them and that they were relevant to her beliefs regarding the use of technology in class. A further look at Nilay's constructs prior to her involvement in blended teaching process shows that although they are consistent and related to the use of technology, they are not detailed constructs defining the specifications in the use of technology in language classes.

Element Links

The element links of Nilay's grid reveals 3 clusters. The first cluster consists ineffective teachers were I3 and I2 are considered to be identical and I1 linked at 97 % match level. So, for Nilay, there is no significant difference among ineffective teachers in terms of integrating technology to the class.

In the next cluster, T1 and T2 are linked at 97 % match level and subordinated by T3 at 92 % match level. Again here, she considered typical teacher to be very similar to each other regarding the constructs she stated. Effective teachers and ideal are grouped in the last cluster. E1 and E2 are viewed identical and subordinated by ideal at 92 % match level, which implies that these two teachers are very close to Nilay's view of ideal teacher who uses technology in teaching. E3 is linked to this cluster at 80 % match level. Despite not having a very high match level, this may indicate that E3 is also closer to her ideal than the rest of the elements.

As for self, Nilay couldn't associate herself to any of the teachers represented by the elements. However, although not statistically significant, there is an association at 73 % match level with effective teachers and her ideal. Consequently, she viewed herself closer to effective teachers than the typical or ineffective teachers in terms of using technology.

(b) *The Content and Structure of Nilay's Personal Theories at the End of the Study*

Nilay's second grid at the end of the term comprised of 11 constructs and 11 elements.

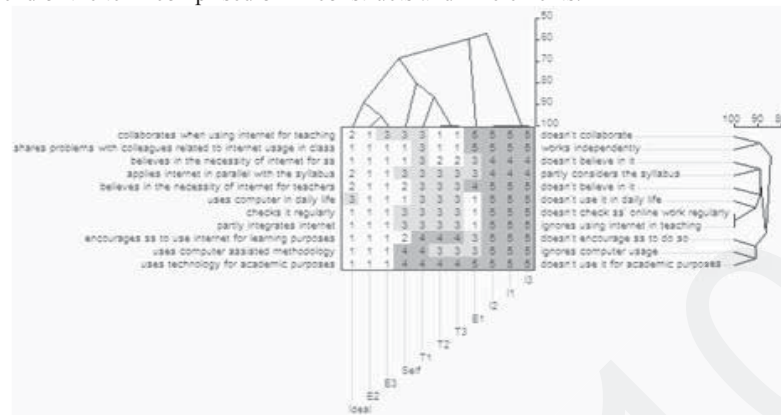


Fig. 2. Nilay's 2nd FOCUS grid

Construct Links

The FOCUS analysis produced one main cluster consisting of all the constructs. Within the cluster, there are four pairs linked to each other. The first pair includes *collaborates when using internet for teaching* and *shares problems with colleagues related to internet usage in class* linked at 88 % match level. So for Nilay, if a teacher collaborates with her colleagues, she shares her problems related to internet usage. The pair has *believes in the necessity of the internet for students* and *applies internet in parallel with the syllabus* matched at 88 %. This is an important link in that Nilay believes that teacher can apply internet into her teaching only if she believes it is useful for students.

The next pair has 100 % match between the constructs: *checks ss' online work regularly* and *partly integrates internet to teaching*. This link suggests that Nilay thinks internet can be partly integrated -but not fully- and if a teacher partly integrates it, she is definitely going to check students' online work regularly. The subordination of this pair by *uses computer in daily life* at 90 % and by *believes in the necessity of internet for teachers* at 88 % indicates that internet is a necessity for teachers and when they use it all the time, they can partly integrate internet to her teaching and check students' online work.

The last pair consists of *uses computer assisted methodology* and *uses technology for academic purposes* matched at 90 % and subordinated by *encourages ss to use internet for learning purposes* linked at 90 %. As the link suggests, for Nilay, when a teacher uses computer for academic purposes, she will adopt a computer assisted methodology and is most likely to encourage her students to use internet for language learning.

The overall result of Nilay's second grid reveals a huge change in the content level. At the end of the online assisted teaching term, she was aware of some basic features of integrating technology into language teaching such as giving regular feedback to students, encouraging them to use the internet, or changing the existent methodology with computer assisted one. Another important construct emerged at the end of the experience implied her awareness for the need to collaborate among colleagues. At structural level, the links among the constructs are high leaving no isolated one out. Again, this suggests that Nilay had clearer meaning and stronger associations attached to constructs she stated.

Element Links

The element links of Nilay's second grid displays three clusters. The first cluster includes two effective teachers, E2 and E3 forming a pair at 96 % match level, and her ideal linked to this pair at 89 % match level. This suggests that E2 and E3 are similar to each other and closer to her ideal teacher compared to the rest of the teachers.

The second cluster has the typical teachers and self. T3 and T2 are viewed identical with 100 % association and subordinated by T1, 88 % match level, and self, 80 % match level. Since self is in this cluster, Nilay viewed herself to share more common characteristics with her typical teacher evaluation in terms of the use of technology in language classes.

The last cluster consists of ineffective teachers, I1, I2, and I3, associated at 100 %. This implies that Nilay viewed all these three teachers to be identical. Among the element links, E1 is the only isolated element. Not only Nilay couldn't associate her most effective teacher to any of her other effective or typical teachers but also she related this element closer to ineffective teachers. This shows that although Nilay considered E1 to be an effective teacher, when it comes to evaluate her in terms of technology integration, she didn't rate her as an effective one.

(c) *Changes Observed Between the Beginning and End of the Study*

Content

The changes in the content of Nilay's grids were significant. She excluded 5 constructs in her first grid, which were rather too general statements, and incorporated 9 new constructs in her repertoire which were more specific and directly related to the integration of technology in language classes (e.g. *checks ss' online work regularly*, *encourages ss to use internet for learning purposes*, *collaborates when using internet for teaching*, *believes in the necessity of internet for ss*, etc.). This result clearly shows that she developed a new and a clearer perspective regarding the use of technology in teaching at the end of the term.

Structure

The Exchange analysis of Nilay's first and second grids shows that two of her constructs were consistent in both grids: *uses computer in daily life* and *uses technology for academic purposes*.

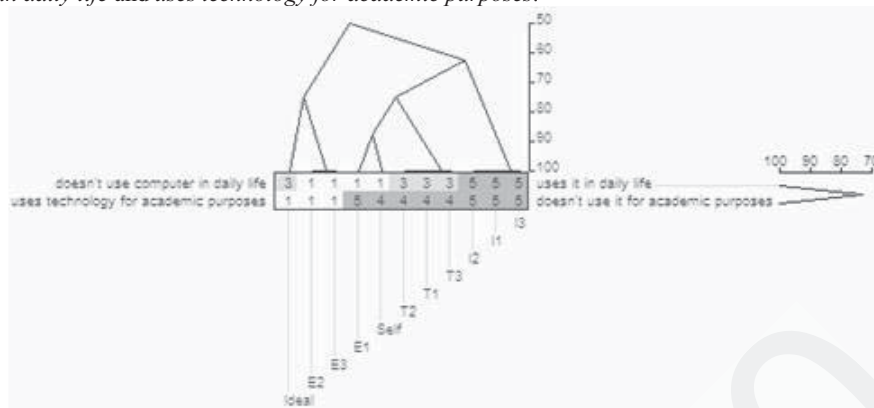


Fig. 3. The exchange analysis of Nilay's two grids

As the figure displays, she didn't have any significant structural change at the end of the term. This shows that the meaning she attached to these constructs and their associations with her other constructs didn't change. She still believed that a teacher should use computer in her daily life and for academic purposes to be an effective teacher in terms of integrating technology to her language classes.

The Exchange analysis, however, shows significant changes for her elements. The first change is in the ineffective teachers. Although only I2 and I3 were viewed identical at the beginning, in the second grid I1 was also considered to be identical. Also, her first grid showed higher links among typical teachers (T1, T2, and T3) whereas the second grid analysis revealed lower links and self, which was also isolated at the beginning implying no shared features with other teachers, was associated with typical teachers at the end of the term. This finding is important in that, besides gaining new insights, the online assisted teaching process she participated led her to think she was a moderate teacher regarding technology usage and thus she needed improvement.

Considering her effective teachers, only E1 showed significant change at the end of the study. Although it was in the cluster of other effective teachers and ideal at the beginning, at the end of the term Nilay didn't think E1 shared any common characteristics with others and thus it was an isolated element. Her ideal, on the other hand, didn't show any significant change. This means her evaluation of ideal teacher for technology-assisted teaching remained roughly the same.

The overall result of the two FOCUS analyses and the Exchange analysis at the end clearly indicates that Nilay went through a change in her conceptual framework of technology usage. At the end of her participation, she seemed to have gained new insights and become aware of some of her weaknesses as a teacher and placed room for improvement. She also expressed this opinion in the interview:

Extract 1:

There have been many technical problems [in the online class] and this affected the performance of both students and teachers. Also, we couldn't encourage students enough because we ourselves are not technically sufficient since teachers are not so open to innovations and have many responsibilities to fulfill. I think we should have been given a serious training previous to this application. They should have also convinced us in its benefits. Teachers could integrate internet more willingly and motivate students more if they really believed in its benefits.

Although she was aware of the benefits at knowledge level, the problems she faced during the application process led her to hesitate to integrate technology. This result may imply that lack of training and experience in technology usage in teaching can affect teachers' confidence in an unfavorable way, which could hinder teachers' ability to come up with immediate solutions to the problems faced during the process.

4. DISCUSSION AND CONCLUSIONS

This study aimed to determine teachers' attitudes toward using technology in language classes and to detect the influences of online assisted teaching on their beliefs regarding the use of technology in language classes. The results show that teachers' attitudes at the beginning toward using technology in their teaching were highly positive. However, a deeper look into their beliefs via rep grid indicated that their initial perspective regarding technology usage in language classes was limited. There was no mention of the methodological considerations but the constructs they stated were mainly related to general teaching practices. At the end of the term, on the other hand, they gained new insights in terms of technology usage in their classes in knowledge level. The blended teaching experience certainly raised the awareness of teachers in several crucial aspects such as the importance of online learning in developing language skills (Case 2: Aysel, 2nd Focus), the need to modify or change the existing teaching methods (Case 1: Nilay, 2nd Focus), the importance of monitoring students progress (Case 3: Ebru, 2nd Focus), providing feedback to students (Case 1: Nilay, 2nd Focus), and the benefits of collaboration among teachers (Case 1: Nilay, 2nd Focus). This led them to acknowledge some requirements in case of any change in their perceptions of teaching as well. For instance, they mentioned the need of teachers' desire to change (Case 2: Aysel, 2nd Focus) and the need to overcome the fear of adopting technology-assisted teaching due to the lack of technical knowledge and equipment. Yet, according to the rep grid analyses teachers' reconstruction of their beliefs in a deeper level after the first online teaching experience was not complete but it was in progress. The reason for this may be due to the fast transition from their traditional

way of teaching to blended learning, where they were expected to be good at using new skills such as computer or the internet.

Many researchers highlight that teachers' beliefs about teaching and learning guide their planning and decision making in their teaching practices (e.g. Schulman, 1987; Diamond, 1991; Dunne, 1993) Therefore, any innovation in any teaching application will start with changing the beliefs of teachers to help them understand the need and be willing to apply the new approach. In this respect, if an institution wants to integrate technology into its teaching program, it first needs to provide a throughout in-service teacher training geared towards increasing teachers' awareness on the need of using technology in their teaching. It should also be directed towards helping teacher to become literate and then efficient in using especially computers and the internet. Otherwise, as stated by the teachers in the study, teachers will use the internet only when they are required by the institution.

References

- Abrams, Z. I. (2002). Surfing to cross-cultural awareness: Using internet-mediated projects to explore cultural stereotypes. *Foreign Language Annals*, 35(2), 141-160.
- Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: The case of Syrian EFL teachers. *Computers & Education*, 47, 373-398.
- Al-Jarf, R. (2004). The effects of web-based learning on struggling EFL college writers. *Foreign Language Annals*, 37(1), 49-57.
- Antonietti, A. & Colombo, B. (2008). Computer-supported learning tools: A bi-circular bi-directional framework. *New Ideas in Psychology*, 26, 120-142.
- Beauvois, M. H. (1994). E-talk: Attitudes and motivation in computer-assisted classroom discussion. *Computers and the Humanities*, 28(1), 177-190.
- Blasszauer, J. (2001). Collaborative projects via the internet. *Teaching English with Technology: A Journal for teachers of English*, 1(6), 1-7.
- Brandl, K. (2002). Integrating internet-based reading materials into the foreign language curriculum: From teacher-to-student-centered approaches. *Language Learning Technology*, 6(3), 87-107.
- Bullock, D. (2004). Moving from theory to practice: An examination of the factors that preservice teachers encounter as they attempt to gain experience teaching with technology during field placement experiences. *Journal of Technology and Teacher Education*, 12(2), 211-237.
- Chapelle, C. A. (2004). Technology and second language learning: Expanding methods and agendas. *System*, 32, 593-601.
- Chun, D. C. & Payne, J. S. (2004). What makes students click: Working memory and look-up behavior. *System*, 32(4), 593-601.
- Diamond, C. T. P. (1991). *Teacher education as transformation: A psychological perspective*. Philadelphia: Open University Press.
- Doughty, C. (1987). Relating second language acquisition theory to CALL research and application. In W. F. Smith, *Modern Media in Foreign Language Education: Theory and Implementation* (pp. 133-167). Lincolnwood, IL: National Textbook Company.
- Dunne, J. (1993). *Back to the rough ground: Practical judgment and the lure of technique*. Notre Dame, IN: University of Notre Dame Press.
- Everett, D. R. & Ahern, T. C. (1994). Computer-mediated communication as a teaching tool: A case study. *Journal of Research on Computing in Education*, 26(3), 336-357.
- Hellebrandt, J. (1999). Virtual collaborations in the Spanish class: From e-mail to web design and CD-ROM development. *Journal of Educational Computing Research*, 20(1), 59-70.
- Hertel, T. (2003). Using an e-mail exchange to promote cultural learning. *Foreign Language Annals*, 36(3), 386-396.
- Kelly, G. (1955). *The psychology of personal constructs*. New York: Norton.
- Kelm, O. (1992). The use of synchronous computer networks in second language instruction: A preliminary report. *Foreign Language Annals*, 25, 441-454.
- Kersaint, G., Lewis, J., Potter, R. and, Meisels, G. (2003). Why teachers leave?: Factors that influence retention and resignation. *Teaching and Teacher Education*, 23(6), 775-794.
- Knight, S. (1994). Making authentic cultural and linguistic connections. *Hispania*, 77, 289-294.
- Lee, L. (1997). Using internet tools as an enhancement of C2 teaching and learning. *Foreign Language Annals*, 30(3), 410-427.
- LeLoup, J. W. (1997). But i only have e-mail – what can i do?, *Learning Languages*, 2, 10-15.
- Lunde, K. (1990). Using electronic mail as a medium for foreign language study and instruction. *CALICO Journal*, 7(3), 68-78.
- Ortega, L. (1997). Processes and outcomes in networked classroom interaction: Defining the research agenda for L2 computer-assisted classroom discussion. *Language Learning and Technology*, 1(1), 82-93.
- Pratt, E. & Sullivan, N. (1994). Comparison of ESL writers in networked and regular classrooms. In *Paper Presented at the Twenty-eighth Annual TESOL Convention*, Baltimore, MD.
- Sanaoui, R. & Lapkin, S. (1992). A case study of an FSL senior secondary course integrating computer networking. *Canadian Modern Language Review*, 48, 525-553.
- Schulman, L. S. (1987). Knowledge and teaching: Foundation of the new reform. *Harvard Educational Review*, 57(1), 1-22.
- Schwienhorst, K. (2004). Native-speaker/non native-speaker discourse in the MOO: Topic negotiation and initiation in a synchronous text-based environment. *Computer Assisted Language Learning*, 17(1), 35-50.
- Yang, S. C. & Chen, Y. (2007). Technology-enhanced language learning: A case study. *Computers in Human Behaviour*, 23, 860-879.
- Warschauer, M. (2000). *Electronic literacies: Language, culture, and power in online education*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Weininger, M. J. & Shield, L. (2003). Promoting oral production in a written channel: An investigation of learner language in MOO. *Computer Assisted Language Learning*, 16(4), 329-349.
- Williams, C., (2002). Learning on-line: A review of recent literature in a rapidly expanding field, *Journal of Further and Higher Education*, 26(3), 263-272.

THE IMPORTANCE OF KNOWLEDGE TRANSFER IN ILL-STRUCTURED KNOWLEDGE DOMAINS FOR AN UNDERGRADUATE COURSE

Mehmet Akif Ocak, Assist.Prof.Dr.
Gazi University
maocak@gazi.edu.tr

Serdar Çiftci, Expert
Gazi University
serdar@gazi.edu.tr

Abstract

This study explores the effect of knowledge transfer on students' understanding of ill-structured topics on a college level computer hardware course. This study is based on the principles of cognitive flexibility theory (CFT) related to the complexity of the topic and omitting of oversimplification. In order to test knowledge transfer, 2 tasks including real world connection and principles of CFT were administered to 16 college students. Students' perceptions of tasks were deeply analyzed by using structured interview questions and solutions of the tasks were observed and recorded. The results show that prepared learning environment is suitable to improve flexibility for students working with ill-structured computer hardware components. Findings indicate that guiding students in authentic context when they experience content at different level of complexity improves high-level learning and students' ability of questioning and reasoning.

Key Words: knowledge transfer, cognitive flexibility, complexity, oversimplification

RELATED LITERATURE REVIEW

Well and Ill-structured Domains

Ill-structured domains require broad-based knowledge background, different learning strategies, and even some perception. In teaching ill-structured domains, teachers need to realize that they must use a wide variety of teaching strategies and approaches to the same material in many different ways by using real-world examples (Papaterpos, Georgantis & Papatheodorou, 2001). In courses prepared according to ill-structured approach, teachers must omit emphasizing rote memorization of knowledge and oversimplifying complex material in early instruction. That means, in such environments, interactive involvement of multiple, wide application conceptual structures are introduced to students. Rather, well structured approach emphasizes just simple series of liner steps in learning that omits difficult learning areas.

Spiro, Feltovich, Jaconson & Coulson (1991) claims any domain can be taught as ill-structured approach. In this sense, students need more broad-based knowledge and flexibility of thought in the concept. However, thinking the teaching process in the classrooms, topics are often presented in instruction as if it is well-structured. There is a lack of information on what if there are benefits to teaching concept that emphasizes its ill-structured nature.

Some researchers define ill-structured tasks as ones that people face routinely in everyday life. In this sense, the tasks require students to consider alternative solutions and representations and in most cases students are supposed to use the information in a meaningful way instead of memorizing knowledge and to justify the solution to persuade others.

Based on previous research, it can be concluded that teachers' attitudes and experience on presenting the knowledge is the primary factor while using different representations of knowledge in teaching process (Shin, Jonassen & McGeel, 2003). Moreover, students are expected to find only one correct solution to most problems and they learn certain kinds of tasks that require formulas in which application of rules and procedures are memorized (Resnick, 1988). By ignoring opportunities to work with real-world problems, teachers mostly seem satisfied when students show memorized knowledge in a new learned topic. The common problem in these kinds of learning environments is that deficiencies of learning mostly come from oversimplification.

Knowledge transfer

Transferring knowledge to adapt in different cases is essential component for knowledge construction and complexity must be used to compare and contrast knowledge and establish relations among different cases. In this context, Spiro & Jehng (1990) urge a constructivist theory of learning in which the real-world complexity and ill-structuredness of knowledge are emphasized. Specifically, cognitive flexibility theory gives ability to restructure one's knowledge in radically changing situational demands. This ability requires students to know how to use different representations of knowledge. According to cognitive flexibility theory, student learning is enhanced when students experience content through different representations, in different contexts, and at different levels of complexity (Spiro et al., 1991).

Cognitive flexibility worries about the transfer of knowledge skills subsequent to the primary learning situation (Feltovich, Spiro, Coulson & Feltovich, 1996). In contents, students mostly do not seem to have problems with linear representation of knowledge. In other words, in the beginning, students discover the basic concepts, theories, etc. in a linear environment. However, when ill-structured knowledge come front, a non-linear approach is required in order for learning to occur. To bridge this gap, knowledge must be acquired from different perspectives to enhance diverse examples of the application of fundamental concepts.

Therefore, it seems clear that the traditional approach to teach simple and well-structured content does not seem enough for more advanced learning in these ill-structured domains. What students need is to apply their knowledge to different aspects of the domain to travel within it from different intellectual perspectives. The central mechanism in this approach is to avoid oversimplification and to use the complexity of knowledge in instruction to reach improved learning and transfer of knowledge (Osterloh & Frey, 2000). In this sense, many aspects of traditional instruction can be revised in order to facilitate learning in many topics that emphasizes its ill-structured nature.

The importance of ill-structured domain

Tasks including ill-structured knowledge require students to demonstrate specific skills and knowledge. Research clearly indicates that in order to understand students' progress and capabilities correctly, goal-based real-world activities based on instructional intentions must be administered to students (Bonthron & Gordon, 1999; Bottoms & Webb, 1998). That is the important requirement in which the students need to acquire and use skills expected in high-performance work environments such as problem solving, communication or technology. However, as indicated by Spiro (1991), students' insufficiencies in many instructional activities become very obvious when the content involves real-world complexity and ill-structured knowledge. Therefore, students need different representations of items of knowledge for the same topic, because it is through varied representations, approaches and contextual purposes that students make sense of knowledge domains which are complex and ill-structured.

This study argues that with different representations and different case examples, students can represent the knowledge in different ways and follow different solution paths. In this sense, knowledge transfer and high-level tasks can provide the means to support learning in these domains. Rather than focusing on certain types of problems, ill-structured nature of the content can give students a chance to see different and more complex knowledge domains by using different representations.

By using the principles of CFT and ideas from the ill-structured knowledge, this study aims to investigate how given tasks based on real-world connection help students to enhance, transfer and apply their knowledge in ill-structured computer hardware course.

METHOD

A qualitative research design was used to examine the ability of knowledge transfer in college students' solving procedures of tasks. Participants' views and their learning experiences were deeply investigated via structured interviews and students' final products of solving tasks were collected. According to Fraenkel & Wallen (2000), interviewing is the most important data-collection process a qualitative researcher possesses.

Participants

16 students enrolled in an undergraduate computer course were participated for the study. Computer Hardware course was a three-credit mandatory course offered as introductory hardware course in the department. Participants ranged in age from 18-20 years. There were 10 male and 6 female students.

Description of Tasks

Two tasks (Table 1) were completed by students. Experimental process lasted 12 weeks. Throughout the course offered, students worked individually to solve the problems and prepared the final product. Final products were collected as final report submitted to faculty member. Tasks were chosen based on principles of CFT in which they included some kind of irregularity, complexity and real word connection. Thus, the term complex referred to tasks that had no single path for solution. Additionally, chosen tasks cannot be solved by the rote application of memorized procedures alone. In other words, the tasks can be solved more than one way. More specifically, the tasks possessed multiple solutions in real world applications. Besides, rather than giving only "yes-no" questions or question with one stick answer, chosen tasks were powerful means to address knowledge transfer and high-level learning.

Table 1. Tasks administered to students

| | |
|--------|--|
| Task 1 | <p>Let's assume you have 1000 TL</p> <p>You are a student at the undergraduate level and you are taking a computer course in which computer hardware, programming languages (Visual Basic, Delphi, PHP etc. are taught. In order to help you in your classes, you decided to buy a computer (desktop, labtop etc.) to use in your home. To meet your needs, please collect the hardware components for your computer. Write down the price of each piece and argue the price. Explain the reasons why you selected the equipments for your computer (For example, you explain the reasons why you chose AMD the preferred model for CPU, instead of Intel).</p> |
| Task 2 | <p>Installation of 20 computers for a computer lab in elementary school</p> <p>You are a student at the undergraduate level. However, after the school, you will teach in elementary school. Imagine that you are currently a computer teacher. The school principal asked you to build a new computer lab. Search the classes taught in school by looking at year plans or training programs and other classes. The lab must meet the expectations of all classes. In the lab, total 20 computers, one computer for the teacher, a projection and one printer must be installed. According to these requirements, what kind of hardware components you prefer to choose. Please explain in detail and give the prices. For what purposes you chose the mentioned components.</p> |

Instrument

A structured interview questions were used to identify how knowledge transfer occurs in students' solutions of the tasks. There were 6 questions in the survey and questions were prepared according to principles of the CFT. Students were interviewed after completion of the tasks. Students were expected to use multiple criteria for evaluation of solutions. In the interviews, students revealed personal opinions and beliefs about the task in the process of interpretation.

The learning environment

Since this study deals with knowledge transfer and ill-structured nature of the content, the computer hardware course was chosen because of its structure in application of rules and procedures related to ill-structured and complexity of knowledge domain. In the class environment, students were mostly expected to construct their knowledge by using authentic context and high-level learning. Secondly, instructor taught the class based on principles of CFT that emphasizes the kind of complexity that makes the content ill-structured. Thirdly, it was essential to make a deeper investigation to see students' solving the given tasks to make a judgment about knowledge transfer and complexity; hence, students were mostly faced with task-based learning and ill-structured knowledge. Based on the instructor' feedback and according to syllabi, knowledge construction and high-level learning were integrated into instruction of the topics. In each course unit, problem solving activity was needed, and the course materials explained topics through the exploration with the real-world case scenarios. Within the class, overall, the Internet was seen as an extremely important tool; and students were expected to use it frequently and actively. The instructor had a good background and was willing to teach the class according to mentioned principles.

Data Analysis

Principles of the CFT were used as guidance to investigate how prepared learning environment including ill-structured and complex structure shapes students' solution of the given tasks (Table 2). In order to find students' preference to solve the tasks, it was an essential move to give the tasks at different level of complexity. Hence, which representation students used for the solution of the given tasks gave a sense of how knowledge transfer occurred. Moreover, when students worked on low and high level tasks, the students' enthusiasm and reaction to tasks were investigated deeply.

Table 2. Principles of the CFT and their relation to solving the tasks

| Principles of CFT | Data analysis to address the principle |
|---|---|
| Different representations of knowledge | Analytical, graphical, verbal, tabular |
| Different case examples | Low, medium, high level |
| Introducing complexity early | High level tasks (advanced knowledge acquisition) |
| Conceptual interrelationships | When the tasks were getting complicated, ability to move from one representation to another |
| Knowledge assembly from rigidity to flexibility | Ability to go beyond low-level of knowledge |

FINDINGS

Students' responses regarding use of the representations are presented in Table 3. There were two major results from the analysis of representations. Firstly, analytic, verbal and tabular representations were predominant in students' use of representations in solving the given Task 2. Secondly, students used graphical and animation representations in equal percentage to find a solution for Task 1 and 2, while interpreting the task 1 as a modeling representation (61.5%). To describe students' preference to approach the tasks and to analyze students' flexibility to move from one representation to another, results clearly shows that for Task 1, as a more personal choice, students attempted to formalize the Task 1 by using modeling to reality. In order to construct a computer system in Task 1, modeling was seen the most appropriate solution in which student tried to simulate a real-world case.

Table 3. Students' preference to use representations in solving the tasks.

| | Analytic | | Graphical | | Verbal | | Tabular | | Web Page | | Power Point | | Modeling | | Animation | |
|---------------|----------|------|-----------|-----|--------|------|---------|------|----------|------|-------------|-----|----------|------|-----------|-----|
| | f | % | f | % | f | % | f | % | f | % | f | % | f | % | f | % |
| Task1 | 9 | 47,3 | 8 | 50 | 8 | 47 | 8 | 47,0 | 7 | 46,6 | 3 | 60 | 8 | 61,5 | 2 | 50 |
| Task 2 | 10 | 52,6 | 8 | 50 | 9 | 52,9 | 9 | 52,9 | 8 | 53,3 | 2 | 40 | 5 | 38,4 | 2 | 50 |
| Total | 19 | 100 | 16 | 100 | 17 | 100 | 17 | 100 | 15 | 100 | 5 | 100 | 13 | 100 | 4 | 100 |

Regarding conceptual interrelationships and knowledge assembly while moving Task 1 to Task 2, Table 4 demonstrates the data coding in which the solution process of Task 1 are related to the solution process of Task 2. It is interesting to note that in Task 1, although students' understanding and knowledge of the underlying concepts was limited, Task 1 was treated as a prior knowledge (31.25%) by which Task 2 can be solved by using connections. Evidence from coding transcripts showed that working individually on Task 1 gave students a chance to ask questions, offer suggestions, elaborate thinking, and provide feedback and these opportunities gave critical comments in solving Task 2.

Table 4. In which direction, solving Task 1 has been useful in solving Task 2?

| | f | % |
|---|----|-------|
| I had prior knowledge | 10 | 31,25 |
| The first problem was experience for me. | 4 | 12,5 |
| I had chance to search the content externally. | 4 | 12,5 |
| It was guiding for me. | 4 | 12,5 |
| It became more efficient, enabled transition. | 4 | 12,5 |
| It helped me to find different solution strategies. | 4 | 12,5 |
| The second problem was solved in a shorter-time. | 2 | 6,25 |
| Total | 32 | 100 |

It was found that the difficulty level of the questions specified by the students also helped the researchers to state their reasons for the students' proposed solutions and make their thinking visible. As shown by Table 5, the justification of the difficulty level of Task 2 was endorsed by high level task (62.5%), while task 1 was labeled as low-middle level. Presumably, prompting students to articulate their thinking in Task 1 and Task 2 helped students to become more aware of what they know in Task 1 and how they could use their thinking available to them for reflection, monitoring, and flexibility in solving Task 2.

Table 5. Students' views on the difficulty level of the tasks

| | Low level | | Middle Level | | High Level | |
|---------------|-----------|-------|--------------|-------|------------|------|
| | f | % | f | % | f | % |
| Task 1 | 5 | 31,25 | 11 | 68,75 | 0 | 0 |
| Task 2 | 1 | 6,25 | 5 | 31,25 | 10 | 62,5 |

Findings on introducing domain complexity early support CFT that Task 2, as ill-structured problem, can facilitate not only the detailed investigation of the topic, but also require more responsibility and ability to think the problem as a social event (Table 6). The findings confirm the results of the previous studies by Spiro (1990) and Ge & Land (2003) that ill-structured questions including real-world scenario can enhance knowledge representation of the students and need some kind of conceptual understanding and knowledge transfer rather than the rote memorization of the knowledge. Results are also consistent with the research indicating that questions like Task 1 could serve as cues to direct student attention to important information that the students might have needed in solving process of Task 2. As indicated by Table 5, Task 2 requires comprehensive research and alternative solutions to think about.

Table 6. Students' responses regarding the difficulty of Task 2

| | f | % |
|---|----|-------|
| It requires a very detailed study. | 12 | 37,5 |
| It requires to keep cost / benefit account in mind continuously | 8 | 25 |
| It requires comprehensive research in elementary school curriculum (not just content, but also research in other areas) | 6 | 18,75 |
| It requires to act and think like a true teacher | 4 | 12,5 |
| Total | 30 | 100 |

Describing students' awareness and reasoning in high level tasks, it was an essential move to investigate conceptual functions used by the students in solving the tasks. Coding transcripts and students' final reports clearly showed how students go beyond low-level of knowledge. In this regard, Table 7 shows the data analysis focusing on students' ability to move among representations, switching among conceptual functions for the tasks. According to Table 6, students performed better problem solving skills for Task 2. Students' ability in evaluation (93.75%), analysis (87.5%) and questioning (81.25%) was better in Task 2. There is ample evidence that using ill-structured approach is an effective method for teaching students complex processes and procedures such as meaning making (75%), recall (68.75%) and interpretation (62.5%). Students show better performance than other classical models of instruction in traditional subject matter areas for producing gains in general academic achievement and for developing high-level conceptual functions.

Table 7. Conceptual functions used in solution of the Tasks

| | Task 1 | | Task 2 | |
|----------------|--------|-------|--------|-------|
| | f | % | f | % |
| Creativity | 14 | 43,75 | 18 | 56,25 |
| Questioning | 6 | 18,75 | 26 | 81,25 |
| Evaluation | 2 | 6,25 | 30 | 93,75 |
| Interpretation | 12 | 37,5 | 20 | 62,5 |
| Analysis | 4 | 12,5 | 28 | 87,5 |
| Comparison | 16 | 50 | 16 | 50 |
| Recall | 10 | 31,25 | 22 | 68,75 |
| Meaning making | 8 | 25 | 24 | 75 |

CONCLUSION

The purpose of this study was to investigate college students' knowledge transfer abilities in a computer hardware course based on features of cognitive flexibility theory. This study highlights a variety of investigations and several important suggestions. From this study, it is obvious that the teachers need to integrate high-level knowledge into students' subject matter by administering complex and ill-structured tasks. Results clearly showed that providing knowledge transfer opportunities to students by giving different case examples is a wise solution to go beyond limited knowledge and reach the boundaries of the high level knowledge. From this research, there is evidence that ill-structured nature of the content can be established by providing varied real-world based examples. Besides, it is probably fair to say that most teachers will find aspects of CFT useful that evaluation, analysis and questioning abilities of the students will benefit more from the learning environment in which complexity and ill-structured nature are emphasized.

The findings of the study support the previous research in which it has been pointed that the students mostly have deficiencies in problem solving, for instance, a failure to apply knowledge from one context to another (Gick, 1986), especially when solving ill-structured problems (Feltovich et al., 1996). Students' difficulties in problem solving arise when providing limited knowledge and insufficient guidance. Given the current study on the cognitive flexibility and transfer knowledge, it can be concluded that relative merit of using complexity and ill-structured nature of knowledge can foster students' problem solving strategies.

There is some evidence that students had the opportunity to use Task 1 as guidance to work on Task 2, and benefited from self-directed situations, especially in Task 2. Therefore, the effectiveness of complexity and high level learning as knowledge transfer can support a variety of connected approaches to the same task by allowing different representations. Additionally, this kind approach can promote students' understanding in the context when the tasks are complex and ill-structured.

REFERENCES

- Bontron, S., & Gordon, R. (Eds.). (1999). *Service-learning and assessment: A field guide for teachers*. Montpelier, VT: Vermont Department of Education, National Service-Learning and Assessment Study Group. Retrieved July 10, 2002, from <http://www.vermontcommunityworks.org/cwpublications/slassessguide/slassessguide.html>
- Bottoms, G., & Webb, L. D. (1998). *Connecting the curriculum to real life*. Breaking Ranks: *Making it happen*. Reston, VA: National Association of Secondary School Principals. (ERIC Document Reproduction Service No. ED434413)
- Feltovich, P. J., Spiro, R. J., Coulson, R. L., & Feltovich, J. (1996). Collaboration within and among minds: Mastering complexity, individuality and in groups. In T. Koschmann (Ed.), *CSCL: Theory and practice of an emerging paradigm* (pp. 25–44). Mahwah, NJ: Lawrence Erlbaum Associates.
- Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education*. McGrawHill: Boston.
- Ge, X. & Land, S. (2003). Scaffolding students' problem-solving processes in an ill-structured task using question prompts and peer interactions. *Educational Technology Research & Development*, 5(1), 21-38.
- Gick, M. L. (1986). Problem solving strategies. *Educational Psychologist*, 21(1&2), 99–120.
- Osterloh M. & Frey, B. S. (2000). Motivation, Knowledge Transfer, and Organizational Forms. *Organization Science*, 11(5), 538-550.
- Papaterpos, C. M., Georgantis, N. P. & Papatheodorou, T. S. (2001). An ontology for modeling ill-structured domains in intelligent educational systems. In Okamoto T., Hartley R., Kinshuk & Klus J. (Eds.), *Proceedings of the IEEE International Conference on Advanced Techniques* (pp. 1-2). Los Alamitos, CA: IEEE Computer Society, USA.
- Resnick, L. B. (1988). Treating mathematics as an ill-structured discipline. In R. I. Charles & E.A. Silver (Eds.), *The teaching and assessing of mathematical problem solving* (pp.32-60). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Shin N., Jonassen D. H., & McGeel S. (2003). Predictors of Well-Structured and Ill-Structured Problem Solving in an Astronomy Simulation. *Journal of research in science teaching*, 40(1), 6-33.
- Spiro, R. J., & Jehng, J. C. (1990). Cognitive flexibility and hypertext: Theory and technology for the nonlinear and multidimensional traversal of complex subject matter. In D. Nix, & R. J. Spiro (Eds.), *Cognition, education, and multimedia: Exploring ideas in high technology* (pp.163-205). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Spiro, R. J., Feltovich, P. J., Jaconson, M. J., & Coulson, R. L. (1991). Knowledge representation, content specification, and the development of skill in situation-specific knowledge assembly: Some constructivist issues as they relate to cognitive flexibility theory and hypertext. *Educational Technology*, 31(9), 22-25.

THE IMPORTANCE OF VISUAL MATERIAL AND VIDEO GAMES IN DESIGN EDUCATION

TASARIM EĞİTİMİNDE VIDEO OYUNLARI VE GÖRSEL MALZEMENİN ÖNEMİ

*Assistant Prof.Dr. İ. Emre KAVUT, MSGSU,Department of Interior Architecture,
iekavut@gmail.com

** Research Asist. Elif ÖZDOĞLAR, MSGSU,Department of Interior Architecture,
elifozdoglar@gmail.com

Abstract

This research is aimed; to understand perception systems and the importance of visual perception, visual materials and video games in design education. Qualified and quantitative methods were used in this research. Literature and sources were scanned in the content of this study. When this subject was examining research area based on design fact and qualified methods were used as field perception which is the most efficient in vision and a questionnaire was made for quantitative results.

According to results of this research perceiving the importance of visual material and video games is an indispensable situation for student's self improvement and improvement of society, Today is the age of speed and technology so this education model is the most assertive candidate to be the education model of future as it is an effective education model today.

THE IMPORTANCE OF VISUAL MATERIAL AND VIDEO GAMES IN DESIGN EDUCATION

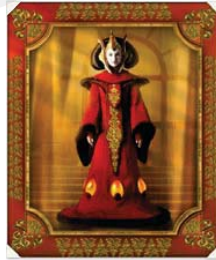
*Assistant Prof.Dr. İ. Emre KAVUT, MSGSU,Department of Interior Architecture,
iekavut@gmail.com

** Research Asist. Elif ÖZDOĞLAR, MSGSU,Department of Interior Architecture,
elifozdoglar@gmail.com

This research is aimed; to understand perception systems and the importance of visual perception, visual materials and video games in design education. Qualified and quantitative methods were used in this research. Literature and sources were scanned in the content of this study. When this subject was examining research area based on design fact and qualified methods were used as field perception which is the most efficient in vision and a questionnaire was made for quantitative results.

It is clear that in perception systems the most perceptible learning way is always visual learning. Visual learning is used in both daily life and educational life. Human being is always open to this learning type, regardless of his age, sociological and psychological situation. It is quite evident that the century that we live in is the age of consumption. In this fast consumption, individuals must use the time efficiently. In all science branches, today with direct learning indirect learning is not a need, it is a necessity. It shows distinctly, in design education with direct learning indirect learning is very important for perceptual and visual subjects.

If we think about classical design education and design education revised according to today, classical design education is like a relationship between master and the apprentice, the design education revised to today keep multi-disciplines like basic disciplines. In today's daily life in our world that is developing fastly, design education is effected by multi-disciplines. Students must learn and apply vocational and vital doctrines within rapidly consumed time in every stroke of it; when studying, resting and having fun. For applying this situation the main factor is selective perception rule. This situation required by the student or revealed by guide person. If it is described; the student who take design education is the apprentice and the person who is the guide is the master.



Picture 1: The princess of the Naboo

This character is from the movie "star wars 1 phantom menage". It is seen the princess of the Naboo planet is designed cap a pie carefully. For his result; main disciplines of design like fashion design, animation design and other like sociology and psychology worked together.



Picture 2: Some sketches

In this picture character design and fashion design details can be seen clearly.

In this situation, when watching film and playing computer games it is tried to examine how student can get information and use this informations in their daily life and how they can use the selective perception and adapted it to their education. We are living in the fastest

age of the world, in this information and communication age every subject and every product is consumed fastly and completed it's age if it is not revized by changing shape or situation. For design education, to make the datas clear, to make others to look at the creativity window fastly, design and design education must accelerate in the same acceleration of the age. The education model that catches the age is succeed everytime.



Picture 3: Star wars 1 phantom menage the underwater space 1



Picture 4: Star wars 1 phantom menage the underwater space 2

This spaces are from the movie "star wars 1 phantom menage". This underwater spaces which were designed as sketches and then applied. This images are proved us the power of synthesis of theory on hand work and the practise on computer together. When this subject is examined, research area is based on design and perception area based on visually. Because in design area every material is thought as an idea and told visually, the last product is come from visual of the intelligence and imagination everytime. Design education is not a notion just people can learn at school or in class only, design education continues in whole life from childhood to death. So student's and people who take education in design area must nourish by visual materials. Education methods, both classical design education and today's design education must be thought together with visuality as the learning type of century that we live in.

That is shown and told by examples from the games that people can use selective perception. If it is tried to tell basicly, and indicate by examples, think about an object which is undefined and not described by yourself is transferred to you by a professional and then think about what is the place of this in your mind ? and how is it effect you? This style of description or expression is not only used in design education, this situation can be thought globally, but all science fiction movies, animation films, video games and visual materials like these are designed by designers. So it is a transmission path from professionals to students. Video games and visual materials are the synthesis of today for a multi-discipline education model. "The sims" video game that is created by EA games and get phonomon all over the world can be thought as an example. In this game people can determine their social status, design a house by choosing furnitures and choose clothes for a character. For a person who is taking design education or studying on visual perception; if the native of design is to creat it couldn't advise a better or a faster way for learning. The student can make practice and improve his knowledge by this way. It seems basic but when this game combined with imagination and infos of a design student it can be very effective.



Picture 5: "The Sims" video game 2



Picture 6: "The Sims" video game 3

If it is talked about selective perception, the first movement must be to look and to see philosophy, everybody can look but designers have to see and select by making new inferences. . Tim Burton said "One person's crazyness is another person's reality". They have to create their designs as projection of this. If it is thought about another example *The Lord of the Rings* written by John Ronald Reuel Tolkien that was readen by wide audiences was created differently by different designers in many kinds of design areas. After that it was transferred by the silver screen as a trilogy by Peter Robert Jackson, and this trilogy aroused great echoes all over the world and design has proven to us the true power of pruning. In this trilogy the book that is up to 1000 pages is told in 8 hours by designers and the director. In this situation the writer is the master and the director and his design group is the apprentices and they also use multi-discipline methods like literary, cinema, computer based design and etc. and it can be defined, the group that is effected by this trilogy and created new art works are the users.



Picture 7: Gungan Flop Carrier



Picture 8: Gungan Space Port

As an example of this situation the video gamet that is called “galactic battleground” that is developed by Lucas Art and it’s sketches are exciting examples that is inspired by another design product star wars.

As another example of this situation HR Giger a well known designer who is created the alien series have an individual style. This style is applied as a bar space in Tokio. All elements in this bar is designed with same style and created as different objects. This visions and images help design students to see and make synthesis.



Picture 9: A Bar In Tokio

Many video games, are created by inspiring animation films and their characters, comic characters and the life editing for this films. Ratatouille, Ice Age and Spider Man games can be thought as examples. Some of the video games are seen as literary adaptations. The literary works of J.R.R Tolkien The Lord of The Rings and J.K Rowling’s Harry Potter are first adapted to silver screen than adapted to video games. As a mirror vision of this format video games are adapted to silver screen also. Prince of Persia that will be on cinemas in may 2010 is an adaptation of a video game to silver screen. It can be understood, video games are inspired by the cinema, the literary works, animations and comics and other visual materials and the opposite of this condition is possible. Because of this the interest of students on cinema and literary works who couldn’t reach video games, can show us the importance of video games and visual materials in design education.

If we check the results of questionnaire was made for quantitative results; the importance of video games and visual materials can be seen more clear. This questionnaire is made with 30 students who are educating different departments of faculty of fine arts both male and females and their ages are between 19-34.

Question 1

Do you play video games in your free times? If yes, how often do you play video games?

| Choices | Percentage | N |
|----------------------|------------|----|
| 1-5 hours in a day | % 10 | 3 |
| 1-5 hours in a week | % 21 | 7 |
| 1-5 hours in a month | % 17 | 5 |
| 1-5 hours in a year | % 10 | 3 |
| No, I don't play | % 42 | 12 |
| Total | % 100 | 30 |

% 42 of students attended to this questionnaire play video games %21 of students play video games 1-5 hours in a week, %17'si of students play video games 1-5 hours in a month. %10 of students play video games 1-5 hours in a day and %10 of students play video games 1-5 hours in a year. According to this results it can be said that a large percentage of design students play video games. % 58 of students don't play computer. The high prices of video games and the impossibility of studying with computer in dormitories and schools can be thought as reasons of this.

Question 2

Do you believe that video games that you play effect yout imagination positively?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 67 | 20 |
| Negative | % 33 | 10 |
| Total | % 100 | 30 |

With this question it is studied to consider the relationship between the imagination and the video games. % 67 of students who were attended to this questionnaire reported their positive views in this direction. It shows that students believe that they can improve their imagination in this way if they can access the video games.

Question 3

Do you believe that video games that you play effect your visual perception positively?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 63 | 19 |
| Negative | % 37 | 11 |
| Total | % 100 | 30 |

This question were asked to determine the relationship between visual perception and video games. % 63 of students replied this question positively. It shows that students believe that they can improve their visual perception video games will be useful if the facilities provided.

Question 4

Do you think video games contributes the design education that you study ?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 53 | 16 |
| Negative | % 47 | 14 |
| Total | % 100 | 30 |

%53'of the participants, more than half of them were replied this question positively. The students are aware of video games would contribute the design education.

Question 5

Do you find the video games visually sufficient today?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 53 | 16 |
| Negative | % 47 | 14 |
| Total | % 100 | 30 |

%53 of the students, more than half replied this question positively. From this result it can be seen, most of the students, find the video games visually sufficient, %47 of them do not find so it can be comment as in this consumption age students want more creative approaches.

The 6,7,8,9 ve 10. questions are about movies as other visual materials.

Question 6

Do you watch movies in your free times? If yes, how often do you watch ?

| Choices | Percentage | N |
|-----------------------|------------|----|
| 1-2 number in a day | % 13 | 4 |
| 1-2 number in a week | % 54 | 16 |
| 1-2 number in a month | % 17 | 5 |
| 1-2 number in a year | % 0 | 0 |
| No, I don't watch | % 17 | 5 |
| Total | % 100 | 30 |

% 54 of the students watch 1-2 number movies in a week, % 17 of them watch 1-2 number movies in a month, % 13 them 1-2 numbers in a day and %17 of them don't watch movies so the %84 of students watch movies periodically. According to access the video games watching movies is more economic and socially more practical visual materials for students. That shows if the opportunity is provided students will interest in video games close to these rates.

Question 7

Do you believe that the movies that you watch effect your imagination positively?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 97 | 29 |
| Negative | % 3 | 1 |
| Total | % 100 | 30 |

With this question it is studied to consider the relationship between the imagination and the movies. % 97 of students who were attended to this questionnaire reported their positive views. It can be thought if the students believe that their imagination effected positively by movies, from silver screen as an audience, if they have chance to take place in this fiction as a player or steer the fiction their imagination can improve more than that.

Question 8

Do you believe that the movies that you watch effect your visual perception positively?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 90 | 27 |
| Negative | % 10 | 3 |
| Total | % 100 | 30 |

%90 of the participants replied this question positively. Designer candidates who have positive thoughts on datas that are presented by designers, took place in this fictions they can improve their visual perception and selective perception even if limited by the possibilities of video games.

Question 9

Do you think that the movies that you watch contributes the design education that you study ?

| Choices | Percentage | N |
|----------|------------|----|
| Positive | % 97 | 29 |
| Negative | % 3 | 1 |
| Total | % 100 | 30 |

% 97 of students are in opinion of the movies that they watch contributes the design education that they study. This high rates show us movies are effective as visual materials and the video games of this movies contribute their education too. In video games of this movies the students can be inside the movie and create new differences on them.

Question 10

If you think the movies that you watch contributes the design education that you study do you think what kind of movies that you watch contributes the design education that you study most?

| Choices | Percentage | N |
|----------------------------|------------|----|
| Science Fiction- Fantastic | % 57 | 17 |
| Animation | % 27 | 8 |
| Literary adaptations | % 13 | 4 |
| Romantic and comedies | % 3 | 1 |
| Thriller and horror | % 0 | 0 |
| Total | % 100 | 30 |

% 57 of the students have opinion of Science Fiction- Fantastic films contributes the design education that they study most that this films are treated surreal or unreal events and concepts that are pushing the limits of imagination. Editing surreal or unreal events and thinking more than existent improve the ability of visual perception and selective perception of the design students. % 27 of the students have opinion of Animation films contributes the design education that they study most. Many design programmes that are used in animation films are known by design students but for creating movies overpowering computers are need. Students can improve their knowledge on this programmes by watching this movies and playing the video games of this films and they can practise. % 13 of the students have opinion of Literary adaptations are more effective in their education. This result shows the multi discipliner approach is right. Literary is an art that develops the power of imaginations. Many literary works are adapted to movies and video games today. When students read a novel or a literary work and also watch the movie or play the game of it they can compare their datas with the professionals.

In light of all this tips, perceiving the importance of visual material and video games in design education and adaptation this knowledge to life in the society is an indispensable situation for student's self improvement and improvement of society. Design education is a multi discipline education model that is nourishing from everything that imagination can think. Basic video games like memory games, classical games like chess, professional strategic or fictional video games for adults improve the imagination of the students who is taking design education or studying in high schools such as fine art or vocational schools. This games and visual material like movies improve the knowledge and intelligence of design students for get ability of composing and creating. With this practical and enjoyable exercises, the design student will be more open minded for learning the main design cases. J.R.R Tolkien is said "Deep roots are not reached by frost". As a suggestion, in all design schools, both high schools and universities; computer labs, small cinemas, mobile cinemas or DVD rooms should be designed and existing ones should be updated. Today is the age of speed and technology, this type of learning is inevitable for design students and society. This education model is the most assertive candidate to be the design education model of future as it is an effective education model today.

REFERENCES

- Kurt Squire, Video Games on Education, MIT, Comparative Media Studies Department
- Star Wars Episode I The Visual Dictionary, David West Reynolds, Lucas Books Dorling Kindersley, Londra, 1999, ISBN 0-7513-7057-6
- The Creating the Worldwide of Star Wars 365 Days, John Knoll with J.W Rinzler, Harry N. Abrams.Inc. Publishers, New York, 2005
- HR Giger, Leslie Barany, Taschen, Güney Kore, Taschen, 2007, ISBN 978-3-8228-3316-2
- Jasper Juul, Video Games between Real Rules and Fictional World, MIT Pres, 2005
- <http://www.ageofempires3.com>
- <http://www.antweb.com>
- <http://www.avatarmovie.com/>
- <http://www.computerandvideogames.com/>
- <http://www.disneychannel.com.tr/DisneyChannel>
- <http://www.ea.com>
- <http://www.ea.com/games/lotr-the-battle-for-middle-earth-2>
- <http://www.gametrailers.com>
- <http://www.harrypotter.gen.tr>
- <http://www.harrypotter.ea.com>
- <http://home.disney.go.com/>
- <http://www.hrgiger.com>
- <http://www.hortkulukavcisi.com>
- <http://www.iceagemovie.com>
- <http://www.imdb.com>
- <http://ironmanmovie.marvel.com>
- <http://www.pixar.com/index.html>
- http://placestovisitinparis.com/images/disneyland_paris.jpg
- <http://www.ratatouillevideogame.com>
- <http://www.rockstargames.com>
- <http://www.starwars.com>
- <http://www.timburton.com>
- <http://www.transformersmovie.com>
- <http://www.tolkientown.com>

THE INFLUENCES OF ELEMENTARY SCHOOL SIXTH GRADERS' PARENTS' INTERNET LITERACY AND PARENTING STYLE ON INTERNET PARENTING

Shi-Jer Lou

National Pingtung University of Science and Technology

lousj@ms22.hinet.net

Yuan-Chang Guo

National Kaohsiung Normal University

yuanman99@yahoo.com.tw

Ru-Chu Shih

National Pingtung University of Science and Technology

vincent@npust.edu.tw

Hung-Tzu Liu

National Pingtung University of Science and Technology

liujenny@mail.npust.edu.tw

Abstract

This study aims to explore elementary school sixth grade students' parents' Internet literacy and parenting style on Internet parenting in Kaohsiung County in Taiwan. Upon stratified cluster sampling, a total of 822 parents from 34 classes in 28 schools participating in this study. The descriptive statistics and chi-square test were used to analyze the responses of the "Internet parenting questionnaire." The findings of this study include 1) the current situations of sixth grade students' parents' behavior of Internet usage, Internet literacy, parenting style and Internet parenting are explored and 2) there is a significant correlation among parents' behavior of Internet usage, parenting style, Internet literacy, and Internet parenting.

INTRODUCTION

According to "Survey on current broadband, mobile and wireless application and demand in families in Taiwan" of ACI-FIND (Foreseeing Innovative New Digiservices) by Institute for Information Technology in 2006, the current popularity rate of personal computers per household is 79.3% in Taiwan. In average, each family has 1.5 computers and family Internet connection popularization rate is 71.7%, indicating that broadband and Internet popularization rate is 60%. With the popularization of family Internet, Internet becomes an important entertaining and social tool for children due to the convenience, privacy, and interaction of Internet. Many of children spent plenty of time on Internet which significantly influences their mental and physical development as well as results in social and family problems (Wen & Shih, 2008). In addition, according to "Survey on junior high and elementary school students' digital capacity and opportunity" by UDN Marketing Research (2006), e-popularity rates of junior high and elementary school students are high, and it is as popular as national education. The average earliest age approaching computers is 7.9 years old (around 3rd grade). The findings of the survey are similar to findings of foreign studies (Mokhtar, Majid & Foo, 2008). The potential problems, such as students' Internet indulgence and addiction are concerned. In addition, modern parents' parenting style is different from those in the past. Some studies suggest that positive parenting will positively influence children's life adjustment; inappropriate parenting style would negatively influence children's complete life development (Kong & Li, 2009). However, elementary school students' mental development is not mature and after totally involving in online games, how will they return to reality? Family education thus becomes critical. Elementary school students mostly approach Internet at home (Kuiper, Volman, & Terwel, 2008). The Common Wealth Magazine (2000) reported that in Taiwan, only 27% of parents will monitor their children's online activities and it is extremely different from American parents (78%). Regarding the monitoring dimensions, most of parents in Taiwan concern about the influence of Internet usage time on children's daily schedule and neglect their online content. Shih (2003) indicated that parents' attitude toward children's Internet usage would directly influence children's Internet addiction. In order to avoid the unfortunate incidents, parents' Internet management and attitude will be extremely important. Family is the main growth and learning environment for children. Children's safe learning and growth will rely on parents' care and cooperation. Thus, the influence of parents' Internet literacy and parenting style on Internet parenting should be concerned and cannot be neglected. The purposes of this study are to explore current situations of elementary sixth grade students' parents' behavior of Internet usage, Internet literacy, parenting style and Internet parenting, and to examine the relationship between sixth grade students' parents' behavior of Internet usage, parenting style, Internet literacy, and Internet parenting.

RESEARCH DESIGN

Research Subjects and Tools

The research subjects of this study were elementary school six grade students' parents in Kaohsiung County in Taiwan. By stratified cluster sampling, the researchers recruited parents of six grade students as the participants from 34 classes in 28 schools from four divided districts. A total of 1020 questionnaires were distributed and of 822 valid responses returned with 80.58% of return rates.

This study administered questionnaire survey approach. The research tool was a self-developed 5-point Likert scale questionnaire containing current Internet usage, parents' Internet literacy, parenting style, and Internet parenting. The questionnaire obtained good validity and reliability with .819 of Cronbach α and 58.146 % of total variance explained value. The statistical analysis approaches include descriptive statistical analysis, t-test, and chi-square test.

DATA ANALYSIS AND DISCUSSION

Analysis of Six Grade Students' Parents' Behavior of Internet Usage

According to the results, 76% of six grade students' parents use Internet and most of them spend one hour using Internet (46%). Regarding the Internet content, most of the parents use internet to search for or download information (60%), followed by sending e-mails and receiving. Regarding types of information searched or downloaded, 90% of them use internet to search or download work related information. And most of the families place the computers in study room (29%), followed by living room. Regarding Internet system, most of them have broadband home (76%).

Analysis of Six Grade Students' Parents' Internet Literacy

Regarding Internet literacy of parents, as to Internet knowledge, most of them recognize meaning of computerization, Internet devices, and key word searching. With regard to Internet skills, most of them are able to add their favorite or commonly used websites to "My Favorites" folder, to search for online information and upload and download pictures, words or files. However, they think website or blog construction is rather difficult. In terms of attitudes toward Internet usage, the parents think that respect for intellectual property rights and protection students' Internet security are important. Regarding the researchers split the subjects into high-score, medium-score, and low-score groups based on the total scores of the three domains. 27% above and below percentile of scores are the criterion for dividing high-score and low-score groups. The findings indicate that the highest ratio is the subjects with medium literacy (39.2%) and the next is low literacy (31.3%) and high literacy (29.5%) the least.

Analysis of Six Grade Students' Parents' Parenting Style

In terms of parenting style, the results of analysis of survey questionnaire show that "open-minded and authoritative" (68.7%) obtained the highest ratio, followed by "autocratic" (24.7%) and "laisser-faire" (4.2%). Only a few parents responded "neglectful and indifferent" parenting (2.4%). Over 90% of the parents are "Open-minded and authoritative" and "autocratic parenting."

Analysis of Six Grade Students' Parents' Internet Parenting

Regarding parents' management of children's frequency of Internet usage, occasional management takes the most portions (37.9%), followed by frequent management. About 90% of the parents prohibit their children from going to Internet cafe. Most of parents set the rules of Internet usage at home (72%) for their children. As to parents' management approaches of children's Internet usage, most of them turn off the power (26.8%), followed by verbal warning (21.2%). Very few of them used corporal punishment (2.1%). As to parents' instruction of children's Internet usage frequency, occasional instruction is the most (34.9%) and the next is no instruction (26.4%). The reasons of no instruction are that the parents cannot use Internet and the parents are busy with jobs or housework. Regarding parents' encouragement of children's Internet usage, occasional encouragement is the most (44.2%); regarding the reasons of no encouragement, most of parents worry of children's Internet addiction (85%) and the next is the parents do not how to use Internet. As to Internet content, educational websites (31.8%) and online games (27.5%) are the most and the second are MSN or blog. Few parents allow children to have online shopping or browsing foreign websites. As to children's use time of Internet, the parents allow children to use Internet for one hour on weekdays. On the weekends, they allow children to use Internet for 2~3 hours per day. In winter and summer vacations, children are allowed to use Internet for 2~3 hours every day. In addition, most of parents prohibit children to use Internet in the time of sleeping, doing homework, before examinations, or eating indicating that most of parents concern about children's regular daily schedule, and do not want children to be disturbed by Internet in their daily schedule.

Analysis of the Correlation between Internet Literacy and Internet Parenting

The results of chi-square test and Post hoc Comparison analyses show that there is a significant correlation between parents' Internet literacy and Internet parenting frequency. Parents with low Internet literacy tend to frequently manage children's Internet usage. Parents with high Internet literacy tend to hardly manage it. There is significant correlation between allowing children to go to Internet Café and parents with three different kinds of Internet literacy. More parents prohibit their children to go to Internet cafe. There is significant correlation between setting rules of Internet usage and parents with three different kinds of Internet literacy. More parents setting the rules than the no rule setting. There is significant correlation between instructions of children's Internet usage and Internet literacy indicating most of parents with "high Internet literacy" do not instruct children's Internet usage. There is significant correlation between parents' Internet literacy and encouragement of children's Internet usage indicating most of parents with three kinds of Internet literacy occasionally encourage their children to use Internet. Generally speaking, parents with "high Internet literacy" show lower frequency of managing than those of "low Internet literacy" regarding Internet parenting frequency, management, and encouragement.

Analysis of the Correlation between Parenting Style and Internet Parenting

The results of chi-square test and Post hoc Comparison analyses show that this study demonstrates the analytical results below: parents' different parenting styles do not have significant difference on management, instruction or encouragement of children's Internet usage. However, it has significant difference on parenting of children's Internet usage frequency, allowing children to go to Internet café, and setting Internet usage rules. For parents with "neglectful and indifferent" or "laisser-faire" parenting styles, their management frequency of children's Internet usage, "occasional management" is more significant than "management every time." On the contrary, parents of "autocratic" parenting style "never manage" children's Internet usage; most of parents of "open-minded and authoritative" parenting style "frequently manage" and "occasional manage" children's Internet usage. Regarding no rules on Internet usage, parents of "neglectful and indifferent" parenting style is significantly higher than parents with "open-minded and authoritative" parenting style.

CONCLUSIONS

1. Parents' current Internet parenting: "occasional management" is the most and the next is "frequent management" for sixth grade students' parents' management of children's Internet usage frequency. Over 90% of parents prohibit children to go to Internet café and over 70% of parents set up Internet usage rules at home. Educational websites and online games are mostly allowed for browsing. In addition, controlling the power of computers is the most common managing approach for parents. Furthermore, over 50% of parents' allow children's playing online games but limit other Internet activities, particularly meeting online friends or going to the gatherings, indicating most of parents are more open-minded about students playing online games than other Internet activities.
2. Correlation between parents' Internet usage and Internet parenting: parents' average Internet usage time is less than one hour every day. Acquiring and downloading information for work are the most common activities. In addition, parents' Internet usage, Internet usage time, and Internet content are significantly related to Internet parenting. Internet parenting attitude, such as instructing and encouraging children to use Internet, is also significantly related. Thus, the more familiar with Internet the parents are, the more concerns on the rules for children's Internet usage and attention on their behavior they will have.
3. Correlation between parents' Internet literacy and children Internet parenting: there is a significant correlation between parents' Internet literacy and Internet parenting. Parents with low Internet literacy are significantly higher than those with high Internet literacy in terms of Internet parenting frequency and instruction and encouragement of children's Internet usage. Parents with high Internet literacy tend to trust their children and do not manage them and hardly guide and encourage children's Internet usage. In contrast, parents with low Internet literacy who do to not use Internet often or cannot use it agree that Internet would enhance children' learning. They will encourage children to use Internet. Additionally, parents tend to manage and monitor children's Internet usage. Parents with high Internet literacy who are familiar with Internet environment and using skills are less aware of Internet security and tend to trust children or to be *laissez-faire*. However, they still worry about children's Internet addiction, and do not encourage children's Internet usage.
4. Relationship and influence between parents' parenting style and Internet parenting: parents' parenting styles show a significant correlation with their management of children' Internet usage frequency, allowing children to go to Internet café, and setting Internet usage rules. Parents with "neglectful and indifferent" and "laissez-faire" parenting styles show more significant in "no management" than "frequent management." Parents with "autocratic" parenting style show more significant "management every time" than "no management." Parents with "open-minded and authoritative" parenting style tend to be more significant "frequent management" than "management every time." Also, only parents with "laissez-faire" parenting show significant different attitudes. In addition, both encouragement and instruction of children's Internet usage and parents' different parenting styles are not correlated. Thus, parents with different parenting styles only regulate children's behavior of Internet usage (such as regulation of using time and setting rules) but not significantly influence children's Internet use (such as content browsed and attitude).

RESEARCH SUGGESTIONS

1. Internet contents browsed by children should be monitored: parents with different levels of Internet literacy or different parenting styles hardly concern about children's Internet content used. Therefore, parents should not only regulate children's Internet usage time, but also should instruct approach and assist with Internet usage and content in order to establish children's correct concepts and habits.
2. Parents' open-minded and authoritative parenting style will stably and positively enhance children's Internet usage behavior: most of parents with "open-minded and authoritative" parenting style encourage children to be independent with open-minded and responsible attitude. They also regulate children's life, learning, and safety. Additionally, parents with "neglectful and indifferent" and "laissez-faire" parenting styles reveal low Internet parenting frequency. In order to avoid students' Internet addiction, parents should possess "open-minded and authoritative" parenting style to ensure children's safety learning and growth.
3. Using website classification software: only few parents use website classification software. Most of parents allow their children to play online games. Thus, the authority should fulfill the management of computer software classification for parents. In addition, government, educational units, and schools should provide more classified online games for children.

REFERENCES

- Kong, S. C., & Li, K. M. (2009). Collaboration between school and parents to foster information literacy: Learning in the information society. *Computers & Education*, 52(2), 275-282.
- Kuiper, E., Volman, M., & Terwel, J. (2008). Students' Use of Web Literacy Skills and Strategies: Searching, Reading and Evaluating Web Information. *Information Research: An International Electronic Journal*, 13(3), September. <http://informationr.net/ir/13-3/paper351.html>.
- Mokhtar, I. A., Majid, S., & Foo, S. (2008). Information literacy education: Applications of mediated learning and multiple intelligences. *Library & Information Science Research*, 30(3), 195-206.
- Shih, S. R. (2003). Network characteristics of the virtual world and its influence on the young. *Student Counseling Bimonthly*, 89, 80-89.
- Wen, J. R., & Shih, W. L. (2008). Exploring the information literacy competence standards for elementary and high school teachers. *Computers & Education*, 50(3), 787-806.

THE INVESTIGATION OF ATTITUDES OF FINE ARTS DEPARTMENT STUDENTS TOWARDS COMPUTER LESSONS

Işıl Güneş MODIRI
Abdullah AYAYDIN

isilmodiri@gmail.com
abdullahayaydin@hotmail.com

Abstract

As an instruction tool in the educational environment, the place of a computer is undisputed. The computer is very important also in Fine Arts Education fields. However can the computer be used appropriate to its aim in every educational area? And have the computer lessons been done appropriate to the aim? The main purpose of this study is to determine the attitudes of Art Education and Music Education students studying in the Fine Arts Education Department towards the computer lessons. This research is a survey. As a data collection tool, quinary likert type attitude scale has been developed and has been applied to the students who attend to the lesson. Obtained data has been statistically analyzed by SPSS software program. Some suggestions have been made according to the research results.

Key Words: Fine Arts Education, Computer, Attitude

1. INTRODUCTION

Education, with its simplest definition is the 'change of behavior' process (Kılıçoğlu, 2007:15). In the traditional sense, education as a social institution, exists for fulfill excellently the economic, social, political and cultural aims and values. In respect to individual, education refers to an institution provide the education necessity. Individual and social expectations from the education are at the highest level (Hoşgörür, Taştan, 2006:271). The accrual of alternation and evolution in the education field is depend on a lot of factors. One of the most important of these factors is the teacher. Because the basic element that gives a soul and meaning to the education and makes it functional, effective and efficient is the teacher. Various assessments have been proved that usage of facilities that come from technology in the educational process, is depend on educated labor force. Here the teacher has an importance function as managing the information technologies and carrying out the link between students and information technologies (Carey, Chisholm ve Irwin, 2005; Oral, 2004; Yıldız, Sünbül, Halis ve Koç, 2002). It is certain that computer will provide convenience in reach to the information and in transmission of the information. Affective use of this system, can only be possible by creating educational environments that sophisticated and qualified teachers in using technology are leading (Özden, Çağıltay ve Çağıltay, 2004).

Society and individual can not survive for a long time without art. Because art is one of the deepest rivers of mankind continuity. They tie every generation to the previous one and examine the next with struggle of their own continual questions. Art disciplines provide their own thinking ways, rich and different thought practices. In another level, art encourages us to resist against tragedies, enriches our celebrations, inspires the bravery, ties the prospects to the memories and is a gift of societies to their own. On the other hand, art is the unique resource of pleasure and enjoyment. Briefly the art occupies every generation's mind because it exposes us with ourselves and the emotions that we provide for ourselves (NAEA, 1994:1).

Science is a systematic, proved and organized information sum that exists on the purpose of finding the system of universe and looks for connections between a definite method and observable variables (Kaya & Gelbal, 2006:229). Developments experienced at the end of twentieth century; revolution in the fields of technology and communication, daily exponentially increase of information sum, have caused to be given some names to the period we live in as 'information age, Computer age or communication age' (Akkoyunlu: 1998). The effects of Sociologic and technique alternations came across in the field of education, are inevitable. Fast increase of information sum has been increased the educational needs (Ünal ve Pilten: 2005).

Despite that, fast developments in the field of technology and communication, have been contribute to development of educational technologies and by this means education can be actualize more fruitful in respect to quality and quantity (Kocasarac: 2003). Technology also has brought facilities to mankind in education area as in many other fields. By its indisputable role in the education, technology has been affecting all sides of the education by its hardware and theoretical dimensions (İşman, Baytekin, Balkan, Horzum and Kıyıcı, 2002). Various researches revealed that there are a lot of factors affecting the effective use of computers in instructional process. Among these factors; limited number of computers in the schools, lack of experience in respect of computer usage by the teachers, lack of integration between computers and instructional programs, limited technical aid and educational software, etc.. are on front rows (Çağıltay, Çakıroğlu, Çağıltay and Çakıroğlu, 2001; Usluel and Haşlaman, 2003; Uşun, 2003). However, in solving of all these problems, attitudes of the teachers towards these equipments play a basic role. A lot of researches done, also have shown that attitudes of the teachers towards computer technologies are directly related with computer usage in education-instruction (Erdoğan, 2006; Aral, Ayhan, Ünlü, Erdoğan and Ünal, 2007).

The concept of attitude can be described as *a learned tendency that forces the individual to expose certain behaviors against certain persons, objects and situations* (Demirel, 2001:125). In other words attitudes show our tendency as approval or refusal towards certain objects, ideas and groups and our feelings against or in favor of them (Gay ve Airasian, 2000).

According to Öner (2006:199), attitude is a kind of mentality. Mentality is the media that reasoning mind is included. This media gain meaning to the concepts being used in the reasoning. According to Ülgen (1995:97), attitude is a case that can be gained by learning and gives direction to the behaviors and causes to partiality in the decision process. The attitude that we developed towards an event or an object, likely brings the possibility of a positive decision about that and vice versa.

Generally it can be said that attitude has got three aspects. The first one is cognitive aspect like ideas and propositions. Second one is sensual aspect; like emotions accompanied by ideas. The third aspect is behavioral one that includes being ready for the behavior (Gagne, 1985). The manners of a person are invisible but we can hold an opinion about his manner related to an object by looking to his behaviors (Tavşancıl, 2002:67). For example, it can be understood that a student that doesn't do his fine art homework, has a negative attitude on this lesson.

2. AIM

The main purpose of this study is; to determine of fine arts department students' (that study in art education and music education programs) attitudes towards computer lessons, to make some evaluations with respect to quantitative results.

3. METHOD

3.1. Study Groups

This research is a survey. The 2nd grade students that study in the Art Education and Music Education programs of Fine Arts Education Department at Fatih Education Faculty, Karadeniz Technical University, constitutes the universe of the study. The study group that has been determined in the universe, consists of 94 fine arts students on total (36 music and 58 art education students) that study in the mentioned programs.

In the study, for collecting data firstly literature search was conducted. By taking help from the obtained data in consequence of the literature search, a scale has been prepared for apply to the study group. For measurement of fine arts students' attitudes toward computer lessons, a scale consists of 30 topics and 6 sub dimensions has been improved and used in the application. Quinary likert type scale has been used as answer options in improved scale. The answer options have been determined as "Completely Agree", "Agree", "Indecisive", "Disagree" and "Absolutely Disagree".

3.3. Analysis of Data

The data have been obtained from application of improved attitude scale, have been put into the process of analysis. In the analysis firstly it has been tried to determine of validity and reliability of the scale. In measurement of reliability quotient of the scale, Cronbach's Alpha reliability quotient has been found as 0,78. The KMO value of the scale has been found as 0,71 and Bartlett's factorization level has been found significant according to $p < .001$ level (Bartlett's Test of Sphericity $\chi^2 = 1234.386 - p = .000$). This result supports multi factorization and normal range of the scale and suitability of the used sample to the factor analysis. With the factor analysis measurement done by using Varimax rotation technique, it is understood that the eigen value of the 30 topic has been collected under 5 factors major than 1. The sub factors consist of six each topics' total variance explanation rate has been determined as %54.01. Obtained statistical findings have been indicated to reliable and valid results of the scale. For examining of the study group answers towards topics formed the scale, descriptive frequency measurements have been done. In measurement of topics get in each factor, the attitude scores have been determined and tables have been formed. In comparing of the answers of art and music teaching students that formed the study group, Mann Whitney "U" test has been done. In application of U test, the significance level has been determined as $p < 0,05$.

4. FINDINGS

4.1. Examining of the Attitudes According to Sub Factors

In this section, the tables took place giving the measurement results towards factors of the answers that study group had given. In tables, related average scores regarding topics entered to the factors have been given and evaluations have been implemented towards these scores.

| Scale | Score Ranges |
|---------------------|--------------|
| Completely Agree | 4,21 – 5,00 |
| Agree | 3,41 – 4,20 |
| Indecisive | 2,61 – 3,40 |
| Disagree | 1,81 – 2,60 |
| Absolutely Disagree | 1,00 – 1,80 |

Table 1: Average Score Ranges Related to Scale

In table 1, the likert type quinary answer options range scores take place. The below tables have been explained by taking help from the table indicating which attitude score corresponds to which range.

| Topics | Average (\bar{X}) | Sd |
|--|-----------------------|------|
| 1-Dealing with the computer doesn't attract me. | 3,47 | 1,32 |
| 4- I'm not willingness in attending to the computer lessons. | 2,78 | 1,33 |
| 6- I enjoy of computer lessons. | 3,26 | 1,11 |
| 17- I think that computer lessons are necessary for all fields. | 2,71 | 1,24 |
| 25- I attend to the computer lessons for not being written absent. | 2,69 | 1,35 |
| 29- I study for the computer lessons willingly. | 3,44 | 1,28 |

Table 2: Attitude Scores Towards The First Factor

By examining the table 2, it is understood that the study group expose an indecisive mode as regards general tendency. When we consider the table 1, it is seen that most of the average attitude scores indicate the **indecisive** option. Just in 1. and 29. topics, have been observed that students participate in related proposition. Consequently, it is emerged that students expose an indecisive attitude in ideas towards "*importance and necessity of the lesson*".

| Topics | Average (\bar{X}) | Sd |
|---|-----------------------|------|
| 5- I enjoy of computer lessons just as art lessons. | 3,79 | 1,22 |
| 9- I don't think that it may be a relationship between the artistic works and computer. | 3,15 | 1,27 |
| 14- I don't need to computer for my artistic works. | 3,35 | 1,14 |
| 15- The computer lessons must be removed from the fine arts education departments. | 3,17 | 1,43 |
| 20- I use computer in all my homeworks related the art. | 3,22 | 1,23 |
| 28- The computer must be exist in every place that art is existed. | 3,07 | 1,19 |

Table 3: Attitude Scores Towards The Second Factor

By examining the table 3, it is understood that the study group expose an indecisive mode as regards general tendency. When we consider the table 1, it is seen that most of the average attitude scores indicate the **indecisive** option. The students just in 5. topic stated their participation. Consequently, it is emerged that students expose an indecisive attitude in ideas towards "*relationship between the art and computer*".

| Topics | Average (\bar{X}) | Sd |
|---|-----------------------|------|
| 10- The handling of computer lesson is consistent with my conception. | 3,26 | 1,09 |
| 11- The conduction style of computer lesson is not effective. | 2,77 | 1,23 |
| 13- I think that the handling style of computer lesson is consistent with its target. | 2,79 | 1,12 |
| 21- The computer lesson comes on the top of my unfavorable lessons. | 2,87 | 1,28 |
| 24- One of the lessons that I don't want to finish, is the computer lesson. | 3,40 | 1,33 |
| 30- I generally sit silently in the computer lesson and wait for effluxion of time. | 2,91 | 1,30 |

Table 4: Attitude Scores Towards The Third Factor

By examining the table 4, it is understood that the study group expose an indecisive mode as regards general tendency. When we consider the table 1, it is seen that most of the average manner scores indicate the **indecisive** option. It is emerged that students expose an indecisive attitude in ideas towards "*teaching style and explanation of the lesson*".

| Topics | Average (\bar{X}) | Sd |
|---|-----------------------|------|
| 3- If the computer lesson's content changes, I may love the lesson. | 2,76 | 1,30 |
| 7- Content of the computer lesson must be more up to date and more contemporary. | 2,40 | 1,11 |
| 12- If I had made the content of computer lesson, it would be the same. | 3,34 | 1,13 |
| 16- Particularly, the contents of computer lesson attract my attention. | 3,31 | 1,19 |
| 19- If I had the possibility, I would change the content of the computer lesson. | 2,51 | 1,17 |
| 22- The content of computer lesson has been prepared fairly effective and consistent. | 3,39 | 1,01 |

Table 5: Attitude Scores Towards The Fourth Factor

By examining the table 5, it is understood that the study group expose an indecisive mode as regards general tendency. When we consider the table 1, it is seen that most of the average attitude scores indicate the **indecisive** option. Just in 7. and 19. topics, have been observed that students didn't participate in related proposition. Consequently, it is emerged that students expose an indecisive attitude in ideas towards "*content of the computer lesson*".

| Topics | Average (\bar{X}) | Sd |
|---|-----------------------|------|
| 2- I attend to the computer lessons prepared. | 2,68 | 1,22 |

| | | |
|--|------|------|
| 8- I like computer lesson's exam as multi choice. | 2,52 | 1,15 |
| 18- I can't be successful in the computer lessons how much I study. | 2,95 | 1,24 |
| 23- Computer lesson exams honestly can measure the knowledge. | 3,52 | 1,08 |
| 26- Style of the computer lesson's exams alienates me from the lesson. | 2,36 | 1,13 |
| 27- I study to the computer lesson's exams unwillingly. | 2,34 | 1,22 |

Table 6: Attitude Scores Towards The Fifth Factor

By examining the table 6 and considering the table 1, it is seen that the average attitude scores indicate the **indecisive** and **disagree** options. It is emerged that students are indecisive or disagree with nonconformity of the “*evaluation of the lesson*”. Consequently it is emerged that generally they expose a positive attitude in ideas towards evaluation of the computer lesson.

4.2. Compare of Departments According to Manners Towards Factors

In this section U test has been applied to the study group with mentioning compare of art education and music education program students' attitudes towards computer lesson, and 6 questions that have been found significant difference among them, have been considered and presented in tables. In the part that students' attitude scores differences evaluated, the significance level between groups has been accepted as $p < 0,05$.

| Topics | Department | N | Average (\bar{X}) | Sd | p |
|---|------------|----|-----------------------|------|------|
| 3- If the computer lesson's content changes, I may love the lesson. | Art | 58 | 42,31 | 1,30 | ,027 |
| | Music | 35 | 54,77 | | |
| 4- I'm not willing to attending to the computer lessons. | Art | 58 | 42,78 | 1,33 | ,028 |
| | Music | 36 | 55,11 | | |
| 7- Content of the computer lesson must be more up to date and more contemporary. | Art | 58 | 43,25 | 1,11 | ,045 |
| | Music | 36 | 54,35 | | |
| 22- The content of computer lesson has been prepared fairly effective and consistent. | Art | 58 | 52,35 | 1,01 | ,022 |
| | Music | 36 | 39,68 | | |
| 23- Computer lesson exams truly can measure the knowledge. | Art | 58 | 52,51 | 1,08 | ,019 |
| | Music | 36 | 39,43 | | |
| 26- Style of the computer lesson's exams alienates me from the lesson. | Art | 58 | 42,15 | 1,13 | ,013 |
| | Music | 36 | 56,13 | | |

Table 7: U Test Results For Compare of attitudes According to Programs

By examining of table 7, it can be understood that in expose of **indecisive** attitude and occurring significant differences between ideas of art and music students in 3. and 4. topics, the weight has been on music program students. Also it is understood that the weight has been on music program students in differences occurred as **disagree** in 7. and 26. topics. However it is understood that the weight has been on art education students in differences occurred as **indecisive** in 22. and 23. topics

5. CONCLUSION AND DISCUSSION

Findings that have been reached at the end of the study, have shown that the students answered the scale, generally exposed an indecisive attitude towards computer lessons. In examining towards sub factors considering of consisted attitude scores, it is observed that the students partly leaned to some topics as **agree** and **disagree** but generally they preferred **indecisive** option. It is understood that the significant differences between programs occurred as **indecisive** in 3., 4., 22., 23. topics and as **disagree** in 7. and 26. topics. By examining of study group answers it is understood that students leaned to **agree** option just in 3 topics and **disagree** just in 5 topics from the 30 topics took place in the scale, and in the rest topics they leaned to **indecisive**.

In evaluation towards the *computer lesson's importance and necessity* the students expressed that dealing with computer don't attract them; nevertheless they study to the computer lesson willingly. In evaluation of ideas towards *relationship between art and computer*, students indicated that they enjoy of computer lessons just as art lessons. In evaluation towards *teaching style and explanation of the lesson*, it is understood that all of the students exposed an indecisive attitude. In evaluation towards *content of the computer lessons* students indicated that the computer lesson content is consistent with their conception and no need for change of this content. Finally in evaluation towards *lesson's measurement and evaluation* students indicated that they don't want the multiple choice exams in evaluation of computer lesson; however this style of the exams doesn't alienate them from the lesson and study for these exams doesn't create an unwillingness on them. In the rest 22 topics students indicated a range around indecisive option.

At the end of the study it is understood that students exposed the most positive attitude in dimension of evaluation of the computer lesson. Owing to **indecisive** tendency that fine arts students exposed in most of the topics, it can be said that they don't have a clear idea about the issues of “*necessity of computer in fine arts, relationship between art and computer, style of teaching and explanation of the lesson, content of the lesson and evaluation of the lesson*”. As a reason for this situation, the influence of conduction of lesson by instructors from out of the department with content of general computer education can be thought. With conduction of computer lessons by department's own instructors towards the usage of drawing and graphic software programs for art education students, and music software programs for music education students; it is thought that the students' ideas and attitudes about this issue will gain more clearness.

6. REFERENCES

- AKKOYUNLU, B., (1998). Eğitimde teknolojik gelişmeler, Editör: Bekir Özer. *Çağdaş Eğitimde Yeni Teknolojiler*, Anadolu Üniversitesi, Eskişehir
- CAREY, J. M., CHISHOLM, I. M., IRWIN, L. H. (2005). *The Impact of Access on Perceptions and Attitudes Toward Computer An International Study*. (<http://ism01.west.asu.edu/jcarey/international.html> Erişim, 21.01.05).
- ÇAĞILTAY, K., ÇAKIROĞLU, J., ÇAĞILTAY, N., ÇAKIROĞLU, E. (2001). Öğretimde Bilgisayar Kullanımına ilişkin Öğretmen Görüşleri. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi 21, s:19-28.
- DEMİREL, Ö. (2001). *Eğitim Sözlüğü*, Ankara: Pegem A Yayıncılık
- ERDOĞAN, Y. (2006). *Öğretmen Adaylarının Öğrenme Biçemlerine Göre Bilgisayar Destekli Eğitim Tutumlarının ve Bilgisayar Başarılarının Karşılaştırılması*. Uluslar arası İnsan Bilimleri Dergisi, ISSN:1303-5134, Cilt:3, Sayı:2, s: 1-9.
- GAGNE, R. M. (1985). *The Contitions of Learning*, New York: Holt, Rinehart&Winston.
- GAY, L.R., AIRASIAN, P. (2000). *Educational Research*. New Jersey: Upper Saddle River..
- İŞMAN, A., BAYTEKİN, Ç., BALKAN, F., HORZUM, B., KIYICI, M. (2002). *Fen Bilgisi Eğitimi ve Yapısalcı Yaklaşım*. The Turkish Online Journal of Educational Technology - TOJET October 2002 ISSN: 1303-6521 Volume 1, Issue 1, Article 7.
- HOŞGÖRÜR, V & TAŞTAN, N. (2006). *Eğitimin İşlevleri*, Ankara: Pegem A Yayıncılık
- KAYA, Z & GELBAL, S. (2006). *Eğitimin Bilimlerinde Yöntem*, Ankara: Pegem A Yayıncılık
- KILIÇOĞLU, M. (2007). *Aktif Öğrenme İçin Etkili Öğretmen*, İstanbul: Morpa Kültür Yayınları.
- KOCASARAÇ, H., (2003). *Bilgisayarların öğretim alanında kullanımına ilişkin öğretmen yeterlilikleri*, *The Turkish Online Journal of Educational Technology – TOJET*
- NAEA (National Art Education Association). (1994). *The National Visual Arts Standards*, Reston: 1916 Association Drive
- ORAL, B. (2004). *Öğretmen Adaylarının İnternet Kullanma Durumları*. Elektronik Sosyal Bilimler Dergisi, ISSN: 1304–0278, C:3, S:10, Ekim; 1–10.
- ÖNER, N. (2006). *Felsefi Tutum, Felsefe Eğitim Sanat (Haz: Sabri Büyükdüvenci-Vefa Taşdelen)* Ankara: Hece Yayınları.
- ÖZDEN, M. Y., ÇAĞILTAY, K., ÇAĞILTAY, E. *Teknoloji ve Eğitim: Ülke Deneyimleri ve Türkiye İçin Dersler* (<http://www.egitim.aku.edu.tr/ozden1.htm> Erişim: 20.07.04).
- TAVŞANCIL, E. (2002). *Tutumların Ölçülmesi ve SPSS ile Veri Analizi*, Ankara: Nobel Yayınları.
- USLUEL, K. Y., HAŞLAMAN, T. (2003). *Öğretmenlerin Bilgisayar Kullanıma Karşılaştırmalı Bir Yaklaşım: Varolan ve Tercih Ettikleri Bilgisayar Kullanma Durumları*. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 25, s:204-213.
- ÜNAL, E.& PİLTEN, P.(2005). ,Öğretmen adaylarının bilgisayara yönelik tutumlarının çeşitli değişkenler yönünden incelenmesi', *Türkiye Sosyal Araştırmalar Dergisi*. Yıl:9, Sayı:1-2, Nisan-Ağustos.
- UŞUN, S. (2003). *Eğitim ve Öğretimde Bilgisayarların Yararları ve Bilgisayarlardan Yararlanmada Önemli Rol Oynayan Etkenlere İlişkin Öğrenci Görüşleri*. Kastamonu Eğitim Dergisi, Cilt:11, No:2, s:367-378.
- ÜLGEN, G. (1995). *Eğitim Psikolojisi*, Ankara: Lazer Ofset Matbaa Tesisleri
- YILDIZ, R., SÜNBÜL, A. M., HALİS, İ., KOÇ, M. (2002). *Öğretim Teknolojileri ve Materyal Geliştirme (1.basım)*. Konya: Mikro Yayınları

THE LEXICAL IMPACT OF NANOTECHNOLOGY ON TURKISH AND ENGLISH LANGUAGE TEACHER EDUCATION

NANOTEKNOLOJİ İLE İLİNTİLİ KAVRAMLARIN TÜRKÇE'YE VE İNGİLİZCE ÖĞRETMEN EĞİTİMİNE OLAN ETKİLERİ

Dilara Demirbulak
Çankaya University
dilara@cankaya.edu.tr

Abstract

The concept of nanotechnology is currently being used very frequently in even our daily life and Turkey, unlike the previous experiences, is the prospective producer of nanotechnology. Despite the tendency to look into the societal impact of nanotechnology in the world, the studies carried out in our country do not reflect such issues. Since language quality and quantity is the reflection of its users' intellectual level, the effect of nanotechnology on our native language, Turkish, and education were looked into from the perspectives of 47 undergraduate English language student teachers. The study was carried out in three stages and the qualitative data were collected via reflective essays and semi-structured interviews. The English language student teacher participants of this study believed that nanotechnology training at all levels is an important mean for linguistic purism and high proficiency in English. Integrated Thematic Instruction (ITI) is the recommended model of such training.

Key Words: nanotechnology, lexical purism, integrated thematic instruction, societal impact

Nanotechnology, which is frequently used even in our daily lives, is perceived as a human resource challenge since it is stated that there will be more jobs available and the need for skilled individuals will increase as well (Bhushan, 2007; İŖçi, 2006; Lothar, 2006; Massimano, 2004). Therefore, much of the debate about nanotechnology today has geared towards its societal implications (Silberglitt, 2006; NAS, 2005; Crow and Sarewitz, 2000). which are categorized under seven headings: Economic Impacts and Commercialization of Nanotechnology, Social Scenarios, Converging Technologies, Ethics and Law, Governance, Public Perceptions, and Education (NSF, 2005). Among these categories education seems to be the leading category due to the identified need for educational reforms. It is emphasized that reforms are essential to teach principles of nanotechnology to students and teachers at all levels, social scientists and other scholars to enable them to conduct interdisciplinary scientific and technological studies. The drawbacks identified in such training are described as difficulty in conceptualizing the nanometer length scale, readiness level of individuals since they need to comprehend concepts of atoms, molecules, and chemical reactions initially and nanotechnology being interdisciplinary but the education systems being discipline-bound.

Meanwhile, the first Nanotechnology Center (UNAM) in Turkey was established in 2007, which is very promising in terms of giving an end to Turkey's position of generally being the importer or the modernizer of the technology (Kılıçarslan & Dinç, 2007). So, it could be said that Turkey would be a producer of nanotechnology competing with other nations in the field of nanotechnology. However, it has also been observed that studies related to the societal implications of nanotechnology is limited in Turkey.

The assumption in this paper is that along with universal problems, the impact of nanotechnology on Turkish as the native language and language education deserves more attention in a fringe country such as Turkey. Literature draws attention to two linguistic problems at this stage. The first one is the influx of English lexical items to substitute Turkish vocabulary. The second one is at the syntactic level which is a result of mixing the two languages. These are perceived as a result of accelerated and sustained "Englishization" in the world covering science and technology as well. And perceived as a threat to the native language, Turkish. The impact is described as not only endangerment of the inter-generational intelligibility among Turkish speakers and their proficiency in English but also on national unity (Açıkğöz, 2007; Arslan, 2007; Özbay, 2006; Sinanoğlu, 2006; Doğan 2003).

Since Turkey is also the producer of nanotechnology rather than being a consumer, it is not late to prevent the influxation of English lexical items pertaining to nanotechnology to Turkish. Language purification, which is practised even at the developed countries, is offered as a solution to overcome the linguistic problems (Çelebi, 2006; Sinanoğlu, 2006; Avcı, 2003). Actually, reformist purism was initiated in Turkey in 1932 to break the influence of foreign languages on Turkish where Turkish words for terms and concepts were coined and Turkish Language Institute was established to achieve this mission. It is believed that the reason for all these efforts not being fully successful is the gap between the fast revolving technology and educational reforms at all levels. Raising the awareness of the teachers and training them to engender the interest of the next generation of producers, consumers and policymakers via employing creative ways of communication is essential. Since they are the ones who can enhance the dissemination of information, they are supposed to share their experiences with the future generation in their classes and with their peers (Kulinowski, 2004).

This study aimed to uncover the perceptions of prospective English language teachers about the implications of nanotechnology on language and language education. It reports on how a teacher education course at a university in Turkey was redesigned in a manner intended to promote the early development of critical reflection in terms of their roles and responsibilities in Turkish language purification as a English language teacher. The perceptions of student teachers to determine whether, and if so in what ways, the redesign helped them in raising their awareness is also explored. The study is offered as a model through which teacher education courses can regain their relevance to fostering critical teaching abilities—as opposed to mere "coping strategies". Prior to turning to the description of the research of this paper, the Integrated Thematic Instruction (ITI) phenomena is briefly elaborated since the second assumption is that the ITI model lends itself easily for language purification and educational reform due to its interdisciplinary and exploratory nature.

Integrated Thematic Instruction (ITI)

The ITI was originally conceptualized in the late 1960's for Gifted and Talented Programs (GT) based on the premise that the learning environment should stimulate the higher order thinking ability of these learners and enable them to make use of their talents. It was believed that the subject-centered, textbook-driven regular classroom practices hindered the achievement of such goals. The assumption in this paper, which is in line with the underlying premises of the current ITI model, is that each individual is gifted and talented in a certain fashion and thus an optimal learning environment should be created for all learners. The first step to be taken to create such an environment would be to integrate subject areas since the world itself is interdisciplinary in character. This, however, does not mean the denial of the need for the factual content mastery associated with each subject as well as the recognition of the organizational feature of each subject. On the contrary, the curriculum implemented should provide opportunity for the mentioned mastery as well as enabling the learners to transfer and

integrate knowledge via unifying theme among the subjects. This way the learners could see a matter from different perspectives and thus enhance their knowledge by adopting a critical approach.

The ITI model is based upon the development and orchestration of one unifying year long concept and its entire ramification through which all content and skills are together. The theme acts as a pattern for organizing ideas, materials, and actions to enable learners to construct their own ideas and conclusions and thus prevents downshifting. Once the theme is created, then what every student is expected to learn must be defined. The mastery is at the conceptual level and contributes to the overall concept being addressed. Inquiry-based activities enable the learners to learn how to apply them to the real world, and to develop mental programs for their long-term retention and application. It can, therefore, be concluded that the ITI approach defines learning as a personal affair and sees real life as the best curriculum for learners (Kovalik, 1994). This then requires the instructors to look into the variety in the creation of meaningful learning environment.

METHOD

Participants

47 English language student teachers taking the Instructional Technology course offered at the English Language Teacher Certificate program participated in the study. The course's duration was three fifty-minute classes per week of semester (fourteen weeks in total). The aim of the course is to introduce the place and use of technologies in the instructional process and development and assessment of teaching materials.

Procedures

The study was carried out in three stages and the qualitative data were collected via reflective essays and semi-structured interviews. The procedures followed are as follows:

- The student teachers conceptual schemata about what nanotechnology as a concept meant for them was identified since, as Wallace (1991) said no procedure can function effectively without finding out what the participant is bringing to the situation. They were given one class hour to individually reflect their perception in an essay. The data collected were used to carry out whole-class discussions the following week.
- The second stage aimed to identify the perceptions of the student teachers about whether nanotechnology training should be included in education at all levels especially at English language teacher education.
- The third stage aimed to identify the student teachers perception about whether linguistic purism should be carried out so as to break the influence of nanotechnology. They were given a list of 122 terms titled "Terms Related to the Societal Implications of Nanoscience and Nanotechnology" (Bainbridge, 2005). The student teachers were asked to work in groups of 3 or 4 to a) find the Turkish equivalents of the lexical items b) inquire the roots of these lexical items via list on the web-page of Turkish Language Institution c) create a word in case of not being able to find the Turkish equivalent d) make proposal for a change of existing Turkish concept.
- At the end of the study they were interviewed individually where the open-ended statement "I believe the study on nano technology was" was prompted.

Standard Conceptual Data Analysis techniques that consisted of coding the data according to the categories of interest to the study and noting the number of instances of comments within were employed to analyze the data and the strength of the evidence under each category along with comments selected for their representativeness or potential insight were used as presenting the data.

FINDINGS AND RESULTS

Although the 47 student teachers had heard the word nano 22 of them stated that they could not describe the concept. The interesting point is that all of these students stated that they had heard the term via advertisements on television. There were sentences such as "I have no idea about what nanotechnology means but I heard the word nano in the advertisements of stainless fabrics or self-cleaning wall paints on television. I do hope to find about it more". However, none of these students had felt the need to inquire about it.

As for the student teachers that expressed their constructed understanding of the concept, stated that they had attended the conferences and seminars given by the rector of their university (Prof.Dr.Guvenc). Almost all of these student teachers stated that they did inquire about the concepts after attending the conferences and seminars since they perceived it as the actualization of science fiction. They all mentioned how the data in an encyclopedia will be stored in an area with a size of a head of a pin, or how a mini-chip stored in a human body would carry out constant check-up, and how the human brain could scan a four-year undergraduate curriculum in just one day. They said that there would not be a need for language teachers since language learning would only take minutes via nanotechnology. One of the student teachers said, "*whole world will be stored in a tiny chip so say hi to life with nanotechnology. I hope that you will have your umbrella with you on a rainy day and nano with you during your stay in the world*".

All the student teachers believed that prospective English language teachers and students at K-12 should be exposed to introductory data about nanotechnology. The reasons they had provided were compiled under three concepts.

Concept 1: The focus is on the outcome of learning

The student teachers' focus was on the individuals as a consumer of technology. It was interesting to see how they identified the difference between a consumer and a user. They said they are generally the users of technology rather than being its conscious consumer. One of the student teachers said

"very little do we know about the technology we are using, its effect on the environment or economy. We rather buy the newest technology just because it is the "newest" rather than its usage. There is an advertisement which mentions about a product called "nanowashing machine and dryer". It is obvious that they want me to be impressed by it. I would be if I knew that it was something good for me".

Concept 2: The focus is on the agent of teaching

The student teachers described the impact of the nanotechnology training in terms of referential qualities of teachers. They perceived the role of the teacher as the transmitter of information rather than transformer. For teachers training was perceived as a means to improve their knowledge so as better to guide the learners. One of the student teachers said:

"teachers are mediators between students and nanotechnology since they are the ones to create stimulating and meaningful environments for students to carry out research and development. After all, what is science fiction today will be an ordinary practice in tomorrow's world. They need to be guided to create their science fiction. Advancements are results of critical and creative thinking. Absence of advancements could lead to dissatisfaction and then problems could start".

Concept 3: The focus is on the object of training

The student teachers described the object of teaching as the well being of the country. They emphasized the fact that Turkey is generally an importer rather than producer of technology. They said that the car factories, for example, only assemble the car or produce some of its parts rather than producing the technology needed to produce parts. They also gave an interesting example as follows:

I read that scientists have cut the optic nerves of a hamster for it to become blind and then healed it by injecting nano particles to those nerves. They hold the copyright of the procedure, which means that countries wanting to use it need to get their permission from them. In other words, they will be dependent on those countries. We already missed the micro age so I hope we won't be too late for nano age. Otherwise, we'll lose our independence.

As for the curriculum of nanotechnology, first of all the student teachers believed that it should start at kindergarden level and continue till the end of formal education which is usually higher education. The following was the description that they all agreed upon.

"Nanotechnology should be introduced as a phenomenon at knowledge level via cartoons such as Jetsons. During the **primary school**, description of nanotechnology in terms of how and where it could be used, at comprehension level need to be inbuilt to short stories. These students could be asked to use their imagination to reflective essays, or draw pictures. This could be at a unit titled "Our Body". The teacher can bring a pin to the class and ask them to guess the size of its head in nanometer (2 billion). The teacher can go on by asking them to write their 10 page short story on just one page as homework and if the students says they cannot then ask them why or why not. Students at **secondary school** could be asked or be involved in mini-projects or report on a planned research project. These students at this stage are expected to have constructed their own understanding of the phenomena and its constituents. Visuals should be used all through these stages. How nanotechnology is used to make material that does not soak water, stainless paints, Ipods, cellular phones, sim cards, watches that are also credit cards for example could be displayed and explained in a simplified fashion. During the **higher education**, there could be a course titled "introduction to nanotechnology in". The undergraduate students would have the chance to analyze and synthesize the impact of this technology on their field of study. The final point would be for them to be able to discuss the advantages and drawbacks of the nanotechnology and its constituents in terms of their field of study. This is because mainly companies and some wealthy families were using computer technology not so long ago but today there is hardly any house without it. So, it should be kept in mind that nanotechnology will not only pertain to engineering or natural science in a very near future. Creative means for evaluation is also a must at all levels. However, the key point is that teachers and instructors at all levels and from all disciplines need to be equipped with the necessary knowledge and skills to evaluate the impact of nanotechnology on their field of study to act as an engineer to the students.

As for the answers of the student teachers to the question about their perception about the study on nano technology they all said that the mini-research project on lexical items related to nanotechnology was thought provoking and awareness raising in three ways. The first one was realizing the relationship between language and technology. The second one was the realization of how big an issue was the language reform accomplished by Atatürk. The third one was, understanding the importance of being trained in nanotechnology in partial fulfillment of their role and responsibilities as an English language teacher.

One of their interesting remark was *"most of the products made in Turkey or stores have non-Turkish names. I think we fear that people would not buy our products if they are in Turkish and I think this is due to not understanding the role of language and keeping it pure. If people had understood its importance they would not try to impress other people by inserting non-Turkish words while they are speaking Turkish"*.

All of the students believed that academic or scientific and technical language is different from daily language and that has its own jargon. They pointed out that as a user of English as a foreign language; its speakers should be aware of the jargon and use it during the academic events such as conferences. However, they also emphasized the importance of these individuals' being aware of the Turkish version of these words and using them at academic events as well. They believed that English language teachers are naturally delineated to ensure this responsibility and therefore have a very important mission.

The student teachers pointed out that if they could attract the attention of young generation to this issue as an English language teacher and involve them in the language activities, then even the media could start using Turkish accurately. One of the student teachers said *"we are so used to using star instead of "yıldız", macro/maxi instead of "büyük", market rather than "bakkal" or hypermarket that people perceive you as "strange when you use the Turkish versions. We, the young generation, prefer to use popcorn instead of patlamış mısır without any hesitation or doubt. Using non-Turkish words even in our daily life has been internalized so it will be very difficult to make individuals use or produce Turkish for technological lexical items. This is a tough agenda yet English language teachers need to deal with it"*.

Another interesting example was an English language teacher saying "entelektüel" when a student asked the meaning of the word "intellectual". They said that it would be easy but meaningless to give its adapted Turkish version. Most importantly that it would enforce learners to rote memorization rather than meaningful learning.

Although there are currently two Turkish words for nano (*moleküler üretim, atomal düzeyde mühendislik*) they are rarely used. The students believed that it was due to not being user-friendly and they suggested "*minikötesi*" as an alternative. During the study they also suggested "*bilgeç* or *yenisel*" to be used depending on the context for technology since it is a concept for new ideas, devices, methods, etc. They also proposed "*küçük*" for atom due to being smaller than nucleus (*çekirdek*) and "*uıklar*" for mouse. They did not suggest changes to words such as bureaucracy, capitalism, or organisation since they believed it was too late to change the habits of people. They did, however, emphasize that the words that are adapted to Turkish were mainly related to science and technology and thus requires remedial action in terms of improvement of the Turkish language's influence and prestige.

CONCLUSIONS AND RECOMMENDATIONS

The study aimed to demonstrate that by employing certain methodologies during teacher education it is possible to raise the awareness of prospective teachers about the impact of technology and its language (English) on Turkish language. The findings of this study suggest that it is possible for student teachers to become critical users of their native and foreign language at a very early stage of their professional career, and to embark on this process in not only professional but also daily lives. It is also hoped that this study would attract the attention especially of the authorities as a food for thought in terms of societal impacts of nanotechnology especially after the two incidents in our country that we need to learn from. The first one was having a car equipped with highly advanced technology yet not having the trained individuals to utilize that technology. The second one was not even the "help line" operators being aware of the GPS service of the GSM companies. The result in the first instance was to use musclepower and its accompanying tools to get in the car yet the result of the second incident was tragic. It will probably be impossible for anyone to forget the journalist's cry for help to be rescued after helicopter crash. So, why not include technology training in the curriculum of schools at all levels using lexical items that are meaningful to its users. ITI model do not lend itself to subject-based curriculum. A modified version of ITI model is provided in scheme 1 and Table 3 to serve as an example of how ITI model could be adapted to our educational system. Although it is emphasized that all absence of even one element could shatter the whole, the example model could enable all parties involved for smooth transition to the implementation of the ITI model.

REFERENCES

- Açıköz, E., Açıköz, M., Gürcan, S. & Gürbüz, R. (2007) İleri düzey İngilizce becerileri Kazandırılmasında bilgisayar destekli pasaj çalışma sistemi uygulaması. *Türkiye`de Yabancı Dil Eğitimi Ulusal Kongres.* Ankara: Gazi Üniversitesi
- Arslan, M. (2007) Değişen koşullar altında üniversitede yabancı dil eğitimine ilişkin saptamalar. *Türkiye`de Yabancı Dil Eğitimi Ulusal Kongresi.* Ankara: Gazi Üniversitesi
- Avcı, O. (2003). Nasıl bir üniversite ilerlemeye katkı sağlar?. *İleri Dergisi*, No: 15.
- Bainbridge, W. (2005) Terms related to the societal implications of nanoscience and nanotechnology. In *Nanotechnology: societal implications-individual perspectives*. USA: National Science Foundation. Retrieved at <http://bart.tcc.virginia.edu/classes/societalnano/NanoTechSocImpIndPers.pdf> on January 16, 2007.
- Bhushan, B. (2007). Introduction to nanotechnology. In B.Bushan (Ed) *Handbook of nanotechnology*. pp. 1-9. USA: Springer
- Crow, M.M. and Sarewitz, D. (2000) *Nanotechnology and societal transformation*. USA: Springer.
- Çelebi, M.D. (2006). Türkiye`de anadili eğitimi ve yabancı dil öğretimi. *Erciyeş Üniversitesi Sosyal Bilimler Dergisi*, 21(2), 285 - 307.
- Doğan, M. (1996) Yabancı dil öğrenimi ve yabancı dilde eğitim. *Cumhuriyet Bilim ve Dergisi*, s.588
- Guvenc, Z.B. Nanotechnology seminar. <http://www.cankaya.edu.tr/~guvenc/Nano-seminar.ppt>. accessed at 2008.
- İşçi, Ç. (2006). What is nanotechnology? *Journal of Yaşar University*, No:3(1)
- Kılıçarslan, O. ve Dinç, O. (2007). Türkiye ekonomisinde teknoloji ve transferi. *Girne American University, Journal of Social and Applied Science*, No:3(5), 73-75.
- Kovalik, S. (1994) ITI:The model:integrated thematic instruction. USA: Thomas Armstrong
- Kulinowski, K.M. (2005) Incorporating nanotechnology into K-12 education. In Kutoğlu, M. *Nanotechnology: implications-individual perspectives*. USA: National Science Foundation.
- Lothar, A. (2006). Identification of skills needs in nanotechnology. Luxembourg: Office for Official Publication.
- Massimilano, D.V. (2004). Introduction to nanoscale science and technology. Boston: Kluwer Academic Publishers.
- A Matter of Size: Triennial Review of the National Nanotechnology Initiative Committee to Review the National Academy of Sciences NAS (2005) A Matter of Size: Triennial Review of the National Nanotechnology, National Research Council. Retrieved from: <http://www.nap.edu/catalog/11752.html> on February 3, 2007.
- National Science Foundation NSF (2005). *Nanotechnology: societal implications-individual perspectives*. Retrieved from <http://bart.tcc.virginia.edu/classes/societalnano/NanoTechSocImpIndPers.pdf> on January 16, 2007.
- Özbay, A. (2003) Yabancı dille öğretim. Ulusal Eğitim Kurultayı Bildiriler. Ankara:Gazi Üniversitesi
- Silberglitt, R., Anton, P., Howell, D.R., Wong, A. (2006) *The global technology revolution:executive Summary 2020*.USA: Rand Corporation.
- Sinanoğlu, O. (2006). Bye bye Türkçe. İstanbul. Alfa Yayınları
- Wallace, M.J. (1991) Training foreign language teachers. Cambridge, UK:Cambridge University Press

Appendix A

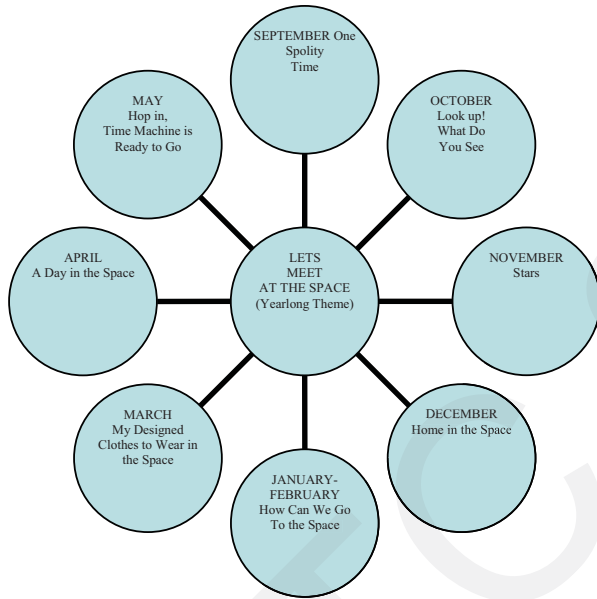
Table 1: Terms Related to the Societal Implications of Nanoscience and Nanotechnology developed by Bainbridge (2005) and their Formal and Recommended Turkish Equivalents

| Terms | of the Terms | Formal Turkish Equivalents this Study | the Terms by the Participants of Proposed Turkish Equivalents of |
|-----------------------------|--------------------|--|---|
| 1. Adaptive System | | Uyumlayıcı Sistem | Uyum Düzeni |
| 2. Alienation | | Yabancılaşma | Soyutlanma |
| 3. Amino Acid | | Protein (Fr) Yapıtışı | Karboksil Zincirin Yapıtışı |
| 4. Angstrom Unit | | Onda Birlik Birimi | Onabir |
| 5. Anomic | | Kuralsızlık | Kuralsızlık |
| 6. Aquaporins | | Hücre Dayanağı | Hücre Kalkanı |
| 7. Assembler | | Toplayıcı, Çevirici | Kurucu |
| 8. Atomic Force | | Atom (Fr) Güç Göreci | Mini Görec Microscope |
| 9. Biomimetic | | Benzer Yaşam Etkisi Maddesi | Benzer Yaşam Etkisi Maddesi |
| 10. Bionic Technology | | İnsan Üstü Mekanik Bilim | Canlı Gelişim Bilimi |
| 11. Boundary Work | | Çalışma Sınırları | Çalışma Hatı |
| 12. Buckyball/Fullerence | Fullerens | | Karbon Eşözdek |
| 13. Bureaucracy | | Bürokrasi (Fr) | Genörgüt |
| 14. Capitalism | | Kapitalizm | Parasal |
| 15. Co-evaluation | | Ortak Değerlendirme | Eş Değerlendirme |
| 16. Common Law | | Medeni Hukuk | Halk Yasası |
| 17. Complexity | | Zorluklar | Karmaşık |
| 18. Consilience | | Konsilens | Bilgibölge |
| 19. Constituency | | Seçmen | Seçmen |
| 20. Construction | | İnşa | Yapılım |
| 21. Contextualize | | Bağlamsallaştırma | Bağdama |
| 22. Converging | | Eşgüdüm/Uyumlu Teknolojiler | Değişen Bilim Technologies |
| 23. Coordination | | Koordinasyon (Fr) | Düğü |
| 24. Cultural Lag | | Kültürde Geri Kalma | Ekinsel Gecikme |
| 25. Demographic Challenge | Demografik | Çökme | Nüfus Çökmesi |
| 26. Devolution | | Havale/Nakil (Ar) | Gönderim |
| 27. Digital Divide | | Bilgi Teknolojilerine | Sayısal Eşitsizlik Erişimde Eşitsizlik |
| 28. Diffusion | | Diffüzyon (Fr) | Yayıma |
| 29. Disruptive Technology | | Zorla Ayrıcı Teknoloji (Fr) | Dağıtan Bilişim |
| 30. DNA | | DNA | Yapıcı Taş |
| 31. Dual Use | | Çifte/İkili Kullanım | Eşlek Kullanım |
| 32. Elasticity | | Esneklik | Geşeklik |
| 33. Entropy | | Dağınm | Bilgi Dağıtım / Yitimi |
| 34. Epitaxial | | İnce Kaplama | Eş Yönlü Billur/Serinsel |
| 35. Ethics | | Ahlak Bilimi | Ahlak Bilim |
| 36. Externalities | | Dışsallıklar | Dışkalıp |
| 37. Focus Group | | Odak Grubu | Odak Öbeği |
| 38. Fullerene | | Fullerene | Karbon Eşözdeği |
| 39. Futures Market | | Vadeli İşlemler Piyasası | |
| 40. GAP Analysis | | Açık Analizi | Açık Arayış / Ayrım Çözümleme |
| 41. GDP | | Gayrisafi Milli Hasıla | Yurtiçi Kişi Başı Gelir Miktarı |
| 42. Gedanken Experiment | | Gedanken Deneyi | Çağırışım/Akla Gelenler |
| 43. Gene Expression | | Kalıtım Düzeni | Kalıtım İfadeşi |
| 44. Genome | | Kalıtımsal Malzeme | Kalıtımsal Ürün |
| 45. Genome Sequence | | Kalıtımsal Sıralama | Kalıtımsal Dizin |
| 46. Grey Goo | | Gri Yapışkan | Dünyanın Sonu |
| 47. Hermeneutics | | Hermenestik | Yorum Bilimi |
| 48. Hyperbole | | Mübalaga/Abartı | Abartı |
| 49. Inelasticity | | Esnek Olmayan | |
| 50. Initiative | | Girişim | Önayak |
| 51. Institution | | Kurum (Fr) | Yerleşikhane |
| 52. Intellectual Property | Entellektüel (Fr) | Sermaye | Düünsel Sahiplik |
| 53. Interdisciplinary | | Disiplinler (Fr) Arası | Dallar Arası |
| 54. Invention | | İcat / Buluş | Türetim |
| 55. Labor Market | | İşgücü Piyasası | Emek Pazarı |
| 56. Lazer Tweezer | | İşıklı Cımbız | İşınan Cımbız |
| 57. Luddites | | Yenileşme Karşıtı Kişi | Gelişime Aykırımlar |
| 58. Melting Pot | | Eritme Potası | Eritme Kabı |
| 59. Micron | | Mikron | Bındebir Milimetre |
| 60. Molecular Electronics | Molekül Elektronik | | Çift Atomal Akış |
| 61. Monolayer | | Tek Kat | Tek Yüzey / Katman |
| 62. Moore's Law | | Moore Yasası | |
| 63. Multidisciplinary | | Çokdisiplinli | Çoklu Dallar |
| 64. Myth | | Mit (Fr) Efsane | Söylence |
| 65. Nano | | Atomal Düzey/Moleküller | Minikötesi Robot Üretim/Nano |
| 66. Nanocomposite | | Nanokompozit | Minikötesi Oluşum |
| 67. NanoFabrication | | Nanofabrikasyon | Minikötesi Üretim |
| 68. Nanofluidics | | Nanofluidiks | Minikötesi Akışkanlar |
| 69. Nanomanipulator | | Nanomanipulör | Minikötesi İşleticisi |
| 70. Nanometer | | Nanometre | Minikötesi Seviye |
| 71. Nanophobia | | Nanofobi | Minikötesi Korkusu |
| 72. Nanoporous | | Nanoforus | Minikötesi Geçirgen |
| 73. Nanoscale | | Nanoscale | Minikötesi Ölçüm |
| 74. Nanoscience | | Nanobilim | Minikötesi Bilimi |
| 75. Nanosensor | | Nanosensör | Minikötesi Algılayıcı |
| 76. Nanotechnology | | Atomal Düzey/Moleküller | Minikötesi Beceri |
| 77. Nanotube | | Nanotüp | Minikötesi Tübu |
| 78. NBIC | | MCKK – Minikötesi Canlı | Beceri Kavrımsal Kavuşması |
| 79. NEMS | | MEMS – Minikötesi Elektro | Mekanik Sistemi |
| 80. Niche Market | | Hücre Pazarı | Minikötesi Pazar |
| 81. Opinion Leader | | Fikir/Kanaat (Ar) Önderi | Öneride Öncü |
| 82. Organization | | Örgüt | Düzenleme |
| 83. Qualia | | Kalite | |
| 84. Quality of Life | | Yaşam Kalitesi | |
| 85. Quantum Dot | | Kuantum/Zerrecik Noktası | Zerrecik Noktası |
| 86. Photolithographer | | Fotolitograf | İşınal Taş Basması |
| 87. Polymer | | Polimer/Çoğuz | Ardışık |
| 88. Post-Hoc Analysis | | - | İlk Sonrası İnceleme |
| 89. Post-Industrial Society | | Endüstriötesi Toplum | Sanayi Sonrası Toplumu |
| 90. Private Goods | | Özel Mallar | Özel Mülk |
| 91. Protein | | Protein | Karboksil Zincir |
| 92. Proteomics | | Proteomiks | Karboksil Zinciri/Bilimi |
| 93. Prudential Principles | | İhtiyat (Ar) İlkesi | Tedbir İlkesi |
| 94. Public Engagement | | Halk (Ar) Uğraşısı | Cumhur(un) Sorumluluğu |
| 95. Public Goods | | Kamu (Ar) Malı | Cumhur Mülkü |
| 96. Risk Assessment | | Risk (Fr) Değerlendirme | Olası Tehlike Değerlendirme |
| 97. Risk Aversion | | Riskten Kaçınma | Olası Tehlikeden Kaçınma |
| 98. Scale Economics | | Ölçek İktisatı/Ekonomisi | Ölçek Tutum Bilimi |
| 99. Scanning Probe | | Tarama İnceleme Litografisi | Tarama İnceleme Taş Lithography Baskısı |
| 100. Scanning Tunnelling | | Tarama Mikroskopu | Atom Minilgöreci Microscope |

| | | |
|-----------------------------|-------------------------------|-------------------------|
| 101. Self-Assembly | - | Kendi Kendine Kurgu |
| 102. Social Judgement | Toplumsal Değerlendirme/Yargı | Sosyal/Toplumsal Adalet |
| 103. Social Movement | Toplumsal Hareket | Toplumsal Devrim |
| 104. Speech Recognition | Ses Tanıma | Ses Onayı |
| 105. Spintronics | - | Akışal Dönüşüm |
| 106. Stakeholder | Paydaş | - |
| 107. Sustainability | Sürdürülebilirlik | - |
| 108. Technological Deterism | Teknolojik Gerekçilik | Becerisel Gerekçilik |
| 109. Technology Assessment | Teknolojik Değerlendirme | Becerisel Değerlendirme |
| 110. Technology Transfer | Teknolojik Aktarım | Becerisel Aktarım |
| 111. Therapeutic Cloning | İyileştirme İkizleme | Sağaltımsal Çoğaltım |
| 112. Thermodynamics | Termodinamik | İşil Devrim |
| 113. Tort | Tort | Zarar |
| 114. Toxicity | Toksin | Ağıldık/Zehirlik |
| 115. Trading Zone | Takas Bölgesi | Ticaret Bölgesi |
| 116. Transcilience | - | - |
| 117. Transistor | Transistör | Geçirgeç |
| 118. Tribology | Triboloji | Sürtünme Bilimi |
| 119. Two Cultures | İki Kültür | Zıt Kutuplu Ekinler |
| 120. Utopia | Ütopya | Öte Anlam |
| 121. Values | Değerler | Özel Paylaşım |
| 122. Vapor Deposition | Buhar Ambarı | Metal Kaplama |
| 123. Virtual Laboratory | Sanal Laboratuvar | Ana Bellek Haznesi |

Appendix B:

Scheme 1: Sample Integrated Thematic Instruction Theme Scheme for 6th Grade (The yearlong theme and its mostly components)



The weekly topics

for the September Component of the Yearlong Theme

| Subject Matter | 1 | 2 | 3 | 4 |
|----------------------------|---|--|------------------------------|------------------------------------|
| Social Science | History of the Universe | The chronology of events in space | Human rights is universal | The point where my freedom ends. |
| Science and Technology | How did the Universe form | Watching the big Explosion | Gravity | A tiny Atom |
| Mathematics | Numerics from The infinitive | From minus infinitive plus infinitive | Natural numerics | Calculations with natural numerics |
| Turkish | Is Turkish a Universal language? | Where is Turkish from? | Non-Turkish Originated words | Don't be ashamed of your Language |
| English | Is English a Universal Language? | How old is the world? | In Turkish Final Countdown | If you Multiply 2 with 2 |
| Religion and Moral Science | The Super Power that created the Universe | How were the religions formed? | Which Holy Book? | Religion Freedom |
| Physical | Where am I in The universe? | Healthy body Healthy psychology | Let's warm up | Marching |

THE NEED FOR IMPROVEMENT OF IT TEACHING

Dr. Anrieta Draganova

Zayed University, Dubai, UAE

Abstract

This research investigates the factors that discuss the urgent need in improving teaching in the area of information technology. Although, there is an interest in the improvement of the IT teaching, it has not yet taken effect in the graduate programs. Few graduate programs furnish efficient IT educator instruction. The limitation to such programs is the shortage of IT instructional pioneers within the program to direct and carry out an IT blended instruction. The study introduces frameworks that can motivate and engage a possible educator to embrace blended instructional teaching into graduate programs.

Index words: IT educational instructions, instructional pioneer, blended instructional teaching.

Introduction

This research is concerned with revelation of knowledge rather than with its spreading. Generally, educators have diverse views about teaching. Educators perceive research as more important than teaching. However, teaching IT in graduate programs needs an improvement. There are the following recommendations for IT teaching to improve.

Teaching in tertiary educational institutions is an essential element of education. The educators are generally assessed on the ground of scholastic attainment different from their teaching. The role of IT educators is to teach the learners, although it appears that IT teaching is sustained from that very ordinariness. IT teaching dominates the largest amount of most IT educators' time, but hardly functions at the highest degree of expertise. There emerges an established scholastic aversion of considering the IT teaching an unambiguous process. Educators act strenuously within their field of study and they are often limited by reflexion of their teaching.

Number of educators considers teaching as an unambiguous that it needs no special preparation, while others find it so individualistic and particular that no preparation could ever satisfy its variety of challenges. But many apportion the conventional notion that educators are brought into this world and not produced. Many educators regard themselves as good educators and they have fueled it by agreeing to it. Educators perceive their teaching in class as fine. Their view of the learners is that they as well as perceive them as good educators, although they are not sure of their own teaching. Indeed, the marginal authenticity in this cognitive content applies no more to teaching.

There are professionals who are good at the professions to acquire and construct skills and knowledge spending immense amount of time in the pinnacle of fierce contention. Prospective capable educators grow into successful educators by the same virtue: through behavioral modification of strength of intellect, through growing and mastering of skills, and through pluralism in the middle of serious rivalry (Eble, 1988).

The "new" focus on educating branches from "new" sociopolitical and demographic factors. Demographics have changed the learner communities and their educational strategies. The advent of technology in education has changed the constituency about learning and teaching. The community outburst attained liability that has roused awareness for governing committees and legislators to actions for enhancement and amendment of teaching and learning.

With the advent of blended and online learning, in recent years, the interest in improved teaching and learning in graduate programs has increased exponentially, cutting into all Emirates of the country and many universities. Tertiary institutions are evolving from twofold support of the importance of teaching to collaborative and continuous attempt to embellish educational programs. Heretofore, the conception of enhancing teaching is scarcely new. In the past, its focus was to augment content expertise. The principle was ascertained as a broader grasp of the content of the subject. Basically, no consideration was given to how that grasp of the content could best be bestowed to learners. Nowadays, this beforehand hypothesis has been turned around and it became an advent supported by four postulations: first, the main priority for most educators is teaching; second, instructional practice is not inherited, but rather master entanglement of approaches, skills, and targets; third, educators can be enlighten how to enhance their classroom production, and last, consolidation of communities involving educators and learners.

Limitations to educational development

Suggested are the following reasons for the educational development to stall. Based upon earlier research (Draganova, 2009) about educators views about their teaching competency and approaches, there are limitations to their educational development.

Firstly, educators have a strong perception about teaching that only an educator with knowledge in the field can talk meaningfully about it. They perceive that general knowledge about educating does not smoothly render into the field-particular terms and theory that an educator of a specific course can freely perform upon. Following is the fact that many educators neglect the importance for improvement in their own pedagogy. Their view is that they are performing well in class, a view that decreases their concern in improved educational programs. One such example is the survey done by Blackburn ET. Al (1980) indicating that 93 percent from 300 college educators rank their teaching above average.

Thirdly, the educator's specific and personal needs do not coexist with the collective nature of vast teaching improvement programs. An educator from a tertiary institution stated that it is not to the benefit of the educator to spent time and efforts for an improvement teaching program that does not relate to the problems the educator has. Lastly, many educators have not been encouraged and motivated to cross the brink of an educating improvement program, lack of willingness more than resistance has kept them on the side. As a Maryland educator stated that he would not participate now in an educating improvement program, but that he will eventually one day do it.

Rationale to enhance IT teaching

The purpose for enhancing IT teaching is ascertained in several interlinked subjects that are connected to: i) educators, ii) learners, iii) tertiary educational institutions, and iv) Educational communities (Seldin, 1993).

Nowadays, the current rewarding system for educators is based on the educators' success in research and scholarship with an undervaluation of teaching. One such coincidence of this slant reward system is the inadvertent reward for the IT educators. In real life, in higher education teaching is considered less important than research. Yet the increased strife for learners today depends upon tertiary educational institutions to consolidate their statement of presenting enhanced teaching. Tertiary educational institutions with enhanced teaching and recognized system of quality education bring a different benefit in the strife for learners.

During the past twenty years, there was a significant growth of professional development programs for educators that they could have taken an advantage of. In fact, only a small percentage of educators received the benefit of these professional development programs. Many educators are not yet up to the level to develop their own teaching methods and philosophy and they lack knowledge of the literature that provides knowledge about teaching and learning. The professional development programs are professionally prepared programs that teach the educators on how to employ different teaching methods and strategies in their teaching. Similar to other professionals, the educators as well should have a self-motivated and great necessity to improve themselves, to participate in professional development and enriched development, to increase and widen their perception of contemporary teaching. They must be receptive to new pedagogical strategies and approaches and the fast growing technological methods. The process of continuing professional development is to become a continuous process for the educators to learn in order to remain the best in teaching.

Contemporary learners are a diverse blend from what they were two decades ago. Nowadays, there are learners from different ages, educational backgrounds, and communities. And those who teach contemporary learners must learn on how to educate them and what method to employ to the new blended and online environment. Ultimately, with the advent of computer technology in education, new teaching strategies and methods have surfaced as effective tools in blended and online teaching and learning. With these novelties, the traditional face-to-face classroom experience needed to change to distant teaching and learning where the time and the place were not an issue that instead it would promote a new teaching and learning with no regard to time and place. Obviously, electronic education via advance technology offers particular stipulation for the educator to create a strategy and an approach to deliver knowledge in a modality that is different from the traditional face-to-face teaching. For the teaching to be efficient and beneficial to learners, the educators participating in blended and online education need to enhance their professional knowledge and to undergo a formal training in applying the new technology.

Methods to enhance IT teaching

At the tertiary high education institutions, the IT educators are usually hired with the prospect that they will employ a professional teaching to the learning community providing them with professional development opportunities to enhance their teaching as a logical continuation of this demand. Educators are entitled to guidance in their teaching as well as learners are to an effective direction in their learning. The IT educator needs to continuously improve and keep up with the advent of the technology in education. It is a continuous process for the IT educators to enhance and enrich their teaching strategies and approaches with no regard to their previous experience. The pedagogy that is used by the IT educators is a subject of a continuous improvement.

There have been a large number of studies about the definition of an efficacious teaching including the IT educator to have a profound knowledge of the subject, an ability to engage and motivate learners, facilitate blended and online interaction with learners, motivation to teach, explicit presentation of the subject, and fair assessment. And with regard to an effective IT teaching there are as well speculations heaved by some that there is no conclusive response to the constituency of an efficacious teaching. That may be well determined; however, the important elements of efficacious teaching are well established.

Eble and McKeachie (1986) suggested that the growth of an educator, the educator is to "reinforce and reward excellent teaching" as well as presenting opportunities for the IT educator to enhance the growth of knowledge. Seldin (1993) as well underlines the importance of the areas to be developed by IT educators including the preparation of educational material and programs for the efficacious teaching as follows:

- Creating efficacious teaching strategies, practices, and skills to benefit learners and their variation of learning goals providing the use of technology and concepts to enhance their understanding of the subject. Educators are to learn from their practices to a particular learner or community and adjust accordingly.
- Facilitation the communication between educator and learners providing teaching approaches and experiences to learners to help them overcome their differences and difficulties in learning. The ease in communication between educators and learners is an important element in the communication between the two that includes appropriate communication and interaction between IT educator and undergraduate learners and IT educator and graduate learners.
- Helping learners to develop skills required for the interaction between learner to learner skills and educator to learner. It is essential for the learner to develop a sense of careens from the educator. The educator's availability in both blended and online interaction helps the learners to increase their engagement and interaction in blended and online learning.
- Create approaches that stimulate educators to comment, promote, and facilitate each educator's teaching to nurture discussions about teaching, ascend positive feelings amongst discouraged educators and to raise greater adherence to teaching and learning.
- Create approaches that develop awareness to educators of their teaching strategy with the purpose of motivation to learn new strategies and methods to benefit the learners. Number of educators needs help with enhancing teaching practices that can't be learned at conferences and workshops. One way to achieve an encouragement and improvement of educators teaching methods is friendly and openly to discuss the issues connected to teaching and knowledgeable educator to facilitate the process.

Teaching IT educators is a challenging experience for the educators to engage and interact in a new social network template. Educators can teach not only learners, but they can also provide experienced teaching to fellow IT educators. A selection of excellent educators is essential for consistent teaching using synchronous and asynchronous modes, in individual sessions and small groups to provide flexible environment and motivation to educators.

The IT educators may entail various advices to the different professional phases to satisfy particular educator's efforts to improve their teaching methods. For experienced educators it is essential to reflect on their teaching methods that could serve as a tool for teaching their junior IT colleagues. There is another group of educators who appreciate new technical skills that they can successfully apply in interdisciplinary teaching, online discussions, and the use of technology in the traditional classroom.

The improvement of teaching the IT educators is an abstract and a relative matter. What is efficient teaching method for some IT educators, it may not be considered successful for others? Sometimes, some teaching experiences work better than others and sometimes the teaching programs work well. Techniques and methods apply well to the degree that they adapt both the personality of the educator and the tradition of the tertiary educational institution (Seldin, 1993).

Model of an efficacious teaching program

There are teaching methods and strategies in the literature that suggest an efficacious teaching that are given a special consideration. The tertiary education institutions are analyzing the use of efficacious teaching programs to subdue fragments of reaction or lessen protruding elements in a present program that would do well by recommending important study to this suggestion. What The reference points of efficacious teaching programs were interpreted by Seldin (1993) and Eble and McKeachie (1986) in the following fashion:

- Use diversity of strategies and methods to satisfy different educator's priorities, agendas, and teaching modes.
- Modify teaching program to the needs of the educational institution.
- Extend program for as long as it is needed.
- Contrive high-level administration profile.
- Demonstrate program's voicing.
- Introduce task groups to modify and govern the teaching improvement program.
- Improve teaching methods to ascertain possibilities for consistent try to enhance the teaching for **both experienced and inexperienced** educators.
- Engage IT educators to interact with others in a partnership to contribute to initiatives in semblance of **their enhanced practices**.
- Instigate educator's ambivalence and a high degree of involution in numerous features of the **improved teaching program**. Establishment of an active methodology to attain of substantial innovation in learning.
- Tackle educators to voice their individual attempts.
- Encourage educators to participate in the program and diminish barriers to it by **encouraging the educators to eavesdrop to others**, discuss and transform the teaching program, and endure required time for the program's **recognition and consent to employ to enhance teaching and learning**.
- Accredited, acknowledge, and honor merit teaching and learning.

Create self-motivated learning community more receptive to teaching

The educator is to be motivated to avoid self-satisfied teaching and to **coordinate with learner's aptitude to learning**. The educator needs to identify personal educational goals in the teaching environment. It is **essential for educators to be inspired** in employing new teaching methods and strategies that are to be perceived as a normal retrench of professional development. Research and teaching loads should be reasonably divided so the educator remains in a row of modification in the subject. **The educators need an immense amount of patience** in order to achieve improvement in teaching through this process of teaching.

Incentives for enhanced IT teaching

Educators indicate that a barrier to improve IT teaching is the incentive that notches IT teaching against research. Many tertiary educational institutions give little attention to the significance of IT teaching but then reverse its attention to the incentives to research, scholarships, and journal publications. Evidently the incentives need to be modified so that there is valued appreciation of greater teaching. The IT teaching is to be given an important role in hiring and promotion decisions. IT educators need to perceive teaching as an important element in the educational careers and essential for the future generation of learners.

Conclusions

Not long past, the common academic tendency toward scholarship and research at university level would provide and deter worthless attempts to amend IT teaching. Nowadays, **teaching IT educators is being considered more thoughtfully**. Increasing weight from such various origins as the American Association for Higher Education, educators, and learners have shifted the importance of teaching to tertiary educational institutions to reassess the significance of **teaching other educators** and the position of the educator in the traditional classroom and online. A large number of educational institutions are revising their devotion to teaching and investigating means to embellish and recompense it.

Teaching is **rather considered a skill and not a science**. Although every educator needs grounding in the teaching approach before doing the work, there is **always the possibility** for the educator to improve skills and teaching practices. The improvement in teaching is a lengthily process and many times **the educators fail** within the process of acquiring this knowledge. No one would comment on the obstacles tackling professor's intention on heightening. Improvement may be sluggish and for some, the attainment may possibly fail.

References

- Blackburn, R.T., Bober, A., O'Donnell, C., & Pellino, G. (1980). *Project for faculty development program education: Final report*. Ann Arbor, MI: University of Michigan, Center for the Study of Higher Education.
- Cole, C.C. (1978). *To improve instruction*. Ashe-Eric Higher Education Research Report, No. 2. Washington, DC: American Association for Higher Education.
- Draganova, A. (2009). *Learners View of Blended Learning in an Information Technology Classroom*. Paper presented at the 3rd IDIA Conference 2009 Digitally Empowering Communities: Learning from Development Informatics. Practice.
- Eble, K.E., and McKeachie, W.J. (1986). *Improving undergraduate education through faculty development*. San Francisco, CA: Jossey-Bass.
- Seldin, P. (June, 1993). *Improving and evaluating teaching*. Paper presented at the American Council on Education Department Chairs Seminar, Washington, DC.

THE NEED FOR PEDAGOGICAL CHANGE IN ONLINE ADULT LEARNING: A DISTANCE EDUCATION CASE IN A TRADITIONAL UNIVERSITY

Sonmez Pamuk, PhD

Computer Education & Instructional Technology Department, College of Education, Ondokuz Mayıs University, Samsun, Turkey.
Email:sonmezp@omu.edu.tr

Abstract

Among many ways of technology use in education, distance education is one particular approach that has been growing rapidly among educational institutions and educators. The need for providing opportunities for those who seek for advancing his or her knowledge and skills on different subjects while they are away from campus has been a requirement of the era we live in. Thus, the diffusion of distance education concept among educators and technologies in many campuses has been growing. Parallel to the adoption rate of distance education in the world, it has also been popular subject in Turkey. Many institutions have initiated distance education programs in recent years. Although different advanced technologies are available for preparing and delivering content online, the important question on how to use these technologies still remains unanswered. Literature on the subject recommends that having access to technology itself does not produce desired outcome, unless it is supported with appropriate pedagogical approaches.

This study, therefore, was designed to investigate pedagogy of teaching and learning online from adult student perspectives. Specifically, to understand pedagogical factors that impact student understanding of the content in online LMS context, how adult students in an online program assess pedagogical approaches represented by course instructors, weaknesses they have experienced and ideas what would be done in terms of pedagogical approach so that adult learners learn better in online environments.

INTRODUCTION

There is no doubt that the use of information technologies, particularly computer-based technologies, in education has increased dramatically and that increase has brought new opportunities to enhance teaching and learning (Bransford et al, 2000). However, studies in the related literature discuss that efforts of few decades have produced little or no change in education as compared to changes in other domains of daily life (Cuban, 2002; Franklin, Turner, Kariuki, & Duran, 2001; Schrum, 2005). People in given time period have changed their banking behaviors, entertainment styles, communication tools and so on. The close investigation of this change process reveal, at least for many of us individually, that the resistance to change or adoption of technology has not been so difficult as it has been in education. Although technology in areas as we cited some above have become an indispensable part of the process, it is not so clear to see this picture or the same speed of the adoption trend and its impact in education. Although educators have agreed on the fact that information technologies have potential to transform teaching and learning, they cautioned that only if it is used appropriately (Koehler, Mishra, & Yahya, 2007).

Among many ways of technology use in education, distance education is one particular approach that has been growing rapidly among educational institutions and educators. The need for providing opportunities for those who seek for advancing his or her knowledge and skills on different subjects while they are away from campus has been a requirement of the era we live in. Thus, the diffusion of distance education concept among educators and technologies in many campuses has been growing. Parallel to the adoption rate of distance education in the world, it has also been popular subject in Turkey. Many institutions have initiated distance education programs in recent years. One of those institutions, Ondokuz Mayıs University has just established its distance education structure and initiated a very large project for more than four-thousand adults who work in the field of health. The current study was carried out with participants of this project.

Although different advanced technologies are available for preparing and delivering content online, the important question on how to use these technologies still remains unanswered. Literature on the subject recommends that having access to technology itself does not produce desired outcome, unless it is supported with appropriate pedagogical approaches. The theoretical discussions as provided in the next section suggest that teaching a subject matter is a complex process that requires teacher consider different components (i.e., content, context, classroom management, pedagogy of teaching and learning) of teaching and learning (Shulman, 1986).

In this study, we have investigated adult students' online learning experiences and conceptualized fundamental principles of online pedagogy of teaching adults. Given the size of the project and the complexity of technology integration process, we believe that the discussions in this study will provide some insights for those who are or plan to be part of distance education project at this scale. Experiences on teaching and learning at distance as well as pedagogical experiences will be provided.

THEORETICAL FRAMEWORK

Educators demonstrate a strong consensus on the need for integrating technology into education. However, they differ on the process for implementation and outcomes. The early implementation results have revealed that the impact of technology on teaching and learning has not been reached to the desired level of success. Parallel to what Cuban (2002) criticized, results pointed out that increased access rate to technology and internet has not produced any remarkable change as expected. Several factors and reasons have been discussed and solutions offered as a remedy in the literature. Although there may be different ways in literature for addressing issues with regard to use of technology in education, we prefer to focus on pedagogical use of technology in this study.

Among different proposed solutions, one specific approach, Technological Pedagogical Content Knowledge (TPACK), gaining attention of educators has been selected as a theoretical framework to assess students' online learning experiences. TPACK framework provides holistic framework to conceptualize how pedagogy and technology should be used together. According to TPACK, effective technology use depends not only on technology and use of it, but content, pedagogy, technology and interrelationships of these concepts. Based on Shulman's (1986) Pedagogical Content Knowledge model, Mishra and Koehler (2006) redefine it and add technology component to the model. In the essence of the model, technology integration is defined as a different and new knowledge base developed from content, pedagogy, technology and their interactions. Therefore, in this model, teachers need to go through a systematic process of deciding what to teach, gain knowledge and experience on how to teach, be aware of context conditions during the teaching and finally think about if technology supports teaching of that specific content, pedagogy in the chosen context.

In our context as given in the research context section in details, approximately eleven academic personnel has taught five courses to 4000 adult students. This is the first experience of instructors as well as students teaching and learning online. Therefore, the pedagogical approaches of each instructor and the way how they implemented with technology has been important component of the overall program. Considering students' limited access to instructors and to resources available in traditional classroom, the way of blending pedagogy and technology become a key factor in the success of program and obtaining desired outcomes. TPCK framework in this study has made it possible for us to define, first of all, what effective or meaningful technology integration is, and how to assess its outcomes. Through lenses of TPCK, we tried to understand what pedagogical factors impact student understanding of the content in online LMS context. More specifically, to understand what pedagogical factors works and what do not work for teaching and learning online from learner perspectives.

PURPOSE OF STUDY

The main purpose of the current study was to investigate pedagogy of teaching and learning online from adult student perspectives. Specifically, this study sought to understand pedagogical factors that impact student understanding of the content in online LMS context, how adult students in an online program assess pedagogical approaches represented by course instructors, weaknesses they have experienced and ideas what would be done in terms of pedagogical approach so that adult learners learn better in online environments. To accomplish this purpose, following research questions were created;

1. What are the main components of effective pedagogical approach in online learning environments from adult learner perspective?
2. How do adult learners evaluate their online learning experience?
3. What would be done differently to improve pedagogy of teaching and learning online?

RESEARCH METHODOLOGY

In this study, qualitative research approaches was used to accomplish the purpose of the study. As indicated in the literature, qualitative research approach provides researcher opportunities and flexibility to investigate the issue from different perspective in details (Glaser & Strauss, 1967; Merriam, 2002). Within the consideration of the research context where learning and teaching take place, two major primary data sources were used to collect data. First, interactions, discussions among students, questions to instructors and to other students in the online forum sections in the LMS were one of the major data source. In addition, based on the emerging themes from initial analysis of the data from online forums and communications, a questionnaire with 17 questions of which 7 were open-ended type were developed by researcher and distributed to participants through an online surveying system. Moreover, because of the position of researcher in the project, e-mails, phone conversations with students, one-to-one and as well as group meeting with instructors would be listed as secondary data resources.

Research Context

This study was carried out in the context where four-thousand adult students from almost all Cites of Turkey enrolled to an online program. Ondokuz Mayıs University has initiated an online certification program for individuals who work in the health field. This program was intended to improve participants' educational level and provide them an opportunity to earn four year college diploma. All participants in the program had two-year community college diplomas and have been working in the field for years. This study has been carried out with the students of the first year in the program.

To accomplish the goals, technical infrastructure were established and Moodle LMS was installed to distribute online content to students, establish communication between students, and instructors as well as among students. Every week students were provided content in different formats. Video streaming with synchronized presentation lecture for the week, hand outs, MP3 audio files of the lecture were some of the teaching materials every week students receive through the LMS system. Students were provided online forums and time to ask questions to instructors and share their thoughts with other students and with instructors.

Data Analysis

Data were analyzed by inductive approach. This approach is described as the way looking at the data and developing general principles about the subject, listing general themes from data. In the current study, researcher read all postings in the online forums and code important data and then develop general themes emerged from the codes in the initial step of the data analysis. This stage actually was ongoing process that started in the beginning with early data comes in and continued till end of the research. Based on the initial data analysis results, a questionnaire were developed and implemented. The data come from the questionnaire instrument was also analyzed by similar strategy. In addition, the descriptive statistics techniques were employed to summarize the data from questionnaire.

RESULTS

Approximately four-thousand student adult participated to the study in different ways. Total 17 weeks of online postings in forums and one thousand and five hundreds responses (The number of response increases during the study) to questionnaire were gathered and analyzed. Overall, analysis of the data revealed that majority of the students (61%) were adults with the average age is between 31 and 35. More than 90% of the students had a work during the study, and about 75% of the students reported that it was 11 or more years past since the their last graduation of a school. Eighty-five percent of the students reported that they had home computer with internet connection. In terms of students' use of internet and e-mail communication, 80% of the students reported that they had an actively used e-mail account, and they use internet daily basis to read news, send e-mails, and similar activities. With regard to distance education experience, 80 percent of the students mentioned no previous experience with distance education.

Based on the analysis of the data, adult learners' thoughts on distance education and pedagogic issues they report are categorized into different groups.

General Thoughts

As noted above, this project was the first distance education project that the majority of the students in this study have experienced. Therefore, their thoughts on the projects would be important in terms of understanding the introductory level of innovation and reactions to it. Although students have reported that being part of the distance education program was an opportunity for them because of their current employment status, they strongly noted that learning at distance was different than that of traditional classroom for several reasons (i.e., motivation, interaction, limited time, other commitments etc). Among several important issues emerged from data, we summarized pedagogical issues under two major groups: 1) pedagogical planning before teaching online, 2) implementation of pedagogy during teaching (see Figure 1).

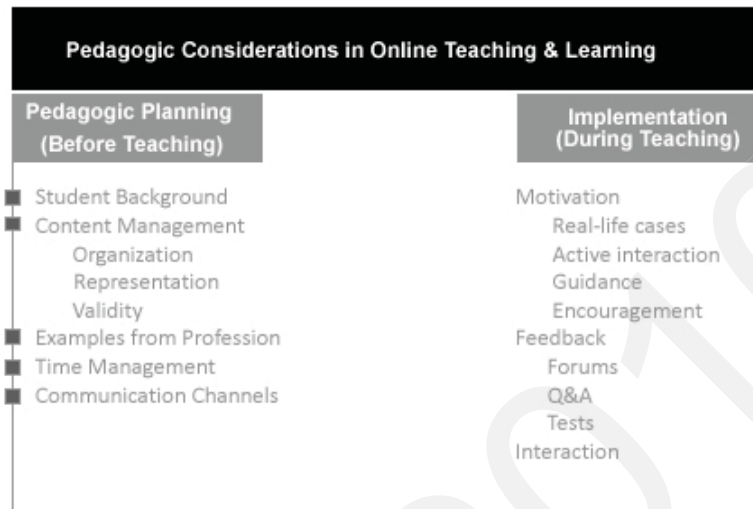


Figure 1. Pedagogic considerations in online teaching and learning.

As we examine the planning section, students reflections on the effectiveness of learning online actually was not different than what we know about the general pedagogy of teaching and learning in the classroom setting. As Shulman (1986) discuss in details in Pedagogical Content Knowledge concept, teachers need to know not only what to teach in other words about the content but ways how to teach it. Shulman points out that effective teaching requires teachers know details of the content, connection among the concepts, and some other relationships. In addition, knowing all details of the content area is not adequate to teach effectively. Teachers, according to Shulman also need to know and have experiences about classroom management, students' background, students' understanding during the lesson (Shulman, 1986).

Most importantly, teacher needs to know how to choose and apply specific pedagogical approaches based on the subject matter so that students understand and learn better. Organization of the lesson require considerations of different aspects of pedagogy of teaching (i.e., student background, readiness, interest, what they understand, what not, how to exemplify). Based on the given discussions, we found similar pedagogical subjects in our research as given in figure 1. Students in the planning section actually need more about a pedagogic approach that connects them to the content to be taught. To accomplish this, students report that more example from their profession, representation of the content in more summary and visual format, the validity and applicability of the content in real life are some the pedagogic issues that may be taken into consideration of the planning stage of the teaching. Due to the limited space, we only focus on the categories of pedagogical issues emerged as the most important and general ones in both planning and implementation level.

1. Content Organization

One of the important issues we found in the data was students' understanding of the content to be delivered. Due to the several reasons (i.e., lack of real-time interaction between students and instructors, limited connections what students perform in their jobs and what they learn in the course) some participants reported that they found difficult to understand the content from the materials provided.

According to students, content needs to be developed not only from ideas, formula and some other theoretical details but also from real case examples, problems, and issues they face every day in their jobs as midwives. As one student reports;

If I were teaching a course online, I would prefer to teach the content students use in their professional life. The theoretical and some unnecessary details make it harder to understand.

Another student report lack of real-time interaction as a missing part she finds supportive to understand better,

I find easier to learn in classroom setting because you have real-time interaction with teacher. If you have question you can ask. But comparing distance education with open-education, DE is better.

Several students also stress on the importance of the organization of the content according to students' backgrounds. Students believe that content should be organized in order from basic concepts to more complicated ones. Also, instructors need to emphasize on the important subjects as they do in traditional classrooms.

2. Interaction

The importance of real-time Interaction between students and instructors in the learning environment is one of the highly noted topics noted by participants. Majority of the students share their issues with learning in online environments as lack of real-time interaction with instructor. The need for clarifying some issues, asking question and receiving simultaneous response were some of the crucial components of learning online. One student points out that;

... During the lesson in the classroom, you can ask question right away or your classmates ask question and you benefit from it. But in DE platform, you have limited contact with instructor. However, considering my age and situation [full time employee, mother, Wife etc], DE is an opportunity. I feel that I'm listening the instructor when I watch the video presentation and read the question in the forum. Listening the MP3 format gives me flexibility too.

Another student stress not only the importance of interaction with instructor but also on the power of face to face interaction on instructor's teaching pedagogy. She notes that;

In the classroom, you have a chance to ask question and understand the subject matter, however you do not have this in DE. The other thing, in the classroom, teacher adjusts his teaching style according to students' understanding in the classroom.

As those students above represent some aspects of the interaction among students and teachers, the overall category emerged from data seems to indicate that the pedagogy of teaching in the classroom actually provide a medium for both learner and teacher to establish a shared pedagogy through questions, discussions and some other activities .

3. Feedback Mechanism

As related to the previous category, students were highly sensitive about the existence of some type of feedback mechanism to test their understandings. Students in their postings as well as responses to the questionnaire indicated that they were not sure if they understand the content provided through LMS. At the very beginning of the program, the majority of the students asked program coordinators and instructors providing weekly questions for each unit. Although this was added to the system, students were still in need of other feedback mechanisms. Therefore, they strongly stress on the importance of the real-time interactions so that they can check their understanding with other students and with instructor. One student, for example, noted that;

... of course learning in a classroom setting is much effective than that of online. You have opportunity in the classroom to interact with your instructor and to clarify what you understand correctly and what you don't through asking questions. In information transmission, no matter what and how well source transmits a message, the receiver's understanding of the message is important. As long as receiver does not understand the message correctly, source message goes somewhere else not to receiver.

In this study, we looked at the data from pedagogic perspective of teaching and learning online from adult students' perspectives. In addition those major categories given above, there are several categories as well we found important. The language of the materials, instructors' teaching strategies, students' backgrounds, lack of real life examples, time commitments, hardness of the content, and some other issues were also discovered from the data. Due to the limited space, we preferred sharing mostly indicated ones.

DISCUSSION

As noted in earlier sections, the main purpose of the study was to understand what adult students think about effectiveness of the learning online and find out pedagogical issues from their perspectives. The initial data analysis has revealed that although students were appreciative about the possibilities that distance education offer them, they were critical about limitations as well. According to students' experiences with distance education as given context, the interaction, simultaneous feedback mechanisms, and content design were important component of effective teaching and learning online. Students need more tools and opportunities to test his or her understanding of the content, to ask questions. In the result of current study, one of the most important finding as we conceptualized the data was the need for integrating pedagogy into content development, or planning stages of any online teaching activity. This requires instructor and instructional designers work together and find ways to how to teach a subject matter with examples, animations, graphics and some other teaching tools. However, this collaborative work should be organized around instructor's pedagogical approaches. In this process, instructors' experiences with teaching similar content in the classroom setting gain key factor as well. As Shulman discusses, teacher need to understand what concepts student have difficulty learning with and what strategies work and what not and some other strategic experiences so that he or she can adjust his/her teaching approach simultaneously. In our study, therefore, it should not be incorrect to conclude that having good pedagogical experiences with teaching special subject matter also a key factor for teaching with technology.

REFERENCES

- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How People Learn: Brain, Mind, Experience, and School: Expanded Edition*. Washington, D.C.: National Academy Press
- Cuban, L. (2002). *Oversold & Underused. Computers in the Classroom*. Cambridge, MA: Harvard University Press.
- Franklin, T., Turner, S., Kariuki, M., & Duran, M. (2001). Mentoring overcomes barriers to technology integration. *Journal of Computing in Teacher Education*, 18(1), 26-31.
- Glaser, B. G., & Strauss, A. (1967). *The discovery of grounded theory, Strategies for qualitative research*. New York: Aldine.
- Koehler, M.J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy, & technology. *Computers and Education*, 49(3), 740-762.
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A new framework for teacher knowledge. *Teachers College Record* 108 (6), 1017-1054.
- Merriam, S. B. (2002). *Qualitative research in practice: Examples for discussion and analysis*. San Francisco: Jossey-Bass.
- Schrum, L. (2005). A proactive approach to a research agenda for educational technology. *Journal of Research on Technology in Education*, 37(3), 217-220.
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.

THE PENCIL PLATFORM: CONNECTING LEARNERS, TUTORS, AND TOOLS

Matthias Heintz, Sebastian Weber
Fraunhofer Institute for Experimental Software Engineering (IESE)
Fraunhofer-Platz 1, 67663 Kaiserslautern, Germany
{firstname.lastname}@iese.fraunhofer.de

Abstract

This paper describes a flexible and extensible platform for supporting collaborative exercise solving in distance learning scenarios called PENCIL (Platform for Exercise sharing aNd Collaborative and Interactive Learning support). With the underlying API, PENCIL can be easily extended by connecting different Web-based tools for creating solutions (called “solution creation tools”) as well as processing tools (called “solution discussion tools”). With the exposed CRUD (create, read, update, delete) operations and a common database that stores exercises, solutions, and solution steps, PENCIL directly supports the process of exercise solving in an integrated fashion. We developed a proof of concept implementation for teaching UML (Unified Modeling Language) and provided two tools called “PINBOARD” and “StudentUML”. These tools enable learners and tutors to collaboratively create, share, and discuss UML exercises and solutions. The platform and the two tools were evaluated with 42 learners and four tutors from five European countries.

INTRODUCTION

The ongoing project “Embed4Auto” (<http://www.embed4auto.org/>), which is co-funded by the LEONARDO-DA-VINCI initiative of the European commission, deals with pedagogical concepts, learning content, and tools for the embedded software sector. This paper focuses on the tool aspect of the project. It describes PENCIL (Platform for Exercise sharing aNd Collaborative and Interactive Learning support), a Web-based platform that connects learners, tutors, and learning tools.

More precisely, PENCIL offers technology support in distance and blended learning scenarios in two different ways. On the one hand, it connects learners and tutors through the Internet and offers them the possibility to solve exercises collaboratively by discussing problems and results of different steps of the solution-finding process. On the other hand, it integrates and connects different tools for presenting learning content, creating solutions and discussing various solutions. Thus, a large PLE (Personal Learning Environment) is established, built by the connected tools. As proof of concept, PENCIL is utilized to teach UML 2.0 (Unified Modeling Language 2.0) and SysML (Systems Modeling Language) by connecting three tools: a Moodle learning management system (<http://moodle.org/>) containing the UML learning resources, StudentUML (Ramollari & Dranidis, 2007), a tool for creating and editing UML diagrams, and PINBOARD (PENCIL client for discussing solutions collaboratively by learners and tutors), a tool for discussing shared solution steps (at the moment only partly solved UML diagrams). But the system is designed in a way that virtually any Web-based tool can be integrated. Thus, a broad variety of topics and exercise types can be supported, depending on the tools that are connected to the platform and used by the learner.

One crucial point in distance learning scenarios are exercises. In real-world learning situations, students are able to do their UML exercises by sketching drawings on a piece of paper and discussing their solutions face to face with a tutor or with other students. In virtual environments, students mostly do multiple-choice exercises or deliver written answers to their tutors or teachers. The aim of PENCIL is to support more sophisticated learning scenarios where more complex problems have to be dealt with. Learning and teaching UML is a good example, as it calls for more ambitious concepts, since learners have to actually draw diagrams on their own in order to learn UML and be prepared for future tasks. UML was also chosen for the proof of concept because we already had experience and results from another project to build on.

Evaluations of the predecessor project Up2UML (<http://www.up2uml.org/>) revealed that learners generally liked the UML learning content developed and provided in the project, but wanted to be involved more deeply in the process of diagram creation (Trapp, 2009). In fact, the learning material did not provide enough opportunities for them to draw diagrams by themselves or to do more sophisticated and realistic UML exercises.

To enhance the learners’ level of involvement, PENCIL draws on different Web 2.0 concepts (for a description and explanation of such concepts, see (Weber & Rech, 2009)), ranging from user-generated content (sharing of UML diagrams and textual comments on them) to collaboration (through helpful discussions).

In order to increase the students’ diagram creation capabilities, a tool for drawing certain UML diagrams has been integrated as part of the current PENCIL platform. In the following section, the learning scenario addressed by PENCIL and the derived requirements are described. A brief description of related work is followed by a section on the architecture and implementation of PENCIL. The paper closes with evaluation results and a conclusion, including future work.

LEARNING SCENARIO AND REQUIREMENTS

In this section, we describe the target group and the general context of the PENCIL platform. From the description of the learning scenario we derive the requirements for a software system that aims at supporting collaborative exercise solving. Based on these requirements, we give an overview of related work and illustrate how the PENCIL platform implements these requirements.

The goal of PENCIL is to support collaborative exercise solving in distance learning scenarios. As already pointed out in the introduction, passive studying of learning content without actively applying what you have learned is usually not sufficient for complex topics (e.g., UML). PENCIL aims at supporting scenarios where face-to-face meetings between learners and tutors are difficult to carry out. Without appropriate tool support, distance and anonymity between the learners and tutors complicate the process of offering, solving, and reflecting solutions.

PENCIL attempts to address these problems by providing a software solution that fills the gap between studying theoretical material and practically applying this knowledge. Its major requirement is to facilitate the process of creating, sharing, and discussing (non-textual) solutions within distance learning groups.

A typical workflow for using PENCIL looks like this: Learning content on the UML and SysML is made available to students in the form of SCORM packages, PDF files, slides, etc. To foster their knowledge, students also need to learn how to draw the corresponding diagrams on their own. Tutors or teachers have provided a course structure (consisting of a selection of lessons and corresponding exercises), and periods of time have been fixed for the discussion of solutions. During the diagram creation process, students might have some questions or they might get stuck and not know how to proceed. This is the point where they might decide to share the current state of their solution. All shared solution steps can be accessed with a second tool, which is also part of the PENCIL platform and offers the possibility to search through and discuss solutions. Thus, a fellow student who knows the answer to a question or problem can write a comment (with an alternative solution

attached if appropriate) to help others to continue. This is also the place where the tutor can provide assistance to all those who did not yet receive help from others.

The software system is more than a simple discussion forum, since *the process of exercise solving is directly supported by the software system*. The system provides tight *integration of discussions about solutions with the actual solution creation process*. Different *procedures are automated in the overall process*, e.g., starting a new solution from an exercise, creating a new step in the solution process, attaching the solution step to an answer in the discussion. The system *offers a flexible and extensible architecture that facilitates integration with existing or new tools*. Thereby, virtually any type of exercise can be supported. For creating solutions, students work with a dedicated tool (StudentUML), which is part of the PENCIL platform. PENCIL *supports large user groups* and multiple parallel discussions about solutions for the same exercise with different user roles (i.e., learners and tutors) on a Web-based platform. PENCIL has been designed for *asynchronous discussions* where *collaboration takes place via discussions about solutions and steps of solutions*. It is worth noting that PENCIL is not suited for collaborative creation of diagrams or other collaborative design processes. However, by allowing solutions to be commented, annotated, and revised, it represents a very valuable step in the creation process with positive impact on the individual learning progress.

After discussing related work in the next section, we will present a more detailed description of the concepts and the architecture of PENCIL.

RELATED WORK

The PENCIL platform with its associated tool landscape, established through integrated solution creation and discussion tools (e.g., StudentUML for UML exercises and PINBOARD for discussions about partly-solved and finished solutions), **constitutes** a Web-based CSCL (Computer Supported Collaborative Learning) platform (Koschmann, 1996). From a technical point of view, **in CSCL a distinction is made** between communication, coordination, and collaboration tools. PENCIL addresses all of these dimensions, but **collaboration is in the focus** in terms of discussions about solutions and steps towards the final solution of an exercise.

The basic idea of collaboration within PENCIL is therefore realized by discussing solutions and **finding solutions this way**. Plenty of discussion tools, such as bulletin boards or Web forums, are available **online** (e.g., <http://answers.yahoo.com/> or <http://www.answerbag.com/>) or can be hosted by online education providers (e.g., <http://www.vbulletin.com/> or <http://www.phpbb.com/>). However, these tools are very generic, which means that virtually anything can be discussed. Thus, **they are not designed** for discussions about solutions and do not provide specific support. If they were used, this would mean that **a dedicated process would have to be followed** because the tool itself does not provide this kind of support. As a result, many **manual steps** (e.g., **creating solutions in an isolated tool, creating a screenshot with another tool, saving the screenshot online, writing an entry and attaching the screenshot**) would be required. These steps would have to be performed in a consistent way by the learners and would **slow down their learning progress**, as this would cause large overhead. The PENCIL approach already implements this process of **creating, publishing, and discussing** steps of a solution in a collaborative platform. Thus, no additional steps need to be performed by the learners to **present** their solution to fellow students and the tutor.

Mühlpfordt and Wessner (Mühlpfordt & Wessner, 2005) pointed out that **explicit referencing** is also very important for collaborative learning and improves the quality of technology-enhanced learning. Their proof of concept implementation called ConcertChat constitutes a chat environment. It offers many useful concepts and implementations for **learning**, such as explicit referencing and a whiteboard. However, in contrast to PENCIL, tools for the creation of solutions are not integrated **into the ConcertChat system** and the exercise-solving process is not explicitly supported.

By discussing solution steps, giving feedback, and providing alternatives or partly-solved solutions, users create many diagrams and sub-diagrams that are organized in tree structures and **stored in a common database**. Tools such as BSCL (Stahl, 2004) (a version of BSCW (Appelt, 1999) more aligned towards learning support) **also provide** a common database for all learners and can visualize a tree structure of different content items, like it is used in PENCIL to **visualize discussions**. However, this is often restricted to pure file browsing with little support for a sophisticated exercise-solving process.

The tool landscape based on PENCIL is a **distributed platform** for a community of learners and tutors. From a tool point of view, it can be seen as part of a learner's PLE. Other **existing platforms**, such as Moodle, are also often called and used as PLEs. However, they constitute a general platform for arbitrary purposes, **mainly for publishing and accessing learning material**; thus, an adjustment would be necessary to integrate exercise-solving support. This could be done by **incorporating plug-ins or applications** into these platforms, but this would require much development effort.

Since the emergence of the term "Web 2.0", much research has been conducted in this area to leverage Web 2.0 concepts (Weber & Rech, 2009) in education (Ullrich et al., 2008). A common approach is to simply use already existing generic tools (such as Wikis, or online whiteboards) in the **traditional classroom**. However, for our purpose, simply combining Web 2.0 services that are not (or little) integrated would not suffice for **establishing a platform** that offers sophisticated exercise-solving support. Our tools try to leverage modern RIA (Rich Internet Application) technologies (e.g., Flex for PINBOARD) in order to create better usability for the learners so that the chances of being embraced by the users increase. At the same time, by using the PENCIL API, they are connected in such a way that the user gets the feeling of using a **single platform rather than a loose assortment of independent tools**.

ARCHITECTURE OF THE PENCIL PLATFORM

Figure 1 illustrates the basic architecture of PENCIL implementing the requirements described above. The PENCIL platform consists of different parts. The back-end takes care of storing and administrating the data, which range from solution steps to user information. It provides CRUD operations on the solutions and solutions steps, user information, as well as other data that are stored in a common database. Access takes place via a dedicated HTTP interface ("PENCIL API") delivering XML results that can be processed by the tools that are part of the front-end.

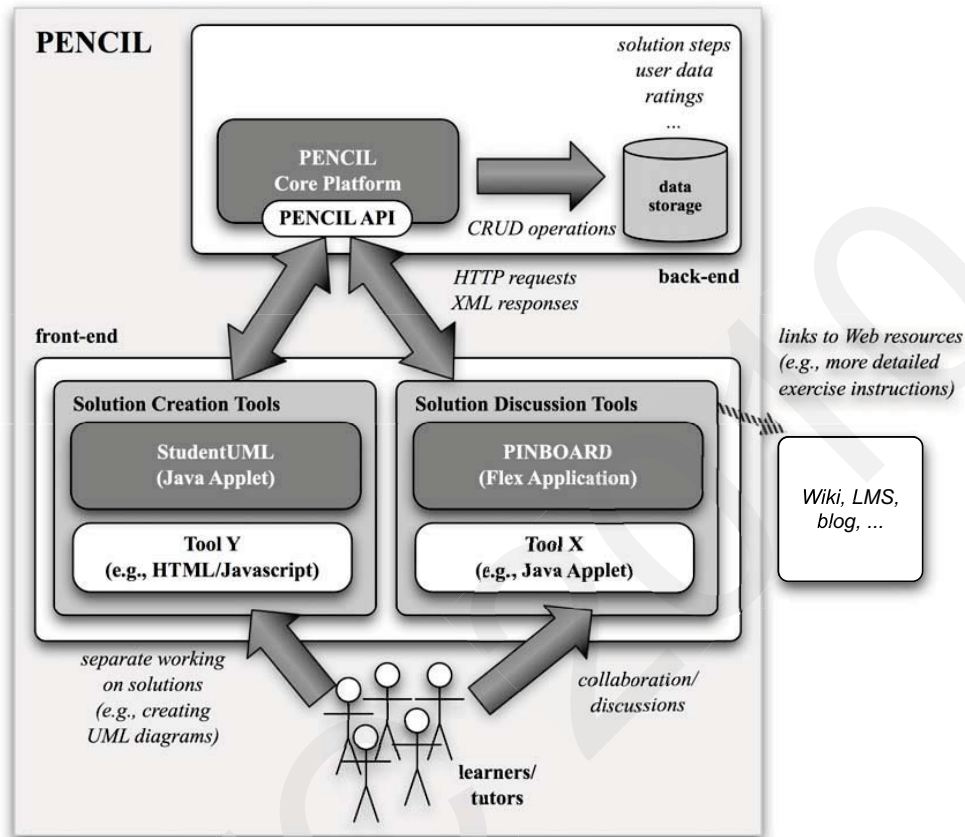


Figure 1: Visualization of the PENCIL architecture

Due to this HTTP-based interface, virtually any Web-based tool can be integrated into the PENCIL platform. Consequently, PENCIL is very flexible and extensible, since it allows supporting nearly any type of exercise (as long as it can be supported by software). The tools integrated into the PENCIL platform ("front-end") can be grouped into two categories. On the one hand, "Solution Creation Tools" (e.g., StudentUML) are used to create and share solutions and steps of solutions. On the other hand, "Solution Discussion Tools" (e.g., PINBOARD) enable discussion about and collaboration on the shared solutions.

Because the main goal of PENCIL and its tools is to offer learners a platform for applying the acquired knowledge with the help of realistic exercises, learning content is not an integrated part of the platform but provided by "links to Web resources". This also enables PENCIL to offer support for many different topics, where the learning content already exists and is accessible online. It can be located in Learning Management Systems (LMS), such as Moodle, or published in a blog or as a simple website, etc. Thus, it can also be provided in different formats, such as SCORM packages, PDF files, etc. In addition to the learning content, more detailed explanations or instructions of exercises can be provided via external links.

The integration of the external learning content with the exercises and solutions provided via PENCIL happens seamlessly via ordinary Web links. As an example, from the overview page within a Moodle system, exercises can easily be accessed by learners who just follow the link. The system is personalized in such a way that the user gets a context-specific view. A tutor, for instance, gets all solutions that have been created regarding a particular exercise, whereas a learner gets his or her solutions presented to the exercise. In consequence, starting to work on an exercise, getting an overview of the corresponding discussions, or continuing with a solution is easily accomplished by just clicking on links or buttons.

The PENCIL API provides a common set of CRUD operations for creating, updating, and retrieving solutions and solution steps. By utilizing this joint interface built of integrated tools in the front-end, the process of exercise solving can be supported and facilitated. Many manual steps would be necessary if ordinary Web forums were used to support exercise solving. With its many automated steps, PENCIL presents a smoother and more comfortable solution.

EVALUATION

In December 2009, we conducted a first user evaluation to test the usability of the system and to find out whether the idea and concepts were accepted and liked by learners. It lasted for two weeks and covered the topics "UML class diagram" and "UML sequence diagram". The learning content was reused from the Up2UML project and extended by seven exercises (plus one exercise to get familiar with the system and the tools) that called for a UML diagram as solution, in order to let the users test the functionality and tools.

The 42 participants and four tutors came from the countries of all embed4auto partners (Germany, Turkey, Greece, Spain, and Sweden). 38% were (undergraduate and graduate) students, 29% postgraduate or PhD students. Accordingly, most participants were under 25 (35%) or 26-36 (43%) years of age. They created nearly 200 solutions with more than 500 comments in total.

For us to gather quantitative and qualitative data from the users, they had to fill in a survey at the end of the evaluation. The results were measured with a 5-point Likert scale ranging from '1: strongly disagree' to '5: completely agree'. The idea and concepts of the system (questions: 'I liked studying on always accessible and time-flexible web-based content', 'Discussing the exercises & solutions contributed to my learning' and 'I enjoyed interacting with the community of learners') all got an average rating of 4.2. The feedback from other students (mean rating: 3.9) and tutors (mean rating: 4.0) were considered helpful for the students' comprehension, as was giving feedback to others (mean rating: 4.0). The qualitative results also revealed that the users' perception was positive, with some suggestions for improvement. Navigation issues, loading speed, and (minor) bugs turned out to pose the biggest problems. Some others were related to the fact that it was only a two-week evaluation and not a whole course (e.g., some learners would have preferred to have more time to learn, discuss, and write feedback).

CONCLUSION AND FUTURE WORK

In this paper, we presented the PENCIL platform and the general concepts and ideas behind it. As a first proof of concept and specific implementation, which fulfills the requirements stated above, the PENCIL API is utilized to connect two tools:

1. PINBOARD: A solution discussion tool where learners and tutors can collaboratively discuss and work on different states of solutions as part of their exercise-solving process. Collaboration is achieved by giving feedback and helping fellow learners by editing and commenting their diagrams.
2. StudentUML: A diagram creation tool that is directly linked to the discussion platform.

The advantage of PENCIL is the direct support and integration of the solution finding and creation process by tools to discuss and create or edit solution steps.

To tackle the problems discovered during the evaluation, we are currently improving the tools (front-end) and the PENCIL API (back-end). Our primary goals for the further development of the back-end are to improve the performance of the data exchange between the connected tools and the core PENCIL platform via the API. In addition, we are revising and complementing the functions of the API according to the requirements of the improved tools for new features. An example is to provide sophisticated RSS feed support in order to extend the PLE to other tools (i.e., feed readers) that might already be used by the students.

To improve the front-end, we want to enhance usability, reduce the information overload, and add additional navigation support by offering a dashboard in PINBOARD. There, users can add widgets that provide them with a fast overview of different issues (e.g., new nodes in my solutions, new solutions for my exercises). At the same time, these widgets reduce the effort and time needed for manual checking of the discussions because they present changes in different threads directly to the user.

To check the results of these improvements, we are going to conduct a second evaluation in May 2010 based on the second prototype of PENCIL. The results of this second evaluation will also be used for further improvements.

ACKNOWLEDGEMENT

This work has been carried out in the framework of the project "Upskilling to Model-Based Software Development in the Automotive and Embedded Software Sector" (Embed4Auto) and is supported by the European program LEONARDO DA VINCI 2008 – 2010 (DE/08/LLP-LdV/TOI/147109).

We would like to thank Sonja Trapp and Martin Wessner for proof-reading an earlier version of this paper and for their helpful comments.

REFERENCES

- Appelt, W. (1999). WWW Based Collaboration with the BSCW System. In Proceedings of the 26th Conference on Current Trends in Theory and Practice of Informatics on Theory and Practice of Informatics (pp. 66-78). Springer-Verlag. Retrieved from <http://portal.acm.org/citation.cfm?id=647009.712532>
- Koschmann. (1996). CscI: Theory and Practice of an Emerging Paradigm (Revised.). Lawrence Erlbaum Associates Inc.
- Mühlpfordt, M., & Wessner, M. (2005). Explicit referencing in chat supports collaborative learning. In Proceedings of the 2005 conference on Computer support for collaborative learning: learning 2005: the next 10 years! (pp. 460-469). Taipei, Taiwan: International Society of the Learning Sciences. Retrieved from <http://portal.acm.org/citation.cfm?id=1149353>
- Ramollari, E., & Dranidis, D. (2007). Dranidis D. StudentUML: An Educational Tool Supporting Object-Oriented Analysis and Design. IN PROCEEDINGS OF THE 11TH PANHELLENIC CONFERENCE ON INFORMATICS (PCI 2007). Retrieved from <http://130.203.133.150/viewdoc/summary?doi=10.1.1.99.4887>
- Stahl, G. (2004). Groupware goes to school: adapting BSCW to the classroom. Int. J. Comput. Appl. Technol., 19(3/4), 162-174.
- Trapp, S. (2009). UPSKILLING UML - Blended Learning für Softwarespezialisten. In Wiegmann, Katharina (Hrsg.); Bundesinstitut für Berufsbildung: Innovationen aus Europa. Zur Bilanz der LEONARDO DA VINCI-Pilotprojekte - Teil II (pp. 211-215). Bonn.
- Ullrich, C., Borau, K., Luo, H., Tan, X., Shen, L., & Shen, R. (2008). Why web 2.0 is good for learning and for research: principles and prototypes. In Proceeding of the 17th international conference on World Wide Web (pp. 705-714). Beijing, China: ACM. doi:10.1145/1367497.1367593
- Weber, S., & Rech, J. (2009). An Overview and Differentiation of the Evolutionary Steps of the Web X.Y Movement: The Web Before and Beyond 2.0. In Handbook of Research on Web 2.0, 3.0 and X.0: Technologies, Business, and Social Applications. IGI Global, USA.

THE PERSPECTIVES ON COLLABORATIVE LEARNING: A CASE FROM COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY DEPARTMENT

Zülfü GENÇ
University of Firat
zgenic@firat.edu.tr

Abstract

This study aims to gather the perspectives on collaborative learning of preservice teachers from the Computer Education and Instructional Technology department of Firat University (n=71). For the period of the research, the third and fourth year students were involved in this study. Initially, students were asked to what extent they exposed to group work in their elementary schooling. For gathering their attitudes toward collaborative learning activities, students were provided with seven questions on 5-Likert scale. At the end of the study instrument, students were given four open-ended questions on their perspective for working in groups. As a result, the students' views towards collaborative learning were positive and they believe that group work is more informative than individual work.

Keywords: Collaborative learning, Computer Education and Instructional Technology, Group Work

1. INTRODUCTION

With the new perspectives on learning and teaching activities, the importance of creating group work has gained a special importance for instructional context. Cooperation and collaboration among learners and teachers are becoming an indispensable component of learning environments. Thus, the perspectives of the students and teachers on how they perceive or what they think about collaborative learning is highly essential.

The term of collaborative learning can simply be defined as an instructional technique where students at various performance levels work together (generally in small groups) toward achieving an academic goal (Gokhale, 1995). In the collaborative learning activities, the students are responsible for one another's learning in addition to their own learning process. Therefore, the success of one student assists other students to be successful. The concept of collaborative learning has been widely researched and supported throughout the professional literature. Findings indicated that collaborative learning has many benefits, such as improving learning and communication skills, developing higher level thinking skills, encouraging student responsibility for learning, creating an environment of active, involved, exploratory learning (Gokhale, 1995; Antil et al, 1997; Ingleton et al, 2000; Brown, 2008; Uzunboylu et al, 2009).

Researchers controlled several independent variables of collaborative learning activity such as size of the group, composition of the group, nature of the task, communication medium. The present study argues that the communication medium was an important factor affecting students' perceptions of collaboration in views of social presence and satisfaction (So & Brush, 2008).

In this study, when implementing collaborative learning activity, the academic task was firstly explained to the students. Next, the collaborative learning structure was defined. Then, the groups were formed using self-selection where students chose their own group members. This study has aimed to gather the ideas of third and fourth year preservice teachers from the Computer Education and Instructional Technology department on collaborative learning activities. The instruments used in this study were developed by the author by literature review.

2. METHOD

Since this study aims to gather the ideas of preservice teachers, it has been better to utilize a survey with questions on collaborative learning. The researcher developed his own instrument from literature review. Moreover final instrument was checked by subject matter experts and Turkish language experts. Since it is a none-experimental study, the instrument was offered preservice teachers to fill it voluntarily.

This study focuses on the third (n=36) and the fourth (n=35) grade students of Computer Education and Instructional Technology department of Firat University (n=71) where the sample includes 30 female and 41 male (Table 1). This group was purposefully selected due to their group-work experiences in their undergraduate courses. In other words, first and second grade students haven't experienced enough on learning collaboratively or working in groups.

3. FINDINGS

In subsequent to demographic information on gender and grade, preservice teachers were asked about their experiences in their elementary school year (Table 1). Most of the elementary schools have attempted to cluster students for collaborative learning. It is interesting that only a small percent of preservice teacher had experienced this clustering technique in their elementary schools. Moreover, nearly all students stated that clustering technique is not beneficial for elementary school students.

Table 1: Basic demographics and experiences from elementary school

| | | Have you experienced clustering technique in your elementary school? | | Is clustering technique beneficial for elementary school students? | | Total |
|--------|--------|--|----|--|----|-------|
| | | Yes | No | Yes | No | |
| Grade | 3 | 5 | 31 | 0 | 36 | 36 |
| | 4 | 4 | 31 | 1 | 34 | 35 |
| Total | | 9 | 62 | 1 | 70 | 71 |
| Gender | Male | 2 | 28 | 0 | 30 | 30 |
| | Female | 7 | 34 | 1 | 40 | 41 |
| Total | | 9 | 62 | 1 | 70 | 71 |

Afterwards, preservice teachers were asked how many times they experienced collaborative learning or group work in their university years. More than half of the participants had at least 5-7 times experiences in group work. Furthermore, students were asked to state how these collaborative or group works affected their learning experiences. The results showed that most of the participants had positively affected from their collaborative or group work. Moreover, more than half of the students become a leader in a collaborative or group work (Table 2).

Table 2: University experiences on collaborative or group work

| How many times have you experienced cooperative learning or group work in university? | | How these experiences affected your learning? | | Have you ever become a leader in any collaborative or group work? | |
|---|----|---|----|---|----|
| Options | n | Options | n | Options | n |
| Never or Once | 0 | Very positive | 16 | Always | 5 |
| 2-4 | 11 | Positive | 44 | Often | 20 |
| 5-7 | 40 | Not sure | 6 | Seldom | 38 |
| 8-10 | 11 | Negative | 3 | Rarely | 7 |
| More than 10 | 9 | Very Negative | 2 | Never | 1 |
| Total | 71 | Total | 71 | Total | 71 |

Additionally, preservice teachers were asked to state their ideas on for “how difficult...” questions. For half of the participants, it was easy to state their ideas when they study in groups. Besides, students stated that arranging a meeting place was easier than arranging a meeting time. Nearly the same number students stated that it is easy (difficult for the others) to conclude with decisions in project meetings (Table 3).

Table 3: How difficult questions about collaborative learning

| | Very Difficult | Difficult | Not Sure | Easy | Very Easy | Total |
|---|----------------|-----------|----------|------|-----------|-------|
| How difficult to state your ideas in collaborative work? | 1 | 1 | 10 | 36 | 23 | 71 |
| How difficult to arrange a meeting time in collaborative work? | 2 | 22 | 9 | 31 | 7 | |
| How difficult to arrange a meeting place in collaborative work? | 1 | 16 | 5 | 36 | 13 | |
| How difficult to get decisions about your projects in collaborative work? | 3 | 22 | 13 | 28 | 5 | |

The next question was about how successful their group work in university. A dominant number of students (n=46 for successful and n=14 for very successful) believed that their collaborative work on learning created a success in their lives. Additionally, seven statements were given to students on a 5 Likert scale from strongly agree to strongly disagree (Table 4). From the mean scores, it was observed that preservice teachers have been fulfilled with studying in groups. On the other hand, they are not sure about whether they want to have a course with or without group study. Besides, these items were checked for significant differences in relation to gender (male or female) and grade (third or fourth) by independent samples t-test. It was found that there is significant differences on these seven item regarding to gender or grade (p>.05).

Table 4: Items on collaborative work

| Items | M. | S.D. |
|--|------|------|
| In general, I was satisfied with studying in groups with other students. | 4,01 | 0,99 |
| Studying in groups helped me learn about topics. | 4,19 | 0,90 |
| I prefer courses with learning in groups. | 3,52 | 1,11 |
| I get along with group members. | 4,35 | 0,76 |
| I prefer leader role in group work. | 3,14 | 0,99 |
| Studying in groups is beneficial for after-school learning activities. | 4,06 | 0,92 |
| Studying in groups taught me how to become active in a group. | 4,08 | 0,75 |

Another question was about the ideal number of people in a group work. Answers have clustered around two (n=13), three (n=25), four (n=16), five (n=16) and ten (n=1) people. From the clusters, the ideal group size for preservice teachers is between 3 and 5.

The latter question was an open-ended question asking the points the preservice teachers like about group work. The answers could be summarized in the following points;

- Taking more responsibility,
- Encouraging each other,
- Fun in meetings,
- Developing communication skills,
- Trusting on other group members,
- Success of group rather than individuals,
- Support coming from group member whenever there is a lack of knowledge,
- Brain storming activities,
- Respecting different ideas and perspectives,
- Correction of mistakes at the moment,
- More tendency toward research,
- Friendship,
- More information than individual work,
- Better and more effective results in learning and timing,
- Sharing the workload,
- Coming to a conclusion,
- Hearing about different people and their ideas.

The last question was another open-ended question about the points the preservice teachers dislike about group work. The answers could be summarized in the following points;

- Difficulty in finalizing with a conclusion,
- Difficulty in expressing ideas,
- Difficulty in arranging a meeting place and/or time,
- Problems occurring after sharing of group tasks,
- Passive group members,
- Feeling more overloaded and tired,
- Fighting for being a group leader,
- Irresponsible behaviors of group members,

- Same grades for all group members (even though some of them don't work).

4. DISCUSSION

From this research study, it can be concluded that collaborative learning enhances learning in several ways. Findings indicate that collaborative learning activities assist the acquisition of academic, social and generic skills. Collaborative learning also encourages critical thinking, helps students clarify ideas through discussion and debate, and builds self esteem in students.

From the analysis of data, it is clear that collaborative learning creates an environment of active, involved, exploratory learning. Students' response point out that group work is more informative than individual work. In the group works, individual accountability and personal responsibility are important. On the other hand, this research reveals that collaborative learning might have some negative aspects, such as difficulty in getting some students to participate and careless behaviors of group members. These negative aspects can be eliminated by formed homogeneous group size or group contracts which include a group contract including some punishment issues. Such as difficulty in arranging a meeting place and/or time problem can be solve by changed students communication medium for example web based or networked collaborative learning environments. Although, applying and grading collaborative learning method to the students is very difficult , it is one more powerful instructional method.

REFERENCES

- Antil, L., Jenkins, J., Wayne, S. & Vadasy, P. (1997). Cooperative learning: prevalence, conceptualizations, and the relationship between research and practice. *American Educational Research Journal*, 35(3), 419 – 454.
- Brown, F. A. (2008). Collaborative learning in the EAP classroom: Students' perceptions. *English for specific purposes world online, Journal for Teachers*, Issue 1 17(7)
- Gokhale, A. A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education*, 7 (1)
- Ingleton, C., Doube, L., Rogers, T. and Noble, A. (2000). Leap into ... Collaborative Learning. Centre for Learning and Professional Development (CLPD). The University of Adelaide, Australia.
- So, H.J. & Brush, T.A. (2008). Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. *Computer & Education*, 51 (1), 318-336.
- Uzunboylu, H., Emindayi, M., Bicen, H., & Bengihan, G. (2009). Teacher candidates views and interest for their future education and collaborative learning. 9th International Educational Technology Conference (IETC2009), Ankara, Turkey.

THE RELATIONSHIP BETWEEN COMPUTER-INTERNET ADDICTION AND FAMILY FUNCTIONS

Emre Balkan

Cyprus International University, Guidance and Psychological Counseling PHD Programme, Nicosia-North Cyprus
 ebalkan@ciu.edu.tr

Abstract

The aim of this study is to investigate the relationship between computer-internet addiction and family structure among high school students. The research was conducted among high school students in TRNC. The sample for the research consists of 59.9% (n=144) female, 40.5% (n=98) male, 242 high school students by using the criterion sampling method.

In this study the "McMaster Family Assessment Device (FAD)" adapted by Bulut (1990) and the Cronbach's alpha reliability coefficient of which is changed between .72, .92, "Internet Addiction Scale (IAS)" adapted by Bayraktar (2001) with a Cronbach alpha reliability coefficient of .90 and "Computer Addiction Scale (CAS)" developed by Yılmaz (2008) with a Cronbach alpha reliability coefficient of .87 were used as a means of collecting data.

Considering purposes of the study percentage documentation average, ANOVA, Pearson moment's correlation were figured out in data analysis. The statistical significance level was accepted as .05 in the study.

The result of this study showed that there is a significant correlation between perceived family functions and the computer-internet addiction to the high school students.

Keywords: Computer addiction, internet addiction, family functions

INTRODUCTION

Computer and internet addiction, which is defined as a new type of addiction, became an important study area that attracts the interest of different disciplines including psychology, sociology and communication (Balci, Gülnar, 2009).

Today have not a definition as "Computer and Internet Addiction". However, researchers resemble the excessive use of computer and internet to other addictions and they emphasize that excessive computer games and internet forms a kind of addiction on the users (Kelleci, 2008).

In 1994 American Psychiatric Association determined any diagnosis of dependency is tolerance, withdrawal and compulsive use are requisites. The need to spend increasing amounts of time on computer activities such as playing games, arranging files or participating in online discussion groups are indicated by psychological tolerance. Computer users are aware of this problematic behavior but they continue to use the computer compulsively. When a person is unable to access a computer they showed that withdrawal symptoms are indicated by an increase in irritability and anxiety (ref. Orzack, 1998).

According to Huang and Alessi in 1997, "Labeling [computer addiction] as if it were a new diagnostic entity may lead to the misdiagnosis of primary psychiatric disorders for which we have proven therapeutic interventions" (ref. Shaffer, 2002).

The Young was first introduced the term of internet addiction in 1996. The Internet addiction symptoms are described by Cengizhan and Young as;

- Excessive mental effort on internet
- Spending hours even though being intended to spend couple of minutes
- Exposure to health problems due to spending hours in front of the screen each time
- Continuously waiting for the next connection time
- Feeling more comfortable contacting people over internet than talking face-to-face
- Feeling a continuous desire for checking e-mails whether there is something new
- Decrease in meals, lessons or work efficiency due to using internet or staying connected
- Trying to give or spread the mail address, chat room names etc. to everybody
- Continuously feeling sleepless and tired because of staying connected to the internet until late
- Having failure in attempts to decrease the internet usage
- Withdrawal syndrome due to decrease in the internet usage
- Telling lies to family members, therapist or others to be able to stay connected to the internet
- Having affection changes in the duration of internet connection (Young, 1999; ref. Öztürk *et. al.*2007; ref. Balta, Horzum, 2008).

According to the definition of family given by the Turkish Family Structure Specialization Commission; family is formed of people mostly living together and that have a blood tie, marriage and kinship relationship via other legal ways; a unit that every person's sexual, psychological, social and economical needs are covered and their adaptation and participation to the society is supplied and arranged (Nazlı, 2001).

Family is a social unit that experiences some developmental stages, which could nearly be universal, are lived in. "Family" is described as the smallest social "unit" in society that is formed by the relationship depending on the blood tie between wife, husband, children and siblings (Gülerce, 1996; Özgüven, 2001; Öztürk 2001).

It is the first social system that the child knows and in which he grows, and from it he must gain abilities such as familiarity with the basic roles carried out in the society in which he lives: the roles of parents and child, of boy and girl, of man and woman, of husband and wife, and how these roles impinge upon the broader society and how the roles of others impinge upon the family and its members (Lidz, 1968).

Family has three main functions, to give answers physical needs of the members, develop autonomy in children, balance and supply development of the personalities of members (Özgüven, 2001; Kulaksızoğlu, 2004).

McMaster of family functioning described, there is an assumption that the primary function of the family unit is to supply a setting for the development and maintenance of family members on the social, biological and psychological levels (Epstein, Bishop & Levin, 1978; Hinde & Akister, 1995; Zeitlin, 1995). The family functioning has six dimensions of this model. These are problem solving: the ability of the family to solve problems at a level that keeps effective family functioning, communication: the exchange of information directly and clearly, roles: established behavioral patterns for handling family needs, including assignment of tasks appropriately and responsible carrying out the tasks, affective responsiveness: the expression of suitable affect over a range of events, affective involvement: mutual appreciation on concerns and activities, behavior control: the maintenance of behavioral standards and general functioning: an independent overall of the above, to indicate extensive health/pathology (Epstein, Bishop & Levin, 1978; Hinde & Akister, 1995; Zeitlin, 1995).

In their studies on family essence, Fitzpatrick and Badzinski described family concept as a small social group that is constructed with blood tie and its main function is to feed and socialize the new born children (Gülerce, 1996).

According to the Young in 1996, there are lots of negative consequences of addictive use of the computer and internet, such as

familial problems, academic problems and occupational problems. The context of relationship problems caused by internet addiction has been undermined by its current popularity and advanced utility. The serious relationship problems were reported by addicts surveyed. Patients will spend less time with people in their lives (ref. Aslanbay, 2006).

In this context, this research results basis for throw fresh light on a subject to the academics, educational program developers, manager, educator etc. to their researches.

The Aim of the Study

It was aim to investigate the relation between family structure and internet-computer addiction tendency in high school students in our country.

The Problem Statements of the Study

The main problem statement of the study: "Is there any statistical meaningful correlation between family structure and internet-computer addiction tendency in high school students in our country?" The direction of that main problem statement is tried to find answers with the following questions.

1. Is there any statistical meaningful correlation between computer addiction and family functions?
2. Is there any statistical meaningful correlation between internet addiction and family functions?
3. Is there any statistical difference between internet addiction and duration of internet-computer usage?
4. Is there any statistical difference between computer addiction and duration of internet-computer usage?

RESEARCH METHODOLOGY

Research Design

The research was made by descriptive type of associational research method. The aim of the descriptive perspective to determine related cases. This type of research aimed to evaluate the level and the variation together between two and more variables (Karasar, 2009)

The Universe and Sample of the Study

The universe of this research is obtained high school students in TRNC. The sample for the research consists of 59.9% (n=144) female, 40.5% (n=98) male, 242 high school students used by purposive sampling techniques of criterion sampling method. According to modify sample of study students have own personal computer set as a criteria.

Instruments

In the collection of data in this study McMaster Family Assessment Device (FAD), Internet Addiction Scale (IAS), Computer Addiction Scale (CAS) and Biographic-Demographic Information Form are used.

Biographic and Demographic Information Form is prepared by the researcher and it is arranged according to the suitability with the aims of the study. It is formed of 13 questions. This form people are subjected to demographic features related questions (sex, which school and class he/she attends etc.) and computer-internet related questions as well.

Mc Master Family Assessment Device (FAD) was developed by Epstein and Bishop (1983) and adapted by Bulut (1990) in Turkish language. The Cronbach's alpha reliability coefficient of which is changed between .72, .92 is a measure that aims to determine the family functions (structural and organizational quality, and relations and interactions in the family) as healthy/unhealthy (Öner, 1994). The measure is formed of 60 items with seven 7 subtests. These subtests are problem solving (6 items), communication (9 items), roles (11 items), affective responsiveness (6 items), affective involvement (7 items), behaviour control (9 items) and general functioning (9 items) (Hinde & Akister, 1995).

Internet Addiction Scale (IAS) was developed by Young (1996) and adapted by Bayraktar (2001) in Turkish. The Cronbach's alpha reliability coefficient is .90. The measure is formed of 20 items and it aims to measure internet addiction symptomatology (Kurtaran, 2008).

Computer Addiction Scale (CAS) was developed by Yılmaz (2008) and Cronbach's alpha reliability coefficient is .87. The measure is formed of 9 items and it aims to measure computer addiction tendency (Yılmaz, 2008).

Data Analysis

All analysis are performed by using the SPSS 15.0 for Windows. Considering purposes of the study percentage documentation average, ANOVA, Pearson moment's correlation were figured out in data analysis. The statistical significance level was accepted as .05 in the study.

RESULTS

In this study were 242 students who have distinguished by personal computer criteria. They had applied to the college students. The group is formed from 59.9% (n=144) female, 40.5% (n=98) male, 242 high school students.

Table 1. Correlation of FAD Test Scores with IAS and CAS Test Scores

| Scales | FAD Com. | FAD Role | FAD Resp. | FAD Inv. | FAD Beh. | FAD Prob. | FAD Gen. |
|--------|----------|----------|-----------|----------|----------|-----------|----------|
| IAS | | | | | | | |
| r | .243** | .336** | .233** | .329** | .213** | .182** | .350** |
| n | 242 | 242 | 242 | 242 | 242 | 242 | 242 |
| p | .000 | .000 | .000 | .000 | .001 | .005 | .000 |
| CAS | | | | | | | |
| r | .290** | .375** | .254** | .366** | .242** | .170** | .366** |
| n | 242 | 242 | 242 | 242 | 242 | 242 | 242 |
| p | .000 | .000 | .000 | .000 | .000 | .008 | .000 |

** p<.001 statistically meaningful correlation

It was investigate the correlation between McMaster Family Assessment Device (FAD), Internet Addiction Scale (IAS) and Computer Addiction Scale (CAS) of the students with the scores of these scales with Pearson Correlation Test it was determined these results:

It was determined mild positive correlation between IAS and Communication ($r=.243$), Affective Responsiveness ($r=.233$), Behavior Control ($r=.213$), Problem Solving ($r=.182$) subscales of FAD. It was determined moderate positive correlation between IAS and Roles ($r=.336$), Affective Involvement ($r=.329$), General Functioning ($r=.350$) subscales of FAD.

It was determined mild positive correlation between CAS and Communication ($r=.290$), Affective Responsiveness ($r=.254$), Behavior Control ($r=.242$), Problem Solving ($r=.170$) subscales of FAD. It was determined moderate positive correlation between CAS and Roles ($r=.375$), Affective Involvement ($r=.366$), General Functioning ($r=.366$) subscales of FAD.

Table 2. Comparing Student's Duration of Computer Usage with Internet Addiction Scale (IAS) Scores and Computer Addiction Scale (CAS) Scores

| Computer Usage Duration | | n | \bar{X} | sd | df | F | p |
|-------------------------|-----------------|-----|-----------|-------|----|--------|--------|
| IAS | Not daily usage | 46 | 20.52 | 14.74 | 4 | 10.220 | .000** |
| | 1-3 hours | 103 | 26.29 | 15.09 | | | |
| | 4-5 hours | 60 | 32.88 | 16.14 | | | |
| | 6-8 hours | 22 | 38.90 | 15.70 | | | |
| | 8 hours and up | 11 | 45.54 | 22.65 | | | |
| | Total | 242 | 28.85 | 16.90 | | | |
| CAS | Not daily usage | 46 | 16.34 | 6.43 | 4 | 11.751 | .000** |
| | 1-3 hours | 103 | 18.05 | 6.53 | | | |
| | 4-5 hours | 60 | 21.63 | 7.57 | | | |
| | 6-8 hours | 22 | 23.59 | 7.20 | | | |
| | 8 hours and up | 11 | 28.63 | 7.36 | | | |
| | Total | 242 | 19.60 | 7.47 | | | |

** p<.001 statistically difference

It was investigate to compare the daily computer usage duration to the IAS and CAS of the students of these scales with ANOVA.

It was determined that there is significant difference to the computer usage duration during a day to the not daily usage ($\bar{X}=20.52 \pm 14.74$), 1-3 hours ($\bar{X}=26.29 \pm 15.09$), 4-5 hours ($\bar{X}=32.88 \pm 16.14$), 6-8 hours ($\bar{X}=38.90 \pm 15.70$), 8 hours and up ($\bar{X}=45.54 \pm 22.65$) and IAS scores ($p=.000$).

It was determined that there are significant difference to the duration of computer use in a day to the not daily usage ($\bar{X}=16.34 \pm 6.43$), 1-3 hours ($\bar{X}=18.05 \pm 6.53$), 4-5 hours ($\bar{X}=21.63 \pm 7.57$), 6-8 hours ($\bar{X}=23.59 \pm 7.20$), 8 hours and up ($\bar{X}=28.63 \pm 7.36$) and CAS scores ($p=.000$).

Table 3. Comparing Student's Duration of Internet Usage with Internet Addiction Scale (IAS) Scores and Computer Addiction Scale (CAS) Scores

| Computer Usage Duration | | n | \bar{X} | sd | df | F | P |
|-------------------------|-----------------|-----|-----------|-------|----|--------|--------|
| IAS | Not daily usage | 40 | 20.47 | 14.18 | 4 | 11.692 | .000** |
| | 1-3 hours | 104 | 24.69 | 15.11 | | | |
| | 4-5 hours | 67 | 34.82 | 15.62 | | | |
| | 6-8 hours | 18 | 40.72 | 13.18 | | | |
| | 8 hours and up | 13 | 40.69 | 24.27 | | | |
| | Total | 242 | 28.85 | 16.90 | | | |
| CAS | Not daily usage | 40 | 16.37 | 6.59 | 4 | 14.590 | .000** |
| | 1-3 hours | 104 | 17.33 | 6.03 | | | |
| | 4-5 hours | 67 | 22.13 | 7.71 | | | |
| | 6-8 hours | 18 | 24.83 | 6.02 | | | |
| | 8 hours and up | 13 | 27.38 | 8.23 | | | |
| | Total | 242 | 19.60 | 7.47 | | | |

** p<.001 statistically difference

It was investigate to compare the daily internet usage duration to the IAS and CAS of the students of these scales with ANOVA.

It was determined that there is significant difference to the internet usage duration during a day to the not daily usage ($\bar{X}=20.47 \pm 14.18$), 1-3 hours ($\bar{X}=24.69 \pm 15.11$), 4-5 hours ($\bar{X}=34.82 \pm 15.62$), 6-8 hours ($\bar{X}=40.72 \pm 13.18$), 8 hours and up ($\bar{X}=40.69 \pm 24.27$) and IAS scores ($p=.000$).

It was determined that there is significant difference to the duration of internet use during a day to the not daily usage ($\bar{X}=16.37 \pm 6.59$), 1-3 hours ($\bar{X}=17.33 \pm 6.03$), 4-5 hours ($\bar{X}=22.13 \pm 7.71$), 6-8 hours ($\bar{X}=24.83 \pm 6.02$), 8 hours and up ($\bar{X}=27.38 \pm 8.23$) and CAS scores ($p=.000$).

DISCUSSION

The computer and internet usage, defined as a new type of addiction which is the most important problem of our age, is investigated in this study. It was aim to investigate the relation between computer-internet addiction and family structure in a group of high school students who have a personal computer. The obtained findings support a correlation between computer-internet addiction and family structure. The main aim of the study is to investigate the relation between computer-internet addiction and dysfunctions in family structure. It was found that as level of computer-internet addiction increases, the family functions such as problem solving, role, communication, affective involvement, affective responsiveness, behavior control and general functions will also increase in the direction of unhealthiness.

According to Gökçeşlan study about half of the families report that the child who is using computer the communications are become limited to the families and their environment (Gökçeşlan, 2005). In our study, similar to Gökçeşlan's study, it was also determined that adolescents who are computer-internet addiction show an increase in more than one family function in the unhealthy direction.

Kelleci *et. al.* the high school student who were using internet 2 hours and up during a day shows that psychological symptoms especially interpersonal sensibility (Kelleci *et.al.*, 2009). In our study, it was determined that significant meaningful correlation computer-internet addiction and 7 dimensions of this scale. So that if this dysfunction in family may be source of the psychological disorders.

According to Block studying the average South Korean high school student spending 23 hours during a week for gaming and another 1.2 million are probably believed to be at risk for addiction. Therapists worry about the increasing number of student's school success, dropping out from school to spend time on computers. Internet addiction is resistant to treatment and high relapse risks regrettably (Block, 2008). In this study was determined that most of the students using 1-3 hours computer and internet usage during a day. So it is a cause of personal and familial problems and shows us probably most of students to be at risk for computer-internet addiction.

CONCLUSION AND SUGGESTIONS

The present study indicated that computer and internet addiction are related with unhealthy family functioning such as communication, roles, affective responsiveness, affective involvement, behavior control and general functioning among adolescents. Also denote that the students use computer and internet at least 1-3 hours a day. It shows us a part of the students become computer-internet addiction and most of the student to be at risk for addiction.

In our study, it was firstly focus on the high school students that use their own personal computer and their family's functions. As related with findings we are aware of the effects of computer and internet usage on family functions and give importance to the relations of students with their parents. In addition to this, education can be given to the parents (parenting school) about general features of children, prevention strategy for computer, internet addiction and how to use their child to the personal computer in a healthy way. The content of the education may cover characteristics of adolescence period, communication skills, problem solving skills, behavior control strategies, explaining and recognizing the roles of the family members and so on.

In this study only the adolescents who attend high school and who have families with higher socio-economical status and education participated. Low socio-economical status of the family, low education may be some other factors related with computer-internet usage and to show their relation with addiction, a sample having wide range of these characteristics should be formed. Having a large sample of students with different backgrounds may enable to generalize the results to the community. Our study was carried out with a limited number of people. If the further studies could be applied in wider range of subjects it may generalize the results to the community. Also our study formed the idea about the view of students computer-internet usage on family functions and triggered the suggestion for further studies on the family's point of view of family functions in this context.

REFERENCES

- Aslanbay, M. (2006). *A compulsive consumption internet use addiction tendency: High school the case of Turkish students*. Unpublished Master's Thesis, University of Marmara, İstanbul, Turkey.
- Balci, Ş. & Gülnar, B. (2009). Üniversite öğrencileri arasında internet bağımlılığı ve internet bağımlılarının profili. *Journal of Selçuk Communication*, 6(1), 5-22.
- Balta, Ö. Ç. & Horzum, M. B. (2008). The factors that affect internet addiction of students in a web based learning environment. *Journal of Faculty of Educational Science*, 41(1), 187-205.
- Block, J. J. (2008). Issues for DSM-V: Internet addiction. *Am J Psychiatry*, 165(3), 306-307.
- Epstein, N. B., Bishop D. S. & Levin, S. (1978). The McMaster model of family functioning. *Journal of Marriage and Family Counseling*, 4(4), 19-31.
- Gökçearslan, Ş. (2005). *İlk ve oratöğretim öğrencilerinin evde bilgisayar kullanımına ilişkin öğrenci ve veli görüşleri*. Unpublished Master's Thesis, University of Hacettepe, Ankara, Turkey.
- Gülerce, A. (1996). *Türkiye'de ailelerin psikolojik örüntüleri*. İstanbul: Boğaziçi Üniversitesi Matbaası.
- Hinde, J.S. & Akister, J. (1995). The McMaster model of family functioning: Observer and parental rating in a nonclinical sample. *Family Process*, 34(1), 337-347.
- Karasar, N. (2009). *Bilimsel araştırma yöntemi*. Ankara: Nobel Yayın Dağıtım.
- Kelleci, M. (2008). İnternet, cep telefonu, bilgisayar oyunlarının çocuk ve gençlerin ruh sağlığına etkileri. *TAF Preventive Medicine Bulletin*, 7(3), 253-256.
- Kelleci, M., Güler, N., Sezer, H. & Gölbaşı Z. (2009). Lise öğrencilerinde internet kullanma süresinin cinsiyet ve psikiyatrik belirtiler ile ilişkisi. *Taf Preventive Medicine Bulletin*, 8(3), 223-230.
- Kulaksızoğlu, A. (2004). *Ergenlik psikolojisi*. İstanbul: Remzi Kitabevi.
- Kurtaran, G. T. (2008). *İnternet bağımlılığını yordayan değişkenlerin incelenmesi*. Unpublished Master's Thesis, University of Mersin, Mersin, Turkey.
- Lidz, T. (1968). *The person throughout the life cycle*. New York: Basic Books, Inc.
- Nazlı, S. (2001). *Aile danışmanlığı*. Ankara: NobelYayın Dağıtım.
- Orzack, H. M. (1998). Computer addiction: What is it? *Psychiatric Times*, 5(8), 2-3.
- Öner, N. (1994). *Türkiye'de kullanılan psikolojik testler: Aile değerlendirme ölçeği*. İstanbul: Boğaziçi Üniversitesi Yayınları.
- Özgüven, İ. E. (2001). *Ailede iletişim ve yaşam*. Ankara: PDREM Yayınları.
- Öztürk, O. (2001). *Ruh sağlığı ve hastalıkları*. Ankara: Nobel Tıp Kitabevleri.
- Öztürk, Ö., Odabaşoğlu, G., Eraslan, D., Genç, Y. & Kalyoncu, Ö. A. (2007). İnternet bağımlılığı: Kliniği ve tedavisi. *Journal of Dependence*, 8(1), 36-41.
- Shaffer, H. J. (2002). Is computer addiction a unique psychiatric disorder? *Psychiatric Times*, 19(4), 1-2.
- Yılmaz, B. (2008). İlköğretim 6. ve 7. sınıf öğrencilerinin bilgisayara yönelik bağımlılık gösterme eğilimlerinin farklı değişkenlere göre incelenmesi. *Ietc Mayıs*, 617-622.
- Young, K. S. (1999). *Innovations in clinical practice*. USA: Professional Resource Exchange Inc.
- Zeitlin, M. F., Babatunde, E. D., Coletta, N. D., Kramer, E. M. & Megawangi, R. (1995). *Strengthening the family- implications for international development*. New York: United Nations University Press.

THE RELATIONSHIP BETWEEN PROBLEMATIC INTERNET USAGE AND LONELINESS LEVEL OF PROSPECTIVE TEACHERS

Levent DENİZ*
Aylin TUTGUN**

Abstract

The purpose of this study was to examine the relationship between problematic Internet usage and loneliness levels of prospective teachers. Two hundred twenty four prospective teachers were recruited from one teacher-training faculty in İstanbul, Turkey. Participants were asked to complete Problematic Internet Usage Scale and UCLA Loneliness Scale. The results indicated that positive correlations were found between problematic internet usage and loneliness levels of prospective teachers. As it was understood from the results, the higher problematic internet usage was correlated with higher level of loneliness. The results were discussed in the scope of teacher training programs.

INTRODUCTION

Internet usage, with the developments in technology, frequently appears in every field of life in Turkey, as in the whole world, for several purposes. While the internet gets widespread rapidly, it also becomes more accessible in many places such as houses, offices, schools and internet cafes. Studies indicate that vast majority of the students have the opportunity to easily access to computers and the internet (Ceyhan, Ceyhan & Gürçan, 2007; Deniz, 2001, 2007; Deniz & Coşkun, 2004). On the other hand, a number of studies were conducted on failure of controlling internet usage and the problems it caused and the studies show that concepts such as internet addiction, cyber addiction, internet dependence, problematic internet usage, pathological internet usage and excessive internet usage emerged. Young (1996), preferred to use the term "internet addiction" and he argued that internet addiction has similarities with alcohol addiction since it leads to academic, social and occupational damages. According to Caplan (2005), who considers problematic internet usage to be a multi-dimensional syndrome, people who are addicted to the internet prefer to perform face to face communication on the internet and they tend to show themselves off by getting into interaction on the internet. It is seen that social isolation and loneliness lead people to prefer social interaction via internet (Kraut et. al, 2002; Young, 2002). When the demographic structure of internet users is examined, it is seen that the internet usage is common among especially university students and it is used by these people for various purposes. The tendency of university students to have close relationships with people of the opposite sex makes the internet attractive for them. According to Erikson (1998), the basic developmental assignment of the university youth is to achieve having close relationships with their peers of the same or the opposite sex. Social isolation is inevitable for the university students who have poor social abilities. The internet is an appropriate platform for these students to show themselves off. Problematic internet usage in university years may lead to social and academic problems and loneliness/social isolation and also problems in their work and family lives in the following years. It is inevitable for these people to have problems especially in occupations such as teaching, which requires social communication abilities. A teacher who has occupational and social problems as a result of problematic internet usage is not expected to convey healthy knowledge to his students and act as a good role model for them. Therefore, this study aims at examining the relationship between problematic internet usage and loneliness level of prospective teachers in faculties of education.

METHOD

PARTICIPANTS

The sample of the study consists of 224 prospective teachers who are the students of seven different departments, including social studies and science departments, of Boğaziçi University Faculty of Education, İstanbul, Turkey. 46,4 % (n=104) of the prospective teachers are freshmen and 53,6% (n=120) are seniors. %67,9 (n=152) of the participants are female and 32,1% (n=72) are male students.

MEASUREMENTS

Data collection tools used in the study are; Problematic Internet Use Scale and UCLA Loneliness Scale.

Problematic Internet Use Scale

Problematic Internet Use Scale is a measurement tool used to determine the problematic internet usage by university students which is developed by Ceyhan, Ceyhan and Gürçan (2007). The scale consists of three factors: "negative consequences of the internet", "social benefit/social comfort" and "excessive usage". The studies to test reliability of the scale concluded that cronbach α internal consistency coefficient was 0.95 for the scale, 0.94 for negative consequences of the internet, 0.85 for social benefit/social comfort and 0.75 for excessive usage. In this study, cronbach α internal consistency coefficient is 0.93 for the scale, 0.91 for negative consequences of the internet, 0.85 for social benefit/social comfort and 0.77 for excessive usage.

The Problematic Internet Usage Scale is a five-level Likert scale consisting of 33 items. The items are scored between "Completely appropriate" (5 points) and "Is not appropriate at all" (1 point). Getting a high score from the scale is considered as a sign indicating that internet usage by the students is getting more unhealthy, the internet effect their lives negatively and they may have pathological tendencies like addiction.

UCLA Loneliness Scale

UCLA Loneliness Scale, which is developed by Russel, Peplau and Cutrona (1980). in order to measure individuals' general loneliness level, is a four-level Likert Scale consisting of 20 items; 10 items worded in a negative direction and 10 items worded in a positive direction. In each item of the scale, a situation which denotes a feeling or thought related to social relationships and the person is expected to tell how often he experiences that situation. Getting a high score from the scale indicates that the loneliness level is high. The scale was adapted to Turkish by Demir (1989). During the adaptation studies, cronbach α internal consistency coefficient of the scale was attained as .96. In this study, cronbach α internal consistency coefficient of the scale was attained as .91.

* Asst. Prof., Marmara University, Atatürk Education Faculty, Department of Educational Science

** Lecturer (M.A), Maltepe University, Education Faculty, Department of Computer and Instructional Technology

RESULTS

Arithmetical averages and standard deviations of the scores of prospective teachers in the Problematic Internet Usage Scale and the UCLA Loneliness Scale are given in Table 1.

Table 1. Means and standard deviations of Problematic Internet Usage Scale and the UCLA Loneliness Scale

| | Mean | Sd. |
|---------------------------------------|-------|-------|
| Negative consequences of the Internet | 28,01 | 10,93 |
| Social benefit/social comfort | 17,83 | 6,71 |
| Excessive usage | 18,04 | 5,37 |
| Problematic Internet Usage | 63,89 | 19,79 |
| UCLA Loneliness Scale | 31,95 | 9,89 |

As it can be seen in Table 1, the average of the scores of prospective teachers in the problematic internet usage scale ($\bar{X}=63,89$) and negative consequences of the internet ($\bar{X}=28,01$) and social benefit/social comfort ($\bar{X}=17,83$) sub-scales show that they have moderate problematic internet usage. When the average score in excessive usage scale ($\bar{X}=18,04$) is examined, it is clear that excessive usage is a little below the moderate level. The average of the scores of participants in the UCLA Loneliness Scale indicates that their loneliness level is moderate ($\bar{X}=31,95$).

Table 2. Correlations between Problematic Internet Usage Scale and the UCLA Loneliness Scale

| Problematic Internet Usage Scale/sub scales | r | p |
|---|------|------|
| Negative consequences of the Internet | .465 | .000 |
| Social benefit/social comfort | .506 | .000 |
| Excessive usage | .204 | .002 |
| Problematic Internet Usage | .484 | .000 |

When Table 2 is examined, according to the correlation between each sub-scales and loneliness, it is seen that there is a positive and meaningful relationship between loneliness and negative consequences of the internet ($r=.465$, $p<.01$), social benefit/social comfort ($r=.506$, $p<.01$) excessive usage ($r=.204$, $p<.01$). When the total scores achieved in the problematic internet usage scale and the UCLA loneliness scales are compared, it is determined that there is a positive and meaningful relationship between problematic internet usage and loneliness level. As a result, we can say that problematic internet usage by prospective teachers increases as loneliness level gets higher.

DISCUSSION

In this study, the relationship between problematic internet usage and loneliness level of prospective teachers is examined, taking the scores achieved in the problematic internet usage scale and its sub-scales (negative consequences of the internet, social benefit/social comfort, excessive usage) into consideration in accordance with the scores achieved in the UCLA loneliness scale. According to the results, it is determined that there are positive and meaningful relationships between loneliness and problematic internet usage ($r=0.484$, $p<0,01$), negative consequences of the internet ($r=.465$, $p<.01$); social benefit/social comfort ($r=.506$, $p<.01$) and excessive usage ($r=.204$, $p<.01$). This result indicates that as the loneliness level gets higher, internet usage for social benefit/social comfort and excessive internet usage increases. According to Young (2002), problematic internet users who allocate little time for real people prefer to spend their time alone using a computer. The reason is that, as Caplan (2005) mentioned in his research, people who have poor social interaction skills in real life prefer online social interaction to face-to-face communication and they tend to show themselves off getting into social interaction on the internet. According to Kraut et. al. (2002), isolation and loneliness lead individuals to prefer social interaction on the internet. On the other hand, in a study conducted by Kubey, Lavin and Barrows (2002), a group of participant students were identified to be addicted to the internet and according to the results of the study, it was concluded that these students are academically disadvantaged because of internet usage and they are "lonelier" compared to the other group. Another finding of the research is that students who are addicted to the internet and mention that they are academically disadvantaged prefer real time applications (MUDs and IRC/chat programs) on the internet. According to the researchers, these interactive applications form an important escape way for lonely people. We can say that this conclusion also supports the research findings related to social benefit/social comfort and excessive internet usage.

When the relationship between the total scores achieved in the problematic internet usage scale and the UCLA loneliness scale is examined, the presence of a positive and meaningful relationship between problematic internet usage and loneliness level ($r=0.484$, $p<0,01$) is identified and it is seen that problematic internet usage increases as the loneliness level gets higher. In fact, this result supports several researches in the literature on the relationship between problematic internet usage and loneliness (Young, 1996; Kraut et. al, 2002; Young, 2002; Kubey, Lavin & Barrows, 2002; Caplan, 2002, 2003).

On the other hand, it is mentioned in several studies on lack of face-to-face communication skills that, lack of skills leads to psycho-social problems such as depression, loneliness and social anxiety, which is mentioned by Davis (2001) for problematic internet usage we can say that, having occupational problems would be inevitable for prospective teachers, who should use their face-to-face communication skills in and out of the classroom. A teacher in this situation cannot be expected to effectively guide his/her students and manage learning environment.

According to the research it is clear that the tendency of prospective teachers to problematic internet usage because of their loneliness is an indicator of possible problems they may experience in the future. Therefore, studies can be conducted to measure the level of problematic internet usage by prospective teachers periodically. Studies on how to control problematic internet usage by prospective teachers can also be conducted. In order to prevent excessive internet usage by university students due to the lack of the ability to adapt to new social environments and establishing new friendships, the academic staff can support especially freshmen with group projects and cooperative study techniques which provide them new opportunities to socialize. On the other hand, qualitative and in depth studies can be conducted on the relationship between problematic internet usage and personal and psychological characteristics.

REFERENCES

- Caplan, SE. (2002). Problematic Internet Use and Psychosocial Well-being: Development of a Theory-based Cognitive-behavioral Measurement Instrument. *Computer in Human Behavior*, 18: 553–75.
- Caplan, SE. (2003). Preference for Online Social Interaction: A Theory of Problematic Internet Use and Psychosocial Well-Being. *Communication Research*, 30: 625–48.
- Caplan, SE. (2005). A Social Skill Account of Problematic Internet Use. *Journal of Communication*, 55(4): 721–36.
- Ceyhan, E, Ceyhan, A & Gürcan, A. (2007). Problemlü İnternet Kullanımı Ölçeği'nin Geçerlik ve Güvenirlik Çalışmaları [The Validity and Reliability of the Problematic Internet Usage Scale]. *Kuram ve Uygulamada Eğitim Bilimleri Bildiri Kitabı [Educational Sciences: Theory & Practice]*, 7(1), 387–416.
- Davis, RA. (2001). A Cognitive-Behavioral Model For Pathological Internet Use (PIU), *Computers in Human Behavior*, 17(2): 187–95.
- Demir, A. (1989). UCLA Yalnızlık Ölçeğinin Geçerlik ve Güvenirliği. *Psikoloji Dergisi*, 7(23): 14–28.
- Deniz, L. (2001). Psikolojik Danışma ve Rehberlik Öğrencilerinin Bilgisayar Yaşantılarına Yönelik Bir İzleme Çalışması [A Follow-up Study of Computer Experiences of Student School Councilors]. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 13: 87–110.
- Deniz, L. (2007). Prospective Class Teachers' Computer Experiences and Computer Attitudes. *International Journal of Social Sciences*, 2(2): 116-22.
- Deniz, L. & Coşkun, Y. (2004). Öğretmen Adaylarının İnternet Kullanımına Yönelik Yaşantıları [Internet Experiences of Student Teachers]. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 20: 39–52.
- Erikson, E. (1998) *Life Cycle Completed: Extended Version*. Newyork: WW Norton & Company.
- Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V. & Crawford, A. (2002). Internet Paradox Revisited. *Journal of Social Issues*, 58: 49–74.
- Kubey, RW., Lavin, MJ. & Barrows, JR. Internet Use and Collegiate Academic Performance Decrements: Early Findings. *Journal of Communication*, 51: 366–82.
- Russell, D., Peplau, L.A. & Cutrona, C.E. (1980). The revised UCLA loneliness scale: concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39:472–80.
- Young, KS. (1996). Internet Addiction: The Emergence of A New Clinical Disorder. *CyberPsychology and Behavior*, 1(3): 237–44.
- Young, KS. (2002). Psychology of Computer Use: XL. Addictive Use of The Internet: A Case That Breaks The Stereotype. *Psychological Reports*, 79: 899–902.

THE ROLE OF ASYNCHRONOUS ELECTRONIC DISCOURSE IN A BLENDED TEACHER EDUCATION COURSE

Zeynep Kocoglu
Yeditepe University
zbkocoglu@yeditepe.edu.tr

Abstract

Developing the ability to think critically is an important element of teacher education. Discussion is thought to be a useful teaching and learning technique for developing critical thinking skills. The extension of discussion beyond the classroom became available with the integration of computers into education. Online discussions can be facilitated using synchronous communication tools (e.g., chat or instant messaging) and asynchronous communication tools (e.g., e-mail and discussion boards). Among these tools, discussion boards were perceived as the most effective tool through which students engage one another in ways that enhance critical thinking skills. This paper analyzed the relative effect of online discussions on critical thinking skills of English-as-a-Foreign-Language (EFL) in-service teachers enrolled to an MA program in English Language teaching. The findings showed discussion boards helped students develop their critical thinking skills necessary for making connections to the classrooms in which they teach and to the new knowledge they learned.

INTRODUCTION

Today the development of critical thinking skills is recognized as one of the main goals in education (Arend, 2009; Dewey, 1998; Garrison, Anderson and Archer, 2000; MacKnight, 2000; Moore, 2004; Perkins and Murphy, 2006), yet many educators are confused about how to develop critical thinking in academic settings (Haas and Keeley, 1998) since many students lack the ability to think critically (Facione and Facione, 1994; Keeley, Shemberg, Cowell and Zinnbauer, 1995). Online discussion board, which is an asynchronous text-based computer-mediated communication medium, is a promising tool to cope with this problem.

Online discussion boards have been used in higher education settings over the past 20 years. Researchers agreed that asynchronous discussion board provided teachers and students with opportunities to promote critical thinking skills by receiving/giving feedback and reflecting on their thinking (Arend 2009; Buraphadeja and Dawson, 2008). Yet, instructors continue to struggle with how to design effective online discussions that foster critical thinking, reflection, and interaction between learners as well as effective methods of assessing the quality of critical thinking evident in the discussions (Land and Dornisch, 2002; Meyer, 2004). Therefore, the purpose of the present study is to analyze the development of critical thinking skills of the teachers in the use of online discussion forums by using the content analysis model developed by Newman, and Cochrane (1995).

BACKGROUND

Critical thinking is “the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered by observation, experience, reflection, reasoning, or communication, as a guide to belief and action” (Scriven and Paul, 2007:1). Critical thinking in educational settings is extremely “crucial for establishing infrastructure of democratic societies, and of a new generation whose life is based on scientific thinking in lieu of medieval remains of thinking and living habits” (Özmen, 2008:119), yet teachers are still confused about how to develop critical thinking in educational settings. Greenlaw and DeLoach (2003) reported that teachers “across a variety of curricula suggested a range of active learning pedagogies to promote critical thinking. These suggestions used one of two media: writing assignments or class discussion” (p. 40).

Online discussion boards combine the advantages of classroom discussions with a written component to allow teachers to observe and analyze student written assignments for evidence of critical thinking and reflection (Ellis and Calvo, 2006; Gilbert and Dagbagh, 2005; Hewitt, 2003; Hung, Tan and Chen, 2005; Meyer, 2004; Spatariu, Hartley and Bendixen, 2004; Tsui, 2002; Wu and Hiltz, 2004). Research supported the notion that online discussions promote students’ critical skills by providing a social context for learning that gives learners time to think about their contributions and organize their thoughts prior to responding. (Christopher, Thomas and Tallent-Runnels, 2004, Garrison, Anderson, and Archer 2000; Havard, Du, and Olinzock 2005; Meyer, 2003; Yang, Newby, and Bill 2005).

Due to the “latent projective nature of what is in essence an internal cognitive process” (Garrison, et al., 2001, p. 119), more work is needed to understand the complexities of online discussions. A review of literature suggests that content analysis is the most popular approach used by researchers to evaluate quality in discussion board postings. Content analysis is “a research methodology that uses a set of procedures to make valid inferences from text” (Anderson et al. 2001, 10) through which transcripts of online discussions can be used as materials in finding evidence of critical thinking and reflection (Christopher et al., 2004; Luebeck and Bice, 2005; Meyer, 2004). Researchers have developed a variety of content analysis coding schemes to analyze the level of student critical thinking within both academic classroom discussions and computer mediated communication (Hara, Bonk and Angeli, 2002). Among different content analysis models, the Content Analysis Method to Measure Critical Thinking and Computer Supported Group Learning developed by Newman, Webb, and Cochrane of Queen’s University Belfast (1995) was adopted in this study. The researcher decided to use their model because this model is (a) easy to apply because codes are explicitly defined; and (b) has more focused and simple codes to interpret definitions (Marra, Moore, and Klimczak, 2004). This model will be discussed in detail in data analysis section since it provided the framework to quantify critical thinking process.

More work, however, is needed to identify discussion characteristics that indicate learning and critical thinking, especially in language teacher education, because teachers need to be aware of their critical thinking potentials to improve their students’ cognitive thinking process. Therefore, the purpose of the present study was to analyze the development of critical thinking skills of the students in a graduate online discussion board according to the content analysis model developed by Newman, Webb and Cochrane (1995). In order to evaluate the effectiveness of online discussion boards used as an addition to the classroom environment, this study seeks to answer the following question: What levels of critical thinking are exhibited in a graduate course online discussion?

RESEARCH METHOD AND PROCEDURE

Participants and the Course

A total of 14 in-service teachers (all native speakers of Turkish; 9 male and 5 female; mean age 23), who enrolled in a foreign language testing course as part of their Masters programs offered at a Turkish university, were involved in the study. Among them, six teachers taught at elementary school, 3 high school and five at university prep schools.

The research was conducted during the second semester of a graduate degree course. The course was delivered using a blended learning environment, combining traditional face-to-face activities within MOODLE environment. One of the features of MOODLE was online discussion board. The online structure of the discussion group allowed participants to make at least five ‘new’ postings reflecting on the topic given, and, to make at least five ‘follow-up’ postings reflecting on the prior posts of their peers. Student participation in the online discussion was compulsory so that marks were assigned to participation. The instructor who did not interfere with the discussions monitored the student postings. The instructor role was as a moderator in the online collaboration.

Data Collection and Analysis

The primary data source consisted of printed transcripts of the student discussion forums. The discussions were saved electronically, and were printed out for coding purposes.

The Content Analysis Method to Measure Critical Thinking and Computer Supported Group Learning developed by Newman, Webb, and Cochrane of Queen's University Belfast (1995) was adopted in this study. Their model identified 45 indicators of critical and non-critical thinking covering content in terms of relevance, importance, novelty, outside knowledge, clarification, linking of ideas, justification, critical assessment, practical utility, and width of understanding. The responses were given a + if it represented critical thinking and a - if it represented uncritical thinking (see Table 1).

Table 1: Newman et al. Indicators of Critical (+) and Uncritical (-) Thinking

| Indicators | Positive | Negative |
|---|--|--|
| Relevance | R+ relevant statements | R- irrelevant statements, diversions |
| Importance | I+ Important points/issues | I- unimportant, trivial points/issues |
| Novelty. New info, ideas, solutions | NP+ New problem-related information | NP- Repeating what has been said |
| Bringing outside knowledge/experience | OE+ Drawing on personal experience OC+ Refer to course material OM+ Use relevant outside material OK+ Evidence of using previous knowledge OP+ Course related problems brought in (e.g. students identify problems from lectures and texts) OQ+ Welcoming outside knowledge | OQ- Squashing attempts to bring in outside knowledge O- Sticking to prejudice or assumptions |
| Ambiguities: clarified or confused | AC+ Clear, unambiguous statements A+ Discuss ambiguities to clear them up | AC- Confused statements A- Continue to ignore ambiguities |
| Linking ideas, interpretation | L+ Linking facts, ideas and notions L+ Generating new data from information collected | L- Repeating information without making inferences or offering an interpretation. L- Stating that one shares the ideas or opinions stated, without taking these further or adding any personal comments. |
| Justification | JP+ Providing proof or examples JS+ Justifying solutions or judgments JS+ Setting out advantages and disadvantages of situation or solution | JP- Irrelevant or obscuring questions or examples JS- Offering judgments or solutions without explanations or justification JS- Offering several solutions without suggesting which is the most appropriate. |
| Critical assessment | C+ Critical assessment/evaluation of own or others' contributions CT+ Tutor prompts for critical evaluation | C- Uncritical acceptance or unreasoned rejection CT- Tutor uncritically accepts |
| Width of understanding (complete picture) | W+ Widen discussion (problem within a larger perspective. Intervention strategies within a wider framework.) | W- Narrow discussion. (Address bits or fragments of situation. Suggest glib, partial, interventions) |

Once the transcripts were coded, the researcher tallied the number of positive codes and the number of negative codes (Figure 1).

Figure 1: An example of a critical thinking indicator in a posting

| |
|--|
| the concept of impact by XXXXXXXX - Monday, 8 March 2009, 02:01 PM |
| <AC- I am not very clear about Professor XXXXX opening her speech by first defining the test impact -AC>, which in fact is referred to in different terms such as consequence, backwash. <OM+ I looked at the Wikipedia for the term backwash +OM> |

The "critical thinking (CT) ratio" was calculated by dividing the difference between the positive and negative statements by the total number of statements analyzed. The following equation was applied to arrive at a "critical thinking (CT) ratio" for each indicator:

$$CT = (x+ - x-)/(x+ + x-)$$

where $x+$ is the count of statements contributing to critical thinking and $x-$ is the count of statements detracting from critical thinking for the category. Positive numbers approaching 1 indicate the highest levels of critical thinking (Marra, Moore and Klimczak, 2004). The overall critical thinking ratio can be calculated by counting all the positive and negative postings in the discussion forum and then apply the above formula. Then, a correlation test has been conducted to determine whether there was any correlation between individual critical thinking ratio and the overall critical thinking ratio.

RESULTS AND DISCUSSION

During the 12 weeks that the discussion forum was operational a total of 51 posts were made which generated 328 sentences for coding. Once the scripts were coded, the totals for each + or - indicator are counted, and a critical thinking ratio calculated by dividing the difference between the positive and negative statements by the total number of statements, converting the counts to a -1 (all uncritical, all surface) to +1 (all critical, all deep) scale.

Research in this study included both assessment of overall critical thinking and assessment of individual critical thinking in order to find evidence of critical thinking in online discussions. An assessment at both the overall and individual level requires description of how the overall critical thinking process proceeds in the discussion and of how the arguments within the discussion are structured (Fahy, 2005). Assessment of the overall critical thinking facilitates identification of best pedagogical practices such as activities that promote critical thinking, discussion prompts that solicit critical thinking, or tools, which support critical thinking. Table 2 shows the summary analysis of the overall critical thinking calculation.

Table 2: overall critical thinking ratios

| Scoring criteria | ratio | + | - |
|--|-------|----|---|
| R+- Relevance | 0.6 | 8 | 2 |
| I+- Importance | 0.84 | 23 | 2 |
| N+- Novelty. New info, ideas, solutions | -0.56 | 2 | 7 |
| O+- Bringing outside knowledge/ experience | 1.00 | 25 | 0 |
| A+- Ambiguity and clarity/confusion | 0.40 | 14 | 6 |
| L+- Linking ideas, interpretation | 0.81 | 28 | 3 |
| J+- Justification | 0.79 | 17 | 2 |
| C+- Critical assessment | 0.80 | 35 | 4 |
| P+- Practical utility (grounding) | -0.43 | 2 | 5 |
| W+- Width of understanding | 1.00 | 5 | 0 |

There were notably more positive for important statements, understanding the whole picture, critical assessment of others and linking ideas, and less for novelty. A possible explanation for the lack of new ideas and solutions might be that the asynchronous online discussion discouraged students from contributing creative and original ideas but rather encouraged pre-planned before-thought contributions to the discussions. Linking ideas and generating new data was easy for the students because they had a chance to look through several previous messages before making a comment, and then link together different ideas.

In addition to that, each 14 student's postings were analyzed to find out evidence for critical thinking in individual base. Assessment of individual critical thinking is necessary to provide feedback and facilitate reflection (Perkins and Murphy, 2006). There is close relationship between individual critical thinking and the group critical thinking ($r=0.943$ with $p=0.01$) and difference between them is not significant ($p=0.361$). In other words, there is close relationship between individual critical thinking ratio and group critical thinking ratio. Content analyses also indicated that students were processing course information at a high critical thinking level. The participants in the online discussion forum in this study were able to analyze and apply knowledge in their postings. They could use what they learned by making connections to the classrooms in which they teach and to the new knowledge they learned. The results showed evidence of critical thinking that are supported by the research involving graduate students conducted by Meyer (2004). Richardson and Ice (2009, p.21) also concluded that "instructors should be looking to online discussions as a gauge, evidence of where students' critical thinking levels are at a particular point in time, and then help them achieve the next level through additional scaffolding." During these online discussions, students were discovering what material was important to their peers and why. They dominated the discussion, not the instructor; a finding that indicated that online discussions were at least somewhat student-centered. Through asynchronous conferencing, each student became a contributor to the class content, at a time appropriate to him or her. With the opportunity for this idea generation, the online discussion board became a tool to foster student knowledge gains and critical thinking levels.

The major limitation of this research was that all data were gathered from graduate students at a single institution. More studies are needed in different contexts to test the effect of online discussion on development of critical thinking. Future studies might also be needed to examine critical thinking by taking into consideration students' age, gender or understanding of critical thinking notion.

REFERENCES

- Arend, B. (2009). Encouraging critical thinking in online threaded discussions. *The Journal of Educators Online*, 6 (1), 1-23.
- Buraphadeja, V., and Dawson, K. (2008). Content analysis in computer-mediated communication: Analyzing models for assessing critical thinking through the lens of social constructivism. *American Journal of Distance Education*, 22 (3), 130-145.
- Christopher, M.M., Thomas, J.A. and Tallent-Runnels, M.K. (2004). Raising the bar: Encouraging high level thinking in Online Discussion Forums. *Roeper Review*, 26 (3), 166-171.
- Dewey, J. (1998). Analysis of reflective thinking, in Hickman, L.A. and Alexander, T.M. (Eds), *The Essential Dewey: Ethics, Logic, Psychology*. Indiana University Press, Bloomington, IN, pp. 137-50.
- Ellis, R.A., and Calvo, R.A (2006). Discontinuities in university student experiences of learning through discussions. *British Journal of Educational Technology*, 37 (1), 55-68.
- Facione PA and Facione NC. (1994). Are college students disposed to think? [Online]. California Academic, www.calpress.com.
- Fahy, P.J. (2005). Two methods for assessing critical thinking in computer-mediated communications (CMC) transcripts. *International Journal of Instructional Technology and Distance Education*, 2 (3), Article 02.
- Garrison, D.R., Anderson, T., and Archer, W. (2000). Critical thinking in a text-based environment. Computer Conferencing in higher education. *Internet in Higher Education*, 2(2), 87-105.
- Garrison, D. R., Anderson, T., and Archer, W. (2001). Critical Thinking, Cognitive Presence, and Computer Conferencing in Distance Education. *The American Journal of Distance Education* 15(1), 7-23.
- Gilbert, P. K., and Dabbagh, N. (2005). How to structure online discussions for meaningful discourse: A case study. *British Journal of Educational Technology*, 36(1), 5-18.
- Greenlaw, S. A., and DeLoach, S. B. (2003). Teaching critical thinking with electronic discussion. *The Journal of Economic Education*, 34(1), 36-54.
- Haas, P.F. and Keeley, S.M. (1998). Coping with faculty resistance to teaching critical thinking. *College Teaching* 46: 63-67.
- Hara, N., Bonk, C. J., and Angeli, C. (2002). Content analysis of online discussion in an applied educational psychology course. *Instructional Science*, 28, 115-152.

- Havard, B., Du, J. and Olinzock, A.(2005). Deep learning: The knowledge, methods, and cognition process in instructor-led online discussion. *Quarterly Review of Distance Education*, 6 (2): 125–135.
- Hewitt, J. (2003). How habitual online practices affect the development of asynchronous discussion threads. *Journal of Educational Computing Research*, 28(1), 31-45.
- Hung, D., Tan, S.C., and Chen, D.T. (2005). How the Internet facilitates learning as dialog : Design considerations for online discussions. *International Journal of Instructional Media*, 32 (1), 37-46.
- Keeley, SM, Shemberg, KM, Cowell, BS, and Zinnbauer, B, J. (1995). Coping with student resistance to critical thinking: what the psychotherapy literature can tell us. *College Teaching*, 43 (4):140–145.
- Land, S.M., and Dornisch, M.M. (2002). A case study of student use of an asynchronous bulletin board system to foster reflection and evaluation. *Journal of Educational Technology Systems*. 30 (4), 365-377.
- Luebeck, J. and Bice, L. (2005). On-line discussion as an instrument of conceptual change among mathematics and science teachers. *Journal of Distance Education*, 20 (2), 21-39.
- MacKnight, C.B. (2000). Teaching critical thinking through online discussions. *EDUCAUSE Quarterly*, 23(4), 38-41.
- Marra, R. M., J. L. Moore, and A. K. Klimczak. 2004. Content analysis of online discussion forums: A comparative analysis of protocols. *Educational Technology Research and Development*, 52 (2): 23–40.
- Meyer, K. (2004). Evaluating online discussions: Four difference frames of analysis. *Journal of Asynchronous Learning Networks*, 8(2), 101-114.
- Meyer, K. (2003). Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks*, 7(3), 55-65.
- Moore, T. (2004). The critical thinking debate: how general are the general thinking skills? *Journal of the Higher Education Research and Development Society of Australasia*, 23(1), 3-18.
- Newman, G., Webb, B., and Cochrane, C. (1995). A content analysis method to measure critical thinking in face-to-face computer supported group learning. *Interpersonal Computing and Technology*, 3(2), 56-77.
- Özmen, K. S. (2008). Current State of Understanding of Critical Thinking in Higher Education. Retrieved April 24, 2009 from <http://www.gefad.gazi.edu.tr/window/dosyapdf/2008/2/2008-2-109-127-7.pdf>
- Perkins, C., and Murphy, E. (2006). Identifying and measuring individual engagement in critical thinking in online discussions: An exploratory study. *Educational Technology and Society*, 9(1), 298-307.
- Scriven, M., and Paul, R. (2007). The critical thinking community. Retrieved January 4, 2009 from: <http://www.criticalthinking.org/aboutCT/definingCT.cfm>
- Spatariu, A., Hartley, K. and Bendixen, L.D. (2004, Spring) Defining and Measuring Quality in On-line Discussion. *Journal of Interactive Online Learning*, 2(4).
- Tsui, L. (2002). Fostering critical thinking through effective pedagogy. *The Journal of Higher Education*, 73(740-763).
- Wu, D., and Hiltz, S.R. (2004). Predicting learning from asynchronous online discussions. *Journal of Asynchronous Learning Networks*, 8(2): 139-152.
- Yang, Y. C., T. J. Newby, and R. L. Bill. 2005. Using Socratic questioning to promote critical thinking skills through asynchronous discussion forums in distance learning environments. *The American Journal of Distance Education* 19 (3): 163–181.

THE ROLE OF NATURAL ENVIRONMENT IN DISTANCE EDUCATION

Kimio Kondo, Prof. Dr.
The Open University of Japan
kkondo@ouj.ac.jp

Abstract

We feel very easy and comfortable when we can behave in face-to-face mode. This article discusses the importance of natural environment in education. The cases and features of the co-location and synchronous educational environment are reviewed and discussed with the actual results of a collaboration environment where the realization of natural interaction was tried.

1. INTRODUCTION

We feel very easy and comfortable when we can behave in face-to-face mode. Kock argued that face-to-face communication is natural [1] and he advocated the media naturalness theory against the media richness theory which had prevailed. We communicate with each other more naturally in face-to-face than via line or via paper. The important features of the naturalness can be reduced to face-to-face and synchronicity. The natural and lively environment gives us intimacy and emotional impacts, and learners can understand things easily. Historically, education has been done in a classroom in face-to-face mode. Teacher's face, voice and behaviors have been influential to young learners. The lecture of a respectful professor will gather many audiences. But in distance education, learners are isolated and interaction, motivating learners and sharing the object to talk about are more difficult than face-to-face situation. In such situation the natural interaction which is easier and more comfortable for learners will be important.

An example of the natural media is a video conferencing system. It makes real time interaction possible with lecturers and also with peer learners watching each other. As the distance education is education, interaction is still important also in this situation. The natural educational transaction is possible through video conferencing systems. And the training of discussion competence and learner identification is much easier, which are thought examples of important issues in distance education. Furthermore, courses do not deeply depend on the development of the course materials and various styles of education are possible as in a classroom. Realizing natural communication in remote conditions contributes to the improvement of the quality of education.

This article discusses the importance of natural environment in education. The cases and features of the naturalness are reviewed and actual results of a natural collaboration environment where natural interaction was tried to realize.

2. NATURAL EDUCATION AND ITS EFFECTS

Distance education has been argued especially focusing on its access issues. The performance and the construction of communication system have been the important issues of the discussion. But distance education is in the final analysis education as Garison argued [2]. The only difference is the communication between teachers and remote learners are mediated. As remote learners have responsibility for constructing meaning in a collaborative or interactive setting, interaction is important for them.

Kock argued that human beings had been communicating in co-located and synchronous situation for more than 99% of the evolutionary cycles [1]. Our brains, therefore, have hard-wired information processing schemes to sense the meaning of facial expressions, body languages and fine vocal changes. We understand things easily when the communication is done naturally. The comfortableness in the natural environment comes from this efficient processing scheme. The same way, emotional impacts come in a natural situation. We often have a special feeling when we interact with real persons or objects in real time. A Holocaust survivor spoke directly to students about what he had seen with his own eyes, Coughlan reported [3]. Learners could ask directly to the survivor. The "yellow star", the tangible evidence he showed, which he was forced to wear, helped to make Holocaust more real with a strong impression. The lecture became much more real and remained in learner's mind and the topics challenged learners to think about their own beliefs. Another example is that Video conferencing Video gave an emotional impact and went beyond linguistic /cultural barrier through the comparison experiment between WebCT on the Internet [4]. We also see that famous lecturer's lectures always gather many audiences even if the transcript is published later. These examples show the emotional effects of the naturalness.

Calkins argued that "our knowledge of the material world is derived through the senses. Objects, and the various phenomena of the external world, are the subjects upon which the faculties first exercise themselves. Knowledge begins with experience [5]." And he insisted that knowledge is easily obtained through sensations, perceptions and observation. That means the importance of real things and the natural way of teaching. It is also easy to deal with real things in natural environment. We can say the education which deals with real things is important and natural. These types of education are called as Experiential, Hands-on or Object education/teaching.

Japanese social scientist Kawakita insisted the importance of the "field science", the methodology for which was field work. He argued that there were three types of sciences; library science that goes with literatures/deduction, laboratory science with hypothesis/verification and field science with conception of hypothesis [6]. Field science takes synthetic, explorative approach or studying problems on site. The field work is essential in many fields including sociology, folklore, anthropology, topography and others. It is also important in environment (ecology) science and outdoor education.

Education in a classroom tends to lose links to the real life including not only the nature, the environment but also surrounding society including heritages, traditional cultures, real researchers or enterprisers. The encounter with these objects/persons will give students impacts of the real world, different from their classrooms or homes. And it awakes familiarity or interests to these things and works.

One of the serious problems concerning young people is their tendencies that they have less and less real experience, physical activities and sociality. And to tackle these problems, the importance of real objects including nature/society is getting noticed. Encountering the nature's grace, grandeur and mysteries is expected to give them inspiration, emotion and wonder. Encountering people outside the school also gives good impacts to young people. And these experiences are expected to motivate them.

3. FACTORS OF NATURALNESS

The natural environment is represented by a face-to-face environment. Kock defined that the co-location and synchronicity as the elements of naturalness [1]. The interaction is done seeing and hearing each other. And quick exchange of communicative stimuli is done through facial expressions, body language and speech. We can easily share the same conditions, atmosphere and feelings as well as necessary information.

Naturalness includes multiple participation capability as is not unusual in the real world. These features also lead to its flexibility and emotionality. The immediate feedback capability helps learners to ask questions in different ways. Sharing of the focus point of discussion is easier in the natural classes.

Whittaker argued that the face-to-face communication is a multimodal communication that includes complex interaction between visual and verbal behaviors, such as gesture, gaze, facial expression, body posture and orientation [7]. There are turn-taking, reference, feedback and interpersonal cue. The reference is the shared understanding of the thing the participants are talking about, and the feedback includes the gestures as nodding when the listener understands. The interpersonal cue includes the emotional stance of the participants.

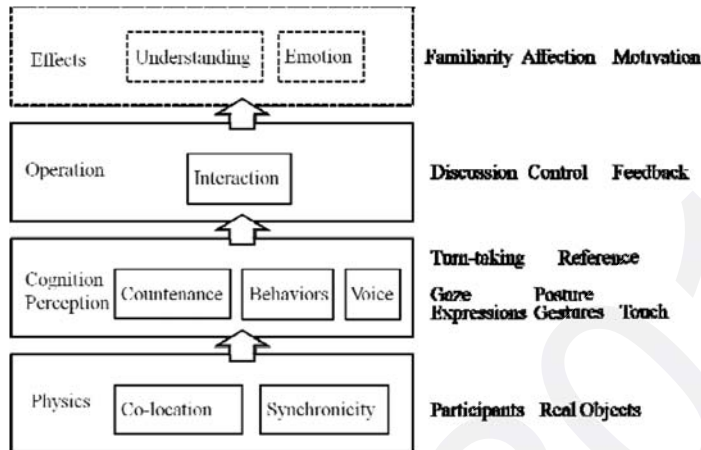


Fig.1 Factors of Naturalness

Recognizing these signals we do discussion with each other. The following behaviors are found especially in discussion.

- Chairmanship: Decision of the speaker and interruption of other's talk
- Discussion: Utterance, hearing other's talk and multiple participants
- Using materials: Demonstration of materials
- Collaboration: Discussion or work on the same task
- Summarizing: Presentation of the summary

The smoothness of these management operations affects the naturalness.

As discussed above, the naturalness can be described with a three-layer model as in Fig.1.

- (1) Physical layer
There are participants in the same place, in the same time and real things are shared.
- (2) Perception/ cognition layer
Participants can see, speak, hear each other and perceive other's faces, expressions, behaviors as well as their gazes in that space. We can point to the same object being discussed about and know the direction or the things.
- (3) Operation layer
The participants communicate, manage, decide and work on things or other participants. And we understand, get motivated or influenced through the interaction.

In distance education, some factors such as co-location and real things are lost in the physical layer of the naturalness model, and the model becomes a "limited" naturalness model which contains the following constraints;

- Limited screen
- Picture and voice quality
- Loss of physical touch

And insufficient perception of visual and verbal behaviors leads us to imperfect coordination in process and content as follows;

- Turn-taking: who should take a turn to speak?
- Reference: loss of the shared understanding of the thing being talked about.
- Feedback: remote students sometimes hesitate to interrupt lectures.

4. NATURAL DISTANCE EDUCATION

Distance education has been argued often focusing on its access issues. And its scale effect was much emphasized as how many students can be taught by distance education. On the other hand, Garrison argued that "distance education is, in the final analysis, education. The only difference is the interaction between a teacher and students is mediated." So the quality of educational interaction and process are to be the same as in the face-to-face classes [8]. As the concepts being constructed in the learner's mind has to be illuminated from different direction for understanding [9], the condition with multiple participants, which is natural in ordinary face-to-face classes, is important in any other distance education. In such situations, learners can learn different perspectives easily. As the natural environment is shared by a group of participants, each interaction is shared by all the participants and the collaboration naturally takes place. The collaboration can be the induced activities from the natural environment and the collaboration gives complementary effect and creativity enhancement. Gatliff argued that lack of faculty strength can be covered by faculties in

other institutions, and undersubscribed courses can be held as joint courses with other universities [10]. European Commission tried to construct a collaboration infrastructure admitting that the collaborative or social activities yielded a higher productivity than individual activities [11].

The video conference provides a flexible education system that can adapt to any style of education as in a traditional face-to-face classroom which enables lectures, interaction and even multiple participants. As the learning style is different from learner especially with regard to deep understanding, this flexibility is important to decrease the miss matching between educational methods and learning styles. The issues in the quality of education such as fostering of the competence to communicate or discuss in face-to-face and the identification of learners in a remote class are easily solved in this natural environment [12].

5. REALIZATION OF NATURAL DISTANCE EDUCATION

We can see how the natural environment worked in the actual inter-university collaboration system, SCS(Space Collaboration System) [13]. All the factors for the naturalness cannot be realized in distance condition. But followings were taken not to deteriorate the naturalness in the design of the collaboration system.

- Enough picture quality to see each other's face and behaviors
- Two channels for signal transmission to improve the reference
- Multi-site operability that includes two or three channels sharing and easy switching with channel request buttons at each site.

Enough quality of picture of 1.5Mbps for each participating site was provided. One more channel of the same quality of picture was added. It helped remote learners focus on the object being talked about. And it also facilitated multi-site participation in a session with elaborated switching/channel requesting control panels.

The collaboration environment was operated in Japan under the name of SCS with 150 sites in 123 higher education institutions including universities and colleges from 1996 to 2009. The naturalness was realized in the system using satellite channels giving equal functions to all sites including the capabilities such as high quality image transmission, multi-site operation, and easy chairmanship, switching, sharing of multi-channels for two-way video signals.

6. OBSERVED EFFECTS OF ACTUAL NATURAL COLLABORATION ENVIRONMENT

It is not easy to distinguish the effect of naturalness from the overall collaboration effects. But it was used for a variety of collaboration activities including lectures, conferences and other discussions for more than 23,000 hours in 10,000 sessions. As the multi site operation was realized, the total site*hours became 150,000 site-hours.

How lessons were learned through the natural collaboration activities in SCS can be seen by reviewing more than 100 articles in reports/papers published by its users. Easy natural interaction enriched collaboration activities. Valuable topics and experiences were shared. It contributed to the improvement of educational quality by providing impact, motivation, and different perspectives or different ideas through interaction with other universities. A classroom of students could have the same experiences and emotional impact was given to participants.

The effects of natural environment can be extended when the number of linked sites or participants increases. An example could be seen when the system was linked also to ISS (International Space Station). Young students had chances to speak directly to astronauts in the space and more than 4,000 people sharing the same atmosphere were excited. This excitement and emotional participation typically represents one of the important features of the synchronous and natural mode of education.

The capability of multi-site participation functioned well. Table 1 shows the average stations in a session for different types of activities. We can see the joint classes were held with four or five sites. Fig.2 shows the number of the sessions participated with plural stations. The sessions with more than three stations were 55% of the total 10,022 sessions and 49% of joint class 4806 sessions in 13 years. The chairman and switching operation were easy enough. One third of the total sessions were operated by lecturer alone. Basic sessions share two channels but three sharing sessions are also easily operated. Actual three channel sessions, however, were less than 3% of the total sessions although the site*hours was 23% of the total one. It can attribute to enough performance of the two-channel multi-site operation system.

Emotional effects and team feeling were just qualitatively observed. We could find descriptions concerning naturalness and emotional effects in the reports of the users as following.

Table 1 Average Stations for Activities

| Activity | Average Stations |
|----------------|------------------|
| Class | 4.5 |
| Workshop | 4.5 |
| Symposium | 16.1 |
| Seminar | 14.8 |
| Conference | 7.0 |
| Administration | 3.9 |
| Others | 5.6 |

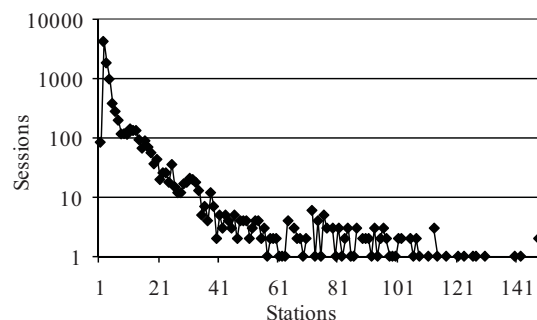


Fig.2 Number of Sessions vs. Stations in a Session

- "We could see each other's face and the features of the face-to-face, two-way and synchronicity, enabled us to grasp and think things on the same basis. "
- "The atmosphere was much closer to face-to-face classes than in computer based learning."
- "The discussion type class which provided each student with opportunity to speak showed the effectiveness of distance education. Students evaluated the courses positively due to the feeling as working together."
- "The audio quality was well enough for the language education."

- “We could develop the experimental process almost the same as done in the campus under some preparation of the equipments and arrangement.”
- “There was almost no difference from the ordinary face-to-face classes.”
- “We can provide almost the same quality of classes with this system.”

However the obstacles to the naturalness were also observed. The size and clarity of monitors varied from university to university as the arrangement of the equipments was independently done by each university. Different level of the audio and camera control skills and different layout of the control panels also affected the naturalness, which were operated by a lecturer or a student.

- “The gaze or eye contact was not good as the location of the camera or monitors were unsuitably located.”
- “Some hesitation to speak with microphone was observed. Smaller size for joint classes is recommended.”

7. SUMMARY

Many examples can be found where the natural environment plays an important role. There are lots of works to pursue the naturalness in distributed situation besides video conferencing systems. HD, 3D video was studied in a video conferencing system [14], for example. Researches concerning liveliness or reality approach the virtual reality research areas that tries to share time, space or even operation and reality of touching. The transformation of data aiming at our instinctive understanding is in line with the natural environment. Some tele-presence activities, for example, try to show the situation as naturally as possible even in remote conditions.

The natural mode of distance education remains to be one of the important applications even though the Internet-based learning environment is getting popular. How to achieve the natural educational environment using the new technologies is to be studied further. New concepts are expected to appear.

Reference

- [1] N.Kock, “Media Richness or Media Naturalness? The Evolution of Our Biological Communication Apparatus and Its Influence on Our Behavior Toward E-Communication Tools”, IEEE Trans. On Professional Communication, vol.48, no.2, June2005, pp117-130
- [2] D.R.Garrison, “Quality and access in distance education”, In Keegan, Distance education. Theoretical principles of distance education, Routledge, 1996, pp. 9-21
- [3] S.Coughlan, “Face to face with the Holocaust”, BBCNews UKEdition, 8 December, 2003
- [4] C.P.Ho, Instructional Strategies and Learning Objects for Pacific-Delivered Courses”, NIME International Symposium 2003
- [5] N. A. Calkins, “Primary object lessons for a graduated course of development”, Harper & brothers, 1861
- [6] J.Kawakita, “Method for Field Science”, Chuko books,1973 (in Japanese)
- [7] S.Whittaker & B.O’Conaill, “The Role of Vision in Face-to-Face and Mediated Communication”, Video Mediated Communication, Laurence EarlBaum Associates Publishers, 1997, pp.25-49
- [8] S.Marginson, “Don't Leave Me Hanging on the Anglophone: The Potential for Online Distance Higher Education in the Asia-Pacific Region”, Higher Education Quarterly, vol.58,nos.2t3, April/July2004, pp74-113
- [9] J.J.Sparks, “Matching teaching methods to educational aims in distance education”, In Keegan, Distance education Theoretical principles of distance education, Routledge, 1993
- [10] B.Gatliff, “Institutional and Instructional Collaboration in Distance Education: Pitfalls and Promises”, Proc. 13th Conf. on Distance Teaching & Learning “Competition Connection Collaboration”, Aug.6-8,1997, pp.93-97
- [11] European Commission, “New Collaborative Working Environments 2020”, Report on industry-led FP7 consultations and 3rd Report of the Experts Group on Collaboration@Work, Brussels, Feb.2006
- [12] R.Lewis, “Recent Developments Impacting on the Quality Assurance of e-Learning, Including the UNESCO/OECD Guidelines for Quality Provision in Cross-border Higher Education”, NIME Symposium2006
- [13] K.Kondo, K.Tanaka, A.Takahara, “Japanese Inter-University Satellite Network “SCS””, IAF97, IAF-97-M.5.01, Turin Italy, 1997
- [14] Jinyong Joa, , Wontaek Honga, , SeungJoo Leeb, Dongkyun Kima, JongWon Kimb, and OkHwan Byeona, “Interactive 3D HD video transport for e-science collaboration over UCLP-enabled GLORIAD lightpath”, Future Generation Computer Systems, vol.22, Issue 8, Oct. 2006, pp.884-891

TEKNOLOJİNİN ÖĞRENME ÖĞRETME FAALİYETLERİNDEKİ ROLÜ: ÖĞRETMEN ADAYLARININ GÖRÜŞLERİ

THE ROLE OF TECHNOLOGY IN TEACHING AND LEARNING: PERSPECTIVE OF PROSPECTIVE TEACHERS

Hacer Çiler Çil
Zonguldak Karaelmas Üniversitesi
Email: hacercil@hotmail.com

Doç. Dr. Ömür Akdemir
Zonguldak Karaelmas Üniversitesi
Email: omurakdemir@gmail.com

Özet

Teknolojinin öğrenme öğretmedeki rolü geçmişe oranla daha hızlı artmaktadır. Teknolojinin öğrenme ve öğretmedeki etkilerini artırmak için ileriye dönük planlar yapmada teknolojiyi kullananların görüşlerini belirlemek önemlidir. Bu çalışmada öğretmen adaylarının, teknolojinin öğrenme öğretme faaliyetlerindeki rolü hakkındaki görüşleri kesitsel araştırma dizaynı kullanılarak açıklanmıştır. Veriler ülke genelindeki 603 öğretmen adayından toplanmıştır. Araştırmanın sonuçları göstermiştir ki; öğretmen adayları farklı becerilerin öğretiminde teknolojinin etkisine karşı olumlu görüşlere sahiptirler. Ayrıca öğretmen adayları teknolojiyi sınıf içi etkinliklerde ve öğretim uygulamalarında etkin bulmuşlardır. Gelecekte yapılacak araştırmalar teknolojinin sınıf içinde kullanımını ve kullanımındaki olası engelleri araştırmalıdır.

Anahtar Sözcükler: öğretim teknolojisi, öğretmen eğitimi, teknolojinin rolü

Abstract

The role of technology in teaching and learning is increasing faster than ever before. The perspective of implementers of technology in schools is important to construct future plans in order to improve the impact of technology in teaching and learning. This study explored the perspective of prospective teachers on the role of technology in teaching and learning through a cross-sectional study. Data collected from 603 prospective teachers nationwide. Results of the study revealed that prospective teachers have positive view about the effectiveness of technology on teaching various skills and also prospective teachers see technology as an effective tool in class to conduct teaching and learning practices. Follow-up studies should investigate the use of technology in class and potential barriers for its use.

Key Words: instructional technology, teacher education, the role of technology

GİRİŞ

Yıllardır eğitimin, psikoloji, sosyoloji ve felsefeyle olan ilişkileri tartışılırken son zamanlarda bu tartışmaya teknolojinin öğrenme öğretme faaliyetlerine etkisi de konu olmuştur. Amacına uyan, doğru ve etkili kullanılan teknolojinin eğitim öğretim faaliyetlerindeki faydaları sayısızdır. Erarı (2002) eğitimi ekonomik, sosyolojik ve politik alanlardaki etkinliğiyle kalkınmayı ve gelişimi etkileyen, ekonomik faaliyetleri canlandıran bir olgu olarak tanımlamaktadır. Bu bağlamda eğitime aktarılabilecek kaynakların verimli kullanılmasında küreselleşen dünyada toplumların rekabet güçlerinin artacağı vurgulanmıştır. Yılmaz ve Horzum (2005) küreselleşme kavramının günümüzde sıkça işitildiğini, bilgi ve teknolojinin küreselleşmeyi hızlandırdığını, üniversiteleri ve dolayısıyla eğitimin her kademesini etkilediğini vurgulamıştır. Ayrıca üniversitelerin içinde buldukları toplumların gelişimini etkiledikleri ve eğitimcilerin küreselleşme karşısında alacakları tavır düşünerek belirlemeleri hususunda dikkatleri çekmişlerdir.

Teknolojinin öğrenme öğretme alanında etkili olabilmesi için önce öğretmen adaylarının etkili bir teknoloji eğitimi almaları gerekmektedir. Öğretmenlerin derslerinde araç ve gereçleri fazla kullanıyor olmaları öğrencilere daha fazla uyarıcı sunma imkânı kazandırır. Materyaller öğrencileri etkin kılmaktadırlar (Öztürk ve Dilek, 2002). Öğretim ortamında kullanılan en yaygın materyal türleri; yazılı materyaller, gerçek nesnelere ve modeller, resim ve grafikler, ses kasetleri, tepegöz ve asetatları, televizyon programları, videokasetler ve bilgisayar yazılımlarıdır (Yanpar ve Yıldırım, 1999).

Karatahtanın 1800'li yıllarda ilk kez kullanılmasıyla başlayan eğitim öğretimde materyal kullanımı yıllar geçtikçe çok büyük bir yelpazeye yayılmıştır (Erbil, 2007). Günümüzde teknolojik gelişmelerin büyük bir ivme kazanmasıyla teknolojinin eğitim öğretim faaliyetlerindeki rolü artmıştır. Ülkemizde Milli Eğitim Bakanlığının eğitimde teknoloji kullanımı alanında yaptığı birçok atılım bulunmaktadır. Örneğin, İnternet Erişim Projesi ile ortaöğretimdeki okulların % 100'ü ve ilköğretimdeki okulların % 94'ü olmak üzere yaklaşık 12 milyon öğrencinin ve 621.000 bilgisayarın internet erişimi sağlanmıştır (MEB, 2008).

Teknoloji bilgi çağı öğretmen eğitimi programlarına teknolojinin entegrasyonunu zorunlu kılmaktadır (Marra, 2004). Bu gelişmelerin belirgin olarak hissedildiği akademik kurumların başında da eğitim fakülteleri gelmektedir. Son yıllarda teknolojinin her alanda hızla ilerlemesi özellikle iletişim teknolojilerinin gelişimi, bilişim teknolojisi ve küreselleşme kavramlarını ortaya çıkarmıştır. Küreselleşme kavramı ile de var olan ve ortaya çıkan sorunların çözümleri için eğitime verilen önem artmıştır. Öğrenme öğretmede teknolojinin, doğru ve etkili kullanımının yaygınlaşmasının temeli olacak olan öğretmen adaylarının bu konudaki fikirlerinin alınması önem taşımaktadır. Bu bağlamda çalışmada, öğretmen adaylarının teknolojinin öğrenme öğretme faaliyetlerindeki rolüne ilişkin görüşlerinin belirlenmesi hedeflenmiştir. Böylelikle, öğretmen adaylarının teknolojinin öğrenme öğretme faaliyetlerindeki rolüne ilişkin görüşlerini açıklamaları imkânı tanınmış ve öğretmen adaylarının ilgilerinin bu konuya çekilmesi sağlanmıştır. Bu bağlamda aşağıdaki araştırma sorularına yanıtlar aranmıştır.

1. Farklı becerilerin öğretiminde teknolojinin etkinliğine ilişkin öğretmen adaylarının görüşleri nelerdir?
2. Teknolojik araçların sınıf içindeki etkinliğine ilişkin öğretmen adaylarının görüşleri nelerdir?

YÖNTEM

Bu çalışmada araştırma dizaynlarından kesitsel çalışma araştırma (cross-sectional study) dizaynı kullanılarak tek zamanlı veri toplanmış ve öğretmen adaylarının teknolojinin eğitim öğretim faaliyetlerindeki rolü hakkındaki görüşleri elde edilmiştir. Kesitsel çalışma araştırma dizaynı ile katılımcıların verilerin toplandığı andaki tutum, fikir veya inanışlarının ortaya çıkartılması hedeflenmektedir (Creswell, 2002).

Çalışma evreni Türkiye'de eğitim fakültesi bulunan altmış bir devlet ve beş özel üniversitede, 2007-2008 eğitim öğretim yılında sınıf öğretmenliği bölümüne devam eden öğrencilerinden oluşmaktadır. Karagözlüoğlu 2008 yılında yapmış olduğu çalışmada üniversitelerin eğitim fakültelerindeki toplam öğrenci sayısını 174895 olarak belirtmiştir. Yüksek öğrenim kurumunun resmi internet sayfasından üniversitelerin her biri incelenerek içerisinde sınıf öğretmenliği bölümü bulunan 46 üniversite olduğu tespit edilmiştir. Bu durumda oranlama yapıldığında sınıf öğretmenliği bölümünün bulunduğu eğitim fakültelerindeki öğrenci sayısı toplamının 115000 civarında olduğu hesaplanmaktadır. Eğitim fakültelerinin her dört yılındaki öğrenci sayısının benzer oranda olduğu düşünüldüğünde her sınıfta kayıtlı öğrenci sayısının otuz bin olduğu saptanacaktır. % 5 güven aralığında toplam otuz beş bin kişiden oluşan popülasyona ait gerekli minimum örneklem değerinin 379 olduğu hesaplanmıştır (Creative Research Systems, 2008). Çalışmanın örnekleminin seçilmesinde Türkiye'nin yedi

coğrafi bölgesinin her birinden ikişer üniversite belirlenmiştir. Bölgelerdeki üniversitelerin belirlenmesinde elverişli örnekleme (convenience sampling) yöntemi kullanılmıştır. Belirlenen üniversitelerin eğitim fakültelerinin sınıf öğretmenliği üçüncü sınıflarına ders vermekte olan akademisyenlere elektronik posta gönderilerek, çalışmanın amacı açıklanmış ve veri toplamada katkıda bulunup bulunamayacakları sorulmuştur. Gönderilen elektronik postalarda bu anket verilerinin kullanılacağı çalışma ve çalışmayı yapan kişi hakkında bilgiler yer almıştır. Çalışmaya katkı sağlamayı kabul eden öğretim elemanları sınıf öğretmenliği üçüncü sınıflara vermiş oldukları derslerdeki kayıtlı öğrencileri arasından seçkisiz yolla 603 öğrenci belirlenmiş ve bu öğrenciler çalışmaya dâhil olmuştur.

CDW-G tarafından sunulan ve Teachers Talk Tech 2006 raporunda kullanılan anket (Crystal, 2006) çalışmada oluşturulacak ankette referans noktası olmuştur. Amerika'da ülke genelinde binin üzerindeki öğretmen ile uygulanan ve öğretmenlerin teknolojinin öğretimi ne şekilde şekillendirdiğine dair görüşlerinin toplandığı çalışmada veri toplama aracı olarak kullanılan anket Türkçe'ye uyarlanmış ve Türkiye'deki öğrenme öğretme faaliyetleri göz önünde bulundurularak ilişkili maddeler eklenerek iki ana bölüm ve toplam on yedi sorudan oluşan "Teknolojinin Eğitim Öğretim Faaliyetlerindeki Rolü" adlı anket oluşturulmuştur.

Teknolojinin eğitim öğretim faaliyetlerindeki rolü anketinin birinci bölümünde öğretmen adaylarının farklı beceri ve uygulamaları öğretmede teknolojiyi ne kadar etkili bulmaktadır sorusu irdelenmiştir. Bu maddelere ait öğretmen adaylarının görüşleri likert tipinde oluşturulan ve (1) Hiç Katılmıyorum, (2) Katılmıyorum, (3) Kararsızım, (4) Katılıyorum, (5) Tamamen Katılıyorum şeklinde düzenlenen yanıtlar ile elde edilmiştir. Anketin ikinci bölümünde teknolojik araçların sınıf içinde ne kadar önemli olduğuna dair cevaplar anketin birinci bölümünde oluşturulan likert tipi cevap seçeneklerinin benzeri şekilde (1) Hiç Katılmıyorum, (2) Katılmıyorum, (3) Kararsızım, (4) Katılıyorum, (5) Tamamen Katılıyorum seçenekleri ile elde edilmiştir. Anketin kapsam geçerliliği uzman görüşleri ile sağlanmış bu kapsamda anket iki akademisyene gönderilmiş ve elde edilen dönütler dâhilinde ankette gerekli düzenlemeler yapılmıştır. Anketin güvenilirliği çalışması 42 öğretmen adayını ile gerçekleştirilmiş ve Cronbach Alpha güvenilirlik katsayısı 0,705 olarak bulunmuştur.

Çoğaltılan yeterli sayıda anketler elverişli örnekleme yöntemi ile belirlenen ve e-mail aracılığıyla iletişim kurulan üniversitelerdeki akademisyenlere kargo yolu ile gönderilmiştir. Gönderilen anketler üniversitelerdeki akademisyenlerce sınıf öğretmenliği, üçüncü sınıf öğrencilerine uygulanmış ve araştırmacıya yine kargo yolu ile gönderilmiştir.

Elde edilen veriler öncelikle bilgisayar ortamında Microsoft Excel programına aktarılmıştır. Aktarılan verilerin olası hatalı veri girişi ve eksik veri girişlerine karşı kontrolü yapılmış herhangi bir hatalı veri girişi ile karşılaşmamıştır. Bununla birlikte on altı katılımcının eksik veri girişinde bulunduğu tespit edilmiştir. Verilerin analizinde betimsel istatistik analizi kullanılmıştır.

BULGULAR

Birinci araştırma sorusunda farklı becerilerin öğretiminde teknolojinin etkinliğine ilişkin öğretmen adaylarının görüşlerinin neler olduğu incelenmiştir. Bulgular Tablo 1'de sunulmuştur.

Tablo 1: Farklı Becerilerin Öğretiminde Teknolojinin Etkinliğine İlişkin Öğretmen Adaylarının Görüşleri

| | Hiç Katılmıyorum | | Katılmıyorum | | Kararsızım | | Katılıyorum | | Tamamen Katılıyorum | | Toplam | |
|--|------------------|-----|--------------|------|------------|------|-------------|------|---------------------|------|--------|-----|
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 1. Teknoloji yazma becerilerini öğretmede etkilidir. | 39 | 6,4 | 94 | 15,5 | 64 | 10,6 | 317 | 52,5 | 89 | 14,7 | 603 | 100 |
| 2. Teknoloji okuma becerilerini öğretmede etkilidir. | 13 | 2,1 | 75 | 12,4 | 69 | 11,4 | 340 | 56,5 | 104 | 17,3 | 601 | 100 |
| 3. Teknoloji dinleme becerilerini öğretmede etkilidir. | 14 | 2,3 | 66 | 10,9 | 73 | 12,1 | 309 | 51,2 | 141 | 23,3 | 603 | 100 |
| 4. Teknoloji eleştirel düşünme becerilerini öğretmede etkilidir. | 16 | 2,6 | 86 | 14,2 | 139 | 23 | 271 | 44,9 | 91 | 15 | 600 | 100 |
| 5. Teknoloji yaratıcı düşünme becerilerini geliştirmede etkilidir. | 18 | 2,9 | 67 | 11,1 | 66 | 10,9 | 276 | 45,8 | 175 | 29 | 602 | 100 |
| 6. Teknoloji kavram öğretmede etkilidir. | 12 | 1,9 | 35 | 5,8 | 93 | 15,4 | 315 | 52,3 | 147 | 24,4 | 602 | 100 |
| 7. Teknoloji matematik alıştırmalarının yapılmasında etkilidir. | 21 | 3,4 | 88 | 14,6 | 111 | 18,4 | 259 | 43 | 123 | 20 | 602 | 100 |
| 8. Teknoloji fen eğitiminde etkilidir. | 4 | 0,6 | 21 | 3,4 | 51 | 8,4 | 297 | 49,4 | 228 | 37,9 | 601 | 100 |
| 9. Teknoloji görsel ve işitsel sanatlara ait uygulamalar yapılmasında etkilidir. | 5 | 0,8 | 21 | 3,5 | 61 | 10,7 | 250 | 41,6 | 263 | 43,8 | 600 | 100 |

İkinci araştırma sorusunda teknolojik araçların sınıf içindeki etkinliğine ilişkin öğretmen adaylarının görüşlerinin neler olduğu sorusu incelenmiştir. Bulgular Tablo 2'de sunulmuştur.

Tablo 2: Teknolojik Araçların Sınıf İçindeki Etkinliğine İlişkin Öğretmen Adaylarının Görüşleri

| | Hiç Katılmıyorum | | Katılmıyorum | | Kararsızım | | Katılıyorum | | Tamamen Katılıyorum | | Toplam | |
|---|------------------|-----|--------------|------|------------|------|-------------|------|---------------------|------|--------|-----|
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 1. Sınıf içinde, yönetim ile ilgili olan işler için (devam ve başarı notlarının tutulması gibi) teknolojik araçlar önemlidir. | 7 | 1,1 | 35 | 5,8 | 45 | 7,4 | 266 | 44,1 | 249 | 41,3 | 602 | 100 |
| 2. Teknolojik araçlar diğer öğretmen, yönetici, veli ve öğrencilerle iletişim kurmak için önemlidir. | 11 | 1,8 | 34 | 5,6 | 44 | 7,3 | 308 | 51,1 | 205 | 34 | 602 | 100 |
| 3. Teknolojik araçlar derslerin hazırlanmasında araştırma yapmak için önemlidir. | 1 | 0,1 | 5 | 0,8 | 15 | 2,5 | 220 | 36,6 | 315 | 59,8 | 556 | 100 |
| 4. Teknolojik araçlar bir öğretim aracı olarak kullanmak için önemlidir. | 5 | 0,8 | 34 | 5,6 | 31 | 5,1 | 316 | 52,4 | 216 | 35,8 | 602 | 100 |
| 5. Teknoloji öğrencilerin öğrenme sürecine aktif şekilde katılmalarını sağlar. | 15 | 2,4 | 36 | 10,9 | 141 | 23,4 | 245 | 40,6 | 135 | 22,4 | 572 | 100 |
| 6. Teknolojinin sınıfta kullanımı ile öğrencilerin başarıları artar. | 6 | 1 | 23 | 3,8 | 94 | 15,9 | 309 | 51,5 | 168 | 27,8 | 600 | 100 |
| 7. Sınıflardaki teknoloji sayesinde öğrencilerin bağımsız düşünme becerileri gelişir. | 20 | 3,3 | 101 | 16,8 | 198 | 33 | 218 | 36,3 | 63 | 10,8 | 600 | 100 |
| 8. Sınıflardaki teknoloji sayesinde öğrenciler daha fazla bağımsız düşünürler. | 25 | 4,1 | 118 | 19,5 | 192 | 31,8 | 201 | 33,3 | 67 | 11,1 | 603 | 100 |

SONUÇ

Anket sonuçlarına dayanarak öğretmen adaylarının okuma, yazma ve dinleme becerilerini geliştirmede teknolojinin etkili olduğunu düşündükleri anlaşılmaktadır. Literatüre bakıldığında ilk okuma ve yazma becerisi kazandırırken öğrencilerin aynı zamanda hızlı, anlayarak, zevk alarak ve işlevsel bir şekilde okuma ve yazma becerisi kazanmış olmasının önemli vurgulanmaktadır (Çelenk, 2002). Bu doğrultuda eğitim sürecine entegre edilen teknoloji temelli materyaller öğrencilerin dikkatini çekmede kolaylık sağlayacaktır. Ayrıca bilgisayarın kullanıldığı ders ortamlarında öğrencilerin değişik öğrenme yeteneklerine de hitap edilmiş olunur (Öztopçu, 2006). Okul öncesi dönemde ise öğrencilerin okumaya hazırlık programlarında kullanılan dinleme temelli teyp kasetleri (Oktaş ve Kerem, 2004) ve ayrıca yabancı dil öğretiminde kullanılan bilgisayar programlarının yapılan çalışmalar sonucunda daha etkili olduğu sonucu (Düşmez ve Gömleksiz, 2005) teknolojinin okuma, yazma ve dinleme becerilerinde etkin olduğunu göstermektedir.

Öğretmen adaylarının, teknolojinin eleştirel ve yaratıcı düşünme becerilerini öğretmede ne kadar etkili olduğuna ilişkin görüşlerine bakıldığında öğretmen adaylarının vermiş oldukları yanıtların “katılıyorum” maddesinde yoğunlaştığı görülmüştür. Koç (2005), doğru ve etkili kullanılan teknolojinin üst düzey düşünme becerilerini, eleştirel ve yaratıcı düşünme becerilerinin gelişimini desteklediğini vurgulamaktadır. Öğretmen adaylarının teknolojinin eleştirel ve yaratıcı düşünme becerilerini öğretmede ne kadar etkili olduğuna ilişkin olumlu görüşleri Koç’un vurgusunu destekler niteliktedir.

Öğretmen adaylarının, teknolojinin kavram öğretmede etkili olduğunu düşündükleri, yoğunlukla “katılıyorum” maddesini işaretlemelerinden anlaşılmıştır. Kavram öğretmede basit resimler, şemalar, karikatürler ve diyagramların kullanılabilmesi (Çilenti, 1991) ve bu basitleştirilmiş örneklerin bilgisayarlar ile öğrencilere projelerle gösterilerek kavram öğretiminde kullanılacağı vurgulanmıştır.

Öğretmen adaylarının, teknolojinin matematik çalışmalarının yapılmasında ne kadar etkili olduğuna ilişkin görüşleri “katılıyorum” maddesinde yoğunlaşmaktadır. Matematik öğretimi ve eğitiminde hesap makineleri ve bilgisayarlardan olabildiğince yararlanılmalı hatta elektronik aletlerin kullanımı matematik öğretim programlarının özünü oluşturmaktadır (Ersoy, 2003a) görüşü araştırmacılarca vurgulanmaktadır. Ayrıca yapılan çalışmalar derslerinde hesap makinesi kullanan öğrencilerin matematiğe karşı daha olumlu ilgi geliştirdiklerini, çabukluk kazandıklarını, zihinsel becerilerini geliştirdiklerini, zamanlarını daha iyi kullandıklarını, özgüvenlerinin arttığını ve dikkatlerini daha rahat toplayabildiklerini göstermektedir (Ersoy, 2003b; Özahışa ve Kök, 2003). Öğretmen adaylarının, teknolojinin matematik çalışmalarının yapılmasında ne kadar etkili olduğuna ilişkin olumlu görüşlerinin araştırma sonuçları ile paralellik gösterdiği gözlenmektedir.

Öğrencilerin teknolojinin fen eğitimine olan katkısının araştırıldığı anket maddesine verdikleri cevaplar da “katılıyorum” maddesinde yoğunlaşmıştır. Fen öğretiminde bilgisayar destekli öğretim ile yapılan çalışmalarda bilgisayar destekli öğretim; öğrencilerin başarılarını arttırmada, öğrencilerin bilgisayara yönelik tutumlarında, araştırma yapma, takım çalışması yapma, iletişim kurma, yazılı ve sözlü ifade, problem çözme, kişisel gelişim gibi yeteneklerin gelişiminde ve öğrenmenin kalıcılığında etkileri araştırılmıştır. Alınan sonuçlar bilgisayar destekli öğretimin tüm bu becerileri olumlu yönde etkilediğini göstermiştir (Aykanat, 2005; Akçay vd., 2005; Meyveci, 1997; Morgül, Ural, 2006). Ayrıca teknolojinin sınıfta kullanımının öğrencilerin başarılarına etkisine ilişkin öğretmen adaylarının vermiş oldukları yanıtların “katılıyorum” maddesinde yoğunlaşmış olması öğretmen adaylarının görüşlerinin araştırma sonuçları ile paralel olduğunu göstermektedir.

Öğretmen adaylarının, teknolojinin görsel ve işitsel sanatlar ait uygulamalar yapılmasındaki etkinliğine ilişkin cevapları “tamamen katılıyorum” seçeneğinde yoğunlaşmıştır. Başbuğ (2007), görsel sanatlar dersinde öğretmenlerin bilgisayar, slayt, film, fotoğraf makinesi, projektör gibi aletleri derslerinde kullanarak, öğrencileri derse daha iyi motive edebildiklerini vurgulamıştır. Öğretmen adaylarının teknolojiyi görsel ve işitsel sanatlar için uygulamalarda etkin bir araç olarak gördükleri anlaşılmaktadır.

Teknolojik araçların sınıf içinde, yönetim ile ilgili olan işler için (devam ve başarı notlarının tutulması gibi) önemi ve teknolojik araçların diğer öğretmen, yönetici, veli ve öğrencilerle iletişim kurmakta önemine öğretmen adaylarının vermiş oldukları yanıtlar “katılıyorum” maddesinde yoğunlaşmıştır. Okul müdürleri bilgisayarların okuldaki kırtasiyeciliği önemli ölçüde azalttığını, işlerin daha düzenli ve hızlı ilerlediğini belirtmektedirler (Çelikten, 2002). Buradan da anlaşılacağı gibi öğretmen adaylarının anketin ilgili maddesine vermiş oldukları olumlu yanıtlar mevcut araştırma sonuçlarını destekler nitelikte olmaktadır.

Teknolojik araçların derslerin hazırlanmasında araştırma yapmadaki önemine ilişkin öğretmen adaylarının vermiş oldukları yanıtların “tamamen katılıyorum” maddesinde yoğunlaştığı görülmüştür. Ayrıca, teknolojik araçların bir öğretim aracı olarak

kullanılmasının önemine ilişkin öğretmen adayları yoğun olarak “katılıyorum” maddesini işaretlemişlerdir. Teknolojik bir araç olarak bilgisayarlar bilgiye ulaşmada büyük kolaylık sağlar (Uşun, 2003). Derslerin hazırlanmasında araştırma yapmak için teknolojik araçların kullanımının vazgeçilmez bir unsur olduğu anlaşılmaktadır.

Teknolojik araçlar ile hazırlanan öğretim programlarının etkililiği yapılan birçok çalışmada araştırılmıştır. Bilgisayarlı öğretiminin öğrenci başarısına etkisini inceleyen bir çalışma bilgisayarla öğrenim gören öğrencilerin başarılarının geleneksel yolla öğrenim gören öğrencilerin başarılarına oranla daha fazla olduğunu göstermiştir (Özmen, Kolomuç, 2004). Teknolojinin öğrencilerin öğrenme sürecine aktif şekilde katılımlarını sağlamasına ilişkin öğretmen adaylarının vermiş oldukları yanıtlar “katılıyorum” maddesinde yoğunlaşmıştır. Teknoloji destekli proje tabanlı öğrenme yönteminin kullanılması sırasında öğrenciler öğrenme sürecine aktif olarak katılırlar ve araştırma yapma, sunu hazırlama, internet ve yazıcı kullanma gibi etkinlikler onlara zevkli ve eğlenceli gelir (Ersoy, 2006). Öğretmen adaylarının teknolojiye karşı olan görüşleri araştırma bulguları ile paralellik göstermektedir. Ayrıca öğretmen adayları teknolojinin sınıfta kullanımının öğrencilerin bağımsız düşünme becerilerini geliştirmesine katkı sağlayacağını düşünmektedir.

Sonuç olarak farklı beceri ve uygulamaları öğretmede teknolojiyi öğretmen adayları etkin bir araç olarak görmektedirler. Ayrıca öğretmen adaylarının, teknolojik araçların sınıf içinde eğitim öğretim faaliyetlerini gerçekleştirmede etkin olduklarını vurguladıkları gözlenmektedir. Bu sonuçlar ışığında geleceğin öğretmen adaylarının teknolojinin öğrenme öğretme faaliyetlerindeki yerini kavradıkları ve imkân tanıdığına gelecekte bu araçları kullanmaya karşı olumlu düşüncelere sahip oldukları anlaşılmaktadır. Gelecekte yapılacak çalışmalar mezuniyet sonrası teknolojinin öğretmenlerce sınıf içinde kullanımına ve muhtemel handikapların belirlenmesine yoğunlaşmalıdır.

KAYNAKLAR

- Akçay, S., Aydoğdu, M., Yıldırım H. İ., ve Şensoy Ö. (2005). Fen Eğitiminde İlköğretim 6. Sınıflarda Çiçekli Bitkiler Konusunun Öğretiminde Bilgisayar Destekli Öğretimin Öğrenci Başarısına Etkisi, *Kastamonu Eğitim Dergisi*, 13(1), 103–116.
- Aykanat, F., Doğru M. ve Kalender S. (2005). Bilgisayar Destekli Kavram Haritaları Yöntemiyle Fen Öğretiminin Öğrenci Başarısına Etkisi, *Kastamonu Eğitim Dergisi*, 13 (2), 392-393.
- Başbuğ, F. (2007). İlköğretim 2. Kademe Görsel Sanatlar Eğitimi Dersine Teknolojik Yaklaşımlar, http://www.pegem.net/akademi/kongrebildiri_detay.aspx?id=5549, (Erişim Tarihi: 10.02.2010).
- Creswell, J.W. (2002). *Educational Research: Planning, Conducting Evaluating Qualitative And Quantitative Research*, Merrill Prentice Hall, New Jersey.
- Crystal, B. (2006). Teachers Talk Tech 2006, <http://newsroom.cdwg.com/features/TeachersTalkTech2006Result.pdf>, (Erişim Tarihi: 01.08.2007).
- Çelenk, S. (2002). *İlkokuma- Yazma Öğretiminde Karşılaşılan Öğretmen Görüşleri*, <http://ilkogretim-online.org.tr/vol1say2/v01s02b.pdf>, (Erişim Tarihi: 12.10.2007).
- Çelikten, M. (2002). Okul Müdürlerinin Bilgisayar Kullanma Becerileri, *Milli Eğitim Dergisi*, Sayı: 155–156.
- Çilenti, K. (1991). *Eğitim Teknolojisi ve Öğretim*, Kadioğlu Matbaası, Ankara.
- Creative Research Systems (2008). Sample Size Calculator, <http://www.surveysystem.com/sscalc.htm>, (Erişim Tarihi: 03.08.2008).
- Düşmez, O. S. ve Gömlüksiz M. N. (2005). İngilizce’de Relative Clause Konusunun Öğretiminde Bilgisayar Destekli Öğretim İle Geleneksel Yöntemin Öğrenci Başarısı Üzerine Etkisinin Karşılaştırılması, *Türk Eğitim Bilimleri Dergisi*, 3 (2).
- Erarı, F. (2002). Küreselleşme Sürecinde Eğitimin Kalkınmadaki Önemi, Açıköğretim Öğrencileri İle Ailelerinin Sosyo-Ekonomik Durumu ve Beklentileri, http://www.aof20.anadolu.edu.tr/bildiriler/Ferhat_Erari.doc, (Erişim Tarihi: 04.03.2007).
- Erbil, O. (2007). *Bilgi Ve Teknoloji-I*, http://uretim.meb.gov.tr/egitekhaber/s92/yazarlar.htm#o%F0uzAlkan_1998, (Erişim Tarihi: 26.02.2007).
- Ersoy, A. (2006). *İlköğretim Beşinci Sınıfta Teknoloji Destekli Proje Tabanlı Öğrenme Uygulamaları*, Yayınlanmamış Doktora Tezi, Anadolu Üniversitesi Eğitim Bilimleri Enstitüsü, Eskişehir.
- Ersoy, Y. (2003a). Teknoloji Destekli Matematik Eğitimi-1: Gelişmeler, Politikalar ve Stratejiler, *İlköğretim-Online* 2 (1). <http://www.ilkogretim-online.org.tr>, (Erişim Tarihi: 10.11.2007).
- Ersoy, Y. (2003b). Teknoloji Destekli Matematik Eğitimi 2: Hesap Makinesinin Matematik Etkinliklerinde Kullanılması, *İlköğretim-Online* 2(2). <http://www.ilkogretim-online.org.tr>, (Erişim Tarihi: 10.11.2007).
- Karagözoğlu, G. (2008). Türk Eğitim Sisteminde Öğretmen Yetiştirme Çıkamazımız, *Çağdaş Eğitim Dergisi*, 349, 3–7.
- Koç, M. (2005). Öğrenme Teorilerinin Etkili Teknoloji Entegrasyonuna ve Hizmet Öncesi Öğretmen Eğitimine Etkileri: Eleştirel Literatür Taraması, *Türk Fen Eğitimi Dergisi*, Cilt 2, Sayı 1.
- Marra, R. M. (2004). An Online Course to Help Teachers “UseTechnology to Enhance Learning”: Successes and Limitations *Journal of Technology and Teacher Education* 12 (3), 411–429.
- MEB (2008). *İnternet Erişim Projesi*, http://www.meb.gov.tr/ADSL/adsl_index.html, (Erişim Tarihi: 25.12.2008).
- Meyveci, N. (1997). *Bilgisayar Destekli Fizik Öğretiminin Öğrenci Başarısına ve Öğrencinin Bilgisayara Yönelik Tutumuna Etkisi*, Yayınlanmamış Yüksek Lisans Tezi, Ankara Üniversitesi Eğitim Bilimleri Fakültesi, Ankara.
- Morgil, İ. ve Ural E. (2006). Aktif Öğrenme Ortamlarında Bilgisayar Destekli Eğitim ve İnternet Kullanımının Kimya Öğretmen Adaylarının Transfer Edilebilen Yetenekler Üzerindeki Etkisi, *Türk Fen Eğitimi Dergisi*, 3 (2).
- Oktay, A. ve Kerem E. A. (2004). Okul Öncesi Dönem (5–6 yaş) Çocuklarına Yönelik Okumaya Hazırlık Programı, <http://www.erg.sabanciuniv.edu/iok2004/bildiriler/Ayla%20Oktay.doc>, (Erişim Tarihi: 22.03.2007).
- Özahışa, U. ve Kök, S. (2003). İlköğretim Matematik Derlerinde Hesap Makinesi Kullanımı, http://www.fedu.metu.edu.tr/ufbmek-5/b_kitabi/PDF/Matematik/Bildiri/t244.pdf, (Erişim Tarihi: 04.04.2007).
- Özmen, H. ve Kolomuç A. (2004). Bilgisayarlı Öğretimin Çözümler Konusundaki Öğrenci Başarısına Etkisi, *Kastamonu Eğitim Dergisi*, 12 (1), 57–68.
- Öztopçu, A. (2006). Okul Öncesi Ve İlköğretim Sürecindeki Eğitimde Bilişim Teknolojilerinin Önemi,” XI. Türkiye’de İnternet Konferansı, Ankara, TOBB Ekonomi Ve Teknoloji Üniversitesi, Ankara.
- Öztürk, C. ve Dilek D. (2002). *Hayat Bilgisi ve Sosyal Bilgiler Öğretimi*, PegemA Yayıncılık, Ankara.
- Uşun, S. (2003). Eğitim ve Öğretimde Bilgisayarların Yararları ve Bilgisayarlardan Yararlanmada Önemli Rol Oynayan Etkenlere İlişkin Öğrenci Görüşleri, *Kastamonu Eğitim Dergisi*, 11(2).
- Yanpar, T. ve Yıldırım S. (1999). *Öğretim Teknolojileri ve Materyal Geliştirme*, Anı Yayıncılık, Ankara.
- Yılmaz, K. ve Horzum B. (2005). Küreselleşme, Bilgi Teknolojileri ve Üniversite, *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 6 (10), 103–121.

THE TECHNOLOGICAL LEGAL EDUCATION IN HIGHER STUDIES IN BANGLADESH AND MALAYSIA: AN APPROACH FOR SUSTAINABLE DEVELOPMENT

Dr. Noor Mohammad¹

¹ Visiting Senior Lecturer, Faculty of Law, University of Malaya 50603, Kuala Lumpur, Malaysia. Tel: 603-7967-6520, Fax: 7957-3235, Email: noormu2007@gmail.com

Abstract

Malaysia and Bangladesh are environmentally rich countries in the globe and their education systems are also based on the British colonial administration due to the fact that these two countries were under the rule of the British Government broadly. In 1957 and 1971, these two countries get independence respectively and try to develop their education systems based on the scientific methods. Some Educations Commissions in these two countries have been made and some initiatives upon commendations have also been done. Currently, around 32 and 20 public and 52 and 18 private universities are working in Bangladesh and Malaysia respectively. Some specialized universities including engineering, agriculture etc; are also working. Most of the universities are general education based where the technological legal education including the information, communication, media and technology based education is rarely done. With the change of time and socio economic needs including globalization, some technological education has been rapidly developing. Both the governments are quite aware about these education and necessary steps have been made with also some limitations. This study will examine the process and state of the techno local legal education in higher studies of Bangladesh and Malaysia based on the primary and secondary sources. A case study may be done at the different faculties in the University of Malaya, Malaysia in this regard.

Keywords: Technological Legal Education, Higher Studies, Sustainable Development.

INTRODUCTION

Technological legal education as part of education¹ is very crucial to the present generation on this earth. Its concept is also traced back² since James Madison, the fourth President of the USA in 1822. To him, a democracy works best when the people have all the information that the security of the nation permits. Technology is an increasingly influential factor in education. It provides an opportunity to learn about the processes and knowledge related to technology. It covers the human ability to shape and change the physical world to meet needs by manipulating materials and tools with techniques.³ It is an innovative approach to develop the soft skills. Britain was perhaps the first country to include the field of technology in the national curriculum for schools from 1989. It is a study of technology in any forms.⁴ The technological legal education shapes and pushes to go ahead in a proper and right track without committing offences. The concerned professionals including the academia have been thinking about the role of the legal education in the technology. This education develops the pedagogy on the legal aspects of the application. It is observed its way into legal education in a variety of ways.⁵ Proficiency in information and communication technologies is one of the essential skills required for law practices. It is also helpful to the legal research and teaching. Information and communication technologies are a diverse set of tools and resources used to communicate, create, disseminate, store, and manage information. These technologies include computers, the internet, broadcasting technologies etc. Information and communication is very closely related and interlinked with the democracy. Without it, the modern democracy is meaningless. It means that more participation, more opinions, interactions etc; are important for the democracy. It is also prerequisite for the good governance. On the other hand, secrecy is a curse to the democracy. It may play key role in abusing and misusing of the State powers. Its impacts on the stakeholders are devastating. In this regard, Amartaya Sen., the Nobel Prize winning economist observed that "... there has never been a substantial famine in a country with a democratic form of government and relatively free press. Information allows people to scrutinize the actions of a government and is the basis for proper, informed debate of those actions."

DISCUSSION AND RESULTS

The idea of the educational background in Bangladesh is very difficult to locate which is closely connected with the human civilization.⁶ It is originated from the ancient and Medieval Bengal. Some educational spirit is observed from the Buddhist religions centre in the 6th and 7th centuries. The Bengal had earned for the cultivation of Grammar from very early time along with Astronomy, Veda, etc⁷ and also in the medieval period. The Sanskrit was taught in the Hindu community.⁸ Some conventional education system was developed in the medieval Bengal. After that, the British came into power and began to teach the oriental language and developed with the colonial administration. In the age of Raja Ramahan Roy, he promoted a more liberal comprising the natural philosophy⁹ chemistry and other useful sciences. Charles proposed and introduced the various education departments for administering the education administration and was the founding father of the Calcutta University. Subsequently, Dhaka University was established in 1921. Moreover, some important contribution on education expansion was made in 1916-1917. Bangladesh got her independence on 27 March 1971. In fact, Bangladesh¹⁰ inherited the British colonial education system. It is very difficult to make comments on the technological legal education. Perhaps, this education policy was observed in the different curricula including the university levels. After the independence, several education commissions and different year plans were made to develop the education systems in Bangladesh. The government passed the colonial based education system in 1972 through the presidential order. Some international donor agencies including the World Bank, United Nations Development Program, European Union etc; were also held. The policy on religious, general education, vocational and technical education etc; were in vogue. The basis of education is our constitution and there is no barrier to the technological legal education in the constitution.¹¹ The government may take appropriate measures in this regard based on the article 17 of the constitution as per the needs of the society.¹² The Government is fully determined to implement the Millennium Development Goals (MDGs)¹³ along with the international commitments.¹⁴ In order to develop the education sector in Bangladesh, several National Education Commissions¹⁵ were formed as discussed earlier. The National Qudrat-i-Khuda Education Commission 1972 is one of them which are known as Qudrat-i-Khuda Education Commission. The commissions recommended that education structure consisting of a formal sub-system and non-formal sub system. The Ministry of Primary and Mass Education is responsible formal primary and non-formal basic education. The Ministry of Education is responsible for Secondary and Higher Education along with the Islamic and NGOs non formal education.¹⁶

TECHNOLOGICAL EDUCATIONAL DEVELOPMENT TRENDS AND PLANS

After the independence of Bangladesh, the Government has been taking several educational development initiatives in Bangladesh. These initiatives may be long term and short term basis. In the Fifth Five year plan, the technological skill and orientation has been discussed that relate to the legal aspects in technology. The national committee on the Curriculum of Mass Education will prepare the curriculum of appropriate subjects of other branches in view of the needs of vocational and technical education etc. The role of various ministries, departments and national media in the extension of mass education will be coordinated. Legal framework will need to be drawn to implement the constitutional commitment for the extension of mass education. Some significance is also observed in the various strategies and plans¹⁷ of the government such as the First Five-Year Plan, 1973-78, November 1973., the Ministry of Planning, the People's Republic of Bangladesh, the Second Year Plan, 1978-80, September, 1978, the Ministry of Planning, Bangladesh., the Third Five Year Plan, 1985-90, Ministry of Planning, the People's Republic of Bangladesh., the Fourth Five Year Plan, 1990-95, the Ministry of Planning, the People's Republic of Bangladesh., The Fifth Five-Year Plan, 1997-2002.; the Ministry of Planning, the People's Republic of Bangladesh.

ENVIRONMENTAL POLICY CONTEXT

The major problem related to environment pollution and degradation have also been clearly identified in Bangladesh and it is necessary that these problems are adequately addressed simultaneously along with issues concerning to improvement of environment in an integrated manner.¹⁸ Therefore, an appropriate technology and sustainable management techniques is essential in the policy level. It is essential that people at all levels may be involved for sustainable use of national resources. This can only be achieved through mass awareness by the help of the technology education. It is necessary to undertake activities at local and national level. It is also feasible and essential to ensure improvement of national environment and thus global environment at large, as well as environmentally sound and sustainable use of resource through regional and global cooperation in relevant fields based on the framework of the modern technology legal education.

ENVIRONMENTAL OBJECTIVES

The Government of Bangladesh has set some environmental objectives¹⁹ such as: a) To maintain ecological balance and overall development through protection and improvement of the environment, b) To protect the country again natural disaster; c) To identify and regulate activities which pollute and degrade the environment d) To ensure environmentally sound development in all sectors e) To ensure sustainable , long term and environmentally sound use of all national resources and f) To actively remain associate with all international environmental initiatives to the maximum possible extent. In order to attain these objectives, the modern technological education including the legal aspects is very important. Without which the sustainable development is quite impossible.

TECHNOLOGICAL ENVIRONMENTAL POLICY

There are some policies²⁰ under the heads of the science, technology and research such as (a) Incorporate environmental pollution supervision and control measures into national science technology policy, (b) Encourage necessary research and evolve technology to ensure long term, sustainable and environmentally sound utilization of all resources for conservation and improvement of environment (c) Incorporate environmental consideration as an integral part of priority areas for research and development within the framework of National Science and Technology Policy (1986) and (d) Consideration of environment issues in all research activities by research and development institutions. It is also stated in the agriculture policy that all steps taken and technologies adopted for agricultural development and attainment of self- sufficiency in food are to be made environmentally sound. Similarly, in the Industry policy, it is mentioned that encourage development of environmentally sound and appropriate technology and initiatives on research and extension in the fields of industries are to be ensured Regarding the balance such initiatives with the best use of labor and provision of proper wages and in the energy and fuel policy, it is stated that develop improved energy saving technology and proliferate its use. Under the head of the Education and Public Awareness Policy: The technological legal education is almost on the theme of the education and public awareness policy due to the fact that it is one of the parts of the education such as (a) Integrate people in the spreads of education and overall development of the country through eradication of illiteracy and increase in the rate or literacy; (b) Create wide spread mass awareness regarding environmental conservation and improvement, sustainable, long term and environmentally sound utilization of all resources; (c) Ensure inclusion and dissemination of environmental knowledge and information in the formal and information systems of education activities, (d) Induce spontaneous and direct participation of people in all environmental activities and (e) Incorporate environmental issues in all government and non- government-training programs for industrial and commercial workers. It could be maintained only for the purposes of sustainable development for our generations on this earth.

LEGAL FRAMEWORK POLICY

There are some legal policies²¹ including the technology on all the sectors laws of the land such as (a) Amend all laws and regulations related to protection of environment, conservation, of natural resources, and control of environmental pollution and degradation with a view to meet present day's need b) Frame new laws in all sectors necessary to control activities concerning environmental pollution and degradation (c) Ensure proper implementation of all relevant laws or regulations and create wide spreads public awareness in al this regard and (d) Ratify all concerned international laws including the conventions or the protocols which Bangladesh confides ratifiable and amend or modify existing laws or regulations in line with the ratified international laws or conventions or the protocols.

INSTITUTIONAL ARRANGEMENTS

Some institutional policies²² on the technological legal aspects may be made by the National Environmental Committee with the head of the Government as the Chairperson would be constituted to give overall direction for implementation of this policy. The Ministry of Environment and Forest would take timely steps for appropriate amendment and modification of this policy on the backdrop of changes in the state of environment and socio-economic and other needs of the country. The Department of Environment will make final review and approve all Environmental Impact Assessments.

TECHNOLOGICAL ENVIRONMENTAL ACTION PLAN

Some action plans²³ in Science, Technology and Research have been made as follows: (a) Counseling will be made available on management and control of environment and control of environmental pollution keeping in view environmentally sound and sustainable technology, (b) Research and Technology innovation on environmental protection, development and proper utilization of resources will be

strengthened, (c) Environmental considerations should be integrated in all priority areas highlighted in the National Policy on Science and Technology, 1986 and (d) All research and development institution will specifically consider programmes and revise them if needed and the related Ministries, departments such as a) Science and Technology Division, b) Science and Technology related Research Institutions c) Various Research Institutions etc; will implement the action plans with other relevant recommendations and appropriate works for sustainable development.

THE POSITION OF HIGHER EDUCATION IN BANGLADESH

The above mentioned technological legal education is in fact taught in the different public and private universities in Bangladesh along with the affiliated university namely, the Bangladesh National University.²⁴ There are 80 universities working in Bangladesh of which 53 private and 27 are public.²⁵ The general and tradition courses are taught in the respective most of the faculties and departments. In terms of environmental legal education, around 200 legislations have been taught in the three public universities and in the twenty three private universities in Bangladesh. The study also finds that this course is taught at the master's level in the most of the cases. These laws are very technical in nature that covers the biodiversities, ecosystems, pollution, measures and other necessary equipments for enabling sustainable development for the nation as a whole. In terms of the role of the university Grants Commission in Bangladesh has a keen role in the monitoring and supervising the any sort of educational needs in the country. The major duties and responsibilities of the Commission²⁶ are to ascertain the demand for university level education, formulate specific policies for the development of higher education. The government took a decision in 2000 to establish 12 new science and technology universities based on the **technical education**. The Commission supervises the Institute of Scientific Instrumentation, a national organization established in 1975 to **prepare technical workers and skilled engineers** capable of maintaining and repairing the highly expensive and delicate scientific instruments used in **education and research** on science and technology. There are three levels in technical and vocational education: (i) certificate level of **one to two years** after grade VIII; (ii) diploma level of three years after SSC; and (iii) degree level of four years after HSC. **Engineering, agriculture, medical, business and law** education comprise graduate and post-graduate level education after the HSC.²⁷ The **directorate of technical education** is responsible for the administration and management of technical and vocational education in Bangladesh. **Bangladesh Telegraph and Telephone Department** was created under the Ministry of Posts and Telecommunications (MOPT) to run the **telecommunication services** on a commercial basis. In pursuance of an Ordinance promulgated by the President on 24 February 1979, this department was **restructured** into Bangladesh Telephone and Telegraph Board (BTTB) and presently known as BTCL (Bangladesh Telecommunications Company Limited) began operations on July 1, 2008 with a mandate to provide basic telecommunication services throughout the country. This Ordinance of 1979 provides the monopoly rights and powers for issuing license for telecommunications and wireless services. The **Telegraph Act of 1985** governs the operation of one way radio communications, paging and radio services. In October 1995, the government amended the Bangladesh Telephone and Telegraph Board Ordinance 1979 and transferred the regulatory authority from BTTB to MOPT which is now in the process of forming a regulatory body called Telecommunication Regulatory Board (TRB).²⁸ The private **entrepreneurs are allowed** in Bangladesh to provide telephone and email service as operators. The Pacific Bangladesh Telephone Ltd, 1989; the **Bangladesh Telecom** 1989; the Grameen Phone 1996 and Telephone Malaysia International Bangladesh 1996 have been working in Bangladesh. The National Information and Communication Technology (ICT) Policy 2002 and the Bangladesh National ICT Policy 2008 (Proposed) aimed at building an ICT driven nation comprising of knowledge based society.²⁹ It will also enhances democratic values and norms for sustainable economic development by using the infrastructure for human resources development, **governance, e-commerce, banking, public utility services** and all sorts of on line ICT enabled services. Citizens at large will be **empowered with necessary** information for efficiently performing their tasks. It may be a tool for fight against corruption and poverty alleviation. In order to **cope** with the cyber offences, the government of Bangladesh has adopted the ICT Policy, Cyber Law, Electronic Transaction Act etc.; that are also taught in the universities in Bangladesh. It establishes rules and norms that validate and recognize contracts, forms **through electronic means**, sets default rules for contract information and governance of electronic contract performances etc. The Copy Right Law 2000 has been amended to include computer software. The role of civil society such as the different non governmental organizations, **voluntary organizations, press and media** etc; have been providing and serving the nations through the technical and legal education based on the **ICT expertise**. In terms of Malaysian Higher studies, that there are 20 public and 18 private universities in Malaysia based on the science. **Most of the universities** have the science and engineering faculty where the Engineering Law, Information, Communications and Technology law, Media and Remedies, Legal Studies, Cyber Laws, Data Protection Laws; Malaysian government's legislations and policies on the ICT and related laws and policies; the environmental laws and policies; Computer Crimes, Real Estate Laws; **international legal systems** on these issues etc; have been taught.³⁰ The national ICT Council (NITC) was formed in under the 6th Malaysian Plan (1990-1995) to ensure ICT would be well integrated into the fabric of the Malaysian society. To further the agenda of the NITC, National ICT Agenda (NITA) was formulated in the 7th Malaysia plan (1996-2000) as a catalyst to transform Malaysian economy into value-based economy with development human capital, infrastructure and applications. It was during this period that the Multimedia Super Corridor (MSC) was launched. In an effort to move towards a knowledge-based economic nation, an effective utilization of ICT as tools as well as **enabling access** to all levels of the population to ICT are the fundamentals that must be laid out very soundly. Policies that will move Malaysia in that direction must be put in place. Of particular important is the Vision 2020 policy that sees Malaysia as a fully developed nation in 2020 in her own mould. To drive the transformation, Malaysia Multimedia Super Corridor (MSC) was established in 1996. Modeled to be a **world class hub** for development and nurturing of the Nation's ICT industry, the MSC provides first-world knowledge and infrastructure, at developing-nation costs⁶. In line with the country's information and communication technology (ICT) master plan (2) and Vision 2020, which envisages its longer-term development, Malaysia recognizes that the transformation of its education system is fundamental to achieving its objectives.³¹ The Ministry of Education, with the participation of non-governmental agencies, is focusing on the development of new media for use as educational, organizational and partnership-building tools, and as a means for bridging the country's digital divide and empowering learners. Due to its belief that ICT can revolutionize education and learning, the Ministry plans to integrate ICT into education on a fundamental level, incorporating systems to facilitate management, information gathering, access, and various forms of communication. Malaysia is better than Bangladesh on the technological legal education with other related laws and policies. Malaysia is faster in science based education including legal studies. In order to develop the technological education including the legal issues, many international soft laws conferences such as the Stockholm Conference, Rio Conferences, Johannesburg Conference along with many other international meetings have been hosting for the purposes of attaining sustainable development and environment for our generations on this earth. Consequently, some important soft and hard laws are passed in this regard. The agenda 21 is also very effective steps for the environmental rights. It contains all practical obligations for ensuring the rights. The Aarhus Convention is outstanding for recognizing the environmental rights and safeguarding the mechanisms. The Convention on Access to Information, Public Participation in decision Making and Access to Justice in Environmental Matters, Done at Aarhus, Denmark, On 25 June 1998. The European Minister Conference 1973; the Universal Declaration of Human Rights 1948; the UN First Conference 1972; The Rio Declaration 1992; the Agreement on the Co-operation for the Sustainable development of the Mekong River Basin (Chiang Rai, April, 1995; the Protocol on shared Watercourse Systems in the Southern Africa Development Community Region (August 28, 1995); the Convention on the International Commission for

the Protection of the Oder (Wroclaw, April 11, 1996); the UN, Convention on the Law of the Non- navigational Uses of International watercourses (New York, May 21, 1997); the protection and Sustainable use of the Danube River (Sofia, June 29, 1994); the Convention on the Rights of the Child and I.L.O Convention No. 169; the Biodiversity Convention 1992; the Frame Work Convention on Climate Change etc.³²

SOME CASE STUDIES

Most of the respondents do not like to talk on the technological legal education issues in Bangladesh and Malaysia. The highly educated people are also unable to give some ideas on the legal matters.

A case in Bangladesh: Cyber war Bangladesh and India:

Case 1: While Bangladesh is stepping towards Digital Bangladesh to fulfill national ICTs agenda and policy, Internet terrorist and hackers threatening is a big challenges and cyber war to the government of Bangladesh is essential. Recently, it is found in the Bangladesh government's offices in the 19 districts out 64 web portals had been hacked. Hacker amends the contents of web portal and has written messages in it. The ICT forensic and expertise investigate the hacking issues and found that the portals have been hacked from the India which is offence as per the ICT laws and policy.

Case 2: In this study researcher highlighted the legal status of ICT in Malaysia and Bangladesh. Researcher observed on the t Malaysia ICTs development and initiatives are satisfactorily made and have been rapidly growing on the IT industries. However, in the perspective of ICT legal education university, college and institutions would emphasis on the legal issues in the curriculums due to increasing number of ICTs crime in various sectors in Malaysia. Since Bangladesh is growing country in the Southeast Asian, currently the government has declared as the ICT as a main national agenda and would like to transform this governmental services to online. Hence, the development of ICT sector and governments' action plan "Towards a digital Bangladesh, the Government has published the national ICT Policy, 2002. The Policy aims at building an ICT-driven knowledge based society by the Year 2010. Nevertheless, along with the national ICTs policies and agenda, the realization of ICT legal education in the universities has great impact in legal studies. Therefore, the universities have to incorporate and update the information and communication technologies laws and practices. It is observed that in the process of the implementation of the existing technological laws including the Cyber Law, Data Protection Law, Computer Crime Laws etc; in Bangladesh and Malaysia are not properly done due to some reasons such as (a) the lack of technical expertise, (b) practical rules and application on the these laws are not properly trained and taught to the stakeholders, the proper evidence and records are not maintained in a due process of laws, (c) people are not aware about the application of the laws, (d) poor governance of the ICT laws and policy, (e) Lack of IT expertise in judiciaries and its environment, (e) Lack of IT expertise in the national security force and related agencies (f) weak ICT infrastructures and security, (g) Shortage of IT auditors and IT forensic expert, (h) lack of awareness building programs, (i) Lack of soft skills in general people, (j)

RECOMMENDATION

From the above study, some recommendations may be made as follows:

- To include the technological legal education at all levels of curricula
- To introduce awareness building programs among all the peoples in the society
- To train the judiciary and the related ICT agencies
- To ensure transparency and accountability in the ICT administration
- To implement the ICT policy and strategies
- To develop the ICT security infrastructure and security force
- To develop e-commerce security infrastructure
- To incorporate and enhance the penal provisions compared to other developed countries
- To introduce more departments and programs on the ICT education in the higher education
- To redesign the course curriculum

CONCLUSION:

From the above study, it is notified here that the technological legal education is in fact a comparatively a new addition to the legal jurisprudence and legal systems of the world. The study finds that the technical legal education in the higher studies is inadequate. The trends of this education have been gradually developing day by day. Some initiatives including Right to the Information Act, Data Protection Act, the Cyber Act, Computer Crimes Act, Technology Laws etc; have been made for meeting up the needs of the day. The study also observes that many cyber crimes have been committing and the personal protection is rarely done. Non-compliance with these laws along with the international environmental laws, human rights law and humanitarian laws bring the violation of human rights to the people on this earth. In order to ensure the humanity and personal dignity, the necessary mechanisms for the implementation of these laws are the most essential. The recommendations made in this study should be considered at all levels for the services to the mankind on this earth, our home.

References:

¹ Education is critical means to Poverty Reduction, Economic Development and Major Indicator for Social Progress, Human and Human Resources, improving the life and the quality of living people, functions of living, culture of society, behavioral aspects, Wisdom, equitable and sustainable economic development.

See the website: *The Importance of Quality Education*. http://portal.unesco.org/en/ev.php-URL_ID=40612, Accession on November 5, 2009 2:48 PM. & Education for All: National Plan of Action II 2003-2015, 4th Draft, Ministry of Primary and Mass Education Government of Bangladesh, May 2003, p. 12.

² Abu Bakar Munir and Siti Hajar Mohd Yasin, Information and Communication Technology Law, State, Internet and Information, (Petaling Jaya, Selangor: Sweet & Maxwell Asia, 2010), p. 1.

³ http://en.wikipedia.org/wiki/Blog#Legal_and_social_consequences; accession on 19.04.2010 at 10:47 P.M.

⁴ Ibid.

⁵ Pearl Goldman, *Legal Education and Technology: An Annotated Bibliography*, (Florida: Nova Southeastern University Shepard Broad Law Center, Fort Lauderdale, 2001), p.1.

⁶ Banglapedia, or the National *Encyclopedia of Bangladesh*, is the first Bangladeshi encyclopedia. It is available in print, CD-ROM format and online in both Bangla and English. The print version comprises ten 500-page volumes. The first edition was published in January 2003 by the Asiatic Society of Bangladesh, with a plan to update it every two years; The encyclopedia's chief editor is Sirajul Islam. Over 1200 writers and specialists in Bangladesh and abroad helped create the entries. Banglapedia has over 5,700 entries in six editorial categories, each of which is overseen by an expert editor, as well as over 2,000 single and four-colour illustrations and 2,100 cross-references and http://www.banglapedia.org/httpdocs/HT/E_0022.HTM; accession on 15.02.2010

⁷ Ibid.

⁸ Ibid.

⁹ Natural philosophy or the philosophy of nature (from Latin *philosophia naturalis*), is a term applied to the study of nature and the physical universe that was dominant before the development of modern science. It is considered to be the precursor of natural sciences such as physics. Forms of science historically developed out of philosophy or more specifically natural philosophy and http://en.wikipedia.org/wiki/Natural_philosophy; accession on 15.02.2010 at 6:47 P.M.

¹⁰ Bangladesh one of the members of the least developed countries in South Asia, between 20°34' to 26°38' north latitude and 88°01' to 92°41' east longitude. Maximum extension is about 440 km in E-W direction and 760 km in NNW-SSE direction. It consists the a area of 147,570 sq km. Boundaries: WEST BENGAL (India) on the west; West Bengal, ASSAM and Meghalaya (all the Indian states) on the north; Indian states of Assam, TRIPURA and Mizoram together with Myanmar on the east; and BAY OF BENGAL on the south. The total length of the land border is about 4,246 km, of which 93.9% is shared with India and the rest 6% with Myanmar. Limit of territorial water is 12 nautical miles (22.22 km) and the area of the high seas extending to 200 nautical miles (370.40 km) measured from the baselines constitutes the Exclusive Economic Zone (EEZ); See the Bangladesh Chapter, National Encyclopedia of Bangladesh/BANGLAPEDIA. *Natural, Gas*, accession on October 24, 2009. The details of the history, of GAS, its components, utilities etc., including the history of Bangladesh has been published in the website.

¹¹ The Constitution of the People's Republic of Bangladesh was adopted by the Constituent Assembly on 4 November 1972 and came into force on 16 December of the same year, marking the Victory Day. The Constitution has 153 Articles arranged under eleven parts and 4 schedules entitled the Republic, Fundamental Principles of State Policy, Fundamental Rights, the Executive, Prime Minister and the Cabinet, the Legislature, Legislative and Financial Procedure, Ordinance Making Power, Judiciary, Elections, Comptroller and Auditor General, Services of Bangladesh, Public Service Commission, Emergency Provisions, Amendment of the Constitution, and Miscellaneous

¹² Article 17, the Constitution of the People's Republic of Bangladesh

¹³ UNDP, in collaboration with national governments, is coordinating reporting by countries on progress towards the UN Millennium Development Goals. The framework for reporting includes eight goals -- based on the UN Millennium Declaration. For each goal there is one or more specific target, along with specific social, economic and environmental indicators used to track progress towards the goals.

¹⁴ UNESCO General Conference Resolution #12 of 1999; The Universal Declaration of Human Rights 1948; The UN Convention on Elimination of All Forms of Discrimination against Women 1979; the UN Convention on the Rights of the Child 1989; the World Declaration on Education for All 1990 and Dakar Framework for Action 2

¹⁵ The Khudrat-e-Khuda Commission 1972, Dr. Mofiz uddin Education Commission 1979; Shamsul Hoque Education Commission 1997, the Mohammad Moniruzzaman Mia Education Commission 2003 et

¹⁶ *Education for All: National Plan of Action II 2003-2015*, Ministry of primary and Mass Education, Government of Bangladesh May 2003.

¹⁷ Different Year Plans The Two Year plan, 1978-80, Ministry of Planning, September 1978. *The Two Five-Year Plan, 1980-85*, Ministry of Planning May 1980; *The Two Five Year Plan, 1980-85*, Ministry of Planning May 1980.

¹⁸ The Environment Policy 1992.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Ibid.

²⁴ Bangladesh Education at a Glance, http://www.dailyneeds.com.bd/edu/bd_education_ata_glancd.htm and accession on January 1 2009 8:18 PM.

²⁵ Salauddin & Aminuzzaman, *Quality Issues of Higher Education in Bangladesh*, http://www.dailyneeds.com.bd/edu/bd_education., Accession on November 5, 2009

²⁶ <http://www.ugc.gov.bd/>; accession on 21.04.2010 at 1:36 A.M.

²⁷ Ibid.

²⁸ http://www.bpedia.org/T_0107; accession on 21.04.2010 at 1:50 A.M. AND Banglapediapedia National Encyclopedia of Bangladesh;

²⁹ Ibid.

³⁰ <http://www.um.edu.my/mainpage.php?module=Maklumat&kategori=83&id=626&papa>; accession on 21.04.2010 at 1:55 A.M.

³¹ http://www.malaysian_ict_policy/Ministry_of_ICT_and_um.edu.my/mainpage.php?module=Maklumat&kategori=83&id=626&papa; accession on 21.04.2010 at 1:55 A.M

³² http://www.international_soft_laws_and_respective_websites.

THE THOUGHTS OF PRIMARY SCHOOL PRE-SERVICES ABOUT THE TEACHING OF ATOM SUBJECT WITH COMPUTER SUPPORTED INSTRUCTION MATERIALS

Zerrin Ayvaz Reis¹, Elif Ince², F. Gülay Kırbaşlar², Zeliha Özsoy-Güneş²

¹Istanbul University, Hasan Ali Yücel Education Faculty, The Department of Computer and Instructional Technologies

²Istanbul University, Hasan Ali Yücel Education Faculty, Department of Elementary Education, Division of Science Education

Corresponding Author: elifince@istanbul.edu.tr

Abstract:

Today, students are educated as a science literate by beginning to learn many science subjects such as physics, chemistry and biology from the very beginning of their primary school education, thereby taking part in the competition of science and technology world as our national youngsters. To have a voice in this competition, being able to follow and use technology is one of the key parameters. This study was carried out on pre services studying in the departments of Science teaching in Primary School, Classroom Teaching, and Pre-services Gifted Teacher Education: they were asked to express their opinions about the teaching of atom subject with Computer Supported Instruction materials. A lesson material that can be used not only to teach the abstract terms about atom subject to students accurately and permanently, but also in computer supported instruction, and moreover a learning subject, was prepared and presented to pre services. A questionnaire to get the ideas of teacher trainees about the teaching of atom subject with Computer Supported Instruction materials was prepared and conducted among 128 pre services who watched the presentation of CSI material. In the analysis of the results of the questionnaire, SPSS 13 was used and chi square technique was assisted.

Keywords: Computer Supported Instruction, Chemical Education, Teaching of Atom Subject.

Introduction:

With science education, by teaching students the ways of accessing information and using it, the improvement of their science intelligence and growing up as a science literate is aimed. The youngsters grown up in accordance with this aim will be able to adapt to both the natural and social environment more easily and will carry out the tasks and responsibilities to be given in the future more effectively. As science includes physics, chemistry and biology subjects, science teaching, in one sense, can be regarded as the doorway of the studying of physics, chemistry and biology (Akgün 1996). Physics and chemistry teaching in science education is at first studied in primary school in the curriculum of Science and Technology subjects and later as separate subjects in the higher education; however, at universities goes on as an education process in which even sub-disciplines are studied. As university level in physics and chemistry teaching is one of the final stages of being scientific intentionally, the process of physics and chemistry teaching has to be sufficient and comprehensible. Physics and Chemistry are thought to be complicated sciences by educators, researchers and teachers (Ben-Zvi *et al.* 1987). What makes these subjects difficult is the variety of symbols, equalities and abstract terms. Concordantly, a number of studies conducted by physics and chemistry educators and researchers have revealed the difficulty of teaching a large number of topics in these subjects and that students turn out to have unsatisfactory learning, concept errors and misunderstandings at the end of their education processes. (Taber, 1997; Boo, 1998; Tan and Treagust, 1999; Nicoll 2001; Piquette and Heikkinen, 2005; Doymuş ve Şimşek, 2007). Among these, we can count topics such as chemical bondings (Nahum *et al.* 2007); chemical reactions (Boo and Watson, 2001); chemical equilibrium (Gussarsky and Gorodetsky, 1988; Doymuş, 2007a); physical and chemical change (Abraham *et al.* 1994; Ayas and Demirbas, 1997), resolution and solution (Kokkotas and Vlachos, 1998; Saribas and Köseoglu, 2006) and phases (Doymuş, 2007b) and atom, matter, the granule structure of the matter in which visual ability made up of orientation ability and spatial sight is effective Delialioğlu (1996).

Various learning difficulties and broken learning faced in these subjects may lead to more serious problems in the stages of future learning. In this respect, since atom subject, a common subject in both physics and chemistry in science includes many abstract terms, it is critical to teach it with correct definitions and concrete materials. Because atom subject and terms are the key elements in teaching physics and chemistry teaching, or rather the whole science teaching, with the right reconstruction of this matter, sufficient background will be provided so as to teach the subsequent subjects such as matter, element, molecules and compound and chemical bonds properly. Tools and materials are generally used to prop up teaching in the process of teaching and learning. Well prepared education tools and equipment enrich the teaching process and boost learning. It is a well known fact that students remember 50 % of the subject if visual materials are used, 70 % of the subject if they participate in the lesson and 90 % if they are given homework or an activity to fulfill (Akpınar, 1999). The usage of such materials provides a multilayer educational situation, help students fulfill their personal needs, attracts attention and makes recalling easier. It also simplifies abstract, complex terms, matters and events that are difficult to understand. In addition, it saves time, enables doing reliable observations, presents consistent content at various times etc (Akçay, Feyzioğlu ve Tüysüz, 2003). In this sense, as the advances in technology change the tools and materials used in education, instead of science teaching which has been carried out traditionally, computer supported and based (CSI and CBI) instruction in which animation and simulation are used has come out as an alternative. (Clark, English, Jalobeanu ve Nistor 1998; Crippen ve Brooks, 2001; Ergin, 1995; Ichiko, Yamamoto, Kawamura ve Hanano, 2001; Chang, Yang ve Chan, 2002). In literature there are highly notable studies related to the efficiency of the computer supported/based instruction. In this respect, at an extensive literature research, the findings are as follows: 1- A considerable majority of studies into this matter state that compared to traditional teaching methods, CSI offers a number of positive attitudes and behaviors (Mevarech, 1985; Güneş, 1991; Tüysüz, 2002; Feyzioğlu, 2002). 2- CSI teaching process reduces the required time and this is more effective in larger classes. A study discloses that CSI saves time about 32 % (Kulik, Kulik & Bangert, 1985; McCoy & Haggard, 1989). 3- It is emphasized that if CSI is used for students in lower levels, it may prove to be more effective. (Hutin, 1987; Chan, 1989). 4- It is stated that while computer – centred and computer simulation supported instruction processes are effective for students at higher levels, CSI is effective for students at lower levels. (David, 1994).

Computer Supported Instruction (CSI) Computer Based Learning (CBL), which attracts the most attention and is also the most commonly studied in the form of using computer in education, has been utilized to support the teaching of certain topics. As a matter of fact computer supported instruction is defined as a teaching method in which technology is used as a teaching environment, which strengthens teaching process and student motivation, can be used in parallel with the student's learning speed and which enables self learning principles (Şahin, Yıldırım, 1999). CSI can be described as activities in which students study the subjects programmed in the computer, teacher is the guide and the computer has the role of the situation. According to another definition, the transfer of educational content and activities through computer is defined as 'Computer Supported Instruction' (Hamafin ve Peck, 1989). With the help of this study, on the one hand by bringing science teaching a student-centred process, the analysis of the effect of CSI and CBT on teaching and acquisition, on the other hand by using animations, abstract nouns have become concrete ones.

This study was carried out on pre service teachers studying in the departments of Science teaching in Primary School, Classroom Teaching, and Pre-services Gifted Teacher Education: they were asked to express their opinions about the teaching of atom subject with CSI materials. For this purpose the terms related to atom subject such as various animations, shapes and pictures were prepared through computers. The lesson material was presented to pre-service teachers during the lesson and a questionnaire was conducted to find out their opinions about this presentation.

Method:

This study was carried out on pre service teachers studying in the departments of Science teaching in Primary School, Classroom Teaching, and Pre-services Gifted Teacher Education: they were asked to express their opinions about the teaching of atom subject with CSI materials. For this purpose the terms related to atom subject such as various animations, shapes and pictures were prepared through computers. The lesson material was presented to pre service teachers during the lesson and a questionnaire was conducted to find out their opinions about this presentation.

This lesson material was watched by a sample group of 128 primary school pre services. In the meantime, necessary explanations were made by an instructor and the presentation lasted 20 minutes. The questionnaire prepared in order to get the thoughts of pre services about the teaching of atom subject using CSI materials was later commented by pre-services. In the analysis of the results of the questionnaire, SPSS 13 was used and chi square technique was used. Of the 128 pre services who comprised the sample group, 41.4 % was Science teaching trainees, 36.7 % was Classroom teaching, and 21.9 % was Superior high intelligence pre services. For the content validity of the survey questions, experts were asked their opinions and taking these into consideration, the survey questions were rearranged. In the CSI material were terms related to atom. These terms were made clear and exemplified with the help of various slides. The term samples were humorous animations so as to attract the attention of the students. The utilization of animations in science teaching helps coding of the presented subject visually. If students encode the presented topic both visually and verbally and rearrange them in their minds, meaningful learning occurs. Meaningful learning makes the storage of the knowledge and recalling of it from the memory easier (Sezgin ve Köymen 2002).

Findings :

81.3 % of the research staff believes that CSI materials make a great contribution to the permanent and meaningful learning of the terms while 78.1 % of them think CSI materials act as a bridge between abstract and concrete terms. 95.3 % of the sample does not believe that learning becomes more difficult in lessons in which CSI materials are not used and 90.6 % disagrees that CSI materials do not reinforce the theoretical knowledge. 87.5 % of the working group does not agree on the idea that it is a waste of time to prepare CSI materials. Also 82 % of the sample stated that they do not believe it is hard to be motivated during the presentation of the computer supported teaching materials. While 78.1 % of them believe that it is good to reuse the CSI materials, 76.6 % of the research staff believes I had different thoughts about abstract terms before watching CSI materials. 68 % of the research staff is of the opinion that it is beneficial for teachers to use CSI materials and 66.4 % believe that CSI materials have to be made available for lessons in which abstract terms are used considerably. 64.8 % agree but 34.4 % of the research staff disagrees that lessons are more enjoyable with CSI materials.

As shown in table 1, while 61.9 % of the sample group is not of the opinion that I had different thoughts about abstract terms before watching CSI materials, they agree on the idea that CSI materials should be prepared for lessons in which abstract terms are frequently used and the connection between these two parameters was considered statistically meaningful ($X^2=4.390$; $p<0.5$). However, it was not possible to reach a conclusion about this department and gender for these two expressions.

Table 1: The chi square test results carried out to illustrate the connection between the ideas that I had different thoughts about abstract terms before watching CSI materials and CSI materials should be prepared for lessons in which abstract terms are frequently used

| Categories | N and % Values | CSI materials should be prepared for lessons in which abstract terms. | | Total | sd | X ² |
|--|-------------------|---|---------|--------|----|----------------|
| | | I don't Agree | I Agree | | | |
| I had different thoughts about abstract terms before watching CSI materials. | I don't Agree | N | 37 | 60 | 97 | 4.390* |
| | In I Dont Agree % | 38.1% | 61.9% | 100.0% | | |
| I Agree | N | 5 | 24 | 29 | | |
| | In I Agree % | 17.2% | 82.8% | 100.0% | | |
| Total | N | 42 | 84 | 126 | | |
| | In Total % | 33.3% | 66.7% | 100.0% | | |

* $p<0.05$

As shown in Table 2, 65.7 % of the sample group does not approve of the ideas that they do not believe it is hard to be motivated during the presentation of the CSI materials and the lesson thought through CSI materials is boring. The connection between these two parameters was considered statistically meaningful ($X^2=16.814$; $p<0.05$). However, it was not possible to reach a conclusion about this department and gender for these two expressions.

Table 2. The chi square test results carried out to illustrate the connection between the ideas that it is not possible to motivate students during the presentation CSI materials and the lesson thought through CSI materials is boring.

| Categories | N and % Values | The lesson thought through CSI materials is boring. | | Total | sd | X ² |
|------------------|----------------|---|---------|-------|-----|----------------|
| | | I don't Agree | I Agree | | | |
| It is hard to be | I don't Agree | N | 69 | 36 | 105 | 16.814* |

| | | | | | | | |
|---|---------------|-------------------|-------|--------|--------|---|--|
| motivated during the presentation of the CSI materials. | I don't Agree | In I Dont Agree % | 65.7% | 34.3% | 100.0% | 1 | |
| | | N | 4 | 18 | 22 | | |
| | In I Agree % | 18.2% | 81.8% | 100.0% | | | |
| | N | 73 | 54 | 127 | | | |
| Total | | In Total % | 57.5% | 42.5% | 100.0% | | |
| | | N | 73 | 54 | 127 | | |

As shown in Table 3, while 62 % of the sample group approves of the idea that CSI materials act as a bridge between abstract and concrete terms, they disapprove the idea that the lesson thought through CSI materials is boring and the connection between these two parameters was considered statistically meaningful ($X^2=5.510$; $p<.05$). However, it was not possible to reach a conclusion about this department for these two statements.

Table 3. The chi square test results carried out to illustrate the connection between the ideas that CSI materials act as a bridge between abstract and concrete terms and the lesson thought through CSI materials is boring

| | Categories | N and % Values | The lesson thought through CSI materials is boring. | | Total | sd | X ² |
|---|---------------|-------------------|---|---------|--------|----|----------------|
| | | | I don't Agree | I Agree | | | |
| CSI materials act as a bridge between abstract and concrete terms | I don't Agree | N | 9 | 16 | 25 | 1 | 5.510* |
| | | In I Dont Agree % | 36.0% | 64.0% | 100.0% | | |
| | I Agree | N | 62 | 38 | 100 | | |
| | | I Agree % | 62.0% | 38.0% | 100.0% | | |
| Total | | N | 71 | 54 | 125 | | |
| | | In Total % | 56.8% | 43.2% | 100.0% | | |

* $p<.05$

As shown in Table 4, 59 % of the pre services who agree on the idea that it is good to reuse the CSI materials are not of the opinion that lessons are more enjoyable with CSI materials but 41 % are. The connection between these two parameters was considered statistically meaningful ($X^2=7.881$; $p<.05$). However, it was not possible to reach a conclusion about this department and gender for these two statements.

Table 4. The chi square test results carried out to illustrate the connection between the ideas that it is good to reuse the CSI materials and lessons are more enjoyable with CSI materials

| | Categories | N and % Values | Lessons are more enjoyable with CSI materials. | | Total | sd | X ² |
|--|---------------|-------------------|--|---------|--------|----|----------------|
| | | | I don't Agree | I Agree | | | |
| It is good to reuse the CSI materials. | I don't Agree | N | 23 | 3 | 26 | 1 | 7.881* |
| | | In I Dont Agree % | 88.5% | 11.5% | 100.0% | | |
| | I Agree | N | 59 | 41 | 100 | | |
| | | In I Agree % | 59.0% | 41.0% | 100.0% | | |
| Total | | N | 82 | 44 | 126 | | |
| | | In Total % | 65.1% | 34.9% | 100.0% | | |

* $p<.05$

As shown in Table 5, while 77.5 % of the sample group agrees on the idea that it is beneficial for teachers to use CSI materials, they do not agree on the idea that lessons are more enjoyable with CSI materials and the connection between these two parameters was considered statistically meaningful ($X^2=3.804$; $p<.05$). However, it was not possible to reach a conclusion about this department and gender for these two statements.

Table 5. The chi square test results carried out to illustrate the connection between the ideas that it is beneficial for teachers to use CSI materials and lessons are more enjoyable with CSI materials

| | Categories | N and % Values | Lessons are more enjoyable with CSI materials. | | Total | sd | X ² |
|---|---------------|-------------------|--|---------|--------|----|----------------|
| | | | I don't Agree | I Agree | | | |
| It is beneficial for teachers to use CSI materials. | I don't Agree | N | 31 | 9 | 40 | 1 | 3.804* |
| | | In I Dont Agree % | 77.5% | 22.5% | 100.0% | | |
| | I Agree | N | 52 | 35 | 87 | | |
| | | In I Agree % | 59.8% | 40.2% | 100.0% | | |
| Total | N | 83 | 44 | 127 | | | |
| | In Total % | 65.4% | 34.6% | 100.0% | | | |

* p<.05

Discussion and Conclusion:

This research mainly deals with the thoughts of Primary School pre-services related to the usage of computer while teaching atom subject and terms which are milestones of chemistry and physics teachings. In accordance with the analysis of the questionnaire prepared to get the ideas of pre services, the findings are as such; pre services are in consensus about the fact that while teaching atom subject and the relevant terms, the application of CSI materials makes a huge contribution to meaningful and permanent learning of the terms, acts as a bridge between abstract and concrete terms, makes the learning process easier and consolidates theoretical knowledge, proves to be effective in proper teaching of the abstract terms and is an aid to the teacher while teaching. As a result, pre services who make up the sample group of this study have positive thoughts about the application of CSI materials while teaching atom subject. This positive thought does not vary significantly according to department and gender. Positive thoughts are high especially in that CSI materials help to the proper teaching of abstract terms. Considering the results of this study, it can be suggested that as pre services convey positive ideas about the teaching of atom subject with computer supported materials, they could learn more about computer during their education process and teaching career so as to avoid difficulties to be faced in teaching. While teaching science subjects to students, they could be diverted to some visual and affective sources on the internet to culminate their interests in the topic. As the next step, they could be asked to prepare a lesson material they choose from their subjects and then present it to the class.

References:

- Abraham, M.R., Williamson, M.M. & Westbrook, S.L. (1994). A Cross-Age Study of the Understanding Five Concepts. *Journal of Research in Science Teaching*, 31(2), 147-165.
- Akçay, H., Feyzioğlu, and B., Tüysüz, C. (2003). The effect of computer simulations on students' success and attitudes in teaching chemistry. *Educational Sciences: Theory & Practice*, 3(1), 7-26.
- Akgün, Ş. (1996). *Fen Bilgisi Öğretimi*. Ankara: Zirve Ofset.
- Akpınar, Y., (1999). *Bilgisayar destekli öğretim ve uygulamalar*. Ankara: Anı Yayıncılık.
- Ayas, A. & Demirbas, A.J. (1997). Turkish Secondary Students' Conception of Introductory Chemistry Concept. *Journal of Chemical Education*, 74(5), 518-521.
- Ben-Zvi, R., Eylon, B. & Silberstein, J. (1987). Is An Atom Malleable? *Journal of Chemical Education*, 63(1), 64-66.
- Boo, H. K. (1998). Students' Understandings of Chemical Bonds and the Energetic of Chemical Reactions. *Journal of Research in Science Teaching*, 3 (5), 569-581.
- Boo, H.K. and Watson, J. R. (2001). Progression in High School Students' (Aged 16- 18) Conceptualizations about Chemical Reactions in Solution. *Science Education*, 85(5), 568-586.
- Chan, C.W. (1989), Computer use in the elementary classroom I: An Assessment of CAI software, *Computers and Education*, 13(2), 109-115.
- Chang, L.J., Yang, J.C., and Chan, T.W. (2002). Multilayer educational services platforms and its implementation. In proceedings of the international conference on computers in education ICCE.
- Clark, C., English, S., Jalobeanu, M., & Nistor, N. (1998). Internet as a vehicle for teaching: A Romanian Internet learning workshop. Paper presented at Turkey Second International Distance Education Symposium, Ankara.
- Crippen, K.J., & Brooks, D.W. (2001). Teaching advanced placement descriptive chemistry: Suggestions from a testing web site. *The Chemical Educator*, 6, 266-271.
- David, J. (1994). CAI systems: The users perspective. Proceedings of the Bureau of the Census Annual Research Conference and CASIC Technologies Interchange. Washington, DC.
- Delialioğlu Ö. (1996). Contribution of Students' Logical Thinking Ability on Achievement in Secondary Physics. *Yayınlanmamış Yüksek Lisans Tezi: ODTÜ*.
- Doymuş, K. (2007a). Teaching Chemical Equilibrium with the Jigsaw Technique. *Research in Science Education*, 38, 249-260.
- Doymuş, K. (2007b). The Effect of a Cooperative Learning Strategy in the Teaching of Phase and One-Component Phase Diagrams. *Journal of Chemical Education*, 84 (11), 1857-1860.
- Doymuş, K. ve Şimşek, Ü. (2007). Kimyasal Bağların Öğretmesinde Jigsaw Tekniğinin Etkisi ve Bu Teknik Hakkında Öğrenci Görüşleri. *Milli Eğitim Dergisi*, 173(1), 231-243.

- Ergin, A.(1995). Öğretim teknolojisi:İletişim. Ankara: Pegem Yayıncılık.
- Feyzioğlu, B., (2002). İnternet tabanlı öğrenmenin öğrenci başarısı üzerine bir örnek: Çözümler. Yayınlanmamış yüksek lisans tezi, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.
- Gussarsky, E. & Gorodetsky, M. (1988). On the Chemical Equilibrium Concept: Constrained, Word Associations and Conception. *Journal of Research in Science Teaching*, 25(5), 319-333.
- Güneş, A. (1991). Bilgisayara ve Basic programları. Açıköğretim Fakültesi Yayınları.
- Hamafin, M.J. and Peck, K.L. (1989). The design, development and evaluation of instructional software. New York/London.
- Hutin, R. (1987). Un ordinateur dans la classe, recherche sur l'emploi de l'informatique comme moyen d'apprentissage entre dix et douze ans. Collection Srp, Genève.
- Ichiko, T., Yamamoto, M., Kawamura, Y., and Hanano, M. (2001). Advanced multimedia telecommunications using a high speed broadband backbone network beyond all aspect of the current Internet. *Computer and Education*, 37, 211-224.
- Kokkotas, P. & Vlachos, I. (1998). Teaching the Topic of the Particulate Nature of Matter in Prospective Teachers' Training Courses. *International Journal of Science Education*, 20(3), 291-303.
- Kulik, J.A., Kulik, C.L.C., and Bangert, D. (1985). Effectiveness of computer-based education in elementary schools. *Computers in Human Behavior*, 1, 59-74.
- Mevarech, Z. (1985). Effect of computer-assisted mathematics instruction on disadvantaged pupils' cognitive and affective development. *Journal of Educational Research*, 79(1), 5-10.
- Mccoy, L.P. and Haggard, C.S. (1989). Determinants of computer use by teachers. Paper presented at the annual meeting of the Eastern Educational Research Association Savannah, Ga.
- Nahum, T. L., Mamlok-Naaman, R., Hofstein, A. & Krajcik, J. (2007). Developing a New Teaching Approach for the Chemical Bonding Concept Aligned With Current Scientific and Pedagogical Knowledge. *Science Education*, 91(4), 579- 603.
- Nicoll, G. (2001). A Report of Undergraduates Bonding Misconceptions. *International Journal of Science Education*, 23(7), 707-730.
- Piquette, J. S. & Heikkinen, H. W. (2005). Strategies Reported Used by Instructors to Address Student Alternate Conceptions in Chemical Equilibrium. *Journal of Research in Science Teaching*, 42(10), 1112-1134.
- Saribas, D. & Köseoglu, F. (2006). The Effect of the Constructivist Method on Pre- Service Chemistry Teachers' Achievement and Conceptual Understanding about Aqueous Solution. *Journal of Science Education*, 7(1), 58-62.
- Şahin, T.Y. ve Yıldırım, S. (1999). Öğretim teknolojisi ve materyal geliştirme. Ankara: Anı Yay.
- Taber, K. S. (1997). Students' Understanding of Ionic Bonding: Molecular Versus Electrostatic Framework. *School Science Review*, 78(1), 85-95.
- Tan, K-C. D. & Treagust, D. (1999). Evaluating Students' Understanding of Chemical Bonding. *School Science Review*, 81(294), 75-83.
- Tüysüz, C., (2002). İnteraktif öğretimin öğrenci başarısı üzerine bir örnek: Mol kavramı ve Avagadro sayısı. Yayınlanmamış yüksek lisans tezi, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Ens., İzmir.

Abstract:

Today, students are educated as a science literate by beginning to learn many science subjects such as physics, chemistry and biology from the very beginning of their primary school education, thereby taking part in the competition of science and technology world as our national youngsters. To have a voice in this competition, being able to follow and use technology is one of the key parameters. This study was carried out on pre services studying in the departments of Science teaching in Primary School, Classroom Teaching, and Pre-services Gifted Teacher Education: they were asked to express their opinions about the teaching of atom subject with Computer Supported Instruction materials. A lesson material that can be used not only to teach the abstract terms about atom subject to students accurately and permanently, but also in computer supported instruction, and moreover a learning subject, was prepared and presented to pre services. A questionnaire to get the ideas of teacher trainees about the teaching of atom subject with Computer Supported Instruction materials was prepared and conducted among 128 pre services who watched the presentation of CSI material. In the analysis of the results of the questionnaire, SPSS 13 was used and chi square technique was assisted.

This study was carried out on pre service teachers studying in the departments of Science teaching in Primary School, Classroom Teaching, and Pre-services Gifted Teacher Education: they were asked to express their opinions about the teaching of atom subject with CSI materials. For this purpose the terms related to atom subject such as various animations, shapes and pictures were prepared through computers. The lesson material was presented to pre-service teachers during the lesson and a questionnaire was conducted to find out their opinions about this presentation.

This research mainly deals with the thoughts of Primary School pre-services related to the usage of computer while teaching atom subject and terms which are milestones of chemistry and physics teachings. In accordance with the analysis of the questionnaire prepared to get the ideas of pre services, the findings are as such; pre services are in consensus about the fact that while teaching atom subject and the relevant terms, the application of CSI materials makes a huge contribution to meaningful and permanent learning of the terms, acts as a bridge between abstract and concrete terms, makes the learning process easier and consolidates theoretical knowledge, proves to be effective in proper teaching of the abstract terms and is an aid to the teacher while teaching. As a result, pre services who make up the sample group of this study have positive thoughts about the application of CSI materials while teaching atom subject.

THE TURKISH ADAPTATION OF E-LEARNING ATTITUDE SCALE: RELIABILITY AND VALIDITY STUDIES

N. İzzet KURBANOĞLU, Sakarya University, Faculty of Education, kurbanoglu@sakarya.edu.tr
Mithat TAKUNYACI, Sakarya University, Faculty of Education, mtakunyaci@sakarya.edu.tr
Orhan KOCAMAN, Sakarya University, Faculty of Education, okocaman@sakarya.edu.tr
Gamze ÇETİNKAYA, Sakarya University, Faculty of Education, gchetinkaya@sakarya.edu.tr

Abstract

With the developments in technology, e-learning has become a sufficient learning environment for students. However, the efficacy of e-learning depends on various factors related to students' attitudes. Therefore, all around the world, various instruments were developed to measure students' attitudes toward e-learning. The purpose of this study is to adapt the e-learning attitude scale developed by EL-Deghaidy (2008) to Turkish and review its validity and reliability. The study was carried out with 414 high school students and 50 English teachers. After analyzing the linguistic equivalence of the scale, reliability and validity analyses were conducted. Cronbach Alpha internal consistency quotient was .85 and the correlation coefficient for the test-retest analysis was .86. Besides, corrected item-total correlations were ranged between .35 and .87. According to these results, it can be concluded that the Turkish version of the scale is reliable and valid to measure e-learning attitudes of students.

Keywords: Technology, e-learning, attitude, reliability, validity.

1. INTRODUCTION

In the traditional teaching method used in universities and other levels of education, the classroom has long been an environment where teachers lecture, and students listen and take notes passively. In this approach, the interaction between teachers and students is seen as an important component of learning process. However, the new approaches and methods of education decreased the use of traditional teaching method (Schon, 1987; Clegg, Tan & Saeidi, 2002; Haverila & Barkhi, 2009).

The developments in technology affected the processes of learning and teaching in education significantly as it did in most of the areas of human life. With these developments, education needed to renew itself with new approaches, materials and tools. One of the most important of these tools is the educational technologies used for learning and teaching (Besoluk, 2010).

With the implementation of information and communication technologies to education, computers have become widely used to support the teaching and learning processes. Educators use commonly CD-ROMs, web-based learning and mobile learning approaches during learning and teaching processes. The most important one of these approaches is web-based learning. web-based learning, a teaching method based on the use of computers, has become widely accepted and used all around the world; not only at higher education level but also at high schools, middle schools, primary schools and even at pre-schools (Ghani, Hamim, & Ishak, 2007).

Web is a technology which connects individuals or groups through computers regardless of their location and allows them to transport and share information such as data, text and graphics (Erkut, 2002). The use of web-based learning accreted significantly and started a new chapter in education. Web-based learning change learning and teaching styles by introducing a new learning environment. Besides, this method not only just uses web as a learning environment, but also connects students with instructors, allow them to interact even though they are at separate places (Anderson, 2005; Lertlum & Papasratorn, 2004; Angelini, Gentile, Plantamura & Plantamura, 2005). In addition, web-based learning also directs students to their interests and concerns. Giving students chance to reach relevant information, it helps meaningful learning to occur and when this meaningful learning occurs, it allows students to define, explain, comprehend and interpret all terms and concepts they learn. In general, web-based learning and CD-ROM learning are advantageous because they make search and reach relevant information on a particular subject easy without using any physical materials; they allow individuals to save a lot of time and effort.

In recent years, with the developments in information technology, the idea of e-learning (learning supported with electronic tools), which also includes CD-ROM learning, web-based learning and mobile learning, has emerged (Lertlum & Papasratorn, 2006; Ghani, Hamim, & Ishak, 2007). E-learning can be thought as a learning environment which allows educators to reach all individuals all around the world with the support of communication networks (Halis, 2001; Aşkar, 2003). In general, electronic (e-) learning is accepted as the use of computer and internet technologies to facilitate education and instruction (Ruiz et al, 2006). However, as technology, the medium of instruction and learning in e-learning, develops, the definitions of e-learning have also changed and differentiated according to different perspectives. Besides the educators and scholars thinking e-learning as any teaching method using technology, there are others that see e-learning as a solution to distance learning (Berteau, 2009). Nichols (2003) defined e-learning as "the use of technological tools, web-based, web-distributed, or web-capable, for the purposes of education". With this definition, e-learning, internet and other web-based technologies are seen as basic components of learning since they allow the transportation of the information to any place, any time. The American Society for Education and Development defines e-learning as "any form of information transmitted, facilitated or provided by electronic technologies in order explicitly to support the process of learning". Waller (2001) explains e-learning as an efficient learning process resulted from the combination of electronic materials, and the purposes and services of education. As it is seen, all these different definitions based on the idea that e-learning uses different electronic mediums and tools to combine, implement and relate learning and teaching activities. Therefore, it is important to recognize technological and pedagogical aspects of e-learning as they are directly related to the development and implementation of technology supported instruction. E-learning can be applied in both formal and informal different educational forms such as open-learning and distance learning. Besides, different components of e-learning can be used at different levels of secondary and higher education (Tuparova, Tuparov, Ivanov, Karastranova, Peneva, 2006).

While thinking from the perspectives of the students, e-learning is a method motivating students to communicate with peers efficiently. Lack of communication between individuals; peers, students and teachers, strongly affects a person's educational performance. The effects of the development of e-learning and its integration to education as a teaching method are related to students' characteristics. A successful e-student should have some certain skills, abilities and characteristics such as self-motivation, patience, self-discipline, confidence in using computers, time management, communication and organization. The presence or absence of these skills directly affects students' attitudes toward e-learning. If a new teaching method is coherent with the abilities, skills and needs of a student, this student may have a positive attitude toward this method; otherwise, the student may develop a negative attitude. Besides, the attitudes of students toward e-learning are affected from their perception of the advantages and disadvantages of it.

One of the most important advantages of e-learning is that with an internet connection students are able to learn time and location-free. Therefore, e-learning, including exam and evaluation systems, and transporting information regardless of the distance, has become a convenient learning environment for most of the students. However, the efficacy of a learning environment, requiring the use of electronic tools, depends on the students' attitude toward technology and specifically e-learning, the advantages they see in this method and their prior knowledge about technology use. Considering these factors, despite all its advantages, students may have different attitudes toward this modern and technological learning method (Berteau, 2009).

All around the world in international studies, various instruments were developed to measure students' attitudes toward e-learning. The purpose of this study is to adapt the e-learning attitude scale developed by EL-Deghaidy (2008) to Turkish and review its validity and reliability.

2. METHODOLOGY

2.1. Sampling

The validity and reliability studies of the e-learning attitude scale were carried out with three study groups. The first group is consisted of 300 high school students taking physics, chemistry, biology and mathematics lessons and attending Anatolian High School (n=75, %25), Vocational High School (n=75, %25), Public High School (n=75, %25) and Science High School (n=75, %25) in Sakarya at 2009-2010 school year. There were 145 male (% 48.3) and 155 female students (% 51.7) whose ages range between 15 and 19. The construct validity and internal consistency analyses of the scale were conducted by using the data collected from this group.

The second group is consisted of 50 English teachers working in Sakarya, Ankara and İstanbul. With this group, the linguistic equivalence studies of the scale were conducted.

Third group is also consisted of high school students; 50 male (% 43.8), 64 female (% 56.2), 114 in total, from four different school types. Test-retest reliability analysis was conducted on the data collected from this group.

2.2. Data collecting instrument

The e-learning attitude scale developed by EL-Deghaidy and Nubby (2008) is used in this study. The e-learning attitude scale is composed of 24 items, where students are asked to check their level of agreement with each item using a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) for positive items. Negative items had reversed scores (strongly disagree = 5 to strongly agree = 1). The e-learning attitude scale is divided into two sub-scales that are summed together to calculate total scores. The first sub-scale measures attitudes towards e-learning in general (12 statements: 6 positive and 6 negative). The other sub-scale measures attitudes toward learning science teaching methods course via an e-learning approach (12 statements: 6 positive and 6 negative). Total scores can range from 24 to 120.

Before adapting the e-learning attitude scale to Turkish, the developers of the scale are informed via e-mail and their approval is taken for the adaptation. Then, the English form of the scale is translated into Turkish by three academicians with fluent English. The term "science teaching methods course" in the original form of the scale was replaced with the term "science lessons" during translation. Then, the Turkish form of the scale translated into English again and the consistency between these two forms of the scale was investigated. After that, the Turkish form of the scale was examined by 6 experienced teaching staff from psychological counseling and guidance, measurement and evaluation, and Turkish education departments, and based on their reviews some necessary changes were made. Before starting the validity and reliability studies, in order to measure the consistency between the Turkish and English forms of the scale a linguistic equivalence study was conducted. For the validity study, the construct validity of the e-learning scale was investigated with exploratory factor analysis. The reliability of the e-learning attitude scale was checked with internal consistency and test-retest methods, and item analysis was made with corrected item-total correlation. SPSS 13.0 program is used for all reliability and validity analyses.

3. FINDINGS

3.1. Linguistic Equivalence

The e-learning attitude scale is composed of two subscales. First subscale measures students' attitude through e-learning and second subscale measures students' attitude through learning science lessons via e-learning. For linguistic equivalence, a correlational analysis was conducted between the scores obtained from Turkish and English forms of the scale and the correlation coefficient was found to be .91 for the overall scale. When the subscales are assessed separately, it was found that the correlations between the scores of Turkish and English form of the scale were .93 and .86, respectively. The correlations between the items of the Turkish and English forms of the scale were shown in Table 1.

Table 1: Correlations Between The Items of Turkish and English Forms of E-learning Attitude Scale

| Item No | r | Item No | r | Item No | r |
|---------|-----|---------|-----|---------|-----|
| 1 | .95 | 9 | .79 | 17 | .88 |
| 2 | .81 | 10 | .89 | 18 | .84 |
| 3 | .77 | 11 | .78 | 19 | .88 |
| 4 | .89 | 12 | .74 | 20 | .83 |
| 5 | .68 | 13 | .86 | 21 | .89 |
| 6 | .70 | 14 | .67 | 22 | .92 |
| 7 | .83 | 15 | .86 | 23 | .65 |
| 8 | .83 | 16 | .50 | 24 | .55 |

3.2. Construct Validity

In order to investigate the construct validity of the e-learning attitude scale, exploratory factor analysis was conducted. First, sampling adequacy and Barlett Sphericity results were checked. To be able to conclude that the data is appropriate to investigate with exploratory factor analysis, KMO value should be bigger than .60 and Barlett Sphericity test results should be significant (Büyükoztürk, 2004). In this study, KMO sampling adequacy coefficient and Barlett Sphericity test value was found to be .859 and 2211,186 ($p < .001$, $df=276$), respectively. Since the original form of the scale is composed of two subscales, while conducting factor analysis with principle component analysis with oblique rotation technique, the results were limited to two factors. The results of the analysis showed that the adapted form of the scale, including 24 items, also has two subscales and explains % 34.87 of the total variance. The items of the subscales in the Turkish form completely overlap with the items of the subscales in the original form. The results of the analysis showing the factor weights and the variance explained by the scale are shown in Table 2.

One of the determined results of

Table 2: *Exploratory Factor Analysis Results of the E-learning Attitude Scale*

| Item Number | Attitudes toward e-learning | Attitudes toward learning science lessons via e-learning |
|-----------------------------------|-----------------------------|--|
| 1 | .32 | |
| 2 | .44 | |
| 3 | .55 | |
| 4 | .46 | |
| 5 | .60 | |
| 6 | .30 | |
| 7 | .72 | |
| 8 | .35 | |
| 9 | .63 | |
| 10 | .43 | |
| 11 | .70 | |
| 12 | .30 | |
| 13 | | .61 |
| 14 | | .30 |
| 15 | | .42 |
| 16 | | .47 |
| 17 | | .79 |
| 18 | | .83 |
| 19 | | .76 |
| 20 | | .50 |
| 21 | | .44 |
| 22 | | .74 |
| 23 | | .30 |
| 24 | | .48 |
| Total variance explained = | %25,30 | %9,57 |
| % 34,87 | | |

subscales with the the

exploratory factor analysis is attitudes toward e-learning. This subscale composed of 12 items, explained %25.30 of the total variance and its factor weights ranged between .32 and .72. As an example to the items of this subscale, "e-learning increases cooperation among peers" can be given. The second subscale again composed of 12 items measures the attitudes toward learning science lesson via e-learning. It explained % 9.57 of the total variance and its factor weights were ranged between .30 and .83. "I would like to learn science lesson via e-learning" is one of the items in this subscale. Moreover, the correlation between these two subscales was also calculated and the correlation coefficient was found to be .48.

3.3. Reliability

The internal consistency coefficients of the e-learning attitude scale was found to be .85 for the overall scale, .76 for the attitudes toward e-learning subscale and .83 for the attitudes towards learning science lessons via e-learning subscale. Besides, test-retest reliability coefficients were .86 for the overall scale, .83 for the attitudes toward e-learning subscale and .81 for the attitudes towards learning science lessons via e-learning subscale

3.4. Item Analysis

The corrected item-total correlations of the e-learning attitude scale were ranged between .35 and .87. The values are shown in Table 3.

Table 3: *The corrected item-total correlations of the e-learning attitude scale*

| Item No | <i>r_{jt}</i> | Item No | <i>r_{jt}</i> | Item No | <i>r_{jt}</i> |
|---------|-----------------------|---------|-----------------------|---------|-----------------------|
| 1 | .36 | 9 | .35 | 17 | .52 |
| 2 | .75 | 10 | .79 | 18 | .70 |
| 3 | .48 | 11 | .52 | 19 | .61 |
| 4 | .45 | 12 | .44 | 20 | .54 |
| 5 | .37 | 13 | .74 | 21 | .82 |
| 6 | .87 | 14 | .47 | 22 | .57 |
| 7 | .51 | 15 | .39 | 23 | .40 |
| 8 | .43 | 16 | .53 | 24 | .69 |

4. DISCUSSION AND CONCLUSION

According to the results of the reliability and validity studies of the e-learning attitude scale, it can be concluded that the Turkish form of the scale is ready to use, and valid and reliable to measure individuals' emotional expressions.

In this study, it was aimed to adapt the e-learning attitude scale developed by EL-Deghaidy and Nubby (2008) to Turkish, and investigate its validity and reliability. The sample selected for this study, is large enough to satisfy the necessities of the statistical analyses. The findings of the linguistic equivalence studies showed that the correlation between the items of the Turkish and the original form of the scale is remarkably high. According to these results, it can be said that the adapted form of the scale has linguistic equivalence with the original form.

To check construct validity of the e-learning attitude scale, exploratory factor analysis was conducted and found that like the original form, the adapted form of the scale also has two subscales; attitudes toward e-learning and attitudes toward learning science lesson via e-learning. Moreover, the factor weights of the items were found to be high as they were in the original form. These two subscales of the scale explained % 34.87 of the total variance. Since the criterion value for the explained variance in development and adaptation studies of scales is % 30, it can be concluded that the Turkish form of the scale has construct validity. Besides, factor weights of the all items were also higher than .30. The results of the construct validity analyses supported that the Turkish form of the e-learning scale is valid to measure attitudes toward e-learning and learning science lessons via e-learning.

The internal consistency coefficients of the scale were found to be high enough to conclude that the adapted form of the scale has internal consistency. In other words, it measures what is intended to measure. A test-retest analysis was also conducted to check the consistency between the scores of administrations of the scale at different times and test-retest coefficients were also found to be high to support consistency. When it is considered that the required reliability value to be able to use an instrument in a study is 0.70 (Tezbaşaran, 1996), the reliability was satisfied for the overall scale and the subscales. For item analysis, it was found that item-total correlations were equal to or

bigger than .30. While interpreting the total-item correlations of a scale, criterion value is .30 to be able to conclude that the scale measures the intended characteristic fairly (Büyüköztürk, 2004). Therefore, in this study, item-total correlations also supported reliability.

5. SUGGESTIONS

For further studies, it can be suggested to the researchers to work with a different sample. This study was conducted only with high school students in a local area; studying with a different group with different characteristics may empower the findings of this study and increase the reliability and validity of the scale. Besides, using this scale in different studies will increase the power of measurement of the scale.

REFERENCES

- Anderson, J. (2005). IT, e-learning and teacher development. *International Education Journal*, 5(5), 1-14.
- Angelini, A., Gentile, E., Plantamura, P., & Plantamura, V. L. (2005). Web information system for e-learning. *International Academy of Sciences: Enformatika*, 8, 209-212.
- Aşkar, P. (2003). Uzaktan eğitimde temel yaklaşımlar ve uzaktan eğitimde öğrenci (katılımcı) olmak. (Editör: Ali Tahran). *Uzaktan Eğitim Teknolojileri ve TCMB'de Teknoloji Destekli Bilgisayar Eğitimi Konferansı*, Ankara: TCMB, October 31, 2001.
- Bertea, P. (2009). Measuring students' attitude towards e-learning. A case study. *The 5th International Scientific Conference e-Learning and Software for Education*, Bucharest, April 09-10.
- Besoluk, S., Kurbanoglu, N. I., & Onder, I. (2010). Educational technology usage of pre-service and in-service science and technology teachers. *Elementary Education Online*, 9(1), 389-395.
- Clegg, S., Tan, J., & Saeidi, S. (2002). Reflecting or acting? Reflective practice and continuing professional development in higher education. *Reflective Practice*, 3(1), 131-46.
- Erkunt, H. (2002). Web-tabanlı eğitim semineri. Boğaziçi Üniversitesi, BÖTE, İstanbul, May 31.
- Ghani, N. A., Hamim, N., & Ishak N. (2007). Web-based learning in science education: Overview and implementation for primary school in Malaysia. *International Conference on Education, 2007*, Universiti Brunei Darussalam.
- Halis, İ. (2001). Öğretim teknolojileri ve materyal geliştirme. Konya: Mikro Yayınları.
- Haverila, M., & Barkhi, R. (2009). The influence of experience, ability and interest on e-learning effectiveness. *European Journal of Open, Distance and E-Learning*. Retrieved from <http://www.eurodl.org/?p=archives&year=2009&halfyear=1&article=363>
- Lertlum, W., & Papasratom, B. (2006). Factors influencing rote learner's intention to use WBL: Developing country study. *International Journal of Computer Science*, 1(1), 61-66.
- Lertlum, W. & Papasratom, B. (2004). Trust framework for web-based learning system. *The International Conference on PISTA' 04 and CITSA'04*. Orlando, USA, July 21-25.
- Nichols, M. (2003). A theory for e-learning. *Educational Technology and Society*, 6(2), 1-10.
- Ruiz, J. G., Mintzer, M. J., & Leipzig, R. M. (2006). The impact of e-learning in medical education. *Academic Medicine*, 81(3), 207-212.
- Schon, D. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Bass.
- Tuparov, G., Tuparova, D., Ivanov, S., Peneva J., & Karashtranova, E., Teachers' attitude towards e-learning courses in Bulgarian universities. Published in "Current Developments in Technology-Assisted Education" (2006), pp. 1755-1759, IV International Conference on Multimedia and Information and Communication Technologies in Education, Seville, Spain.
- Waller, V., & Wilson, J. (2001, October). A definition for e-learning. *Open and Distance Learning Quality Council Newsletter*. Retrieved February 5th, 2010, from: <http://www.odlqc.org.uk/n19-e.htm>.

THE URBAN ENVIRONMENTAL POLLUTION IN MALAYSIA: NEED TO IMPLEMENT THE ENVIRONMENTAL LEGAL EDUCATION FOR SUSTAINABLE DEVELOPMENT

Dr. Noor Mohammad¹

¹ Visiting Senior Lecturer, Faculty of Law, University of Malaya 50603, Kuala Lumpur, Malaysia. Tel: 603-7967-6520, Fax: 7957-3235, Email: noormu2007@gmail.com

Abstract

Malaysia is one of the largest environmentally friendly and rich developing countries in the globe which is us known as greening country. Her natural resources including the palm oil gas etc; is widely known. But with the change of time and socio-economic needs, this environment has been facing numerous problems such as urbanization, corruption, exploitation of natural resources, huge motor vehicles etc. The impacts of these issues are very alarming and the environmental degradation has been observing. To cope with these situations, the Government of Malaysia has already passed some important environmental laws and policies including international initiatives in order to ensure the quality of life and the healthy environment for the people of this land but not yet been done properly due to poor environmental governance. The Government of Malaysia is also very healthy to the environmental aspects and therefore, several technological universities are working in the country. It is often discussed the need for the environmental technological Instruments along with the religious education with ethics and the civil laws for environmental harmonization and sustainable development. This study will examine the urban environmental pollution and its impacts along with the environmental technological instruments on the environment in the areas of Kula Lumpur City, an urban area of Malaysia consisting of 100 respondents with some case studies in the technology universities in Malaysia setting some environmental indicators such, cleanliness, fisheries, wetland, parks, security, food, corruption etc; in different criteria such as the various professionals including the foreigners, local people, old aged people, law enforcing agency, students etc., based on the primary and secondary sources through structured and unstructured questionnaire for achieving the sustainable environment and development for the present and future generations on the earth, our home.

Keywords: *Environmental Pollution, Environmental Technological Instruments, Urban Areas.*

INTRODUCTION

The present state of the Malaysian¹ urban environment is critical. Her economy is quite strong and has been exploited by the colonial capitalist system² that has been significant impacts with the help of the immigrants from China and India facing with regional and ethnic income disparities, rural poverty, concentration of development activities in a few areas which had ready access to available infrastructure, and persistent disease hazards.³ Some environmental pollutions and degradation of the environment were identified in this period of time.⁴ The Government began to monitor these problems in the early stages of industrialization with the establishment of a National System of Monitoring Stations for air and water quality in the 1970s with the help of the Department of the Environment created in 1975 under the Ministry of Science, Technology and the Environment. This Ministry largely has been contributing to the management and administration of the environmental quality in Malaysia.⁵ The term environment is quite broad based as pointed out by *Albert Einstein* "Environment is everything that isn't me".⁶ Malaysia covers an area of 330,000 km composed of eleven states.⁷ Malaysia territorial waters cover an area of 549,500 square kilometer. The principal water bodies are the Straits of Malacca.⁸ The country is not only rich in biodiversity and natural resources but is also culturally rich. Almost all of the world's major religions have substantially representation in Malaysia, reflecting the multi-ethnic character of the population.⁹

DISCUSSION AND RESULTS

Urban pollution is a global issues and Malaysia is not an exception to it. The global environment is not sound to the mankind and the scholars and scientists are quite concerned about the impacts of the environment. In order to tackle this problem, some initiatives such as the United Nations organization and its specialized and hundreds of the international environmental organizations have been working in this regard. The globe environmental problems¹⁰ are based on several ways. There are some basic problems¹¹ and causes¹². Therefore, some impacts¹³ have been observed on this earth. Malaysia, is one of the Asian tiger economies of the world enjoyed the remarkable growth over the last few decades with the industrialization, agriculture and tourism playing leading role in the economy. But today, Malaysia faces numerous diverge range of environmental issues and problems as follows.¹⁴

Air pollution: Air¹⁵ is polluted in many ways. Many different substances that contribute to air pollution. Among the many types of air pollutants, the nitrogen oxides, carbon monoxides, organic compounds that can evaporate and enter the atmosphere. It has mainly two sources¹⁶ such as the natural and Humans. There are several causes¹⁷ of air pollution. The effects¹⁸ of air pollution are very dreadful which have been observed in Malaysia. The biodiversities are quite healthy at this moment.

Water Pollution: Water¹⁹ pollution is also acute in Malaysia. It is polluted in many ways²⁰ and also bears many effects²¹ on the biodiversities issues.

Sound & Noise Pollution: It has been an acute problem in many parts of the cities and towns in Malaysia. There are some causes²¹ and effects²² in this regard upon the environment in Malaysia.

Agro -Chemical Pollution: The agro chemicals develop our agriculture and it has become an integral part of our agriculture but its impact on agriculture biodiversities is destructive and observed in terms of environmental consideration. The agriculture environment is polluted in many ways.²³ It has many effects.²⁴

Degradation of Ground Water Level: The Ground water level degradation is another environmental problem in Malaysia. The level of ground water is becoming going down and therefore, the deep tube well is installing for drinking water. It affects the environmental problems like landslip, earthquake and deforestation.

Filling of Lakes and Water Bodies: Filling of lakes, canals, wetlands etc., have been filled in and made ready for residential areas and its impacts have been observing in this regard. The fish biodiversities are also missing in those areas. Wetlands in Malaysia face large-scale destruction.²⁵

Acid Rain: The influence of Acid rain is also a matter of concern in Malaysia. The term 'acid rain'²⁶ refers to what scientists call acid deposition. It is caused by airborne acidic pollutants and has highly destructive results the entire world and bears effects²⁷ on the globe environment.

Deforestation: Malaysia faces the deforestation problems. But most of the cases, it is found that the forest resources in Malaysia is not sufficient that does not cover the peaceful environment of the country. Therefore, deforestation rate is increasing day by day. It has causes²⁸ with some effects²⁹ on the land.

Soil Pollution: In Malaysia, polythene has been used in the markets for shopping unprecedented which results the soil pollution. It has also many other causes.³⁰

Land Degradation: It is one of the environmental problems. There are some causes for the land degradation.

The Causes of the land degradation are the unplanned irrigation systems, Excessive use of chemicals fertilizer, Use of pesticides, Earth quake, Natural calamities, Over population, Fragmentation of land, Drainage system and Controlling measures like bridge, pool etc.

Biodiversity Degradation: It has become a great environmental problem in Malaysia due to the use of biotechnology, genetically modified varieties, genetically engineered seeds, use of pesticides and chemical fertilizers and impacts of green house revolution etc. With regard to the bio-prospecting, there is no specific legislation nationally but the State of Sarawak has made some initiatives in this regard.

Global Warming: Malaysia is also influenced with the global warming. It has made the earth inhabitable to the people on earth. There are many causes for global warming such as: The global warming is created comprising the gases such as: Carbon dioxide, Methane, Nitrous oxide that earth's atmosphere creates steadily increasing and impacts on the biodiversities are observed.

Terrorist Activities: The terrorism has become a global issue at home and abroad. It is deadly increasing day by day. It spreads not only in the town based but also in the rural areas. It is also observing in Malaysia to some extent. The Government is quite aware and be more aware in this regard.

Politics and Political Parties: The political situation in the country is not so transparent and academic in nature. The practice of democracy is not satisfactorily made. The development and the environment of the country depend on the nature of the political parties.

Corruption in Administration: Corruption is an alarming issue in Malaysia. It is hotly discussed about its impacts at home and abroad. It is very much related to the administrative activities. Generally, administration is run by the bureaucrats. They are not so very sincere to the service of the people. They try to involve in corruption. It is almost observed in the developing and in the under developed countries.

Solid Waste Management: It is also a problem in Malaysia and it is increasing day by day. It is largely found in the developing and also underdeveloped countries of the world. Pollution forms from the solid wastes due to poor civic sense, inadequate facilities and inefficient management systems.

Unplanned Urbanization: Urbanization is increasing day by day in Malaysia. The rapid and the unplanned expansion of the city due to lack of proper implementation of concerned rules and regulations and inadequate monitoring have placed tremendous stress on the physical environment of the city. Sufficient lands are not remaining for the urban people.

Hazardous Waste: Hazardous waste is also one of the problems in the urban areas in Malaysia. In addition to releasing gases and particles into the atmosphere, humans produce waste that is dumped on the environment. Often, this waste is hazardous and dangerous to both nature and human life. The levels of dangerous wastes continue to grow.

Water Crisis: The notable water crisis in 1998 in the Klang valley affected domestic as well as industrial needs for months and the situation also spread to other water stress areas in the northern states of Peninsular Malaysia and Sabah where agricultural production was affected.

Diseases Outbreak: It is reported that the cases of viral encephalitis broke out in Malaysia since October 1998. It is found that both *Japanese encephalitis* and *paramyxovirus* was identified in Malaysia. The major outbreaks occurred in Langkawi in 1974, Penang in 1988, and in the Serian district of Sarawak in 1992.

Landslides and Landslips: It is identified that the collapse of the highland towers condominium is observed. The Renting Highlands Landslide, the East-West Highway and other expressways etc; are the example of this incident. All professionals, political masters, bureaucrats, business community NGOs etc., come forward to helping in this regard.

Polythene use: The use of polythene has been increasing in Malaysia and may be a great havoc to the nations. It should be banned as the manner of Bangladesh.

Sectoral Environmental Problems: Some sectoral environmental³¹ problems are also found in Malaysia as mentioned earlier etc.

MALAYSIAN INITIATIVES

Some environmental initiatives³² have been made for the purposes of attaining sustainable development and environment in the different sectors in Malaysia in the context of sustainable development. It is observed that the principles and the policy are very closely connected and its implementation is rarely done. The barriers towards the implementation should be identified and properly managed for the interest of the environmental development and conservation. In order to develop the environmental conservation, in every five years Malaysia formulates a Malaysian plan which provides a road map of socio economic aspects of the country. The Second Outlines Perspective Plan (OPP2) (1991-2000); the first Plan: the way forward Vision 2020; the third Malaysia Plan (1976-1980), the Fifth (1986-1990), the Sixth (1991-1995) and the seventh Malaysian Plan (1995-2000) etc; have been implemented in Malaysia. The seventh Malaysia Plan states that clean, safe, and healthy living environment are to be achieved for our present and future generations. Some environmental projects are also implemented in the country. In the constitutional aspects, a single provision have specific made with regard to the environmental conservation.³³ But there are many provisions that are highly influential in the environmental aspects. The Government of Malaysia has been working based on the constitution.³⁴ The Malaysian environmental laws and policy are sectoral³⁵ in nature dealing with land, water, forests, marine, fisheries and mining etc., for tackling the environmental pollution. Some provisions of the environmental legislations³⁶ dealing with the environmental aspects. The Environment Quality Act is a milestone for the development and conservation of the Malaysian Environment. The Department of Environment was established under this Act. It addresses the overall adverse impacts in the industrialization process which are reflected in the different Malaysian year plans. It is noted that much of the laws are sectoral in nature. Currently, around forty to fifty environmental related legislations in the country. Malaysia enacted first its kind the environmental legislation in the form of the 'Environmental Quality Act' 1974 and has given on the charge for the first time for controlling and regulating the industrial pollution, wastewater, air pollution from factories and solid waste management problems. It is mentioned here that this Act has been amended for three times since it was first enacted. The preventive measures in the form of environmental impact assessment were introduced in the 1985 amendment. With the change of time, some legislative changes are also made. The Minister along with the other officials is given powers by amendment of the laws for the environmental conservation.³⁷ The penal provisions of these laws are not adequate. It is noted here that in order to maintain the Environmental Fund, an Environmental Fund Committee has been formed by the Minister consisting of the Director General, two Environmental Officers and two public officers.³⁸ The Local Government³⁹ has been performing a wide range of services which can be summarized as Environment, Public Health and Cleansing, Enforcement and Licensing, Public Amenities and Social Services and Development functions under the local government laws in Malaysia. The highest judiciary of Malaysia is the Federal Court of Malaysia headed by the Chief Justice⁴⁰ can interpret the Constitution and constitutional provisions. The Court can also settle the disputes

between the State and the Federal Governments. Some judicial decisions⁴¹ are also made between 1992 and 2002 relating to the environmental issues in Malaysia. In terms of institutional strengthen; some institutions⁴² have been dealing with the environmental issues in Malaysia. Malaysian Government also have been actively participating and implementing then various provisions of the international initiatives.⁴³ The Malaysian Government has been working closely with the UNO along with many other regional organizations under the international environmental laws in Malaysia. In terms of teaching, the environmental legal education⁴⁴ relating to the domestic and the international are taught in the different universities of Malaysia. Regarding the role of the media, the print media and also the electronic media are also playing a very important role in the conservation and development of Malaysia. A good number of daily newspapers are in the Malaysia that publishes various news in the country. The civil society⁴⁵ in Malaysia is very aware about their environmental conservation and development. Malaysia is also rich in Environmental Groups or Non Governmental Organizations.⁴⁶ Around at least 20 NGOs have been working for greening the country. As regards to shariah law, Malaysia is also healthy on the shariah laws and policy.

EMPIRICAL RESULTS

| Indicators | Minimum | Maximum | Average (%) | Standard Deviation | First Quartile | Median | Third Quartile |
|---|---------|---------|-------------|--------------------|----------------|--------|----------------|
| Access to Clean Drinking Water | 30 | 100 | 70.50 | 16.01 | 60.00 | 70.00 | 80.00 |
| Access to Sanitation/Clean Environment | 30 | 100 | 66.20 | 15.52 | 53.75 | 70.00 | 76.25 |
| Forest Areas for Good Environment | 20 | 100 | 68.23 | 20.68 | 50.00 | 70.00 | 81.25 |
| Wetland/Ponds/Haors/Beels for Fisheries | 10 | 100 | 53.30 | 21.32 | 40.00 | 50.00 | 70.00 |
| Amusement/Park/Gardening for recreation | 20 | 100 | 58.15 | 20.92 | 40.00 | 60.00 | 70.00 |
| Car Parking Facilities | 10 | 100 | 59.55 | 21.76 | 40.00 | 60.00 | 80.00 |
| Motor Vehicles for Pollution | 0 | 100 | 53.00 | 22.63 | 38.75 | 50.00 | 70.00 |
| Population in Malaysia good for Environment | 30 | 100 | 70.80 | 18.79 | 60.00 | 70.00 | 80.00 |
| Urban Infrastructure Facilities | 20 | 100 | 66.20 | 19.73 | 50.00 | 70.00 | 80.00 |
| Access to Gas for Cooking | 20 | 100 | 74.10 | 18.82 | 60.00 | 80.00 | 90.00 |
| Quality Medical Services | 20 | 100 | 65.10 | 19.73 | 50.00 | 70.00 | 80.00 |
| Fresh Food in Malaysia | 20 | 100 | 71.75 | 17.59 | 60.00 | 80.00 | 80.00 |
| Electricity | 30 | 100 | 81.30 | 14.92 | 73.75 | 80.00 | 90.00 |
| The Price of Daily Commodities friendly with the people | 10 | 100 | 62.27 | 17.16 | 50.00 | 65.00 | 75.00 |
| Poverty Range (Poor/the Rich) | 20 | 90 | 61.92 | 16.73 | 50.00 | 60.00 | 80.00 |
| Waste Dumping System | 10 | 90 | 59.04 | 18.51 | 50.00 | 60.00 | 70.00 |
| Diversified Culture | 30 | 100 | 69.24 | 17.51 | 60.00 | 70.00 | 80.00 |
| Law & Order Situation in Malaysia | 10 | 95 | 62.15 | 19.56 | 50.00 | 60.00 | 80.00 |
| Local Administration | 10 | 90 | 59.08 | 18.17 | 50.00 | 60.00 | 70.00 |
| Availability of Daily Commodities for shopping | 30 | 100 | 71.20 | 16.89 | 60.00 | 72.50 | 85.00 |
| Income & Expenses friendly with the people | 20 | 90 | 60.25 | 18.44 | 50.00 | 60.00 | 75.00 |
| Relationship between the foreigners' & Local People | 10 | 90 | 61.30 | 19.92 | 50.00 | 60.00 | 80.00 |
| Misdeeds (Robbery, Dacoits/Theft) etc. in Malaysia | 0 | 90 | 49.85 | 24.19 | 33.75 | 50.00 | 70.00 |
| Security to the Residential Areas | 10 | 95 | 58.05 | 22.48 | 40.00 | 60.00 | 80.00 |
| Accountability in Administration | 10 | 100 | 59.05 | 19.60 | 50.00 | 60.00 | 70.00 |
| Transportation Facilities | 20 | 100 | 65.05 | 21.53 | 50.00 | 62.50 | 80.00 |
| Quality Education in Malaysia | 0 | 100 | 63.70 | 25.20 | 50.00 | 70.00 | 80.00 |
| Corruption in Malaysia | 0 | 90 | 49.15 | 23.20 | 30.00 | 50.00 | 70.00 |
| Natural Environment in Malaysia | 30 | 90 | 69.05 | 12.51 | 60.00 | 70.00 | 80.00 |
| Access to Justice | 10 | 100 | 61.40 | 17.32 | 50.00 | 70.00 | 70.00 |
| Using of Polythene (Harmful for Environment) | 0 | 90 | 49.35 | 33.94 | 10.00 | 50.00 | 90.00 |

The study finds that the environmental sustainability indexes as set in the study are quite good in Malaysia due to the fact that the technology in this regard is healthy. Most of the cases, it is observed that the people in Malaysia are also satisfied and happy with environment as maintained and determined except a few matters. The rate of corruption is unexpected and unhealthy to the people's expectations.

RECOMMENDATIONS

From the above study, some general recommendations may be made here in order to make the healthy environment in Malaysia.

- To use more modern environmental technological education to protect and conserve the environment.
- The Government should encourage the people not to use more vehicles and common law may be enacted immediately. The concerned offices are to be decentralized and the quarters to be made surrounding the office.
- Introducing the Polluter Pays Principle technology law are to be introduced and corporated in the national environmental regulations.
- The government should be aware that at least 25% of the total land areas are to be used for forestation without any fail and cost.
- All regulatory bodies need to be revised and regularized with proper and effective monitoring.
- Accountability and transparency at all levels of the administration are to be made.
- To implement the Environmental Laws and Policy properly.
- Environmental wrong doers to be identified and the necessary lessons are to be ensured in any forms.

- Religious Education is considered to protect the environmental sustainability.
- Findings on the related to the research works are to be implemented.
- The shariah law along with other religious laws with regard to environmental conservation may be considered.
- The government should use immediately more technologies for eliminating corruption in Malaysia.

CONCLUSION

It is observed that significant environmental technological instruments including environmental laws and policies relating to environmental conservation and development have been implemented in Malaysia. In the implementation discourse, some problems such as the non coordination, lack of enforcement mechanisms, lack of experts, shortage of manpower etc., are prevailing in the country. It needs to implement the existing legal instruments for immediate solution. Some specific environmental courts may be considered on the long term basis for the environmental consideration as the other countries of the world. Moreover, the empirical result finds that the environment in Malaysia is quite good as per the people's observations and experiences. They are also happy with the prevailing environment in Malaysia except corruption. The modern technology on the elimination of the corruption needs to be put into practice. Moreover, the recommendations in the study may be considered. Finally, in order to live a healthy and peaceful life, we need to implement the environmental governance issues involved in the study that could only ensure our planet, a free from pollution environment for our generations.

References:

- ¹ Malaysia became independent in 1957 and alter in 1963 formed the federation (which originally included Singapore until 1965) with the inclusion of Sabah and Sarawak. The country's natural wealth combined with its strategic location along the maritime routes has made international commerce an important feature of its economy for centuries. In the 14th Century, Malacca was founded and served as an ideal harbour as well as a meeting place for the exchange of goods. From the Malay Peninsula came gold, tin and forest products. Traders from Arabia, India, Burma and Siam brought ivory and precious stones while the Chinese and the Begis merchants brought gold, silk, porcelain, spices and articles of ancient commerce. The fall of Malacca to the Portuguese, Dutch and later the British marked the influence of the British in the Far East and the beginning of natural Resource exploitation plus some early guidance for resource management.
- ² Wan Portiab Hamzab, "Environmental Governance in Malaysia", Environmental Governance in Asia: Synthesis Report on Country Studies, Hisakazu Kazu KATO, Project Leader, Environmental Governance Project, Institute for Global Environmental Strategies, February 2001, p. 31.
- ³ Ibid.
- ⁴ Ibid.
- ⁵ Ibid. p. 32.
- ⁶ Simon Ball & Stuart Bell, *Environmental Law (New Delhi: Universal Law Publishing Co.Pvt.Ltd, 1996), p.05*
- ⁷ Op.cit. P.39, Wan Portiab Hamzab, "Environmental Governance in Malaysia", *Environmental Governance in Asia: Synthesis Report on Country Studies.*
- ⁸ Ibid, and Malacca is one of the world's busiest shipping passages, and the South China Sea.
- ⁹ Ibid.
- ¹⁰ The http://en.wikipedia.org/wiki/List_of_environmental_issues; accession on 18.04.2010 at 11:55 P.M. Global environmental problems include air Pollution, soil pollution, noise pollution, solid waste disposal, deforestation, biodiversity degradation, green house gases, chemical pollution, terrorism, food insecurity, explosion of population, war, migration etc.
- ¹¹ <http://www.highbeam.com/doc/1P3-687949701.html>; accession on 18.04.2010 at 11:58 at P.M. High rate of Population Growth, Urbanization, High range of Poverty, Land Degradation, Threatened Wetlands Problems, Water Scarcity Atmospheric Pollution, Pollution of Marine Environment,, Desertification ,Water Borne Diseases Prevalent, the loss of Biodiversity, earth quake, soil erosion etc
- ¹² http://ideas.repec.org/p/hhs/osloec/1989_011.html; accession on 18.04.2010 at 12 A.M. Over population, Poverty, Corruption, Terrorism, Using of the chemical fertilizers, using of pesticides, herbicides , explosion of nuclear, unplanned construction of building, weak environmental governance, short term projects, con compliance of the Environmental laws and policies, lack of environmental experts, technicalities, Dominance Over the Nature, unwise use of natural resources, unawareness, tendency to gain, use of motor vehicles, not know the nature, ignorance of humanity, misuse of the rule of law, disrespect to the nature, lack of governance, not to learn the history, not compliance with the religious rules etc.
- ¹³ http://www.actionbioscience.org/environment/hinrichsen_robey.html; accession on 12.04.2010 at 12.09 A.M. Air Pollution Problem, Water Pollution Problem, Sound Pollution Problem, Noise Pollution Problem, Agro Chemical Pollution problem, Insufficient Water Supply Problem Lack of Trees Coverage Problem, Insufficient Park problem, Open Space Problem, Degradation of Ground Water Problem, Filling of Lakes, Filling of Water Bodies/ Khaal/ Beel/ Haor/Baor, Land Fragmentation problem, Acid Rain Problem, Deforestation Problem, Soil pollution Problem, Land Degradation Problem, Biodiversity degradation problems, Seasonal and Natural Calamities.
- ¹⁴ Air pollution, Deforestation, Pollution of Inland and Marine Waters, Soil and Coastal erosion, Over fishing, Coral reef destruction, Water Pollution, The problem of waste disposal. Species endangering etc., based on many articles, Books, newspapers, Magazines etc. It has been described in the different books, journals, newspapers, published by the different environmental NGOs in Malaysia magazines and so on; which are quite known to the people of Malaysia and therefore, does not need to explain all the problems in Malaysia. It may be also found in the web site of Malaysia. The problems are also deeply discussed in many in books Simon Ball & Stuart Bell, *Environmental Law (New Delhi: Universal Law Publishing Co.Pvt.Ltd, 1996), p.05*.
- ¹⁵ A.K.M. Kaffluddin, *Population Research, Environmental Conservation and Economic Development* (Dhaka: Prof. Shammim Ahmed, 2001), Mohiuddin Farooque, *Laws Regulating Environment in Bangladesh*, (Dhaka: Bangladesh Environmental Lawyers Association, 1996), p. 07, Mahfuzullah, *Environmental Politics in Bangladesh*, (Dhaka: Centre for Sustainable Development, 1999), p.195.
- ¹⁶ R.N.Trivedi, *A TestBook of Environmental Sciences*(New Delhi: Anmol Publications Pvt. Ltd,1995), p.340; Lily Pritam Telu Ram, *Environmental Health and Hygiene* (New Delhi: Vikas Publishing House Pvt. Ltd., 1993),p.134. , Mizan Khan, *Environment policy making in Bangladesh*, (Dhaka: State of Environment, 1999), p. 145; Ansar Ali Khan, *Environmental La*,(Dhaka: New warsey Book Corporation,2001),p.183.,Lily Pritam Telu Ram, *Environmental Health and Hygiene* (New Delhi: Vikas Publishing House Pvt. Ltd., 1993),p.19
- ¹⁷ http://en.wikipedia.org/wiki/Air_pollution; accession on 18.04.2010 at 11:52 P.M. Air is an integral part of life and man cannot live even for a minute without air. It is a life sustaining precious natural resource without which mankind cannot survive. It is essential to keep air and atmosphere free from pollution.
- ¹⁸ Human being substantially contributes more to the air pollution problems. Natural: There are some also natural causes of air pollution such as: Forest fires, Volcanic eruptions, Wind eruptions, Pollen dispersal evaporation of organic compounds, Natural radioactivity etc.
- ¹⁹ http://www.arizonaenergy.org/AirEnergy/health_effects_of_air_pollution.htm; accession on 18.04.2010 at 12:12 A.M. The most pollution is the result of human activity. The biggest causes are the operation of fossil fuel-burning power plants and automobiles that combust fuel. Combined, these two sources are responsible for about 90% of all air pollution in the United States. Some cities suffer severely because of heavy industrial use of chemicals that cause air pollution. Places like Mexico City and Sao Paulo have some of the most deadly pollution levels in the world. Moreover, the followings are the responsible factors for air pollution: Motor Vehicles, Air Crafts, Railway Engines, Industrial Plants, Power Plants, , Brick Fields, The different Industrial Pollutants, Green House Effect, Greenhouse Gas, Human and Animals Wastage, Dead Bodies, Gases of Vehicles, Ozone lyre depletion etc.
- ²⁰ http://www.hc-sc.gc.ca/ewh-semt/air/out-ext/effe/health_effects-effets_sante-eng.php; accession on 18.12.2010 at 12:14 A.M. Health Problem: Air pollution is responsible for major health effects. Every year, the health of countless people is ruined or endangered by air pollution.
- ²¹ <http://en.wikipedia.org/wiki/Water>; accession on 18.04.2010 at 12:15 A.M. Water is like air is a basic necessity without which life cannot be maintained. It is indeed, the very basis of human life. Water is the principal constituent of the human body. It should be borne in mind the human body is constituted of around 60% water. It is also an environmental issue. It is one of the vital problems of the urban environment. There are three sources of water pollution in urban areas such as: Industrial Effluent, Waste Water and Urban Run Off, Industrial Effluent: A wide variety of industries contribute to industrial effluent. It comes these industrial sources contains various organic and inorganic compounds including acids, caustics, biological oxygen demand, heavy metals, synthetic organic etc.
- ²² <http://edugreen.teri.res.in/explore/water/health.htm>; accession on 18.04.2010 at 12:18 A.M. This resource is exploited and polluted in many ways and in different forms. The causes of water pollution such as :Arsenic contamination of ground water, Chemical wastage, Industrial waste age, Human and animals dead bodies and wastage, Industrial pollution, Rainfall, Gases of engines, Modern irrigation practices, Pesticides Chemicals fertilizers, Natural calamities etc; are worth of mentioning
- ²³ The http://pollution-control.suite101.com/article.cfm/ocean_pollution_facts; accession on 18.04.2010 at 12:20. The problem of ocean pollution affects every nation around the world. This is especially true because water is able to transport pollution from one location to another. Oil, such as that spilled by transport ships, has been dumped into the water since the US Civil War. Every year, between 1 and 10 billion tons of oil are spilt, killing many species and destroying the ecosystem in the area. Clean up efforts have been weak, as only about 10% of the oil is removed by the most successful efforts. For many years, chemicals were dumped into bodies of water without concern. While many countries have now banned such behavior, it continues to go on today. As the world has industrialized and its population has grown, the problem of water pollution has intensified. The simple fact that millions of people live along coastlines and near rivers means that these bodies of water are likely candidates for heavy and destructive pollution. It kills life that inhabits water-based ecosystems. It affects fish, birds, dolphins and many other animals living in the water. Water pollution disrupts the natural food chain. The different kinds of fisheries consume the polluted water. Eventually, humans are affected by this process as well. People can get diseases such as hepatitis by eating sea food that has been poisoned. Ecosystems can be severely changed or destroyed by water pollution. Many areas are now being affected by careless human pollution, and this pollution is coming back to hurt humans. It is mentioned here that every year, 14 billions pounds of sewage, sludge, and garbage are dumped into the world's oceans. 19 trillion gallons of waste also enter the water annually. Across the world, about half of all sewage is dumped into water bodies in its original form. No efforts are made to disinfect the sewage or to remove especially harmful pollutants
- ²⁴ http://en.wikipedia.org/wiki/Health_effects_from_noise; accession on 18.04.2010 at 12:22 A.M. Over population, Hydraulic horns, Loud -speakers, Construction drills, Auto rickshaw engines and a million other things etc. It can cause people completely deafness. It creates in many kinds of illness such as high blood pressure, headaches
- ²⁵ <http://library.thinkquest.org/C005137F/E/facts%20of%20noise%20pollution.htm>; accession on 18.04.2010 at 12 A.M. It creates in many kinds of illness such as high blood pressure, headaches, Indigestion peptic ulcers Insomnia etc.
- ²⁶ <http://www.ogansync.com/hazards-of-noise-pollution/>; accession on 18.04. 2010 at 12:26. It has created hazardous environmental problems of serious concern on our land. The agro environment is degraded through the application of chemical fertilizers, Pesticides, Herbicides etc.
- ²⁷ http://en.wikipedia.org/wiki/Agricultural_biodiversity accession on 18.04.2010 at 12:27 A.M. The agriculture biodiversity is hampered. Many of the indigenous rice varieties have been lost due to the introduction of the HYVs. It brings on public health or workers or users. It affects the fish biodiversities. It affects the human health.
- ²⁸ Ibid.

²⁶ http://en.wikipedia.org/wiki/Acid_rain accessed on 15.04.2010 at 12:28 A.M. Scientists first discovered acid rain in 1852, when the English chemist Robert Agnes invented the term. From then until now, acid rain has been an issue of intense debate among scientists and policy makers. Acid rain, one of the most important environmental problems of all, cannot be seen. The invisible gases that cause acid rain usually come from automobiles or coal-burning power plants.

²⁷ <http://rainforests.mongabay.com/0904.htm>; accessed on 18.04.2010 at 12:34 A.M. The global pollution issue causes great debates between countries that fight over polluting each other's environments. For years, science studied the true causes of acid rain. Some scientists concluded that human production was primarily responsible, while others cited natural causes as well. Recently, more intensive research has been done so that countries have the information they need to prevent acid rain and its dangerous effects. Acid rain is having harmful effects both on people and on the natural ecosystems of the world. Scientists today are convinced that acid rain is severe in many areas, and that it is having an adverse effect on the environments of those locations. The problem of acid rain is rapidly spreading. Because it is mainly caused by industrial processes, automobiles, and power plants, those countries that are developed have the most severe acid rain problems. However, as the undeveloped nations begin to industrialize, acid rain will increase greatly. Determining just how much the planet is being hurt by acid rain is very difficult because the ecosystems that it affects are so diverse and complex. Many ecosystems are affected by acid rain. Bodies of water, such as lakes and rivers, see many of their inhabitants die off due to rising acidity levels. Acidic water also ruins plant nutrients, hurting plants' ability to survive and to give life to other organisms. Human-made products are also experiencing degradation from acid rain. Cars can lose their finishes, and outdoor statues are beginning to rust. Acid rain's effects are destructive and long lasting. Though scientists have studied lakes, streams, and many other natural ecosystems to prove its negative effects, acid rain continues to be produced and is increasing.

²⁸ <http://www.allbusiness.com/environment-natural-resources/pollution-environmental/12117340-1.html>; accessed on 18.04.2010 at 12:32 A.M. There are some causes of deforestation in such as: Population pressure, over population, de-range of poverty, Settlement or mitigation of land less people in the forest areas, Shifting cultivation, Inappropriate exploitation of forest resources, Grazing, Illegal logging, Use for fuel wood, Uncontrolled and wasteful commercial exploitation, Lack of awareness of the value of forests and partition of the sub-continent and transfer of the forest to the forest department also caused deforestation in many parts of the world.

²⁹ Ibid and the Loss of habitats, Loss of biodiversity, Changes in local ecology, Loss of carbon sink, Soil erosion, less water retention and increased flooding etc.

³⁰ <http://www.buzzle.com/articles/soil-pollution-causes-and-effects.html>; accessed on 18.04.2010 at 12:37 A.M. The Causes of Soil Pollution are the excessive use of pesticides, Grazing, River bank erosion, Flood, Heavy rainfall, over population, unscientific method of cultivation, Lack of plantation, Making building upon building, Mismanagement of soil, Lacking of research etc.

³¹ The Sectoral Law includes the forestry, fisheries, agriculture, animal husbandry, mineral resources, land, House Building, urban etc., of the environment in Malaysia

³² The Malaysian Cabinet approved the National Policy on the Environment on October 2, 2002. Its main aim was to protect the environment based on the human needs and depending on the natural resources for ensuring the economic development and

The National Forestry Policy 2002; the National Agricultural Policy's (1992-2010); The National Mineral Policy (NMP); The Mineral Development Act 1994; The National Policy on Biological Diversity; The National Coastal Zone Management Policy and The National Policy on the Environment etc.

³³ Ibid., p. 859

³⁴ Ibid, p.p. 860-8863 & also the guideline of the Constitution as mentioned earlier.

³⁵ Op.cit. P.43, Wan Portiab Hamzah.

³⁶ The Straits Settlement Ordinance 1894, the Mining Enactment 1992, the Forest Conservation Enactment 1934, the Drainage Works Ordinance 1954, the Road Traffic Ordinance 1958, the Fisheries Act 1963, the Land Conservation Act 1960 (revised 1985) Act 385, the Environmental Quality Act 1974 Act 12, the Protection of Wildlife Act 1972 Act 7, the Factory and Machinery Act 1967, the Protection and Wildlife Act 1972, the National Parks Act 1980 Act 226, the Fisheries Act 1985 Act 317, the National Forestry Act 1984 Act 313, the Town and Country planning Act 1976 Act 172, the Mining Enactment 1929, the Merchant Shipping (Oil Pollution) Act 1994, the Bio safety Act 2007 ACT 678, the Animals Act 1953 (Revised - 2006) ACT 647, the National Heritage Act 2005 ACT 645, the Protection of New Plant Varieties Act 2004/ ACT 634 etc., the Environment Quality (Scheduled Wastes) Regulations 1989, the Environment Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) regulations 1989, the Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989 etc.

³⁷ Op.cit., Sharom, Azmi., p.p.882-883

³⁸ Ibid, p.884.

³⁹ The Local Government is elected by the local people and worked locally and empowered locally by the constitution and governed by the Representative of the people's of the locality.

⁴⁰ Op.cit., Sharom, Azmi., p.p.882-883.

⁴¹ The Rural Legislation and Entitlement Kendra Dehradun and others Vs State of U.P. and Others (1985) 2 SCC 431, Devaki Nandan Pandey V. Union of India and Others (1985) 3 SCC 614, Tan Tek Seng V. Suruhanjaya Perkhidmatan Pendidikan (1996)1 MLJ 288, Kettua Pengarah Jabatan Alam Sekitar & Anor vs. Kajing Tubek & Ors (1997) 3 MLJ 23, Government of Malaysia vs. Lim Kit Siang, United Engineers (M) Berhad vs. Lim Kit Siang [1988] 2 MLJ 12, The Malaysian Vermicelli Manufacturers (Melaka), Sdn Bhd vs. PP (2001) 7 CLJ etc.

⁴² Op.cit. P.45, Wan Portiab Hamzah & the institution includes the National Planning Council (NPC), the National Development Planning Committee, The Economic Planning Unit (EPU), The Manpower Planning and Modernization Unit (MAMPU), the Technical Working Group (TWG), The Ministry of International Trade and Industry and the Central Bank, the Federation of Malaysian Manufacturers (FMM), The State Economic Planning Unit (UPEN), the department of Environment, the Ministry of Science, Technology and Environment (MOSTE), and the Inter-agency Planning Group (IAPG) etc.

⁴³ Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer 1990 (Date of Ratification: 14 September 1993), Amendment to the Montreal Protocol to Substances that Deplete the Ozone Layer 1992 (Date of Ratification: 14 June 1994), The United Nations Convention on Biological Diversity 1992 (Date of Ratification: 22 September 1994), United Nations Framework Convention on Climate Change 1992 (Date of Ratification: 11 October 1994), Kyoto Protocol to the United Nations Framework Convention on Climate Change 1997 (Date of Ratification: 4 September 2000), The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (Date of Ratification: 10 March 1995), The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989 (Date of Ratification: 8 January 1995), The International Tropical Timber Agreement 1994 (the date of Ratification: 1994) & The International Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or desertification, particularly in Africa 1994) etc.

⁴⁴ The Environmental Laws in Malaysia including the international environmental laws as mentioned above

⁴⁵ Aliran Kesedaran Negara (Aliran), All Women's Action Society Malaysia (AWAM), Amnesty International Malaysia, Centre for Independent Journalism (CIJ), Centre for Policy Initiatives (CPI), Centre for Public Policy Studies (CPPS), Civil Rights Committee, Kuala Lumpur and Selangor Chinese Assembly Hall (CRC-KLSCAH), Civil Society Committee, LLG Cultural Development Centre (LLG-CSC), Civil Society Initiative for Parliamentary Reform (CSI@Parliament), Council of Churches of Malaysia Youth Network, Durham Malaysian Scholars, Gabungan Bertindak Mahasiswa Utara (GBMU), Group of Concerned Citizens (GCC), Institut Kajian Dasar (IKD), Institute for Development of Alternative Living (IDEAL), SibU, Islamic Renaissance Front (IRF), Jaringan Orang Asal Semalaysia (JOAS), Jawatankuasa Penduduk Zon 23 MPJS, Justice for Beng Hock Facebook Page and Group, Kuala Lumpur and Selangor Chinese Assembly Hall Youth Section (KLSCAH-YS) etc.

⁴⁶ It includes the Malaysian Environment Malaysia Nature Society - MNS All Women's Action Society (AWAM) at NGOs - MENGO, Malaysia - Education & Research Association For Consumers Malaysia, Centre for Environment, Technology and Development, Malaysia - CETDEM National Consciousness Movement etc. Finally, the author acknowledges to his all publications in this regard.

THE USE OF ADAPTIVE AND INTELLIGENT EDUCATIONAL HYPERMEDIA SYSTEMS IN THE DESIGN OF E-LEARNING ENVIRONMENTS

Özcan ÖZYURT

Karadeniz Technical University, Beşikdüzü Vocational School, Beşikdüzü, Trabzon/TURKEY
oozyurt@ktu.edu.tr

Hacer ÖZYURT

Karadeniz Technical University, Fatih Faculty of Education, Trabzon/TURKEY
hacerozyurt@ktu.edu.tr

ABSTRACT: Rapid development of internet technologies and their pervasion have brought along the usage of different techniques and methods in design of web based learning environment. Traditional web based learning environments do not take students' individual differences into consideration, and they were designed in a structure giving them static pages prepared in a certain format. The fact that all individuals were receiving the same page context and same links was making it obligatory for all students to have education in the same way. This obstructed the individualization of teaching in web medium. In this sense, Adaptive and Intelligent Web Based Education Systems (AIWBES) were designed and started to be used as a combination of Adaptive Hypermedia Educational Systems (AHES) and Intelligent Tutoring System (ITS) architectures. AIWBES was designed as an adaptive system adapting to individual differences such as target, interest and preferences. It was develop instead of traditional web based systems designed according to the sense of "one-size-fits-all" where no individual differences are taken into consideration. In this study, AIWBES which has a place in the literature was searched. Techniques used in constitution of the systems were handled, and contributions of these mediums to the education process within the direction of the studies in the literature were discussed.

Keywords: Adaptive and Intelligent Web Based Educational Systems, Adaptive Hypermedia, Individual Learning, Usage of Intelligent Components in Education, Web Based Education

INTRODUCTION

Adaptive Hypermedia Systems (AHS) can generally be defined as systems with the quality of changing behaviour according to the context (Brusilovsky, 1996; Sadat and Ghorbani, 2004; Brown, Cristea, Stewart and Brailsford, 2005; Somyürek, 2009). The concept of adaptive is considered to the change of the system with respect to users and other parameters during working process. In accordance with this architecture, systems were designed and used in many fields such as education, e-trade, online information systems (Brusilovsky, 1996; Sadat and Ghorbani, 2004).

Adaptive hypermedia (AH) can be considered as intersection of user modelling and hypermedia. Conventional web based systems provide students with static pages and the same connection sequence which can be considered as restriction. Conventional systems were designed and used according to the logic of "one-size-fits-all" (Brusilovsky, 1996; Brusilovsky and Peylo, 2003). For example; in a conventional web based learning environment, the same material is presented to each student regardless of their related information, his/her learning style or individual differences relating to subject. This is not a rather acceptable situation in reality. This is because, individual differences, related information and the needs of students can be quite different, and these differences may have an effect on their learning. AH becomes the part of the activity at this phase and it is considered as an alternative substitution for conventional hypermedia developed according to the logic of "one-size-fits-all" (Brusilovsky, 2001; Brusilovsky and Peylo, 2003). AHES creates a user model determining individual differences such as information levels, preferences and learning styles for each student instead of conventional web based educational systems (Brusilovsky and Peylo, 2003; Chang, Lu, and Fang 2007; Sağiroğlu, Çolak and Kahraman, 2008). Using these techniques, AHES presents the necessary materials to students whose personal differences were determined according to their needs. This is a proof of system's adaptively. As for the conventional web based educational systems, they do not have information about the student and drag him/her into a predetermined frame.

The first examples of AHES usage in education were seen between the years of 1995-1996 under the title of AIWBES (Brusilovsky, 1996). Many systems were designed and used after this date. Although AHES and ITS are used together frequently, they do not mean the same concept exactly. (Brusilovsky and Peylo, 2003). AHES are environments in which individual differences of students are taken into consideration, a support which provides each student or a group of students with specific characteristics different contents and navigation is given. As for ITS, they are computer systems designed using artificial intelligence techniques which knows whom to teach, what to teach and how to teach (Murray, 1999). ITSs are considered to be education systems which employ artificial intelligence techniques, provide students with intelligent problem solution support and perform as intelligent solution analyst (Brusilovsky and Peylo, 2003; Kubat and Doğan, 2008). Today, though it is not possible to use these two terms interchangeably, it is also not possible to draw their boundaries and separate them since they occasionally cover each other according to the techniques and methods they employ (Brusilovsky and Peylo, 2003). In figure 1, architectures of AHES and ITS systems are given in accordance with each other.

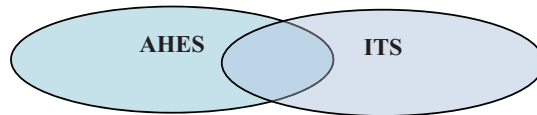


Figure 1. The relationship between AHES and ITS

Basic ITS techniques are curriculum sequencing technology, intelligent solution analyses and problem solving support. (Brusilovsky and Peylo, 2003). *Curriculum sequencing technology* is presentation of examples, exercises and problems in accordance with a certain plan prepared according to individual differences of each student instead of giving the same curriculum to all students. In other words, by means of curriculum sequencing technology we aimed to help students in finding the best way among the education materials. Curriculum sequencing technology is very important for it leads students to advance according to their knowledge and needs in hypermedia space. *Intelligent solution analysis* is an approach relating to the solutions while solving educational problems. While feedbacks saying whether it is wrong or right are given to students in unintelligent systems, this system searches the reasons behind the errors and shares them with students. Students may make mistakes because of misunderstandings, lack of information or inattention. With the aid of intelligent solution

analyses, appropriate feedbacks are given to students and student modules are updated. As for *problem solving support*, it is the intelligent aid given to students in each step while solving the problem. Student is supported in each step while solving the problems with clues and gets aid for solution.

As to basic AHES techniques, they are divided into two as adaptive presentation and adaptive navigation support (Brusilovsky and Peylo, 2003; Sağıroğlu, Çolak and Kahraman, 2008). *Adaptive presentation* is based on adaptation of hypermedia content to student taking each student's parameters, needs, related information and individual differences his/her module into consideration (Kubat and Doğan, 2008, Somyürek, 2009). In adaptive presentation technology, each page is produced and presented not statically but adaptively for each user. As for *adaptive navigation support*, it helps students by making links appear or hide, thus, directing them as navigation support in hypermedia space. For example; adaptive system may decide the page to go from the present page by explaining sequence of links or making them disappear. Adaptive navigation support serves for the same purpose with curriculum arrangement technique in ITS and helps students in deciding the best way for him/her. This prevents students from getting lost in hypermedia space or taking inappropriate pages himself/herself. By means of adaptive navigation support, it is possible to minimize the direction problems encountered in hypermedia mediums by simplifying connection structure, thus, it helps students in finding the most appropriate way for himself/herself within this system (Chang, Lu and Fang, 2007; Somyürek, 2009). Thanks to this structure, it is possible to arrange the connections to facilitate the running to the other page, put explanations to connections or hide some of the connections. Thereby, adaptive navigation support is provided for the students. In figure 2 AHES and ITS technologies are presented.

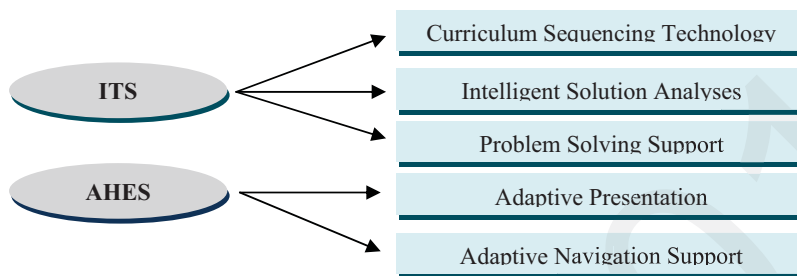


Figure 2. Basic AIWBES technologies

BASIC COMPONENTS OF AIWBES ARCHITECTURES

Basically, three components are used in design of AIWBES though they may be differently named in different resources. These components can be listed as *knowledge domain model module* constituted by curriculum that will be presented to students, *user (student) model module* in which student information and characteristics are stored and *pedagogical (adaptation) model module* providing adaptation between user (student) model module and knowledge domain module. Additionally, in many systems, a fourth module, user interface module, is commonly used. This model provides communication between system and student.

Knowledge Domain Model

Knowledge domain model is the unit that presents the content of subjects and concepts which are requested to be taught. This model should be designed in a way which will answer the request of adaptation quality for students. In accordance with this aim, knowledge domain model should be equipped with different information levels and coverage qualities that can be adapted to student levels for each concept and subject (Brusilovsky and Peylo, 2003; Sağıroğlu, Çolak and Kahraman, 2008; Somyürek, 2009). While constituting knowledge domain model, one of the used methods is concept network structure. Maps of concepts which will be explained are prepared and this conception maps are correlated with pages. This correlation may be concept based information space, page indexation based information space and item indexation. The best one among these is item indexation (Brusilovsky and Peylo, 2003).

User Model

User model provides communication with information field model, students -system users- and stores the characteristics of students for them to access information. In this model, different methods are used in recording learning styles, individual differences and preconditions of students in order to determine their levels.

The first method commonly used in the development of AIWBES is overlay user model. The most distinct quality of this model is that it records data that keep user information for each information field concept (Brusilovsky and Peylo 2003; Nguyen and Do, 2008; Sağıroğlu, Çolak and Kahraman, 2008). In this model, user information is marked as "he/she knows-he/she does not know" in the easiest way covering the knowledge domain. Using different artificial intelligence techniques level of user information may be subjected to different classifications. While it is possible to scale student information about a subject or concept quantitatively (between 0-10 or 0-100), it is also possible to have qualitative values such as "bad-average-good-perfect". Constant update of user model is important for the determination of student level and advancement of the system. A model should be determined for each user. Another way to model student information is to use stereotype patterns. Stereotypes indicate pre-determined user classifications (Tsiriga and Virvou, 2003; Nguyen and Do, 2008).

Adaptation Model

Adaptation model can be considered as a model which correlates between knowledge domain model and user model. The basic function of this model, named as education model in different resources, is to decide on how to resume the education utilizing information field model and user (student) model. In other words, this model produces an adaptive content presentation for user model. The function of adaptive model is to give adaptive content selection and adaptive navigation support (Brusilovsky, 2001; Zakaria and Brailsford, 2002; Brown, Cristea, Stewart and Brailsford, 2005; Nguyen and Do, 2008; Sağıroğlu, Çolak and Kahraman, 2008).

EDUCATIONAL SAMPLES

AHES was used in many areas from education to electronic trade. In this study, AIWBES examples were examined in which AHES and ITS were developed together within the framework of AHES. The first examples of AHES usage in education is between the years of 1995-1996 with AIWBES (Brusilovsky, 1996). Many systems were designed and used after this date. Some of these systems were based on UHÖS architecture while the others were based on ITS architecture. Samples from these systems are given in Table 1. Sample systems are given with the dates of their constructions and publications.

Table 1. AIWBES Samples

| System Name | Short Description |
|-------------|---|
| ActiveMath | Intelligent web based education system developed for mathematics. A medium enriched with a content of adaptive interactions changing according to student information (Melis and Siekmann, 2004). |
| ACT-R | An electronic library designed for cognitive psychology education (Brusilovsky and Anderson, 1998). |
| AlgeBrain | Intelligent web based education system in which students have chance to apply their algebraic equation solving skills (Alpert, Singley and Fairweather, 1999) |
| ALPHANET | It is focused on providing the most efficient individual learning and aims to create an education environment which provides intelligent individualization (Santos, Barrera, Gaudio and Boticario, 2003) |
| Arthur | A web based education system providing adaptive individual education (Gilbert and Han, 1999). |
| AST | A web based adaptive statistics teacher (Specht, Weber, Heitmeyer and Schch, 1997). |
| CHEOPS | A host sided system which presents the intended pages in accordance with student profile and information (Negro, Scarano and Simari, 1998). |
| ELM-ART | An educational web based system which was developed in order to teach Lisp programming language. It provides ELM-ART Intelligent problem solution support and adaptive navigation support (Brusilovsky and Weber, 1996). |
| HYPADAPTER | Adaptive system supporting individual learning and developed in order to teach Lisp language (Hohl, Becker and Gunzenhuser, 1996). |
| Ilesa | Intelligent web based education system designed to teach simple algorithms (López, Millán, Pérez-de-la-Cruz and Triguero, 1998). |
| ISIS-Tutor | Intelligent education system developed in order to teach CDS/ISIS/M information extract system's formatting language (Brusilovsky and Pesin, 1998). |
| iWeaver | A web based interactive education environment aiming to conduct individual learning based on learning styles (Wolf, 2003). |
| SKILL | A web based education environment which provides a cooperative and adaptive learning environment to students (Neunmam and Zirvas, 1998) |
| SmexWeb | A web based education system which is also user model based, which takes cognitive aspects and background information of students into consideration in addition to their skills (Albrecht, Koch and Tiller, 2001). |
| SQL-Tutor | An information based education system designed in order to teach SQL language to students. SQL-Tutor is also able to adapt itself according to individual learning skills and needs of students (Mitrovic and Hausler, 2000). |
| TANGOW | An adaptive system which creates a profile of student by means of his/her behaviours during their learning process, and accordingly, provides a medium for students (Carro, Pulido and Rodriguez, 1999). |

CONCLUSION

In this study, web based education mediums designed using AHES and ITS architectures and their designing techniques were examined. The fact that AHES and ITS concepts cannot be separated thoroughly and their being intertwined with each other most of the time resulted in the birth of AIWBES. In this sense, we conducted a research on AIWBES components; system architectures and education systems designed according to these approaches and presented examples of these systems. The techniques used while designing AIWBES were handled in detail and the functions of system components as well as the interactions between them were emphasized. AIWBES are systems designed based on the components and adaptive systems adapting themselves self according to the student by means of interaction between the components. With respect to the studies in literature, it has been observed that conventional web based education mediums (web based one-size-fits-all education mediums) provide students with the same environment and therefore do not meet the needs of students. This gave rise to new approaches in designing web based education systems. With these new approaches, many parameters such as individual differences, needs, background information and learning styles of students are taken into consideration, thus, different mediums are presented to each student. This supports individual learning. In other words, with the use of AIWBES technologies, each student has opportunity to receive education pertaining to himself/herself. Within this direction, there are findings in literature which indicate that these kinds of systems have a positive effect on achievements of students at a level of 40% and that their learning processes are reduced at a level of 30% (Kubat and Doğan, 2008; Sağıröğlü, Çolak and Kahraman, 2008).

It is thought that this study will contribute much to the future studies in terms of developing applications using AIWBES technologies, components of this system and contents of these components.

REFERENCES

- Albrecht, F., Koch, N., and Tiller, T. (2001). Smexweb: An adaptive web-based hypermedia teaching system. *International Journal of Continuing Engineering Education and Life- Long Learning Special Issue on Intelligent Systems/Tools in Training and Life-Long Learning*, pp. 367- 388.
- Alpert, S. R., Singley, M. K., and Fairweather, P. G. (1999). Deploying Intelligent Tutors on the Web: An Architecture and an Example. *International Journal of Artificial Intelligence in Education* 10, pp. 183-197.
- Brown, E., Cristea, A., Stewart, C., and Brailsford, T. (2005). Patterns in Authoring of Adaptive Educational Hypermedia: A Taxonomy of Learning Styles. *Educational Technology & Society*, 8 (3), 77-90.
- Brusilovsky, P. (1996). Methods and techniques of adaptive hypermedia, *User Modeling and User Adapted Interaction*, 6(2-3), 87-129.
- Brusilovsky, P., and Weber, G. (1996). Elm-art: An intelligent tutoring system on world wide web. In *Intelligent Tutoring Systems. Lecture Notes in Computer Science*, 1086, pp. 261–269.
- Brusilovsky, P., and Pesin, L. (1998). Adaptive Navigation Support in Educational Hypermedia: An Evaluation of The Isis-Tutor, *Journal of Computing and Information Technology*, 6(1), pp. 27-38.
- Brusilovsky, P., and Anderson, J. (1998) Act-r electronic Bookshelf : An adaptive system to support learning act-r on the web. In *The 3rd World Conference of the WWW, Internet, and Intranet, WebNet'98*, pages 92–97.
- Brusilovsky, P. (2001). Adaptive Hypermedia, *User Modeling and User-Adapted Interaction* 11, 87-110
- Brusilovsky, P., and Peylo, C. (2003). Adaptive and Intelligent Web Based Educational Systems. *International Journal of Artificial Intelligence in Education Vol. 13*, 156-169.
- Chang, Y-H., Lu, T-Y. and Fang, R-J. (2007). An Adaptive E-Learning System Based on Intelligent Agents, *Proc. of the 6th WSEAS International Conference on Applied Computer Science*, pp. 200-205.
- Gilbert, J. E., and Han, C.Y. (1999) Adapting instruction in search of a significant difference. *Journal of Network and Computer Applications*, 22(3), pp. 149-160.
- Hohl, H., Bcker, H.D., and Gunzenhuser, R.(1996). Hypadapter: An adaptive hypertext system for exploratory learning and programming. *Hypertext and Hypermedia, User Modeling and User-Adapted Interaction* 6 (2-3), pp.131-156.
- Kavcic, A. (2004). Fuzzy User Modeling for Adaptation in Educational Hypermedia, *IEEE Transactions on Systems, Applications and Reviews*, 34(4) pp. 439-449.
- Kubat, B., and Doğan, N. (2008). A new component for intelligent education systems: **Arranger Module**, *Informatics Technologies Magazine* 1 (2), pp. 5-9.
- López, J. M., Millán, E., Pérez-de-la-Cruz, J. L., and Triguero, F. (1998). ILESA: a Web-based Intelligent Learning Environment for the Simplex Algorithm., 4th International conference on Computer Aided Learning and Instruction in Science and Engineering, CALISCE'98, Göteborg, Sweden pp.399-406.
- Melis, E., and Siekmann, J. (2004). ActiveMath: An Intelligent Tutoring System for Mathematics, *Artificial Intelligence and Soft Computing, ICAISC 2004, LNAI 3070*, pp: 91-101.
- Mitrovic, A., and Hausler, K. (2000). Porting sql-tutor to the web. In *ITS'2000 workshop on Adaptive and Intelligent Web-based Education Systems*, pp. 37-44.
- Murray, T. (1999). Authoring Intelligent Tutoring Systems: An Analysis of the State of the Art, *International Journal of Artificial Intelligence in Education*, 10, 98-129.
- Negro, A., Scarano, V., and Simari, R. (1998). User adaptivity on www through cheops, *Proceedings of the 2nd Workshop on Adaptive Hypertext and Hypermedia HYPERTEXT'98, Pittsburgh, USA*.
- Neumann, G., and Zirvas, J. (1998). Skill - a scalable internet-based teaching and learning system. In *Proceedings of WebNet 98, World Conference on WWW, Internet and Intranet AACE, Orlando, USA*.
- Nguyen, L., and Do, P. (2008). Learner Model in Adaptive Learning, *Proceedings of World Academy of Science, Engineering and Technology*, Vol. 35, 396-401.
- Sadat, H., and Ghorbani, A.A. (2004). On the evaluation of adaptive web systems. *The Second International Workshop on Web-based Support Systems (WSS04) in Conjunction with AI 2004*, pp. 127-136.
- Sağıroğlu, Ş., Çolak, I., and Kahraman, H.T. (2008). Transition from conventional web based education systems to adaptive education systems. *Gazi Üniv. Eng-Arc. Fac. Mag. Vol 23, No 4* 837-852.
- Santos O.C., Barrera C., Gaudio E., and Boticario J.G. (2003). ALFANET: an adaptive e-learning platform. *Second International Meeting on Multimedia and ICTs in Education (miCTE 2003). Advances in Technology-Based Education*, pp. 1938-1942.
- Somyürek, S. (2009). Adaptive Education Mediums: A New Paradigm In Designing Educational Hyper Mediums, *Informatics Technologies Magazine*, 1(1), pp. 29-38
- Specht, M., Weber, G., Heitmeyer, S., and Schch V. (1997). Ast: Adaptive www-courseware for statistics. In *Workshop Adaptive Systems and User Modeling on the World Wide Web, Sixth International Conference on User Modeling, Chia Laguna, Sardinia*, pp. 91-95.
- Tsiriga, V., and Virvou, M. (2003). Modelling the Student to Individualise Tutoring in a Web-based ICALL, *International Journal of Continuing Engineering Education and Lifelong Learning Vol. 13, No.3/4*, 350-365.
- Wolf, C. (2003). iweaver: towards 'learning style'-based e-learning in computer science education. In *Proceedings of the fifth Australasian conference on Computing education*, pp. 273–279.
- Zakaria, M. R., and Brailsford, T. J. (2002). User modeling and adaptive educational hypermedia frameworks for education. *New Review of Hypermedia and Multimedia*, 8, 83-97.

THE USE OF MANY LISTENING MEDIA TYPES IN ONE MULTIMEDIA LISTENING APPLICATION

Vehbi TÜREL

Abstract

The positive effects of using different listening texts (i.e. audio, video) in listening enhancement as a part of FLL are already well known. As multimedia enables us to combine and present these media types, - which are the main listening elements-, more effectively on the same computer platform, they can be presented to language-learners in one multimedia listening application (MLA) in different forms as different listening media types (i.e. audio-only, audio + visuals, audio + animation, video-only, video + visuals). This study investigated forty five autonomous intermediate and upper intermediate NNSs learners' (AILLs) perceptions of the use and priority of different listening media-types in one MLA that aimed to enhance the listening skills of the participants. The results revealed that the learners are in favour of the presence of different listening media types in one MLA. They believe that the presence of different listening media types in one MLA improves their listening skills and helps prepare for the real-world. Similarly, learners prefer some listening media types more than others in one MLA. In the same way, not only do learners think that some listening media types improve their listening more than others, but learners also believe that they prepare better for the real-world.

Keywords: Listening, media types, multimedia, presentation of information, listening texts, foreign language learning

1. Introduction

When the available CD-ROMs for intermediate learners on the market are examined carefully, it will be seen that while some of them consist of *video-only*, e.g. English for Business- Introduction to a company and the other products of the same series, the others feature only *audio + visuals*, e.g. Getting the Message or *audio + animations*, e.g. Let's Go, Firsthand Access, Dynamic English. Is this really what autonomous intermediate learners want to see in an MLA? Is it what we are pedagogically supposed to provide in one MLA for self-study? None has investigated the presence of different media types in one MLA. We need to find out what learners want to see in one MLA, which is also a concern in the field of CALL (Al-Seghayer 2001: 203, Brett 1999: 344).

2. The use of many media in one MLA

As a whole, aural-texts (i.e. audio, video), which are the main listening elements, can be presented in different forms as different listening media types (i.e. *audio-only*, *audio + visuals*, *audio + animation*, *video-only*, *video + talking heads (THs) -visuals*) in an MLA. Their use, priority and design, like many other elements, play a significant role in the effectiveness of an MLA. To this end, the following can be said: In terms of priority, we can say that at the moment we do not have any concrete evidence that favours the priority of any media types to the others in general. However, certain media types are preferred over others in certain contexts. For example, when the target learners are children, it is better to use *audio-only* accompanied by a majority of *animations* as well as video featuring animations. This is because children overwhelmingly favour them, although not all combinations always help them comprehend and retain information (Acha 2009:23-31).

Similarly, in terms of richness, video can be given priority, as it features visuals, which is its strength in telling a story (Hart: 1992: 5) and exposing the 'real world'. (2) In other words, they feature the target speakers behaving authentically (although not always the case). Thus, the way they dress, act, smile, laugh, reject, eat and greet; facial expressions, body language and the like tend to be authentic. Not only do these enable the learners to be aware of the 'target-world', but they also help them to better understand the target culture, language, life style, cultural differences and the like (Tschirner 2001: 310). As a result, learners will acquire many things more quickly. Regarding its role in MC, Peter (1994: 202) also says that 'video is a rich medium that can be included in a program...'

In terms of improving the target learners' acoustic-channel, which is the most privileged in terms of getting used to spoken-language, *audio-only* can be more beneficial. Since they do not feature any visuals, the learners have to rely completely and heavily on what they hear. This naturally and ultimately improves their acoustic channel.

Moreover, some students are highly visually oriented and some are highly auditory oriented (Reid 1987: 92, 96 - 97; Dunn 1983: 496 - 506; Dunn & Dunn 1979: 238: 44). In terms of learning style preferences, we need to provide both *audio-only* and *audio-visuals* (i.e. *audio + visuals*, *audio + animation*, *video-only*, *video-THs + visuals*) because listening relies on the senses of sight and hearing.

Providing different (listening) media types is particularly easy in a multimedia environment, as it enables more effective presentation of them in different ways (Tschirner 2001: 312-3). For example, it can slow down communicative behaviour and is able to highlight and focus on various features (Tschirner 2001: 312 - 3, Zhao 1997: 57-8, 60).

As each listening media type facilitates the role of learning of specified groups in its own way, and multimedia enables more effective combination and delivery of media types, a power which might affect the priority of listening media types in an MLA, then what should our approach be if we are to develop an effective MLA?

First, it might be said that all forms of listening media types (i.e. *audio-only*, *audio + visuals*, *audio + animation*, *video-only*, *video-THs + visuals*) should be provided in one MLA. The assumptions would be that different forms of media types meet the needs of (1) learners with different learning style preferences or different (dominant) senses of learning, (2) different learners at different levels and (3) age-groups and (4) prepare them all better for the real-world. For example, not only does *audio-only* enable learners to focus on what they hear (i.e. making use of hearing sense fully), but it also prepares for some real-life situations in which there are no visuals such as speaking on telephone and listening to radio-programmes. Similarly, *audio-visuals* enable learners not only to make use of available visuals, but also to comprehend and acquire listening texts better, as visuals can help in many different ways (Herron et al. 2002: 37, Ginther 2002: 133 - 67; Rubin 1994).

Secondly, since the participants are adult intermediate (and upper intermediate), priority should be given mostly to *audio-visuals* because of the positive aspects of visuals and the level of the target learners.

Thirdly, *audio-only* should be given less priority due to the lack of visuals and the level of the target learners. If the learners were advanced and proficient, then *audio-visuals* would be given less and *audio-only* more priority, as they need less visual support due to having ample linguistic knowledge. However, is this really what autonomous intermediate learners want to see in an MLA? Is it what we are pedagogically supposed to provide in one MLA?

In short, we need to find out what AILLs want to see in one MLA, which is also a concern in the field of CALL (Al-Seghayer 2001: 203, Brett 1999: 344).

Therefore, in order to determine the priority of the listening media types in one MLA, the following need to be investigated:

- 1) Do AILLs want to see all listening media types (i.e. *audio-only*, *audio + visuals*, *audio + animation*, *video-only*, *video-THs + visuals*) in one MLA in terms of (1) preference, (2) improving their listening, and (3) preparing them better for the real-world?
 - a) Is the presence of all listening media types in one MLA effective in improving listening development?
 - b) Does the presence of all listening media types in one MLA motivate in listening development?
 - c) Does the presence of all listening media types in one MLA help improve listening development?
- 2) Which media types do AILLs want to see mostly in one MLA in terms of (1) preference, (2) improving listening and (3) preparing them better for the real-world?

3. The study

3.1. The aim of the study

The study gathered some empirical data to tease out what learners thought of the presence of different media types in one MLA which aimed to enhance their listening skills as part of FLL (during self-study). The study did not aim to measure empirically whether an improvement in listening development had resulted from the use of the different media types in one MLA. The purpose was only to gather information about the learners' perceptions of the use of the different listening media types in one MLA for self-study. Not only did it enable the researcher to know what the learners think of the use of the different listening media types in one MLA, but it also provided useful insights for using them in one MLA in particular for self-study.

3.2. The participants

The participants were 45 NNS students (56.5% male, 43.5% female). They were at intermediate and upper intermediate level (100%) in listening and attending an intermediate course of General English. They had been tested, grouped and placed by the ELP units of the institutions. To some extent, they were a ready group (i.e. clustered sampling) for the study. In terms of background, they were heterogeneous, as they were of 16 different nationalities: Libyan, Saudi, Syrian, Japanese, Taiwanese, Chinese, Spanish, Colombian, Italian, Kurdish, Mongolian, Vietnamese, Estonian, Portuguese, Bulgarian and Israeli (see *Appendix 1*).

3.3. The software

The software was an IMM application, which facilitates the development and practice of learners' listening-skills as well their listening development as a part of FLL. The programme contained five chapters and each chapter was composed of at least a few subsections. Each subsection (lesson) featured at least one video or audio clip, the length of which varied from 00:21 seconds to 2:59 minutes, and was made up of three gradual stages: the preparation, the while-listening and the post-listening stages. In total, it featured around 20 minutes of *video* and 15 minutes of *audio*, which were authentic and presented in different forms.

Audio-only: One of the media types that was used in the MLA was in the form of *audio-only* (Figure 1). It featured in one chapter and consisted of six different clips, the length of which varied from 00:14 to 00:58 seconds. In total, it was more than 3 minutes.

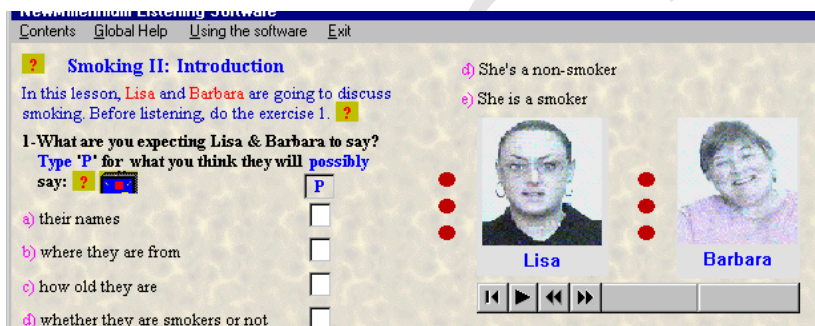


Figure 1: A sample of *audio-only* as a media type

Audio + visuals: Another media type that was used in the MLA was in the form of *audio + visuals*. It consisted of *audio-only* clips, but it was presented with supplementary contextual visuals at the post-listening stage (Figure 2).

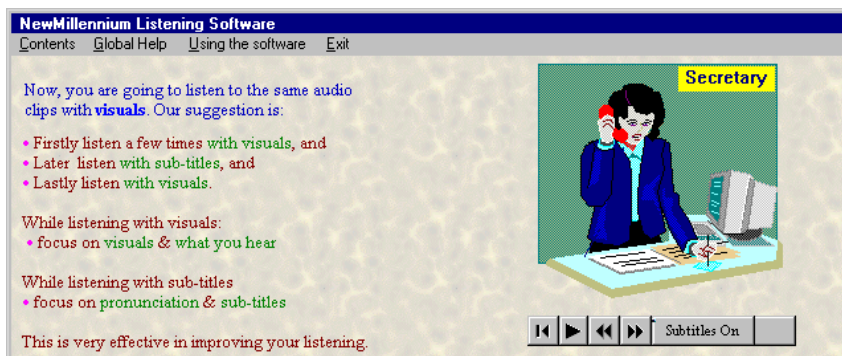


Figure 2: A sample of *audio-visuals* as a media type

Audio + animation: Another media type that was used in the MLA was in the form of *audio + animation* (Figure 3). The animations were supplementary contextual. It featured in one chapter and consisted of 10 different clips and it was more than 3 minutes in total.

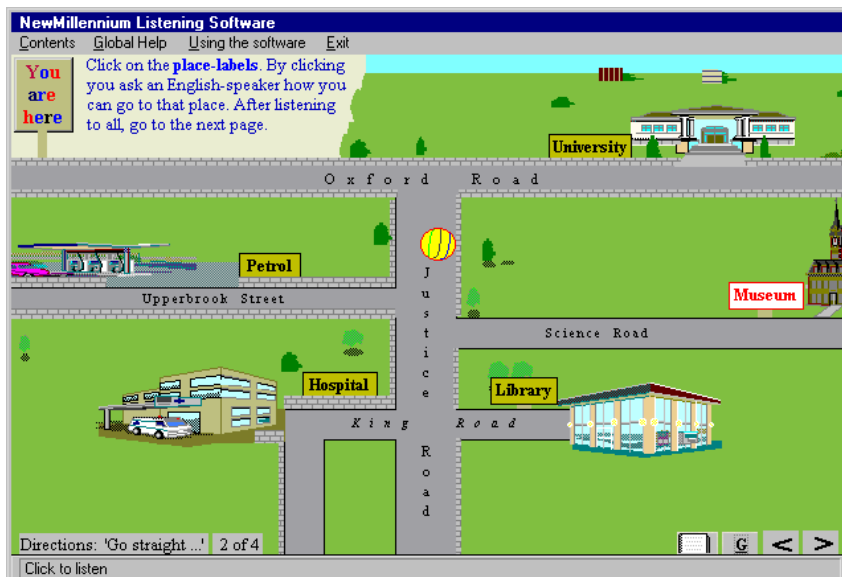


Figure 3: A sample of *audio-animations* as a media type

Video-only: Another media type that was used in the MLA was in the form of video-only (Figure 4). It featured in one chapter and consisted of 10 different clips, the length of which varied from 00:18 to 00:93 seconds. It was 8 minutes in total.

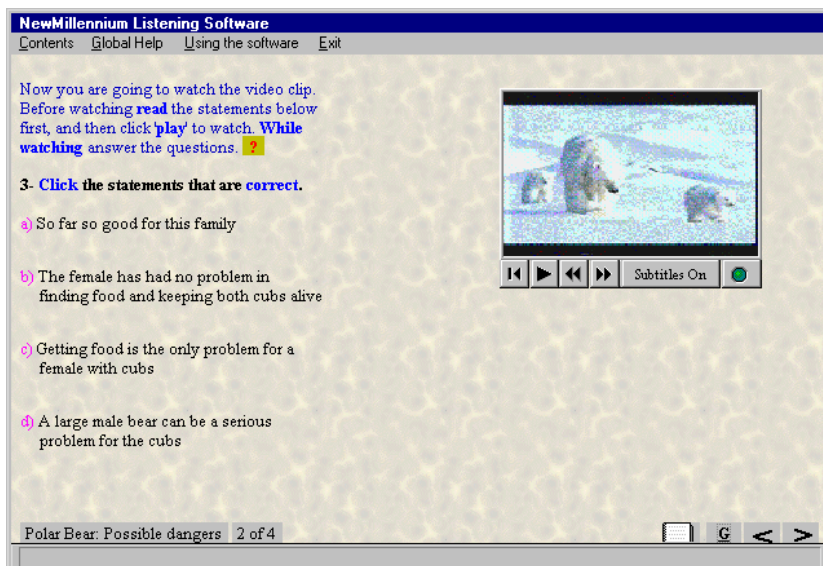


Figure 4: A sample of *video-only* as a media type

Video- (THs) + visuals: The other media type that was used in the MLA was in the form of *video (Talking Heads - THs) + visuals*. The visuals were supplementary contextual (Figure 5). *Video (THs) + visuals* featured in two chapters and consisted of 10 different clips, the length of which varied from 00:21 to 02:59 seconds. In total, it was more than 12 minutes.



Figure 5: A sample of *video (THs) + visuals* as a media type

Similarly, the software featured a wide variety of tasks to help learners to practise and develop their acoustic and visual channels, as well as receptive and productive skills. Through the material, learners were instructed (1) at what stage what kind of strategies they needed to follow and what they needed to do, (2) how they could improve and develop their listening and listening skills, and (3) why they needed to study in the ways instructed. While improving their listening skills and development, the software also aimed to help learners to become familiar with the target culture, different accents, authentic language and its features such as intonation and stress, fillers, false starts, grammatical mistakes and so on. It was also expected to improve their vocabulary and pronunciation, which are necessary and essential for listening development and improvement.

3.4. The procedure

The learners accessed the software in separate classes, with a maximum of 12 in each class. There were 14 Pentium PCs with appropriate headphones. The learners were introduced to the software in the first 10 / 15 minutes of the first session. They were shown its major features using a computer projector, including how to run and control it, and how to make use of it fully. The subjects were then requested to complete the learners' profiles questionnaire (Appendix 1), the main source of which came from Brett's data collecting procedures for the same purposes (1999: 465 - 9, 474). Afterwards, they were then free to use it as they wished for *at least* two teaching sessions. Each session was between two and three hours. Most of the students attended all sessions fully. Those who could not attend the sessions used the software at the time that was convenient for them. The researcher was on-hand to deal with and overcome any potential technical problems or otherwise.

3.5. Methodology

Observations (Appendix 2), questionnaires (Appendix 3), interviews, and log-files were used to gather data. The questionnaires were the key data collecting means. They were structured questionnaires and featured multiple measures of similar attitudes to safeguard against inaccurate answers. They were conducted after the learners had finished working with the software. Afterwards, up-to- 9 (out of 45) learners were interviewed, which was sometimes shortly after or within a one or two week period of time. The selection was based on the principle of 'first-accessed, first-interviewed'. Although they were used to crosscheck the main data (as a support data), they also revealed some interesting issues. The observation type preferred was checklists, as they enabled the researcher to focus on what had already been determined. They were conducted while the learners were using the software. The log-data were used to track and register how much time each subject spent with the software at each session.

The results of the questionnaires were obtained through descriptive statistics (i.e. SPSS - one-way frequency method / test) and measures of central tendency of SPSS. The qualitative data (i.e. interviews) were categorised according to some categories that were derived from the data itself and were then applied.

The correlation between the variables of attitudes, and the type of learners and attitudes was analysed by using SPSS. The Spearman test in Bivariate was used, as the variables were ordinal (SPSS 1996: 203, 165, Norusis 1998: 365-6), and the results were further cross-tabulated. When at least one of the variables was not ordinal, their correlation was computed by using Chi-square in Crosstabs (SPSS 1996: 164, Norusis 1998: 352). When the expected value in one or more cells was low (cell count was below 5), then Fisher's exact test was used instead of Chisquare (SPSS 1996: 164, Norusis 1998: 315).

4. Results

As the variables were nominal (Appendix 3), the results of the questions 1, 2, 3, 14, 15 and 16 were presented in both descriptive and inferential analysis such as mean, standard deviation, variance, and a one-way-frequency. The results of the questions 4, 5 and 6 were presented as measures of central tendency of SPSS, as the variables were ordered categorical. In some cases of the measures of central tendency, due to the way the data (items 4, 5 and 6) was coded (i.e. 1= most preferred, 5= least preferred) the lower the value (i.e. mean, sum) the more preferred it is. The higher the value is the less preferred it is. In other words, the lowest value is the most preferred; the highest value is the least preferred. The results of the item 13 were obtained with the aid of a one-way frequency (descriptive statistics of SPSS). The observation items 1, 2, 3, 4, 5, 6, 7 and 8 (Appendix 2) were used to check if the participants used the media types or not. Interviews were also used to elicit the learners' perceptions of the presence and priority of different media types in one MLA.

4.1. The learners used the listening media types

Our observations (Table 1), log-data and interviews revealed that the learners used all media types, as shown below.

| <i>The number of the observed learners</i> | <i>Video-only</i> | <i>Video- (THs) + visuals</i> | <i>Audio + animation</i> | <i>Audio-only</i> | <i>Audio-only +visuals</i> |
|--|-------------------|-------------------------------|--------------------------|-------------------|----------------------------|
| 27 | 100% | 100% | 100% | 100% | 100% |

Table 1: The learners' use of the media types according to our observations

'You ... listened audio clips with 'supplementary visuals'. You watched 'video version' of 'audio clips'. You listened to only 'audio clips'. You accessed 'Animation + audio' part. You listened to 'how to go to University' of 'Animation + audio' part. You listened to 'Where the petrol station is' of 'Animation + audio' part.' (Log data ID Code: 2)

'I think very good the variety of, what you say [media types] media types. I can keep motivation." (Subject 9/Interview)

'I think the presence of different media types, it is very useful to understand everything in the software. Of course, when we watch video, and video + visuals, and audio, audio + visuals, it is very very helpful for the person who is learning the English language to understand everything what it means in the programme.' (Subject 1 / Interview)

The data show that the learners listened to all listening media types in the software.

4.2. Learners wanted to see different listening media types in one MLA

More than half of the learners wanted to see *all* listening media types (Table 2 and 3). 93.3% seemed to want to see *video -THs+ visuals* and *audio + animation*, 84.4% want to see *audio + visuals*, 77.8% want to see *video-only* and 57. 8% want to see *audio-only* in one MLA.

Which media types do you want to see in listening software?

| | | Audio | Audio + Visuals | Audio + Animation | Video | Video + Visuals |
|----------------|---------|-------|--------------------|----------------------|-------|--------------------|
| N | Valid | 45 | 45 | 45 | 45 | 45 |
| | Missing | 0 | 0 | 0 | 0 | 0 |
| Mean | | .58 | .84 | .93 | .78 | .93 |
| Std. Deviation | | .499 | .367 | .252 | .420 | .252 |
| Variance | | .249 | .134 | .064 | .177 | .064 |

Table 2: Distribution of mean of the learners' attitudes to the presence of different media types in one MLA

| Item 1 | Which media types do you want to see in MLS | Number | Don't Want | Want |
|--------|---|--------|------------|------|
| 1a | Audio-only | 45 | 42.2 | 57.8 |
| 1b | Audio-only + visuals | 45 | 15.6 | 84.4 |
| 1c | Audio + animation | 45 | 6.7 | 93.3 |
| 1d | Video-only | 45 | 22.2 | 77.8 |
| 1e | Video-THs + Visuals | 45 | 6.7 | 93.3 |

Table 3: Simplified distribution of frequency of the learners' attitudes to the presence of different media types in one MLA

4.3. The presence of different listening media types helped improve learners' listening

When the learners were asked which media types they thought helped improve their listening (item 2), more than half (between 66.7% and 95.6%) appeared to think that the presence of all listening media types in one MLA helped improve their listening (Table 4 and 5). 95.6% thought that *audio + animation*, 84.4% *audio + visuals*, 77.8% *video-THs + visuals*, 71.1% *video-only*, and 66.7% *audio-only* helped improve their listening.

Which media types do you think help improve your listening?

| | | Audio | Audio + Visuals | Audio + Animations | Video | Video + Visuals |
|----------------|---------|-------|--------------------|-----------------------|-------|--------------------|
| N | Valid | 45 | 45 | 45 | 45 | 45 |
| | Missing | 0 | 0 | 0 | 0 | 0 |
| Mean | | .67 | .84 | .96 | .71 | .78 |
| Std. Deviation | | .477 | .367 | .208 | .458 | .420 |
| Variance | | .227 | .134 | .043 | .210 | .177 |
| Range | | 1 | 1 | 1 | 1 | 1 |

Table 4: Distribution of mean of the learners' attitudes to the presence of different media types in improving listening

| Item 2 | Which media types do you think help improve your listening | Number | Want | Don't Want |
|--------|--|--------|------|------------|
| 2a | Audio-only | 45 | 66.7 | 33.3 |
| 2b | Audio-only+visuals | 45 | 84.4 | 15.6 |
| 2c | Audio+animation | 45 | 95.6 | 4.4 |
| 2d | Video | 45 | 71.1 | 28.9 |
| 2e | Video-THs+Visuals | 45 | 77.8 | 22.2 |

Table 5: Simplified distribution of frequency of the LLs' attitudes to the presence of different media types in improving listening

4.4. The presence of all listening media types in one MLA is effective and motivating in improving listening-development

When the learners were asked whether the presence of all media types in one MLA was effective and motivating in listening development with two-choices in both positive and negative forms (items 14-16), majority of the respondents agreed (Table 6).

| No | Items | Number | Agree | Disagree | No-answer |
|----|---|------------|-------|----------|-----------|
| 14 | The presence of all media types in MLS is effective in improving listening development | 45 | | | |
| | | Missing :1 | 97.8 | | 2.2 |
| 15 | The presence of all media types in MLS is motivating in improving listening development | 45 | | | |
| | | Missing: 1 | 97.8 | | 2.2 |
| 16 | The presence of all media types in MLS does not help improve listening development | 45 | | | |
| | | Missing: 1 | | 97.8 | 2.2 |

Table 6: Simplified frequency distribution of the learners' attitudes to the presence of different media types in improving listening

97.8% seemed to think that the presence of all of the listening media types in one MLA was effective and motivating in improving their listening development.

4.5. The presence of different listening media types in one MLA helped prepare learners for the real-world

When learners were asked which listening media types they thought helped prepare them better for the real-world (item 3), more than half (between 60% and 77.8%) appeared to think that the presence of all listening media types in one MLA helped prepare better for the real-world (Table 7 and 8).

Which media types do you think help prepare you for the real world?

| | | Audio | Audio+ Visuals | Audio + Animation | Video | Video + Visuals |
|----------------|---------|-------|----------------|-------------------|-------|-----------------|
| N | Valid | 45 | 45 | 45 | 45 | 45 |
| | Missing | 0 | 0 | 0 | 0 | 0 |
| Mean | | .60 | .71 | .76 | .76 | .78 |
| Std. Deviation | | .495 | .458 | .435 | .435 | .420 |
| Variance | | .245 | .210 | .189 | .189 | .177 |

Table 7: Distribution of mean of the learners' attitudes to the presence of different media types in preparing them for the real-world

| Item 1 | Which media types do you think help prepare you better for the real-world? | Number | Agree | Disagree |
|--------|--|--------|-------|----------|
| 3a | Audio-only | 45 | 60.0 | 40 |
| 3b | Audio – only + visuals | 45 | 71.1 | 28.9 |
| 3c | Audio + animation | 45 | 75.6 | 24.4 |
| 3d | Video - only | 45 | 75.6 | 24.4 |
| 3e | Video – THs +visuals | 45 | 77.8 | 22.2 |

Table 8: Simplified distribution frequency of the LLs' attitudes to the presence of different media types in preparing for the real-world

77.8% seemed to think *video-THs + visuals*; 75.6% *audio + animation* and *video-only*; 71.1% *audio + visuals* and 60% *audio-only* helped prepare them better for the real-world. Further more, all of the qualitative data (9 out of 9) also supported the quantitative findings. There were some interesting reasons given: The presence of different listening media types in one MLA:

- was useful and helpful (mentioned 9 times)
 - 'I think the presence of different media types, it is very useful to understand everything in the software. Of course, when we watch video, and video + visuals, and audio, audio + visuals, it is very very helpful for the person who is learning the English language to understand everything what it means in the programme.' (Subject 1 / Interview)
 - '...
 - I: So, you mean it's useful to have different media types?
 - S: Yeah' (Subject 10 / Interview)
 - 'I think it's useful to have different type different media type in the same software.' (Subject 8 / Interview)
- avoided boredom (mentioned 5 times)
 - '... I think it's good because it gives us unborning when I ... watch many many different visions. That's better to help us to help me to study more.' (Subject 6 / Interview)
 - S: Yes, I think ... very useful because it's very interesting.
 - I: Why is it very interesting?
 - S: Because don't boring if you just listen to one of them.
 - I: I see. You get bored you mean when there is only one of them.
 - S: You get bored when you have one of them for a period of long time, but if it's different, you are interested more. (Subject 7 / Interview)
 - '...
 - S: ... media types are very good because we are not boring and we can feel fresh when we study. So it's good...
 - I: ... are they boring?
 - S: Not boring.' (Subject 10 / Interview)
- made it interesting (3 times mentioned)
 - '...
 - I: When you have more than one type of media types, is it then more interesting? S: Yes, it's more interesting...' (Subject 8/Interview)
 - '...
 - I: So ... when you have different media types like video, video + visuals, animation... Does it become more interesting for you?
 - S: Yes, more interesting, yes, a change.... And also to make different types emm... to understand more. For example there are some difficult words, as I said, there is visuals and if there is, no need to video, there is audio. It's better.' (Subject 3 / Interview)
- enabled learners to have a change (once mentioned)
 - 'I think it's good to be different types to make a change, not the same way to study in the same way. And it's better.' (Subject 3 / Interview)
- motivated learners (5 times mentioned)
 - '...
 - I: When you have more than one type of media types, does it motivate you? S: Yes, motivate me to understand.' (Subject 8/Interview)
 - 'I think very good the variety of, what you say, [media types] media types. I can keep motivation.' (Subject 9/Interview)
 - S: I think ... emm.... some ... media types are very good ... I: Do they motivate you?
 - S: Yeah.' (Subject 10 / Interview)
 - '...
 - I: Does it motivate you when you have different types?
 - S: Yes.' (Subject 7 / Interview)
- improved their listening (once mentioned)
 - 'Yeah, yeah, yeah. It also improves my listening.' (Subject 6 / Interview)

4.6. Language learners preferred some listening media types in one MLA more than others

When the learners were asked which listening media types they preferred in the software mostly (item 4), they revealed that they preferred some listening media types more than the others (Table 9). The learners preferred *video-THs + visuals* the most, which had the *mean* value of 1.80 and the *sum* value of 81. It also had the *mode* value of 1, which meant that most of the learners preferred *video-THs + visuals* as the most preferred media type.

Which media types do you prefer in this software mostly? (1 most - 5 least)

| | | Audio | Audio + visuals | Audio + animation | Video | Video + visuals |
|--------------------|---------|-------|-----------------------|-------------------------|-------|-----------------------|
| N | Valid | 45 | 45 | 45 | 45 | 45 |
| | Missing | 0 | 0 | 0 | 0 | 0 |
| Mean | | 4.31 | 2.93 | 2.84 | 3.09 | 1.80 |
| Std. Error of Mean | | .185 | .181 | .149 | .185 | .176 |
| Median | | 5.00 | 3.00 | 3.00 | 3.00 | 1.00 |
| Mode | | 5 | 4 | 3 | 4 | 1 |
| Std. Deviation | | 1.240 | 1.214 | .999 | 1.240 | 1.179 |
| Variance | | 1.537 | 1.473 | .998 | 1.537 | 1.391 |
| Range | | 4 | 4 | 4 | 4 | 4 |
| Sum | | 194 | 132 | 128 | 139 | 81 |

Table 9: Measures of Central Tendency of the learners' attitudes to the priority of media types (the lower the value is, the more preferred it is)

The second most preferred media type is *audio + animation*. It had the *mean* value of 2.84 and the *sum* value of 128. It also had the *mode* value of 3, which meant that most of the learners (out of all) preferred *audio + animation* as the third most preferred media type although as a whole it was the second most preferred media type. The third most preferred media type was *audio + visuals*. It had the *mean* value of 2.93 and the *sum* value of 132. It also had the *mode* value of 4, which meant that most of the learners (out of all) preferred *audio + visuals* as the fourth most preferred media type. The fourth most preferred media type was *video-only*. It had the *mean* value of 3.09 and the *sum* value of 139. It also had the *mode* value of 4. This meant that most of the learners preferred *video-only* as the fourth most preferred media type. The least preferred listening media type was *audio-only*. It had the *mean* value of 4.31 and the *sum* value of 194. It also had the *mode* value of 5, which meant that most of the learners preferred *audio-only* as the fifth most preferred media type.

4.7. Learners thought that some listening media types in MLS improved their listening more than others

When the learners were asked which listening media types in the software they thought improved their listening mostly (item 5), results revealed that they believed that some listening media types improved their listening more than others (Table 10). Table 10 shows that they thought *video-THs + visuals*, which had the *mean* value of 2.22 and the *sum* value of 100, improved their listening most. It also had the *mode* value of 1, which meant that most of the learners preferred *video-THs + visuals* as the media type that improved their listening most. The second most preferred media type was *audio + visuals*. It had the *mean* value of 2.71 and the *sum* value of 122. It also has the *mode* value of 2, which meant that most of the learners (out of all) preferred *audio + visuals* as the media type that improved their listening second most. The third most preferred media type was *audio + animation*. It had the *mean* value of 2.76 and the *sum* value of 124. It also had the *mode* value of 3, which meant that most of the learners preferred *audio + animation* as the third most preferred media type that improved their listening. The fourth most preferred media type was *video-only*. It had the *mean* value of 3.36 and the *sum* value of 151. It also had the *mode* value of 4, which meant that most of the learners preferred *video-only* as the fourth most preferred media type in terms of improving their listening. The least preferred listening media type was *audio-only*, which had the *mean* value of 3.93 and the *sum* value of 177. It also had the *mode* value of 5, which meant that most of the learners preferred *audio-only* as the fifth most preferred (the least preferred) media type for improving their listening.

Which media types in this software do you think improve your listening mostly? (most - 5 least)

| | | Audio | Audio + visuals | Audio + animations | Video | Video + visuals |
|--------------------|---------|-------|-----------------|--------------------|-------|-----------------|
| N | Valid | 45 | 45 | 45 | 45 | 45 |
| | Missing | 0 | 0 | 0 | 0 | 0 |
| Mean | | 3.93 | 2.71 | 2.76 | 3.36 | 2.22 |
| Std. Error of Mean | | .243 | .173 | .163 | .183 | .193 |
| Median | | 5.00 | 3.00 | 3.00 | 4.00 | 2.00 |
| Mode | | 5 | 2 | 3 | 4 | 1 |
| Std. Deviation | | 1.629 | 1.160 | 1.090 | 1.228 | 1.295 |
| Variance | | 2.655 | 1.346 | 1.189 | 1.507 | 1.677 |
| Range | | 4 | 4 | 4 | 4 | 4 |
| Sum | | 177 | 122 | 124 | 151 | 100 |

Table 10: Measures of Central Tendency of the learners' attitudes to the priority of media types in terms of improving their listening (the lower the value is, the more preferred it is)

4.8. Learners did not believe that all listening media types in one MLA improved listening equally

When the learners were asked whether all listening media types improved their listening equally (item 13), a big majority (84.1) agreed that all listening media types did not improve their listening equally (Table 11). Rather, they believed that some listening media types improved their listening more than the others did.

| No | Item | Number | SD | Disagree | Neutral | Agree | SA | Don't Know |
|----|---|--------|------|----------|---------|-------|-----|------------|
| 1 | All media types (<i>audio-only, audio-only+visuals,</i> | 45 | 15.6 | 66.7 | 4.4 | 4.4 | 6.7 | 2.2 |
| 3 | <i>audio+animation, video-only, video-THs+visuals</i>) improve their listening equally | | | | | | | |

Table 11: A simplified one-way frequency of the learners' attitudes to the priority of media types in terms of improving their listening

4.9. Learners believed that some listening media types in one MLA prepared them better for the real-world

When the learners were asked which media types in the software they thought prepared them for the real-world mostly (item 6), the results revealed that they seemed to think that some listening media types prepared them more than the others did (Table 12).

Which media types in this software do you think prepare you for the real world? (1 most - 5 least)

| | | Audio | Audio + visuals | Audio + animations | Video | Video + visuals |
|--------------------|---------|-------|-----------------|--------------------|-------|-----------------|
| N | Valid | 45 | 45 | 45 | 45 | 45 |
| | Missing | 0 | 0 | 0 | 0 | 0 |
| Mean | | 3.87 | 3.18 | 2.98 | 2.73 | 2.24 |
| Std. Error of Mean | | .233 | .169 | .164 | .186 | .225 |
| Median | | 5.00 | 3.00 | 3.00 | 3.00 | 1.00 |
| Mode | | 5 | 4 ^a | 3 | 3 | 1 |
| Std. Deviation | | 1.561 | 1.134 | 1.097 | 1.250 | 1.510 |
| Variance | | 2.436 | 1.286 | 1.204 | 1.564 | 2.280 |
| Range | | 4 | 4 | 4 | 4 | 4 |
| Sum | | 174 | 143 | 134 | 123 | 101 |

a. Multiple modes exist. The smallest value is shown

Table 12: Measures of Central Tendency of the learners' attitudes to the priority of media types in preparing them for the real-world (the lower the value is, the more preferred it is)

Table 12 shows that the learners seemed to think *video-THs + visuals*, the *mean* value of which was 2.26 and the *sum* value was 101, prepared them for the real world mostly. The *mode* value of *video-THs + visuals* was 1, which meant that most of the learners preferred *video-THs + visuals* as the media type that prepared them most for the real-world. The second most preferred media type was *video-only*. The mean value of *video* was 2.73 and the *sum* value was 123. It also had the *mode* value of 3. This meant that *video-only* was the third most important media type choice (out of five) for preparing them for the real-world. The third most preferred media type was *audio + animation*, the *mean* value of which was 2.98 and the *sum* value was 134. It also had the *mode* value of 3. This meant that *audio + animation* was the third most-important media type choice for preparing them for the real-world. The fourth most preferred media type was *audio + visuals*. The *mean* value of *audio + visuals* was 3.18 and the *sum* value was 143. The *mode* value was 4. This meant that *audio + visuals* was the fourth most preferred media type for preparing them for the real-world. The least preferred media type was *audio-only*. It had the *mean* value of 3.87 and the *sum* value was 177. The mode value was 5, which meant that most of the learners preferred audio-only as the least preferred media type for preparing them for the real-world. In sum, the results from the standpoint of view of (1) preference, (2) improving listening and (3) preparing for the real-world meant that the learners preferred some media types more than the others, as summarised below (Table 13).

| No | Items | Audio-only | Audio-only + visuals | Audio + animation | Video-only | Video-THs + visuals |
|----|--|------------|----------------------|-------------------|------------|---------------------|
| 4 | Which media types do they prefer in this software mostly? | 5 | 3 | 2 | 4 | 1 |
| 5 | Which media types in this software do they think improve their listening mostly? | 5 | 2 | 3 | 4 | 1 |
| 6 | Which media types in this software do they think prepare them for the real world mostly? | 5 | 4 | 3 | 2 | 1 |

Table 13: The priority of media types in one MLA according to the learners' attitudes (1 = most preferred, 5 = least preferred)

In all three cases, *video-THs + visuals* was preferred most, and *audio-only* was preferred least. The priority of the other three (*audio + visuals*, *audio + animation*, *video-only*) varied depending on the objective of the prioritisation. When the means of all items in terms of three different aspects were collapsed, the priority of the media types as a whole became clearer (Table 14).

| | Audio-only | Video-only | Audio-only + visuals | Audio + animation | Video-THs + visuals |
|---|------------|------------|----------------------|-------------------|---------------------|
| Which media types do LLs prefer in this software mostly as a whole in terms of (1) preference, (2) improving listening, and (3) preparing for the real world? | 4.04 | 3.06 | 2.94 | 2.86 | 2.09 |

Table 14: The priority of the media types when the means of all the items are collapsed (the lowest mean is the most preferred, and the highest mean is the least preferred)

This means that the learners preferred *video-THs + visuals* most, *audio + animation* second most, *audio-only + visuals* third most, *video-only* fourth most and *audio-only* fifth most (least). The quantitative-results were also supported by the qualitative data, as shown below.

- 'S: I prefer video + visuals ... most
I: Second most?
S: Audio + animation
I: Third most?
S: Audio + visuals
I: Fourth most?
S: Video
I: And the last one?
S: Audio...' (Subject 10 / Interview)
I: Which media types do you think help most in MLS?
S: I think all of them are very important and very useful in this programme. I think all of them, but the best, I think, is video. And also visuals are very very important in this programme.' (Subject 1 / Interview)
'Except audio type, four of them much help me' (Subject 9 / Interview) I: Which of them do you like most, do you find more useful?
S: Ehh... audio + visual.
I: Audio + visuals. So, this is the one you like most.
S: It improves my listening...' (Subject 8 / Interview)
'I think the first thing is about audio + animation animation. And the second one is video + visual. And the ... the other thing is, I think, not many different between them. The most important is the first one and the second one.' (Subject 6 / Interview)
'I think video + visuals help (more) than the other(s)' (Subject 2 / Interview)

It also became clear that the learners found supplementary contextual visuals in particular those which included difficult and salient features of the input very useful.

- 'S: I think audio and visual.
I: Why?
S: ... it's helpful and make it easier to find the right word. But just if it's difficult not just for make it visual, but if there's some difficult word or a new word, to remind us and to catch a word very well. It's better.' (Subject 3 / Interview)

4.10. There were significant correlations

There were some significant relationships (correlation) between different variables at the .05 level (two-tailed test). The learners who wanted to see *audio-only* in MLS also tended to want to see *video-only*. The learners who wanted to see *audio + visuals* in MLS also tended to want to see *video-THs + visuals* in a listening-application. Those who thought that *audio-only* helped improve their listening also tended to believe that *video-only* helped to improve their listening. There were some significant correlations between the learners' characteristics variables and their attitudes at the .05 level (two-tailed test). More male learners and less female learners wanted to see *audio + animation* in MLS and this tendency was significant. Those who did not speak a third language wanted to see more *audio-only*. More female learners and less male learners thought that *audio-only* helped prepare them better for the real world.

There were some significant positive and negative correlations between different variables at the .01 level (two-tailed test) and at the .05 level (two-tailed test). The learners who preferred *video-THs + visuals* tended not to prefer *audio-only* or vice versa. The learners who preferred *audio + visuals* and *audio + animation* tended to not to prefer *Video-only*. The learners who felt confident about learning English also preferred *audio-only*. The learners who felt confident about understanding when listening to English did not prefer *video-only*.

5. Discussion

When the available MLAs are reviewed carefully, it will be seen that they mostly feature only one type of media, e.g. Getting the message (only *audio + visuals*) - 1990, Introduction to a Company (*video-only*) -1994, Let's Go and Firsthand Access (*audio + animation*); although there are some which feature more than one media type (Beginning Turkish -*video-only, audio-only*- 1999, Türel 2002: 2).

In this study, more than half of the learners wanted to see all listening media types (*video-THs + visuals, audio + animation, audio + visuals, video-only and audio-only*) in one MLA although some are preferred more than the others. Learners thought that the presence of all listening media types in one MLA helped improve their listening and was effective and motivating in improving listening development. Additionally, learners thought it helped better prepare them for the real-world.

The results pedagogically match the findings in the field of learners' ESL learning style preferences (Dun and Dun 1979, Dunn 1983, Reid 1987: 96-7), as learners are either visual, auditory, kinaesthetic or tactile. Therefore, we need to provide different listening media types in one MLA so that it meets the needs of learners who vary in their learning style preferences or different senses of learning. While, for instance, *audio-visuals* meet the needs of visual-learners (and auditory-learners), *audio-only* meets the needs of auditory-learners. Similarly, following *audio-visuals (audio + animation)*, as in the sample software, can meet the needs of tactile- and kinaesthetic-learners. The results also psychologically match common sense, as the variety of media types in one MLA can avoid boredom and maintain motivation. The results further match the other findings in that learners had preferred *audio-visuals* more than *audio-only*. The assumption is that most learners are visual in their learning such as Korean, Chinese and Arabic learners (Reid 1987: 96-7) as well as most of children (Dunn and Dunn 1979). By obtaining the results which reveal that the learners want to see all listening media types in one MLA, the findings match the results of different investigations which researched different media types individually. Peter (1994: 203) found, for instance, that 'video is a rich medium that can be included in a programme'.

These mean that providing a variety of listening media types in one MLA can help language learners tremendously during the FLL process, which is very likely to help them on future occasions. At least, this is what the learners think and believe. Due to those reasons, pedagogically, psychologically as well as in terms of FLL, so-far mentioned media types should and need to be provided in one MLA. This means that the presence of different listening media types in one MLA would be a positive enhancement of learners' listening development and a better preparation for the real-world. Ultimately, it can contribute to and result in FLL. If such a design (the inclusion of different listening media types in one MLA) can benefit learners in this way, it is assumed that intermediate (and upper intermediate) learners ought to be provided with different listening media types in one MLA. Further investigation might try to uncover what the effects, benefits and contributions of the presence of different listening media types in one MLA to FLL are, relating them closely to learners' proficiency level in listening and other characteristics such as age.

It was said above that it is vital to know which media types are preferred more by which group of learners in terms of the production of learning effective MLS. It was also emphasised that most of the available MLAs feature only one type of media. Moreover, the ones that include more than one media type, the number and variety of which are limited, do not give priority to any particular media. From the standpoint of MLA production, it is vital to know which media types are preferred more by which group of learners. Then, we will be able to create better and more learning effective MLAs that can meet the needs of the target learners, contribute to FLL more, and are cost effective.

It should also be noted that, *video-only*, which is preferred fourth most *as a whole*, was taken from the BBC, which means that professionals filmed it. The *video-THs+ visuals* format filmed and recorded by the researcher, however, was ranked highest in all cases. Although the *video-only* had been produced by the experts, the 'quality' production did not appear to have had any 'positive effect' on the learners' preferences.

The results substantiate the findings in the field of FLL (Herron et al. 2002: 37, Ginther 2002: 133 - 67; Al-Seghayer 2001: 203; Brett 1997: 46-7; Secules et al 1992: 480 - 90; Rubin 1994; Mueller 1980: 340; Omagigo 1979; Arnold and Brooks 1976: 713-16; Casambre 1962: 51-55). Visuals in general facilitate the understanding of intermediate learners, which is likely to result in FLL. Therefore, the results also match comprehension input hypothesis. In the same way, the results match what pointed out by Peter (1994: 90) in that it is said that relevant information in / around the visuals stage area can be very useful. On the other hand, they do not match what Peter (1994: 90) says, which is based on the results of an experiment conducted with NSs, in that she says that 'a video window not containing a talking person seemed to work better'. It should, however, be re-emphasised that what preferred most here is more than a talking-person, as it features supplementary contextual visuals.

The results also parallel Brett's findings (1997: 46-7) in that he found that language learners regard the combination of different learning elements most beneficial, and visuals (i.e. pictures) secondly most. The most preferred three media types (*video-THs + visuals, audio + visuals, audio + animation*) in this study are the combination of different learning-elements (i.e. audio, still or motion visuals). Such a combination, which also features visuals, can facilitate recognition, comprehension and learning (Carroll 1977: 509), which leads to acquisition (Long 1983: 138, Carroll 1977: 500). The results are also consistent with the dual coding theory and redundancy hypothesis. Learners preferred the listening media types that consist of more than one element that aims to teach one thing, which provides more paths of recall and is therefore more effective in building recall cues in memory. The results are consistent with other studies (Jones and Plass 2002: 546-61, Al-Seghayer 2001: 202-32) which show that learners recall better when they were assigned to combined elements and the effects of visuals were much longer for pictorials.

For the production of MLAs for intermediate (and upper intermediate level) learners, the implication is that priority needs to be given to some listening media types more than the others. This would have a positive enhancement of motivation, learners' listening development and on preparation for the real-world. Ignoring it, however, lead to poor motivation, less comprehension and ineffective learning. The underlying assumption is that attitudes are consistently related to achievement (Masgoret and Gardner 2003: 123-63, Linebarger 2001: 288-298, Baltova 2000, Chapelle and Jamieson 1991: 43). Additionally, learning style preferences, different hypothesis (i.e. *noticing hypothesis*), and theories (i.e. *the dual-coding theory, the attention theory, the comprehension input theory*), epistemology, senses of human beings, the concern in the field of multimedia and findings (in the field of visuals, multimedia, audio) authenticity, the realities of the real-word and common sense require the use of different listening media types in one MLA for FLL purposes.

Further studies might try to investigate the presence of which media types in one MLA are the most effective and beneficial and contribute most to FLL, relating them closely to learners' proficiency level, their learning objectives and other characteristics. Moreover, it is more important to know whether such gains and benefits of media types prioritisation in MLAs can be transferred to real-life.

Bibliography

- Acha, Joanna. (2009). The effectiveness of multimedia programmes in children's vocabulary learning. *British Journal of Educational Technology*, 40(1), 23-31.
- Al-Seghayer, Khalid. (2001) The effect of multimedia annotation modes on L2 vocabulary acquisition: a comparative study. *Language Learning & Technology*, 5 (4) January, 202-232.
- Arnold, D. J. & P. H. Brooks. (1976). Influence of Contextual Organising Material on Children's Listening Comprehension. *Journal of Educational Psychology* 68, 711-16.
- Beginning Turkish. (1999). *Critical Languages Series*, The University of Arizona, USA.
- Baltova, Iva. (2000). The Effects of Subtitled and Staged Video Input on the Learning and Retention of Content and Vocabulary in a Second Language' Dissertation Abstracts International, A: The Humanities and Social Sciences, 2000, 60, 10, Apr, 3620-A. IS: ISSN 0419-4209, <http://sun5.csa1.co.uk/htbin/ids60/procskel.cgi>, 3/20/03, 12:42 PM.
- Brett, Paul. (1997). A comparative study of the effects of the use of multimedia on listening comprehension. *System* 25(1), 39-53.
- Brett, Paul. (1999). *The design, implementation and evaluation of a multimedia application for second language listening comprehension*. Unpublished Ph.D. thesis, The University of Wolverhampton.
- Carroll, John B. (1977). On learning from being told. In Merlin C. Wittrock (Eds.) *Learning and Instruction*. Berkeley, CA: McCutchan, pp. 496-512.
- Casambre, A. J. (1962). *The Effect of Certain Variables in Informative Speaking on Listener Comprehension*. Unpublished Ph.D. thesis, Columbus, Ohio State University, 1962.
- Chapelle, Carol & Jamieson, Joan. (1991). Internal and External Validity Issues in Research on CALL Effectiveness. In *Computer-Assisted Language Learning and Testing: Research Issues and Practice* Edited by Patricia Dunkel, 37-60.
- Dunn, R. & Dunn, K. J. (1979). Learning style / teaching styles: should they ... can they ... be matched? *Educational Leadership*, 36, 238-244.
- Dunn, R. (1983). Learning style and its relation to exceptionality at both ends of the spectrum. *Exceptional Children*, 49, 496-506.
- Getting the Message. Irish Technology Ltd. (1990).
- Ginther, April. (2002). Context and Content Visuals and Performance on Listening Comprehension Stimuli. *Language Testing*. Cambridge Scientific Abstracts Internet Database Service.
- Hart, Ian. (1992). Video, Foreign Languages Teaching and the documentary tradition. *System*, 20(1), 1- 13.
- Herron, C; S. Dubreil, C. Corrie, & S. P. Cole. (2002). A classroom Investigation: Can Video Improve Intermediate-Level French Language Students' Ability to Learn about a Foreign Culture? *The Modern Language Journal*, 86, 36-53.
- English for Business -Introduction to a company. The University of Wolverhampton (1994).
- Firsthand Access. DynEd International, 989 E. Hillsdale Blvd., Suite 130, Foster City, CA 94404, Web site: www.dyned.com.
- Jones, Linda C., & Jan L. Plass. (2002). Supporting Listening Comprehension and Vocabulary Acquisition in French with Multimedia Annotations. *The Modern Language Journal*, 86, 546-561.
- Let's Go., DynEd International, 989 E. Hillsdale Blvd., Suite 130, Foster City, CA 94404, Web site: www.dyned.com.
- Linebarger, Deborah L. (2001). Learning to read from Television: The Effects of Using Captions and Narration. *Journal of Educational Psychology*, 93(2), June, 288-298.
- Long, Michael H. (1983). Native Speaker / Non-Native Speaker Conversation and the Negotiation of Comprehensible Input. *Applied Linguistics*, 127-141.
- Masgoret, A. M. & R. C. Gardner. (2003). Attitudes, Motivation, and Second Language Learning: A meta-analysis of studies conducted by Gardner and associates. *Language Learning*, 53(1), 123- 63.
- Mueller, G. (1980). Visual Contextual Cues and Listening Comprehension: An Experiment. *Modern Language Journal*, 64, 335-40.
- Norusis, Marija J. (1998). SPSS 8.0 Guide to Data Analysis, Prentice-Hall, Inc., New Jersey.
- Omaggio, Alice C. (1979). Pictures and Second Language Comprehension: Do they help?" *Foreign Language Annals*, 12, 107-16.
- Peter, Mathew. (1994). *Investigation into the Design of Educational Multimedia: Video, Interactivity and Narrative*. Unpublished Ph.D. thesis (Open University).
- Reid, Joy M. (1987). The Learning Style Preferences of ESL Students. *TESOL Quarterly*, 21(1), 87-111.
- Rubin, Joan. (1994). A Review of Second Language Listening Comprehension Research. *The Modern Language Journal*, 78, 199-221.
- Secules, Teresa., Carol Herron & Michael Tomasello. (1992). The Effects of Video Context on Foreign Language Learning. *The Modern Language Journal*, 76, 480-90.
- SPSS Base 7.0 for Windows User's Guide. (1996), USA.
- Tschirner, Erwin. (2001). Language Acquisition in the Classroom: The Role of Digital Video. *Computer Assisted Language Learning*. 14(3-4), 305-19.
- Turel, Vehbi. (2002). Beginning Turkish. *CALICO Journal*, 4, 1-12.
- Zhao, Yong. (1997). The Effects of Listeners' Control of Speech Rate on Second Language Comprehension. *Applied Linguistics*, 18(1), 49-68.

Appendixes

Appendix I: The learners' pre-exposure-characteristics - questionnaire results (in %)

| | | Male 56.5 % | | | | | Female 43.5 % | | |
|---|---|------------------|-------------|---------------|--------------------|-----------|------------------|-----------------|-----|
| Gender | | | | | | | | | |
| Nationality | Libyan | 30.4 | Japanese | 10.9 | Spanish | 4.3 | Kurdish | 2.2 | |
| | Saudi | 6.5 | Tai | 1.3 | Colombian | 2.2 | Mongolian | 2.2 | |
| | Syrian | 4.3 | Chinese | 8.7 | Italian | 2.2 | Vietnamese | 2.2 | |
| | Estonian | 2.2 | Portuguese | 4.3 | Bulgarian | 2.2 | Israeli | 2.2 | |
| | Arabic | 43.5 | Spanish | 6.5 | Mongol | 2.2 | Bulgarian | 2.2 | |
| Native language | Japanese | 10.9 | Kurdish | 2.2 | Russian | 2.2 | Portuguese | 4.3 | |
| | Chinese | 19.6 | Italian | 2.2 | Vietnamese | 2.2 | Mandarin | 2.2 | |
| | | | | | | | | | |
| | 11-15 years | 16- 20 years | 21-25 years | 26-30 years | More than 30 years | No answer | | | |
| Age group | | 4.3 | 23.9 | 34.8 | 34.8 | 2.2 | | | |
| Any other languages (apart from English and their native language) they speak | | No | | | Yes | | | | |
| | | 76.1 | | | 23.9 | | | | |
| The period of learning English | | 1 - 2 years | 3 - 5 years | 6 - 10 years | More than 10 years | No answer | | | |
| | | 37 | 26.1 | 21.7 | 8.7 | 6.5 | | | |
| Their level in English | | Pre-intermediate | | | intermediate | Advanced | | | |
| | | | | | 87 | 13 | | | |
| Their level in listening | | Pre-intermediate | | | Intermediate | Advanced | | | |
| | | | | | 100 | | | | |
| Their reasons for learning English | | Post-study | Job | No-answer: | 4.3 | | | | |
| | | World language | 26.1 | Communication | 2.2 | | | | |
| Computer literacy | | Basic User | 1 | 2 | 3 | 4 | 5 | Proficient User | |
| | | | 37 | 10.9 | 32.6 | 17.4 | 0 | No-answer: | 2.2 |
| Those who used software for learning a foreign language before | | No | | | | | Yes | | |
| | | 76.1 | | | | | 23.9 | | |
| How they feel about learning English | confident | 1 | 2 | 3 | 4 | 5 | No-answer | not confident | |
| | | 13 | 21.9 | 39.1 | 10.9 | 4.3 | 8.7 | | |
| | relaxed | 13 | 19.6 | 50 | 8.7 | 4.3 | 4.3 | not relaxed | |
| | | 8.7 | 26.1 | 41.3 | 13 | 0 | 10.9 | not good | |
| How they feel about understanding when listening to English | confident | 8.7 | 13 | 41.3 | 21.7 | 8.7 | 6.5 | Not confident | |
| | relaxed | 6.5 | 15.2 | 39.1 | 21.7 | 8.7 | 8.7 | not relaxed | |
| | good at it | 6.5 | 10.9 | 52.2 | 15.2 | 6.5 | 8.7 | not good | |
| | | 6.5 | 19.6 | 41.3 | 17.4 | 6.5 | 8.7 | not confident | |
| How they feel about improving their listening | confident | 6.5 | 19.6 | 41.3 | 17.4 | 6.5 | 8.7 | not relaxed | |
| | relaxed | 8.7 | 19.6 | 39.1 | 17.4 | 8.7 | 6.5 | not good | |
| | good at it | 6.5 | 23.9 | 37 | 19.6 | 2.2 | 10.9 | not confident | |
| | | 6.5 | 23.9 | 37 | 19.6 | 2.2 | 10.9 | not relaxed | |
| Do they normally study English alone? | | a lot | often | Sometimes | Occasionally | never | No-answer | | |
| | | 10.9 | 30.4 | 54.3 | 4.3 | | | | |
| | Do they normally practise listening alone? | 6.5 | 28.3 | 52.2 | 8.7 | 4.3 | | | |
| | Do they want to learn English with computers? | 21.7 | 26.1 | 32.6 | 15.2 | 2.2 | 2.2 | | |
| Do they want to practise listening with comp.? | 32.6 | 26.1 | 26.1 | 8.7 | 2.2 | 4.3 | | | |

Appendix 2: Observations about the priority of media types in one MLA

Subject no / name:

| About the priority of media types | |
|-----------------------------------|--|
| 1 | They listened to the <i>video-only</i> |
| 2 | They listened to the <i>video-only</i> with visuals |
| 3 | They listened to <i>video + visuals</i> |
| 4 | They listened to <i>video + visuals</i> without <i>visuals</i> |
| 5 | They listened <i>audio + animations</i> |
| 6 | They listened <i>audio + animations</i> without <i>visuals</i> |
| 7 | They listened to <i>audio- only</i> |
| 8 | They listened to <i>audio- only</i> with <i>visuals</i> |

Non-participant observer's name: Signature & Date:

Appendix 3: Questionnaire about the priority of media-types in one MLAThis questionnaire is about the *priority of media types* in the *NewMillennium* multimedia-listening software.

Please tick the appropriate choices (more than 1 is possible)

| No | Questions | Audio | Audio + Visuals | Audio + Animation | Video | Video + Visuals | | | |
|-----------|--|-------|-----------------------|-------------------------|-------|-----------------------|---|----|----|
| 1 | Which media types do you want to see in listening software? | | | | | | | | |
| 2 | Which media types do you think help improve your listening? | | | | | | | | |
| 3 | Which media types do you think help prepare you better for the real world? | | | | | | | | |
| 4 | Which media types do you prefer in this software mostly? Write 1 (most) - 5 (least) | | | | | | | | |
| 5 | Which media types in this software do you think improve your listening mostly? Write 1 (most) - 5 (least) | | | | | | | | |
| 6 | Which media types in this software do you think prepare you for the real-world? Write 1 (most) - 5 (least) | | | | | | | | |
| Questions | | | | SA | A | N | D | SD | DK |
| 13 | All media types (video + visuals, video, audio + visuals, audio + animations and audio) improve listening equally | | | | | | | | |
| Questions | | | | | | | | A | D |
| 14 | The presence of all media types in listening software is effective in improving listening development | | | | | | | | |
| 15 | The presence of all media types in listening software is motivating in improving listening development | | | | | | | | |
| 16 | The presence of all media types in listening software does not help improve listening | | | | | | | | |
| 21 | Would you like to add anything about media types | | | | | | | | |

Your full-name: Thank you very much

ABSTRACT. This paper presents LMoTS an authoring tool for designing and using learner models. We consider the different services and features that such a tool has to offer, as well as mechanisms for its implementation. The possibility of dynamically designing learner models different in their structure and behaviors presents several advantages; design activities will be permitted during the design phase of the learning environment, as well as during the exploitation phase. Essentially, we highlight the relegation of the hypothetical aspect of the learner model to second order consideration, proposing the concept of responsibility on the designed models, and a new role named learner model designer. Preliminary experimentation shows that, given little direction via a brief presentation and minimal guidance in use of LMoTS system, teachers appear to be able to use the tool efficiently to produce and use learner models.

KEYWORDS: Learner Modeling, Authoring Systems, Learning Management Systems.

1. INTRODUCTION

Personalisation is one of the main objectives of interactive learning environments (ILE), it consists on caring about learner's individual characteristics and capabilities. This adaptation is mainly based on the learner modeling component (Self, 1994), (Paiva & Al., 1995), (Dimitrova & Al., 2000), (Bull, 2004). Learner model (LM) represents system beliefs about the learner (Jeremic & Devedžić, 2004), (Paiva & Al., 1995). It plays a central role in ILE's learner adaptation strategies; but remains too hypothetical (Self, 1994), (Dimitrova & Al., 2000).

Several approaches of learner modeling were used, essentially: Overlay, Differential Model, Buggy Model, Stereotype, etc. Most of these approaches use various techniques of artificial intelligence; they tried to manage the uncertainty in this context, mainly concerning the diagnosis phase of the modeling process. These techniques include fuzzy logic, Bayesian networks, Expert system, and so on.

Commonly, the design of the learner model is done during the ILE design phase. Choices made on this model remain unchangeable during the operating phase of the ILE; the same model mechanisms are applied uniformly to all learners. In view of that, certain questions arise: who designs the learner model and on which bases? Is there no interest in reconsidering the model during the operating phase? Isn't possible to use different approaches, in a timely manner during formation? Etc.

All these questions led us to explore the idea of an authoring tool for designing learner model. Design and management activities are allowed before, within and after learning sessions. It is not necessary to build the entire model; it is possible to start with a partial model that can be extended during learning sessions.

Thus, the *Learner Model Designer (LMD)* can combine different modeling techniques and define, for each technique, its own structures and parameters. Those parameters relates to the structure of the model, the model initialization phase, diagnosis phase and synthesis phase. Possible designable models concern domain knowledge mastery. Prototypes called LMoTS have been implemented and preliminary experimentation have taken place. Experimental work tried to answer the feasibility and acceptance question: With minimal direction to teachers via a brief presentation, can LMoTS permit to its users (teachers) to produce learner models and use them?

The work on the learner model authoring tool fits into an overall project of twinning between intelligent tutoring system and web-based learning management systems. Some tracks about this new orientation are mentioned in (Brooks & Al., 2006).

2. QUALITY AND RESPONSIBILITIES IN LEARNER MODELING

In classical learning environments, the pre-designed learner model is: Immutable and Hypothetical. The first characteristic expresses that, for a particular environment, a set of design choices on the learner model are made and are applied uniformly to all the learning sessions and for all learners. Design choices have a direct impact on the acuity of the learner model. We believe that it is interesting to have several, structurally different and timely designed models; built before and/or during learning sessions. As a result, several design choices are possible and can be changed at any time.

For the second characteristic, it's well known that a learner model remains hypothetical (Self, 1988), the responsibility falls entirely on the learning environment and its designers. The introduction of an authoring environment marginalizes the hypothetical nature of the learner model and makes learner modeling a dynamic and an ongoing activity. This gives birth to a new concept: Author's responsibility on designed models. The models acuity results from designers constructions, inspired by their expertise.

Each LMD holds the entire responsibility on design choices, learning environment just offering the opportunity to create and maintain learner models. The ILE is relieved of this responsibility, and offers a new feature: the ability to dynamically build and maintain learner models. The designer can decide to change his models at any time, talking about *model beliefs* instead of *system beliefs*. Also, the term designed model quality appears in same manner of responsibility on models.

3. RESEARCH CONTEXT AND SYSTEM ARCHITECTURE

The convergence between Intelligent Tutoring Systems (ITS) and Web-based Learning Management Systems (LMS) appears to have potential benefits. For few past years the distance was great between ITS, LMS, and the corresponding communities. Actually, some works claim the potential benefits in rapprochement between ITS and LMS (Brooks & Al., 2006); our researches are in the same perspective. Accordingly, this paper addresses the learner modeling issue in Intelligent Learning Management Systems by presenting the learner model authoring tool and the learner modeling engine.

The authoring system is based on: Graphical tools; LM Engine; Viewers. Graphical tool allows the design of learner models. Designed model are instantiated by affecting them to a specific learner. Instances are hold by LM Engine. Viewers are used for instance externalisation. Figure 1 shows overall system architecture.

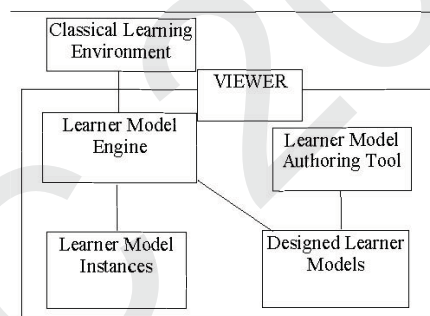


Figure. 1. Learning environment architecture increased.

4. OVERLAY, STEREOTYPES, AND OPEN LEARNER MODELS

LMoTS is based on the use of bricks from the extended overlay approach and stereotypes. We also use fuzzy inference system (Alenka, 2004, p439) based on fuzzy logic set theory, and the open learner model

approach. The extended overlay approach and stereotypes have been chosen because of their intuitive aspect. LMoTS is essentially intended for human use: especially teachers.

The overlay is one of the major approaches to model learners; extension refers to additionally taking into account errors and misconceptions. It has the advantage of being simple and applicable to various domains. Other more sophisticated methods exist; most representative ones are described in (Xiaolin & Al., 2003).

The stereotypes approach has been used in several other systems (Kay, 2000), (Tsiriga & Virvou, 2003). It is a powerful and effective way to infer a great amount of information based on few amount of observations. Stereotypes are mainly characterized by activation triggers, deactivation triggers, and the stereotype inferences (Kay, 2000). Activation triggers are boolean expressions based upon learner model components, when an activation trigger is true the concerned stereotype is activated for the model.

Deactivation triggers are also boolean expressions, if a deactivation trigger is true, the corresponding stereotype is deactivated. Stereotype inferences are rules which are fired when the corresponding stereotype is activated.

Several recent studies have shown considerable benefits to open models to learners (Bull, 2004), (Self, 1994), (Dimitrova & Al., 2000). These benefits are around promoting reflection and meta-cognition, improving domain awareness, and improving the quality of learner model. LMoTS integrates the open model approaches.

5. LEARNER MODEL AUTHORING STEPS

The learner model authoring process in LMoTS consists of:

- Selecting Domain Model, -Creating learner model structure,
- Tuning structure parameters, which includes:

Defining initialisation parameters.

Synthesis functions design.

Open aspects tuning. -Scheduling diagnosis (evaluations) sources, -Instantiating learner models by assigning them to specific learners, -Using learner models (instances). Those activities are supported by LMoTS tools: DOM BUILDER, LMODEL BUILDER, DIAGNO Tool, and Viewer. The following details major authoring activities.

5.1. Selecting/Creating Domain Knowledge

The LMD can create or import a concept map (CM) representation of a knowledge domain with DOM BUILDER. CM graphically represents, using nodes and arcs, knowledge elements in particular domain and their relationship (Rueda & Al., 2004).

In LMoTS each element of the CM has a set of descriptive properties, particularly a reference towards elements of ontology. This reference is not indispensable, but when it exists, it makes parts of the CM and the corresponding part of learner model reusable (Winter & Al., 2005).

5.2. Model Structure Creation

The construction of the model structure consists in creating a set of an *evaluation elements* e_i (EE) and connecting them to CM elements. Each e_i holds model belief about learner level in knowledge elements linked to this e_i . Figure 2 shows a partial designed model with two e_i 's and their links with domain model elements. LMODEL BUILDER supports most of model design activities.

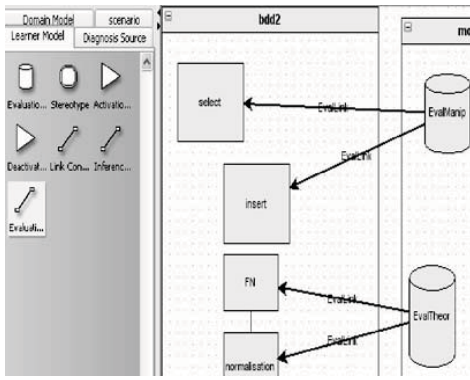


Figure. 2. Learner Model Authoring.

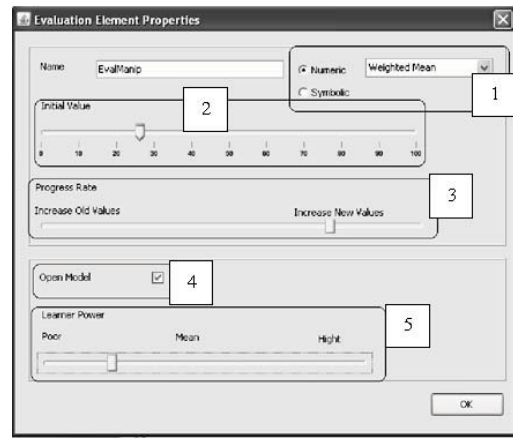
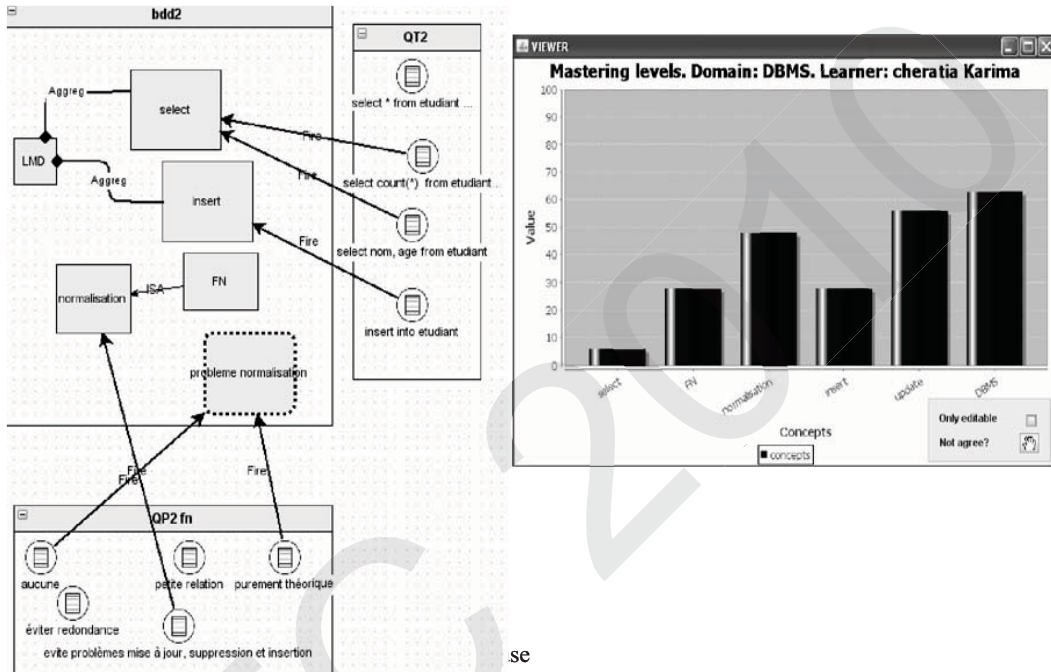


Figure. 3. Evaluation element properties dialog.



An e_i is attached to one or more elements of the CM, these links can be weighted. e_i can be numeric or symbolic (Zone 1, Figure 3). Symbolic e_i values are: poor, average, good, excellent; calculus are done with a fuzzy inference system. A set of properties can be defined for each EE, figure 3 show the properties window.

LMD can define stereotypes and their components by selecting dedicated graphical icons. Open learner aspects are defined in the EE property dialog (zone 4 and zone 5 in Figure 3). By acting on the values of the parameters the designer indicates whether an e_i should be open or not; he can also allow learner

modification actions on an e_i by a *power parameter*. Externalisation is the same for all of e_i in the model; it is a global parameter. Mainly, our externalisation options are different kind of skill meters.

5.3. Initialisation Phase Design

Initialisation in learner modeling consists on giving first values to model elements. In LMoTS this can be scheduled by tuning zone 2 in Figure 3. Initial values are hold by EE when the model is instantiated.

4.4. Diagnosis Phase Design

The diagnosis phase is the passage between learner's observable actions and corresponding estimations related to particular elements in system's domain knowledge representation. These estimations will impact the learner model to reflect new beliefs.

In LMoTS, designer construct diagnosis rules in graphical way (Figure 4) with DIAGNO Tool. Given the web-based LMS orientation of our tool, we have considered as evaluative situation the answers to Moodle's questionnaires. Therefore, the designer has questionnaires (iconic representation of evaluative resource) representing the assessment situations; he identifies the e_i 's involved in each assessment situation and assigns scores to them. For example, the LMD imports the questionnaire Q_i that is a multi-choice question, and for each possible answer define assessments to be given to e_i 's concerned with this choice.

In the Figure 4 case the LMD imported two questions: " $QT2$ ", " $QP2fn$ ". Each question has diagnosis items. Diagnosis items are the real diagnosis sources instead of questions. The SMD expresses that, if a learner chooses "*purement théorique*" diagnosis item in question " $QP2fn$ " the domain element "*probleme normalization*" will receive an evaluation held by the corresponding Fire link.

5.5. Synthesis Phase Design

The synthesis phase consists in incorporating diagnosis phase assessments to existing model. The LMoTS authoring tool associates with each EE type (symbolic/numeric) a set of synthesis functions. In Figure 3 this can be done by zone 1 parameters. Also, zone 3 in Figure 3 is concerned with synthesis phase design. LMD can tune with the Progress-Rate slider evaluation element evolution speed i.e. privileging new value or old value.

6. MODELING ENGINE.

The LM Engine acts as a player. After designing a model, SMD affects it to specific learner (or a group) then instance are created and managed by the LM Engine. Main features of the LM Engine are: –Creating instances of learner models. –Maintaining links between learners, models, and instances. –Instances manipulation using the appropriate model parameters. –Model states and values query response (model usage). –Fuzzy Inference. –Stereotypic inference.

Figure 5 above shows an external view of a learner model instance generated by the engine and presented by VIEWER module.

7. CONCLUSION AND FUTURE WORKS

Preliminary experience tends to answer the basic questions of system feasibility and acceptance. That is, given little direction via a brief presentation and minimal guidance in use of LMoTS system, teachers appear to be able to use the tool efficiently to produce and use learner models. Thus, we are gaining confidence that our system has potential value as a support to learner modeling. In other hand, LMoTS present some limitations, most important one are: no support for automatic diagnosis; and ad hoc techniques in ILE integration. We are working now to improve these insufficiencies.

Finally, we can state that learner model authoring with LMoTS is: –An ongoing activity: LMD can intervene during design or/and operating phases. –Permit an incremental design and contextual use: the designer creates or modifies learner model parts regarding context and needs.

Principally, we highlight the relegation of the hypothetical aspect of the system's learner model in the second order consideration, replaced by a new concept of designer responsibility on the built models. Thus, a new LMS role is defined, it is learner model designer.

REFERENCES

- Alenka K., "Fuzzy User Modeling for Adaptation in Educational Hypermedia", IEEE Transactions on Systems, Man, and Cybernetics, Part C, November 2004, Vol. 34, No. 4, pp. 439-449.
- Brooks C., Greer J., Melis E., Ullrich C.. (2006) Combining ITS and eLearning Technologies: Opportunities and Challenges. 8th International Conference on Intelligent Tutoring Systems (ITS2006), June 26 – June 30, 2006. Zhongli, Taiwan.
- Bull, S. Supporting Learning with Open Learner Models, Proceedings of 4th Hellenic Conference with International Participation: Information and Communication Technologies in Education, Athens, Greece, 2004.
- Dimitrova, V., Self, J.A. and Brna, P. Involving the Learner in Diagnosis – Potentials and Problems. In Proceedings of Web Information Technologies : Research, Education and Commerce, Montpellier, France, 2-5 May 2000.
- Jeremic Z., Devedžić V., Design Pattern ITS: Learner Model Implementation, The 4th IEEE Int. Conf. on Advanced Learning Technologies, Finland, 2004.
- Kay J, Stereotypes, Learner Models and Scrutability, in G. Gauthier, C. Frasson, K. VanLehn (Eds.), Intelligent Tutoring Systems, Springer, 2000.
- Paiva, A. et al. Externalising learner models, Proceedings of World Conference on Artificial Intelligence in Education 1995, Washington DC, 509-516.
- Rueda, U., Larrañaga, M., Arruarte, A., Elorriaga, J. A. Applications of a Concept Mapping Tool, International Conference on Concept Mapping 2004, Pamplona, Espagne.
- Self, J.: The role of learner models in learning environments. Transactions of the Institute of Electronics, Information and Communication Engineers, E77-D(1) (1994) 3-8.
- Self, J. Bypassing the intractable problem of learner modeling. Proceedings of the International Conference on Intelligent Tutoring Systems [pp.18-24], June 1-3 1988. Montreal, Canada.
- Tsiriga V., Virvou M.: Initializing Learner Models in Web-Based ITSs: A Generic Approach. ICALT 2003: 42-46.
- Winter M., Brooks C., Greer J., (2005) Towards Best Practices for Semantic Web Learner Modeling 12th International Conference on Artificial Intelligence in Education (AIED 2005), July 18 – 22, 2005. Amsterdam, The Netherlands.
- Xiaolin Niu, Gordon I. McCalla, Julita Vassileva: Purpose-Based User Modeling in a Multi-agent Portfolio Management System. User Modeling 2003: 398-402.

TRANSITION OF HIGH SCHOOL ON-LINE LEARNERS TO TERTIARY EDUCATION: RESULTS OF A MULTI-YEAR INVESTIGATION

Dale Kirby
dkirby@mun.ca

Dennis B. Sharpe
dsharpe@mun.ca

Memorial University of Newfoundland, Canada

Abstract

Studies of student transition to tertiary education have not examined the transition experiences of students who complete on-line courses as part of their high school program. To address this area of deficit in distance and on-line education research literature this paper reports on a study designed to examine high school on-line learners' plans to participate in tertiary education, their enrollment in tertiary education, and their persistence in a tertiary education program. Data for these analyses were collected from student surveys as well as high school and university academic records. The results suggest that participation in on-line courses in high school is not a significant factor in the tertiary education transition process while academic achievement is consistently influential.

INTRODUCTION

Recent studies of youth transition in Canada suggest that upwards of 75% of the country's youth participate in some form of tertiary education within the first two to four years of completing high school (Malatest & Associates, 2007; Shaienks, Eisl-Culkin, & Bussière, 2006). Given the economic benefits of a more highly educated populace and the significant public investments in tertiary education institutions and programs, a great deal of research effort has been focused on uncovering the attributes and factors associated with youth transition and successful progression through tertiary-level studies.

One branch of the body of transition research has focused on factors influencing high school students' career paths and choices of tertiary programs and institutions. This research has shown that high school student decisions to pursue tertiary education are influenced by a variety of factors such as gender, family background, academic performance, parental expectations, and financing (Malatest & Associates, 2007; Sweet & Anisef, 2005). Another major branch of youth transition research has examined factors that impact students' continuation in tertiary-level studies from one year to the next, ultimately to successful completion of a program. Such student retention studies have examined individual student characteristics which are presumed to affect subsequent academic performance in college or university, such as abilities, motivations, and preferences, as well as the way in which individuals interact or become integrated with the tertiary education environment (Parkin & Baldwin, 2009; Tinto, 1993).

Gender and academic achievement have been consistently shown to be significant in student transition processes. Canadian research has consistently shown that women are more likely to enrol in tertiary education and that men are more likely than women to leave college or university without successfully completing a credential (Malatest & Associates, 2007; Parkin & Baldwin, 2009). Strong academic performance in high school is a significant predictor of participation in tertiary education, especially in university programs which require higher grades for admission. Likewise, academic performance at both the secondary and tertiary levels is associated with tertiary education program retention and completion (Malatest & Associates; Parkin & Baldwin).

While earlier theories and studies of student transition have examined the influences of a variety of student background characteristics, none have examined the role of on-line course experience in high school on tertiary education transitions. A number of studies have suggested that high school students who complete all or some of their schooling on-line tend to have higher levels of academic achievement and are more inclined to choose to pursue university-level studies following graduation (Barbour & Reeves, 2009). There has also been some speculation amongst researchers that higher ability students may be self-selected or selected by their schools as better candidates to participate in on-line courses (Crocker, 2007; Hannum, Irvin, Banks, & Farmer, 2009).

STUDY CONTEXT AND PURPOSE

This research was conducted in the Canadian province of Newfoundland and Labrador where enrollment in high school on-line courses increased from 200 in the 2001-02 school year to approximately 900 students in 2007-08 (Barbour & Stewart, 2008), and appears set to expand further. The growth in student participation in on-line courses, which utilize both synchronous and asynchronous on-line technologies, has occurred almost exclusively in rural schools where the recruitment and retention of qualified teachers with appropriate subject matter expertise has challenged school administrators.

Because of the shift to courses delivered on-line, a growing population of rural students in Newfoundland and Labrador are completing a portion of their high school education in on-line environments that differ substantively from the traditional classroom learning environment. The expansion of on-line learning has been accompanied by questions about equity in outcomes for students who have no other option but to complete needed courses in the on-line format.

With these community concerns in mind, the researchers sought to investigate whether any differences existed between students who completed on-line courses as part of their high school program and others who did not take these courses in terms of their a) plans to participate in tertiary education; b) eventual enrollment in tertiary education; and c) persistence through a tertiary education program.

METHODS AND RESULTS

This multi-year research study was designed to investigate the influence of participation in on-line course participation in high school on students' transition to and through tertiary education. It included three studies which were carried out between 2007 and 2009. Study I was designed to

investigate the tertiary education plans of high school on-line learners in their final year of high school. Study II examined the transition of high school on-line learners to tertiary education. Study III was conducted to explore the first-year retention rates of high school on-line learners who subsequently enrolled in a university program.

In addition to pair-wise comparisons using chi-square tests of independence, logistic regression models were utilized in each study to assess the impact of selected variables on tertiary education plans, choices, and retention. In addition to high school on-line course participation, these models included student gender and academic achievement since both of these factors have consistently been shown to have a significant impact on tertiary education participation and attainment.

Study I - Student Intentions

Study I was carried out to compare the tertiary education plans of students who completed one or more on-line courses in high school with the tertiary education plans of students who completed all of their high school courses in the traditional face-to-face setting.

Participants and Data

A total of 496 Grade 12 students at 35 rural schools in Newfoundland and Labrador were asked to complete a short survey at the end of the school year in 2008. The survey instrument asked students about their academic performance in high school as well as any plans they had to attend tertiary education following graduation. A total of 314 students returned completed surveys for a response rate of about 63%. Amongst the respondents, 40.1% (n=126) of students had completed on-line courses while the remaining 59.9% (n=188) had not.

Data Analysis

An analysis of students' tertiary education plans (see Table 1) revealed that a larger proportion of the high school students who completed on-line courses planned to enrol in tertiary education (94.4%) and to attend university (48.4%). There was a significant association between student enrollment in on-line courses and plans to enrol in tertiary education, $\chi^2(1, 314) = 5.50, p < .05$. Likewise, there was a significant association between high school on-line course enrollment and student plans to undertake university studies, $\chi^2(1, 314) = 7.54, p < .01$.

Table 1 Tertiary education plans of high school students

| | Plans to Attend Tertiary Education | | Plans to Attend University | |
|-----------------------------|------------------------------------|------------|----------------------------|-------------|
| | Yes | No | Yes | No |
| On-line course enrolment | 94.4% (119) | 5.6% (7) | 48.4% (61) | 51.6% (65) |
| No on-line course enrolment | 86.2% (162) | 13.8% (26) | 33.0% (62) | 67.0% (126) |

Further analysis using logistic regression enabled the researchers to examine students' plans for tertiary education and university with additional variables considered. In addition to on-line course participation, the logistic regression models included student gender and self-reported overall academic average. The results of these data analyses indicated that while on-line course participation was not significant to students' plans for tertiary education, overall academic average was (see Table 2). In comparison, both on-line course participation and high school grades were significant in the equation predicting plans for eventual enrollment in a university-level program (see Table 3).

Table 2 Logistic regression results for characteristics predicting students' plans for tertiary enrollment

| Predictor Variable | β | SE β | Wald | df | p | Odds Ratio |
|---|---------|------------|-------|----|------|------------|
| Gender (M = 0, F=1) | -.129 | 0.41 | 0.098 | 1 | 0.76 | 0.88 |
| Overall Academic Average (<80% = 0, ≥80% = 1) | 1.15* | 0.47 | 6.01 | 1 | 0.01 | 3.15 |
| On-line Course Participation (N = 0, Y=1) | -.129 | 0.48 | 4.83 | 1 | 0.28 | 2.88 |
| Constant | 1.56 | 0.29 | 28.97 | 1 | 0.00 | 4.75 |

Note: Nagelkerke $R^2 = 0.22$. Model $\chi^2(3) = 35.82, *p < .05$.

Table 3 Logistic regression results for characteristics predicting students' plans for university enrollment

| Predictor Variable | β | SE β | Wald | df | p | Odds Ratio |
|---|---------|------------|-------|----|------|------------|
| Gender (M = 0, F=1) | 0.31 | 0.27 | 1.31 | 1 | 0.25 | 1.36 |
| Overall Academic Average (<80% = 0, ≥80% = 1) | 1.69** | 0.27 | 40.17 | 1 | 0.00 | 5.40 |
| On-line Course Participation (N = 0, Y=1) | 0.59* | 0.26 | 5.01 | 1 | 0.03 | 1.80 |
| Constant | -1.73 | 0.25 | 46.76 | 1 | 0.00 | 0.18 |

Note: Nagelkerke $R^2 = 0.37$. Model $\chi^2(3) = 98.17, *p < .05, **p < .001$.

Study II - Student Transition

Study II was carried out to compare the transition from high school to tertiary education of students who completed high school on-line courses with the transition of students who did not complete these courses.

Participants and Data

A total of 225 students from the Class of 2008 who participated in Study I also indicated that they would participate in a follow-up survey one year later. This survey asked respondents if they had enrolled in a tertiary education program since completing school the previous year. If they indicated that they had undertaken a tertiary program, the interviewees were asked to provide details about the type of program they had registered in. The response rate was approximately 63% with 142 individuals successfully contacted and surveyed. Within this group, 61.3% (n=87) had completed one or more on-line courses in high school and 38.7% (n=55) had completed their high school program entirely in the traditional, face-to-face instructional setting.

Data Analysis

Levels of tertiary education participation in the year following high school graduation are provided in Table 4. Individuals who completed high school on-line courses had only a slightly higher level of participation in tertiary education compared to those without the on-line course experience (72.4% versus 70.9%), and these levels of participation were not significantly different $\chi^2(1, 142) = 0.38, p > .05$. However, individuals with high school on-line course experience had a higher level of participation (65.1%) in university programs in comparison to the other graduates (38.5%), and this difference was found to be significant, $\chi^2(1, 102) = 6.89, p < .01$.

Table 4 Tertiary education participation of high school graduates

| | Tertiary Education | | University | |
|-----------------------------|--------------------|------------|------------|------------|
| | Yes | No | Yes | No |
| On-line course enrolment | 72.4% (63) | 27.6% (24) | 65.1% (41) | 34.9% (22) |
| No on-line course enrolment | 70.9% (39) | 29.1% (16) | 38.5% (15) | 61.5% (24) |

Logistic regression analyses using gender and the self-reported academic averages provided by students in Study I suggested that on-line course participation was not significant in the models predicting tertiary education or university enrollment (see Tables 5 and 6). However, students' self-reported overall high school academic average was significant in both of these models.

Table 5 Logistic regression results for characteristics predicting students' tertiary education participation

| Predictor Variable | β | SE β | Wald | df | p | Odds Ratio |
|---|---------|------------|--------|----|------|------------|
| Gender (M = 0, F=1) | .70 | 0.40 | 2.99 | 1 | 0.08 | 2.01 |
| Overall Academic Average (<80% = 0, \geq 80% = 1) | 1.40* | 0.42 | 11.122 | 1 | 0.00 | 4.05 |
| On-line Course Participation (N = 0, Y=1) | -0.19 | 0.42 | 0.22 | 1 | 0.64 | 0.82 |
| Constant | -0.71 | 0.39 | 4.36 | 1 | 0.00 | 1.22 |

Note: Nagelkerke $R^2 = 0.17$. Model $\chi^2(3) = 17.82, *p < .001$.

Table 6 Logistic regression results for characteristics predicting students' university participation

| Predictor Variable | β | SE β | Wald | df | p | Odds Ratio |
|---|---------|------------|-------|----|------|------------|
| Gender (M = 0, F=1) | 0.73 | 0.52 | 1.97 | 1 | 0.16 | 2.08 |
| Overall Academic Average (<80% = 0, \geq 80% = 1) | 2.33* | 0.53 | 19.39 | 1 | 0.00 | 10.27 |
| On-line Course Participation (N = 0, Y=1) | 1.14 | 0.50 | 5.18 | 1 | 0.23 | 3.14 |
| Constant | -2.58 | 0.71 | 13.26 | 1 | .000 | 0.08 |

Note: Nagelkerke $R^2 = 0.38$. Model $\chi^2(3) = 33.90, *p < .001$.

Study III - Student Retention

Study III was designed to investigate any differences between the retention of high school on-line learners and other students who were not on-line learners in high school after they enrolled in a university program. Differences in their retention levels were assessed at two points: a) in 2007-08 academic year after the first year of study (i.e., in the second year); and b) in the 2009-10 academic year during what would normally be the fourth and final year of undergraduate study.

Participants and Data

The 369 students in the retention study were high school graduates of the *Class of 2006* who had attended rural schools in Newfoundland and Labrador and subsequently enrolled in an undergraduate program at Memorial University of Newfoundland in the September immediately following graduation. Within the sample, 162 (43.9%) of the students comprised the entire population of first-year students at Memorial University of Newfoundland who had completed one or more on-line courses in high school. The remaining 207 students (56.1%) were randomly selected from the remaining population of 485 first-year university students who had attended rural schools in the province but had not completed high school on-line courses. The data used for the study, including gender, high school on-line course participation, and university academic average, were compiled from high school records maintained by the Newfoundland and Labrador Department of Education and university records maintained by the Registrar's Office at Memorial University of Newfoundland.

Data Analysis

Table 7 shows the numbers of students who returned to university for a second year of studies in the 2007-08 academic year and the numbers of students who returned to university for a fourth year of studies in the 2009-10 academic year. Although a slightly larger proportion of the students with high school on-line course experience returned for a second year (77.8% versus 72.9%) the difference between the rates of retention was not significant, $\chi^2(1, 369) = 1.133$. Similarly, while a greater proportion of the students with on-line course experience returned to university for a fourth year of studies (62.3% versus 54.1%) the difference in the student retention rates was not found to be significant, $\chi^2(1, 369) = 2.528, p > .05$.

Table 7 Second year and fourth year retention rates for university students

| | Returned For Second Year | | Returned For Fourth Year | |
|-----------------------------|--------------------------|------------|--------------------------|------------|
| | Yes | No | Yes | No |
| On-line course enrolment | 77.8% (126) | 22.2% (36) | 62.3% (101) | 37.7% (61) |
| No on-line course enrolment | 72.9% (151) | 27.1% (56) | 54.1% (112) | 45.9% (95) |

To further explore factors impacting on second year and fourth year student retention in university, a logistic regression model was created with gender, cumulative university academic average, and high school on-line course participation as the predictor variables. On-line course participation was not a significantly contributing variable in either of the models. In both the second year retention model (see Table 8) and the fourth year retention model (see Table 9), student academic performance in university was significant with the likelihood of retention increasing in both instances if students' university grades were higher.

Table 8 Logistic regression results for characteristics predicting students' return for second year of university

| Predictor Variable | β | SE β | Wald | df | p | Odds Ratio |
|---|---------|------------|-------|----|------|------------|
| Gender (M = 0, F=1) | 0.55 | 0.28 | 5.04 | 1 | 0.51 | 1.74 |
| First Year University Academic Average | 0.12* | 0.02 | 53.45 | 1 | 0.00 | 1.12 |
| On-line Course Participation (N = 0, Y=1) | 0.29 | 0.29 | 1.02 | 1 | 0.31 | 1.34 |
| Constant | -6.34 | 0.98 | 42.12 | 1 | 0.00 | 0.02 |

Note: Nagelkerke $R^2 = 0.34$. Model $\chi^2(4) = 96.42$, * $p < .001$.

Table 9 Logistic regression results for characteristics predicting students' return for fourth year of university

| Predictor Variable | β | SE β | Wald | df | p | Odds Ratio |
|---|---------|------------|-------|----|------|------------|
| Gender (M = 0, F=1) | 0.33 | 0.29 | 1.25 | 1 | 0.26 | 1.38 |
| Fourth Year University Academic Average | 0.20* | 0.29 | 89.23 | 1 | 0.00 | 1.22 |
| On-line Course Participation (N = 0, Y=1) | 0.21 | 0.29 | 0.55 | 1 | 0.46 | 1.24 |
| Constant | -12.53 | 1.35 | 85.76 | 1 | 0.00 | 0.00 |

Note: Nagelkerke $R^2 = 0.55$. Model $\chi^2(4) = 194.1$, * $p < .001$.

DISCUSSION

The results of these three studies help to advance our understanding of how the secondary-to-tertiary education transitions of on-line learners compare with those of others who do not participate in on-line courses in high school. Overall, the results appear to suggest that, of the factors included in the analyses, student academic performance plays a dominant role in tertiary education transitions.

While the pair-wise comparisons suggested that on-line course participants were more likely to plan to participate in tertiary education, further analyses suggested that student academic achievement played a more influential role. However, it is notable that on-line course enrollment was found to be significant in the regression model predicting student intentions to attend university. This result is consistent with earlier studies which have found that high school on-line learners are more likely to intend to enrol in a university program following graduation (Barbour & Reeves, 2009).

The multivariate analyses of student enrollment activity following graduation from high school revealed academic achievement in high school to be a significant factor in eventual tertiary and university program enrollment but on-line course participation was not significant. In the analyses of student retention from one year to the next at university, the analyses again found student academic performance to be influential in continuing registration. It is also noteworthy that, in contrast to the findings of other studies (Parkin & Baldwin, 2009), young women were no more likely than young men to persist in their studies.

In response to the earlier noted concerns about equity of student outcomes, these studies lead to the conclusion that there is no "transition disadvantage" for high school on-line learners in terms of their plans to participate in tertiary education, their eventual enrollment in tertiary education, or their persistence through a tertiary education program. On the contrary, as one might predict, the results indicate that high school students with academic challenges, enrolled in on-line courses or otherwise, are more likely to be disadvantaged in terms of planning to attend tertiary education, actually enrolling in a program, and maintaining their enrollment once they have registered.

REFERENCES

- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education*, 52(2), 402-416.
- Barbour, M. K., & Stewart, R. (2008). *A snapshot state of the nation study: K-12 online learning in Canada*. Vienna, VA: North American Council for Online Learning.
- Crocker, R. (2007). *Distance learning: Access and outcomes*. St. John's, NL: Killick Centre for E-Learning Research.
- Hannum, W. H., Irvin, M. J., Banks, J. B., & Farmer, T. W. (2009). Distance education use in rural schools. *Journal of Research in Rural Education*, 24(3). Retrieved June 18, 2009, from <http://jrre.psu.edu/articles/24-3.pdf>
- Malatest & Associates. (2007). *The Class of 2003: High school follow-up survey*. Montreal, QC: Canada Millennium Scholarship Foundation.
- Parkin, A., & Baldwin, N. (2009). *Persistence in post-secondary education in Canada: The latest research*. Montreal, QC: Canada Millennium Scholarship Foundation.
- Shaienks, D., Eisl-Culkin, J., & Bussière, P. (2006). *Follow-up on education and labour market pathways of young Canadians aged 18 to 20 - Results from YITS cycle 3*. Ottawa, ON: Statistics Canada.
- Sweet, R., & Anisef, P. (2005). *Preparing for post-secondary education: New roles for governments and families*. Montreal: McGill-Queen's University Press.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: University of Chicago Press.

TRENDS IN EDUCATIONAL TECHNOLOGY: A DECADE OF IETC

Yakut Gazi
Texas A&M University at Qatar
yakut@aggienetwork.com

Abstract

International Educational Technology Conference (IETC) is completing its 10th year in 2010. This research looks at the issues represented in the past IETCs to identify the trends in the papers accepted for presentation. The papers published in the conference proceedings in 2001 through 2009 are analyzed through methods of constant-comparison content analysis. An initial cursory reading of the proceedings is conducted to identify categories for content analysis. A second detailed analysis categorized each paper submission into one of these categories. A random 1% of these papers are also categorized by an independent judge to ensure inter-judge reliability in the analysis process.

The study also analyzes the proceedings and conference documentation to identify the growth paths for the conference in becoming a leading regional as well as international scholarly event.

The aim of the study is to highlight the trends as represented in the IETC proceedings in the last decade to **create an awareness** of the past and a debate on the future of the field. Findings show an increased diversity in topics as well as in institutions represented. The conference evolved from being a Turkish-issues-focused conference to an international one, covering a wide **range of topics of interest** in educational technology. The researcher will also speculate on what the future may bring, based on the past trends and regional and international developments.

INTRODUCTION

Academic conferences are special events where scholars present, discuss, and **debate the results** of their theoretical or empirical work. Due to the relative ease of travel and increased globalism, the academicians are today **presented with a plethora** of choices for conferences in their fields. Consequently, professional organizations and conference **organizers are faced with** the challenge of offering events that are sustainable, interesting, and with a potential for growth.

Conferences create the opportunities for networking as well as partnership. **This partnership** usually transcends the borders of institutions, countries, continents, and cultures. Another aspect of the conferences is that they are practitioner-friendly. Practitioners of the field usually do not have the time and opportunity to write long papers and **publish these**; however, they tend to attend conferences to share and learn best practices and report on their experiences. In some ways, **conferences are a better** pulse test for their corresponding field; they highlight the focus and major trends much better than the concerns of the “**ivory tower**”, as usually reflected in the scholarly publications.

International Educational Technology Conference (IETC) had its inaugural meeting in 2001 under the auspices of Sakarya University in Turkey. Since then the conference convened annually in several cities in Turkey and in the Turkish Republic of Northern Cyprus. This research looks at the evolution of the IETC and presents the trends in the field of educational technology as reflected by a decade of the IETC.

METHODS OF DATA ANALYSIS

Proceedings of the past IETCs were downloaded from the conference web site (IETC, 2010). These proceeding files have been used as data sources as well as the IETC web site.

Initial analysis was conducted to identify some major characteristics about the past nine conferences. These characteristics related to the venue of the conferences, the number of papers presented, the number and variety of institutions represented, and the language of the presentations.

In-depth analysis was conducted to identify the trends in educational technology as represented by the IETC presentations in 2001-2009. For this analysis, a cursory content analysis of each presentation was done. The categories were created by reading the papers and identifying major descriptors by the researcher. An independent judge analyzed 25 randomly selected papers using these categories. All of these papers were in English as the other judge did not speak Turkish. The inter-judge reliability was 85%.

RESULTS

The IETC was held in six different cities between 2001-2010, in Turkey and the Turkish Republic of Northern Cyprus (TRNC). Sakarya University takes the lead in organizing and hosting the IETC four times (Table 1). The conference was held in the TRNC twice, in Famagusta and Nicosia. The IETC comes to Istanbul for the first time in 2010, with a pleasant coincidence of the city's celebrating its “European Capital City of Culture” status (Istanbul 2010).

Table 1. IETC Venues in 2001-2010

| Year | Location |
|------|-------------------|
| 2001 | Sakarya, Turkey |
| 2002 | Sakarya, Turkey |
| 2003 | Famagusta, TRNC |
| 2004 | Sakarya, Turkey |
| 2005 | Sakarya, Turkey |
| 2006 | Famagusta, TRNC |
| 2007 | Nicosia, TRNC |
| 2008 | Eskisehir, Turkey |
| 2009 | Ankara, Turkey |
| 2010 | Istanbul, Turkey |

The IETC had varied participation from presenters in the past decade. The conference began with a modest number of 99 papers in 2001 and this number decreased to 75 in its second year. When the conference was held in Famagusta, the number of papers rose up to 132. In 2004, the conference participants attended to 218 presentations, more than double of the inaugural conference 3 years ago. 2005 conference presentations again dropped down to 140 and this may be partially due to the fact that it was held at the same venue as the previous year's conference, Sakarya. After this year, the conference saw an increase in the presentation numbers (216, 212, and 275, respectively) until the drop in 2009 conference in Ankara, which only had 114 presentations. The number of papers versus years is presented visually in Figure 1.

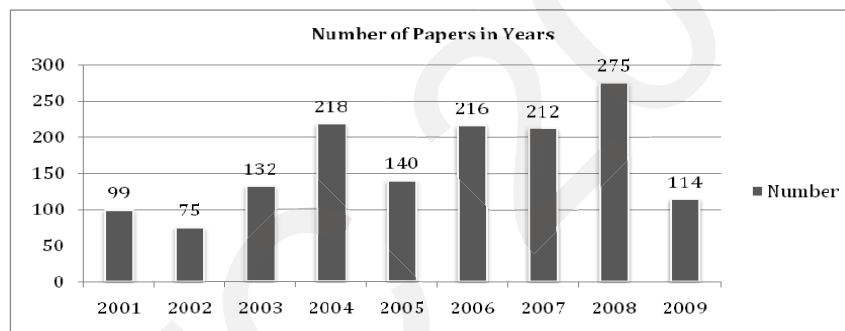


Figure 1. Number of presentations versus years of IETC

An important aspect of scholar work is collaboration. IETC created a platform for collaboration to exhibit itself. Every year, except for the 2009 conference, there were more presentations with two authors and three-or-more authors than single author papers. Figure 2 depicts these numbers visually.

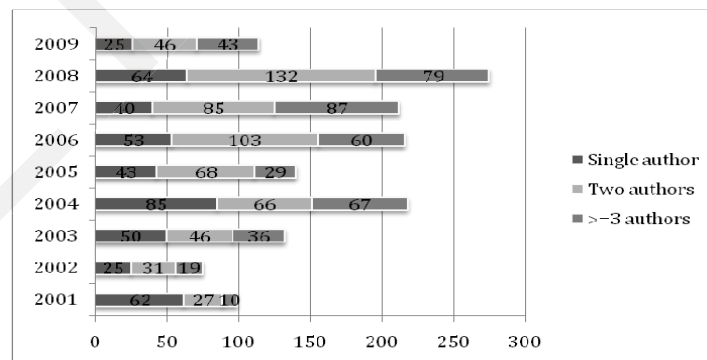


Figure 2. Number of authors versus years

One of the important characters that distinguish a local conference from an international conference is the official language of the conference. In many non-English speaking conferences, presentations in both the local language and English are common. However, in order to attract English-speaking academicians, the conference ought to have a good portion of the presentations in English; otherwise the value of the academic experience for the English-speaking attendees is severely lowered. IETC has been relatively successful in the inclusion of English presentations in the program. Figure 3 plots the number of total presentations against number of presentations in English.

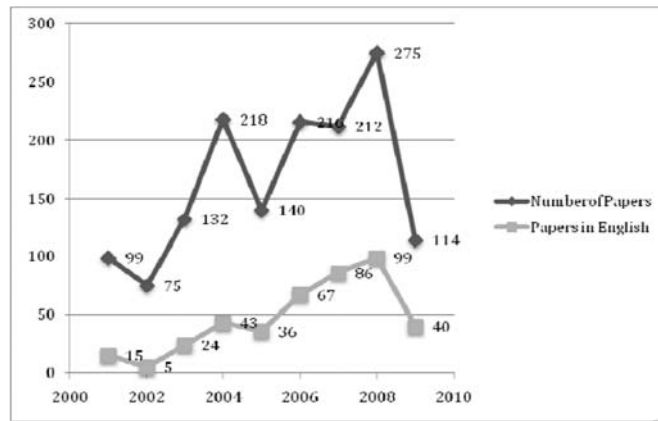


Figure 3. Number of presentations versus number of presentations in English

One may not be too satisfied with these numbers; however, when looked at the percentage of presentations in English (Figure 4), it is clear that in the recent years, the percentage of presentations in English has been around 35-40% range.

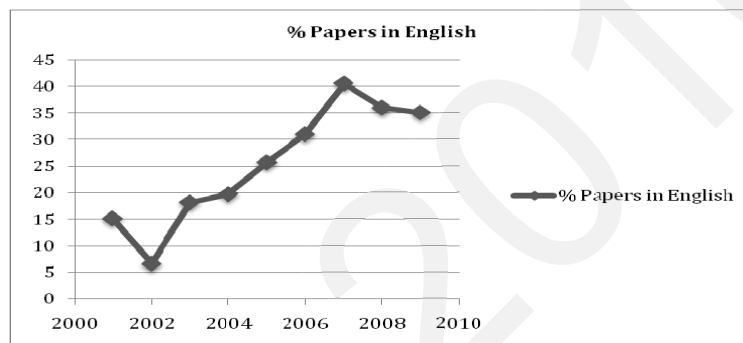


Figure 4. Percentage of papers in English

According to the first author affiliations, the host of the inaugural conference, Sakarya University leads the total number of papers in the past decade of the conference, with Marmara and Anadolu Universities closely following. Figure 5 displays the top ten institutions according to the corresponding number of papers in the IETC. However, as can be seen in the graph, the largest affiliation is the category “Other”, which indicates a good level of diversity in the institutions represented at the conference.

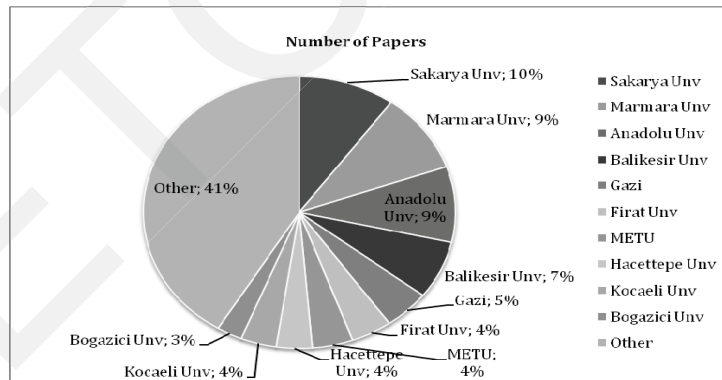


Figure 5. First Author Affiliations

Trends in Educational Technology (Preliminary Results)

A constant-comparative content analysis of the conference proceedings was conducted. The tabulation and reporting of this content analysis is ongoing and will be available for the conference. A preliminary report identifies the Distance education, web-based instruction and the Internet to be the largest category, followed by studies that relate to the K12 educational environments. The top categories that the researchers worked on are presented in (Figure 6):

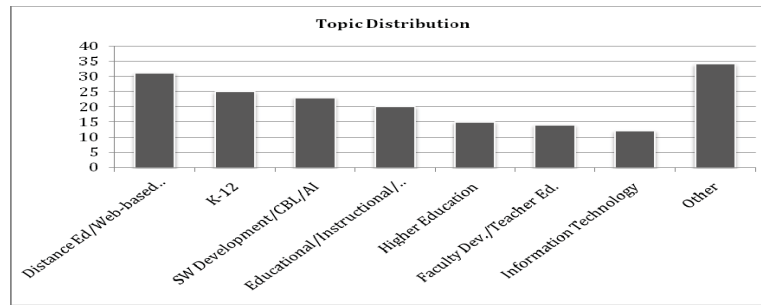


Figure 6. Topic distribution of papers

Majority of the papers were theoretical, focusing on literature surveys, presenting historical developments in the field, or in the host countries (Turkey and the Republic of Northern Cyprus). Empirical studies followed historical developments as the next most frequent type of research. Developments of software programs, computer and web-based instruction modules, and interfaces followed empirical studies in frequency (Figure 7). Most of the empirical studies focused on a limited sample of participants and case studies. Qualitative research studies, although rare, were also conducted.

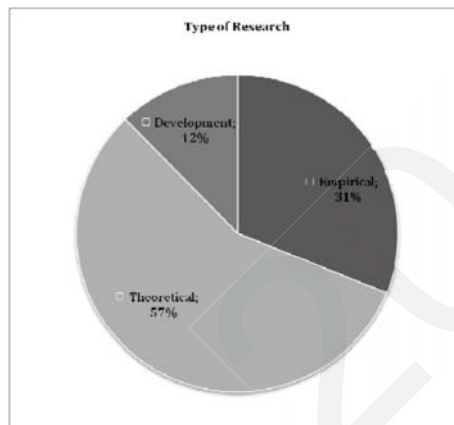


Figure 7. Type of research studies

When empirical research studies were examined more carefully, it was shown that survey methodologies were by far the most frequent data collection method. Other methods of data collection included participant observations, document analysis (as in the analysis of textbook), interviews, and analysis of asynchronous data (Figure 8).

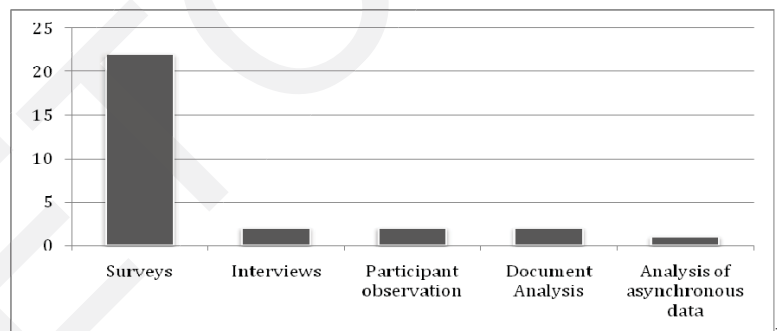


Figure 8. Methods of data collection

CONCLUSIONS

Thorough conclusions will be available when full tabulation of the results is completed. However, based on the preliminary results, one can say that IETC is a growing conference and the research studies seem to closely reflect the focus of the field and that of other conferences. In a time where academicians and practitioners are presented with a variety of conferences to choose from, IETC has the potential to become one of the high quality choices. As presentations in English increase, the conference will gain more recognition as an international conference in the field. This year's conference in Istanbul received over 500 submissions so far and is likely to have the highest participation from national and international researchers. In addition to the scholarly value of a conference, its location also has a lot to do with the level of participation. In the future, IETC organizers may want to hold the conference in attractive locations in and outside of Turkey to increase the visibility of and participation at the conference.

One factor in making conferences successful and sustainable is the existence of a sponsoring professional organization. These organizations tap into the resources of members and provide for an institutional framework for their conference. In the absence of a sponsoring organization, the fate of a conference is in the hands of a handful of dedicated professionals, which in the long run, does not provide the sustainability in the absence of these people. The present author highly recommends the IETC to be affiliated with an existing, preferably international, professional organization for the continuity and success of the IETC.

REFERENCES

- International Educational Technology Conference. *Proceedings*. Retrieved from <http://www.iet-c.net/publications.php>
- Istanbul: European Capital of Culture. Retrieved from <http://www.en.istanbul2010.org/index.htm>

TURKISH EFL ACADEMICIANS' PROBLEMS CONCERNING TRANSLATION ACTIVITIES AND PRACTICES, THEIR ATTITUDES TOWARDS THE USE OF ONLINE AND PRINTED TRANSLATION TOOLS, AND SUGGESTIONS FOR QUALITY TRANSLATION PRACTICE

Buğra Zengin
Işıl Günseli Kaçar

Abstract

This mixed method research study aimed to highlight the problems of EFL academicians concerning their current translation practices, their attitudes towards the use of various translation tools, and offer suggestions for more quality translation practices. Fifty-nine EFL academicians from two Turkish universities participated in the study. The qualitative data was collected through semi-structured interviews and open-ended questionnaire items and analyzed with the content analysis while the quantitative data was obtained through Likert-scale items and analyzed with descriptive statistics. Based on the participants' ideas, the establishment of a translation center in the university, collaboration with professional translators with academic background and experience of professional translation in various disciplines, the organization of awareness-raising seminars, the introduction of minor and double major programs in translation and the integration of training programs facilitating the use of online translation tools and search engines were found beneficial in enhancing the quality of existing translation practices.

Keywords: computer-aided translation, ELT, terminology, online tools

INTRODUCTION

The emergence of globalization brought about multitude of scientific, technological, economic and social repercussions in the last few decades. The 21st century has witnessed a wide range of developments in science and technology. One of the most significant is the advent of the internet, facilitating instant and cost effective access to information as well as the collapse of cultural and linguistic barriers between countries. The global market requires that industrial and commercial issues be negotiated on an international scale. Within this global landscape, nations maintain and strengthen their cross-cultural bonds. Nevertheless, they also wish to preserve their independence and cultural identity. In this regard, translation can be regarded as a catalyst.

A rise has been noted recently in the popularity of the profession of translation, manifested through a subsequent increase in the number of academic institutions offering translation programs to train prospective translators (Sanchez, 2006). Sanchez also mentions recent studies dealing not only with trainees' translation competence but also the market demands (e.g. Muñoz Martín, 2002; Pym, 2003; Reineke and Sánchez Muñoz, 2005; Rico Pérez, 2002; cited in Sanchez: 2006), which is likely to have some significant repercussions on the professional practices.

The importance of English can not be underestimated. Craciunescu, Gerdin-Salas, Stringer-O'Keeffe (2004) underlines its first place in the translation market with 48% as a source language and 45 % as a target language. Besides, Fletcher (2005) states that the two thirds of the content indexed is English-language documents according to data from large search engines such as google, yahoo, msn, and tooma. Thomas (1996: cited in Alptekin, 2002) emphasized that the storage was in English for the eighty percent of the computer data and the eighty five percent of all information.

However, as Craciunescu et al. (2004) has emphasized, there is a lack of professional translators to meet the huge demand for translation in multifarious scientific disciplines. This has resulted in a series of attempts to develop translation tools to have immediate access to immediately-available information and non-sequential access to databases. Nevertheless, translation is a complicated process that requires a thorough command of the source and target language in terms of their syntactic, semantic and pragmatic properties, in addition to a great deal of creativity and imagination. Machine translation is regarded as inefficient, inaccurate and inappropriate, with its output capacity limited to simple texts and controlled language, especially in terms of the literary text translation. The issues such as polysemy, connotation and style remain to be addressed (Sanchez, 2006). It fails to account for the higher order cognitive operations entailed in the translation process (Craciunescu et al., 2004). Technology cannot replace the human translator; nonetheless, using it wisely can facilitate translation.

As argued by Craciunescu et al (2004) it is widely acknowledged that the professional translator needs to acquire skills related to new technologies to keep his or her efficiency and competitiveness. In search for effective tools to assist the translators, online tools are reported to provide promising solutions (Sanchez, 2006). Biau, Gil and Pym (2006, cited in Sanchez, 2006) also emphasized the vital role of technology in translation in the present era. Korkas, Pavlides, Rogers (2005) argue that a well-trained translator has good research skills, and uses the internet as an extremely useful and powerful research tool, aware of the advantages of the regular update of online dictionaries and encyclopedias and the availability and quick access to the corpora of parallel texts in various domains. Translators or translation trainees use the online resources for terminology challenges presented by increasing specialisation.

Pym (2003) maintains that it is essential to reconsider translation training to meet the requirements of a variety of translation-related contexts in an epoch of whirlwinding technological changes and diversified domains of specialization. Köksal (1995) underscores the need to train translators in the field of technical translation but also conceding that it must be borne in mind that this kind of training only enables translators to specialize in certain areas. Köksal (1995) also puts forward an idea that data banks can be formed, and technical terminology dictionaries can be compiled. However, there have not been adequate advances in this regard. The reason might stem from inadequate attention to online products, which are easily available and updated.

Theoretical knowledge of translation makes translators to think of the issues regarding translation in a multi-dimensional manner (Yazıcı, 2005). Translation competence can be defined as the underlying system of knowledge and skills needed to be able to translate. Its acquisition requires a process of restructuring and developing subcompetencies (communicative, extra-linguistic, professional-instrumental, transfer, strategic and psycho-physiological) the interaction (controlled by strategic competence) and hierarchy (related to transfer competence) of which vary according to directionality and language combinations, specialisation or translation context (Beeby, Berenguer, Ensinger, Fox, Albir, Mélis, Neunzig, Orozco, Presas, and Vega, 2000). Special subject knowledge is used depending on the type of text (Schäffner 1993; Dancette 1994: cited in Beeby et al, 2000) and different tools, such as dictionaries or databases (Fraser 1994: cited in Beeby et al, 2000).

On the other hand, it is also true that overexpansion of the number of subcomponents may not give a practical picture. Defending a minimalist approach, Pym (2003) indicates that there is a high degree of mismatch between what translation students are learning and what they should be asked to do. He points out that his more critical students consider the invariable hard core of a translation class as lists of false friends, modulation strategies, all the linguistic tricks, plus some practice on a few really specialized texts. Pym (2003) argues for a minimalist approach to translation competence "based on the production then elimination of alternatives, which he considers, can help orient translator training in times of rapid technological and professional change" while criticising the general trend among theorists of

multicomponential expansions of competence that it is partly grounded in institutional interests, and leads to staying one or two steps behind market demands due to its conceptual flaw.

Taking into consideration the wide range of contexts where translation is utilized and the purposes which it serves in the academic circles, as well as the caveats involved in the efficient use of printed versus online translation sources, this research study sets out to investigate the problems reported by various members of the academia concerning the conduct of translation practices and possible solutions they have generated in this regard that they may have consensus on and the attitudes toward the use of printed versus online translation tools among the academia in ELT, English philology and school of foreign languages. The responses are important given the inadequate number of the professional translators, the huge demand for translations (especially special fields), and the problems regarding structure and style, lack of the target language and culture, and terminologies of the special field.

This study does not adopt a view which gears translation to language teaching and learning, a view which was held by academicians who considered it of a secondary status as Munday (2001) states criticisingly. Nevertheless, it has implications on teaching or learning English as a foreign language for the purpose of communication, which is also an important aim in translation as well. A contemporary view to translation as an autonomous interdisciplinary field may reflect positively to language teaching and learning. House (1986: 182, cited in Pym, 2003) suggested acquiring communicative competence is not only the aim of the language class but also that of the teaching of translation. Regarding the overlaps, Nord (1991: 165-166, cited in Pym, 2003) argued that translation practice is likely to develop in the language class the awareness of contrastive structures, and skills like the effective use of dictionaries. In the context of the general bilingual dictionary known as a translation dictionary, translation can be seen as a traditional exercise in second/foreign language teaching and learning (Kirkness, 2004). Contrastive analysis together with translation has also been found to have significant effect on L2 students' lexical storage of English (Laufer and Girsai, 2008).

PARTICIPANTS

A total of 59 participants with various academic positions from Atatürk University, which is located in Erzurum (AU) and Namık Kemal University, which is in Tekirdağ (NKU), neither of which has a translation department, took part in the study. The distribution of the participants from AU is as follows: 21 university lecturers, 7 research assistants and 10 assistant professors. On the other hand, from the School of Foreign Languages of NKU, 21 university lecturers participated in the research. Five of the research assistants were engaged in doctoral studies and the two in MA studies at AU. Among the lecturers of AU, five of the respondents were engaged in doctoral studies, and seven of them either had MA or on their way to graduation. The others had BA in ELT or English language and literature. There were two respondents from NKU who had MA, one was engaged in MA study, and the other had quit an MA program after courses. Most of the others had BA in English language and literature or ELT, but the two were graduates of translation studies.

RESEARCH DESIGN

The mixed method research design was used with the triangulation of the qualitative and quantitative data. A Turkish semi-structured interview was conducted in AU. The interview process helped detect specific issues. Based on the feedback, a quantitative Likert scale (1-5) questionnaire was constructed in Turkish to gain further insights. The questionnaire also included two open-ended items probing into the translation strategies of the academicians. Only the questionnaire was conducted in NKU. The rationale for using a mixed design was complementarity, which "seeks elaboration, enhancement, illustration, the clarification of the results from one method with the results from the other method" (Greene, Caracelli, and Graham, 1989; cited in Johnson and Christensen, 2004, p. 423). The qualitative data was analyzed through the content analysis, as suggested by Miles and Huberman (1994), which involves the coding for themes, looking for patterns, and making interpretations. The quantitative data was analyzed with SPSS. Data triangulation helped understanding the phenomenon from different perspectives of participants who worked in different departments. The researcher's interpretations and conclusions were discussed with the actual participants, other members of the participant community and peers for verification and insight.

FINDINGS

This section aims to report the results of the qualitative and quantitative data analysis respectively. As to the qualitative data analysis, the interview results overlapped with those of the questionnaire to a considerable extent. In fact, most of the common themes that emerged in the interviews reappeared in the questionnaire for purposes of quantifying. Apart from the common concerns raised in both types of data concerning the respondents' attitudes towards translation and the challenges they are currently facing in their translation practices, and the frequencies of and preferences for their online and printed source use, the following themes concerning the solutions to the academicians' translation-related problems emerged only in the interviews: the organization of translation training programs or workshops for graduate students and academicians with a particular emphasis on the improvement of translation skills and written language proficiency, which is in line with the suggestions of Craciunescu et al. (2004), the instruction on domain-specific terminology and the development of language awareness, discourse and sociolinguistic competence, the establishment of university-based academic writing centers and the recruitment of voluntary lecturers to work there, offering minor or (double) major programs in translation studies at undergraduate or graduate level, enhancing the quality and content of the already existing translation courses at universities by extending the range of texts covered so as to offer students an opportunity to be familiar with the domain-specific terminology, which reinforces Pym's (1993) study revealing the shortcomings of the translation studies, and the collaboration between experienced professional translators with expertise in different fields (e.g., law or medicine) and academicians in translation classes, which is also indicated in Köksal (1995), the awareness-raising workshops at universities for the academic and non-academic circles as to the laborious, and time-consuming nature of the translation process and the steps involved to make people more conscious of the fact that translation is an academic discipline.

In addition to these themes, an increase in the share from the working capital to be allocated to the academicians involved in translation projects with industrial and commercial organizations or in the academic writing centers or the translation centers was offered as an incentive to promote the involvement of the academic staff to realize the university-industry cooperation. Regarding the participants' self-reported use of translation strategies, the following strategies were also considered: consulting non-native speakers who are thought to be experienced translators or good at translation or native speakers for proofreading purposes, relying on one's own intuition as an experienced EFL teacher or their own judgement in choosing the collocation or fixed expression that reflects the naturalistic, authentic use of the language. In the open-ended questionnaire items, which also formed part of the qualitative data in the study, the patterns emerged are the necessity of considering the context where the lexical items are used and the structural and discursive constraints related to their meaning and use, the caution against the exclusive reliance on the use of one type of source (online or printed), and the need for creativity and imagination in the translation to enhance the quality of the translation practice.

With respect to the results of the quantitative data (the Likert-scale items), the results indicated a great deal of parallelism to ideas expressed in the interviews as mentioned above. As for the reliability of the likert scale questions, the cronbach α reliability scale is .86 (high reliability) for AU and .771 (moderately reliability) for NKU. Considering translation as an important aim in teaching English is very common among AU, respondents with the mean of 3.974 compared to the mean (3.4762: little below 3.5) of responses of NKU lecturers who seem undecided. This is understandable given their priorities. However, as for whether they think translation activities contribute, the mean scores of both AU and NKU are much above 3.5 (4.1579 and 3.9524 respectively) – the first means mentioned below belong to university A

(UA), while the second to university NKU. They think that the time and energy they need to devote to their own work, the work they are employed for, is consumed by the demands of the academicians of the departments other than their own (Qa3: 4.3947 and 4.2381). These colleagues from other departments are not aware of the fact that translation is demanding and time consuming (Qa4: 4.2895 and 4.3333).

The recruitment of professional translators are believed to reverberate in the translation activities of their universities considerably (Qa5: 4.5263 and 4.7619). They believe that the ones experienced in both academic settings and professional market of translation should be preferred (Qa6: 4.3158 and 4.4286). The diversity of experience should cover academic writings, commerce, industry, etc. Working interactively with these translators would contribute positively to the improvement of the quality of their translations (Qa7: 4.1316 and 4.3333). It is useful to establish a translation center where these translators work together with volunteering academicians (Qa8: 4.2632 and 4.3333). It is possible to carry out translation activities in a systematic organisation in a manner which contributes to the economy (Qa9: 4.1316 and 4.3810).

The academicians who want to work in this center should be paid in proportion to their contribution (Qa11: 4.2895 and 4.4286). The share they get from the working capital should be increased (Qa12: 4.00 and 4.3333). If talented students also work in the center, their practice would help improve their translation quality, and decrease the workload of the center (Qa13: 3.8684 and 4.2381). Their participation can be certified additionally along with their graduation documents (Qa14: 3.5526 and 3.8571). The quality of the translations improve with the recruited professional translators checking the texts (Qa15: 3.8158 and 4.1429). This center can function as an academic writing center contributing to the acceptance of the number of articles to be submitted by the academic staff (Qa16: 4.0263 and 4.5238). This center can also contribute to translation needs of other universities (Qa17: 3.7368 and 3.9048), of the firms engaged in industry or commerce (Qa18: 3.7632 and 4.0952); however, the priority should be on the academicians working in the university where the center is located (Qa19: 4.00 and 4.1429).

Terminology problems along with their solutions can be recorded and used to construct a database (Qa20: 4.2632 and 4.7143). Producing solutions to the problems related to collocations is important for the naturalistic use of the language (Qa21: 4.1053 and 4.5238). It is useful if the content of the database is classified into subfields (Qa22: 4.2368 and 4.6190). It is also useful if frequently occurring translation problems and their solutions are accessed online (Qa23: 4.2105 and 4.6667). As for questions b1 and b2, most of the respondents in AU and NKU have the tendency to use online tools rather than the printed with 68 % and 71.4 % respectively selecting the fourth item (I tend to use online sources more often.), which echoes Sanchez' (2006) views of online tools as promising solutions to the translation problems. However few they are, two respondents used even exclusively online tools in both universities. In AU and NKU, the percentage of respondents agreeing that there should be a tendency to use more online sources is highest: 68.4 and 57 % respectively.

Table 1. Responses of AU and NKU for questionnaire items b1 and b2

| Choices | 1 | 2 | 3 | 4 | 5 |
|------------------------------|-----------|------------|------------|-------------|-----------|
| Number (percent.) AU for B1 | 1 (2.6 %) | 7 (18.4 %) | 2 (5.3 %) | 26 (68.4 %) | 2 (5.3 %) |
| Number (percent.) NKU for B1 | - | 4 (19 %) | - | 15 (71.4 %) | 2 (9.5 %) |
| Number (percent.) AU for B2 | - | 5 (13.2 %) | 7 (18.4 %) | 26 (68.4 %) | - |
| Number (percent.) NKU for B2 | - | 2 (9.5 %) | 7 (33.3 %) | 12 (57.1 %) | - |

The mean scores do not indicate are below 3.5 on whether they use bilingual or monolingual dictionaries, or whether they translate from English to Turkish, or from Turkish to English. (Qb3: 2.9737, b5: 2.9211, b6: 3.1842, and b7: 3.1053). The mean scores for the questions to do with printed dictionaries are low among which the highest of the low scores belong to the monolingual printed dictionary use (Qb4 3.4737 and 3.1905). The least difference between online and printed dictionaries is in monolingual dictionaries.

Participants reported using online dictionaries frequently (Qb8: 3.9474 and 4.1905), in particular the bilingual ones (Qb10: 3.6579 and 3.8571) with which sometimes English is the source language. Therefore, when asked about each direction the mean was between 3 and 4, but closer to 3 in AU and a little below 4 in NKU (Qa11: 3.4474 and 3.2857, and Qa12: 3.3158 and 3.1905). Monolingual dictionary is preferred in AU whereas it is not used often in NKU (Qb9: 3.4286).

When asked about their frequency of using search engines in translation their response was positive (3.5789 and 3.6190). The participants in both AU and NKU responded very positively to using search engines whether it is alternately with dictionaries (and this is so whether these are printed or online). Using search engines along with use of dictionaries is not much (Qb14: 3.2381) especially when the dictionary is printed (Qb15: 2.2381).

In both AU and NKU, participants' mean score is low as regards the frequency of cooperating with the expert of a field (on which translation is done). The reason being terminological differences (Qb18) is 4.0952 in NKU whereas it is lower in AU (3.3947), possible due to more experienced respondents. Participants have not been able to find opportunity to co-work with experts of a field (Qb19: 2.4737 and 2.4737). Neither have they used database adequately (Qb20: 3.0263 and 2.9524).

All the questions related to use of machine translation have low means (much below 2, mostly) in both universities, which is quite in line with the comments of Sanchez (2006) and Craciunescu et al. (2004) concerning the inefficiency of machine translation. There is a similar picture regarding whether they trust machine translation. It did not matter whether English is source or target language in both the frequency of use and the trust issue.

The participants all believed that it is important that the translation should be close to natural English as regards style and structure (Qb26: 3.8684 and 4.0476), and full check for this kind of accuracy of style and structure should be necessary when a nonnative speaker of English translates from Turkish to English (Qb28: 4.2632 and 4.3810). However, they donot frequently check parallel texts (Qb27: 3.1053 and 3.0952). They couldnot check the paralel texts as much as they want to due to the inadequacy of time (Qb29: 3.563 and 3.5714). The number of AU participants who thought that it would be effective to use English – Turkish parallel texts alongside was not very high (Qb25: 3.2368), whereas it was high in NKU (Qb25: 3.2368).

They all want to be informed about the technological means which would save time for the closeness of the translation to natural English use regarding style and structure (Q30: 4.0789 and 4.5238), which indicates that the participants match the ideal translator profile described by Korkas, Pavlides, and Rogers (2005), Pym (2003), (Craciunescu et al, 2004), and Biau, Gil and Pym (2006, cited in Sanchez, 2006). The number of databases should be increased, which is important whether they translate from English to Turkish (Qb31: 4.00 and 4.1905), or from Turkish to English (Qb32: 4.2105 and 4.3333).

The respondents considered the role of both dictionary and search engine to provide for the accuracy of style and structure in translations (Qc1: 3.7632 and 4.0476). They assumed that their knowledge on using search engines for this aim was enough to solve many problems practically (Q: 4.0789 and 3.6667). The total percentages of respondents selecting 3 and 4 suggest that in their actual practice they tend to be closer and more oriented to the search engine end of the continuum: the alternate use of both dictionary and search engine. In fact they believe that they should do so more than they actually do. These suggest that they think their practice should be more oriented towards using search engines more frequently in their alternate use with dictionaries.

Table 2. Responses of AU and NKU for questionnaire items C3 and C4

| Choices | 1 | 2 | 3 | 4 | 5 |
|------------------------------|------------|-------------|-------------|-------------|---|
| Number (percent.) AU for C3 | 7 (18.4 %) | 13 (34.2 %) | 8 (21.1 %) | 10 (26.3 %) | - |
| Number (percent.) NKU for C3 | 1 (4.8 %) | 9 (42.9 %) | 4 (19 %) | 7 (33.3 %) | - |
| Number (percent.) AU for C4 | 3 (7.9 %) | 13 (34.2 %) | 11 (28.9 %) | 11 (28.9 %) | - |
| Number (percent.) NKU for C4 | - | 8 (38.1 %) | 8 (38.1 %) | 5 (23.8 %) | - |

DISCUSSIONS AND CONCLUSION

The findings reveal that the academicians working in English language and literature, ELT, or school of foreign languages have positive attitudes toward improving their applications of online tools. Most of them use search engine and online dictionaries in turns. The search engine indexes a large corpora. The corpora includes parallel texts we can benefit to make our translation sound naturalistic. According to Stubbs (2004), corpora provides the association patterns relating item and context (lexico-grammatical units, and style and register). However it is believed by our respondents that the level of sophistication they use these tools in their actual practice is not adequate for most of their problems. They believe that they can develop their online skills with professional translators' know-how.

A similar study has been found in relevant literature which hypothesizes that a course specially geared towards translating as a communicative activity will diminish differences between translations of university language students and those of professional translators (e.g., Dimitrova's project, 1996-1997). Secondly, setting up multilingual parallel texts is perceived in Europe as a good investment not in the short term but in the midterm or long term for teaching translation and doing contrastive linguistic analysis, which can also reflect on teaching languages (Bernardini, 2003). Positive responses to Qb25 is in line with this contemporary practice.

The results can contribute to translation projects if they are shared with the university presidents. The universities can recruit professional translators who can run translation centers where they can guide, work interactively with and supervise the volunteering academicians and maybe students. They can also coordinate collaborations with the experts of the fields of translations. Databases can be constructed. According to Kirkness (2004), professional translators can be expert informants for practising lexicographers.

With all the contributions, academicians in universities can develop the command of academic English, and increase the quality and number of their articles published internationally. The project can have lasting effect on academicians' promotion as well as advances in international collaborations between the institutions outside the academia including cultural, commercial and industrial organisations. Hayakawa and Hayakawa (1990) emphasize the importance of the technology stating that if institutions do not match the rapid change of our world, they do not survive.

Although the study was conducted in two different university contexts in Turkey, the findings obtained from both universities showed a lot of similarities, which may imply the challenges, problematic issues, and suggestions for solutions that are likely to reflect those experienced yet may be inarticulated by academicians in many other settings in Turkey. In fact, a recent speech of Prof. Dr. Yusuf Özcan, the head of the Higher Education Council, delivered at Atatürk University in the first semester of the 2009 and 2010 academic year can be regarded as reinforcing some of the findings. He argued that relations between university and society should be stronger. He pointed out the negative impact on the development of society of the lack of cooperation between the industry and the university, which may imply the beneficial effects of the recruitment of professional translators who are experts in their fields but not academicians to teach translation classes at universities and the promotion of student involvement in extracurricular translation projects through the accreditation of their work on their graduation documents. There is also an issue of unsatisfactory share from working capital, Prof. Dr. İsmail Yüksek (the Rector of Yıldız University, İstanbul) stated that an increase in the allocation of shares in the working capital is considered in related commissions (universitemedya.tv, 27 February 2010). This, if realized, may encourage the realization of a university-based translation centers, and support the academicians' suggestions as to the provision of a financial incentive to increase the involvement of academicians in the joint translation-related projects with the industrial organizations.

The fact that our sample of respondents is not large limits the possibility of generalization. Another limitation of the small size was that attitudinal differences or differences of frequency in using tools in terms of professional, age and educational level groups could not be compared. According to Lexis Nexis technology gap survey, American white collar workers all agreed that technology made it easier to get up-to-the-minute information (95 percent agree), perform research (94 percent agree), improve productivity (90 percent) and manage information (87 percent). However, as to whether they actually applied technology, in other words, when asked specifically on the frequency of their use of technology, the picture differed depending on their age. The most junior workers (aged under 28) had highest averages, the most senior workers (aged 44 to 60) had the low averages, whereas those aged 29 to 43 applied technology in moderation. Although the report had respondents working in education sector, whether a similar pattern may emerge in universities in using technological tools in translation tends to be much less probable assuming the universities are competitive.

In future, studies with larger population of respondents can be made. It is also important to consider that the study cannot be generalized to several age groups since mainly their ages range from between mid twenties to mid thirties. Further longitudinal studies into the translation-related problems, the current translation practices and the suggestions for the improvement of existing practices in other Turkish contexts may prove to be beneficial for the improvement of the quality of the existing translation practices and translated works, and contribute to the academic excellence of Turkish universities.

REFERENCE

- Alptekin, C. (2002). Towards intercultural communicative competence in ELT. *English Language Teaching Journal*, 56/1, 57-63
- Bernardini, S. (2003). Designing a corpus for translation and language teaching: the CEXI experience. *Tesol Quarterly*, 37(3), 528-537.
- Cariunescu, O., Gerding-Salas, G., Stringer-O'Keefe, S. (2004). Machine translation and computer-assisted translation. *Translators and Computers*, 8(3).
Retrieved from <http://accurapid.com/journal/29bias.htm>
- Christensen, L., & Johnson, B. (2004). *Educational research: quantitative, qualitative and mixed approaches* (2nd ed.). Boston, MA: Pearson Education.
- Dimitrova, E. Translation ability and translatorial competence. Project conducted at TÖI, Institute for Interpretation and Translation Studies, Stockholm University, (1996-1997).
Retrieved February 17, 2010 from http://www.translation.su.se/Translation_Ability.html
- Fletcher, W. H. (2005). Concordancing the Web: Promise and problems, tools and techniques. [Electronic version]. In M. Hundt, N. Nesselhauf & C. Biewer (Eds.) *Corpus Linguistics and the Web*. Amsterdam: Rodopi.
- Hayakawa, S. I. & Hayakawa, A. R. (1990). *Language in Thought and Action* (5th ed.), Orlando: Harcourt Brace and Company.
- Kavrazlı, Ü. & Cantürk İ. (Producers). (2010, February 27). *Universite medya* [Television broadcast]. İstanbul: Habertürk
<http://www.universitemedya.tv/umtv/?cat=104>
- Kirkness, A. (2004). Lexicography. In A. Davies and C. Elder (Eds.) *The handbook of applied linguistics* (pp. 54-82). Blackwell Publishing Limited.
- Korkas, V. *Teaching terminology in postgraduate translation programmes: an integrated approach* (with Dr Pantelis Pavlides and Dr Margaret Rogers) 5th Conference "Hellenic Language and Terminology", organised by ELETO at the University of Cyprus (October 2005). Retrieved from
http://www.eleto.gr/download/Conferences/5th%20Conference/5th_28-29-KorkasPavlidesRogersPaper.pdf
- Köksal, D. (1995). *Çeviri Kuramları*. Ankara: Neyir Yayıncılık
- Laufer, B., & Girsai, N. (2008). Form-focused instruction in second language vocabulary learning: a case for contrastive analysis and translation. *Applied Linguistics*, 29(4), 694-716. doi:10.1093/applin/amn018

- Miles, M. B. & Huberman, A. M. (1994). *Qualitative Data Analysis* (2nd edition). Thousand Oaks, CA: Sage Publications.
- Munday, J. (2001). *Introducing translation studies*. London: Routledge.
- Özcan, Y.Z. (2009). Açılış konuşması [Atatürk University 2009-2010 academic year opening ceremony].
- PACTE (2000). "Acquiring Translation Competence: Hypotheses and Methodological Problems in a Research Project". In: Beeby, A.; Ensinger, D.; Presas, M. (eds.) *Investigating Translation*. Amsterdam: John Benjamins, p. 99-106. Retrieved from www.fti.uab.es/pacte/publicacions/Benjamins2000.pdf
- Pym, A. (2003). Redefining Translation Competence in an Electronic Age. In *Defence of a Minimalist Approach*, Vol. 48(4), December 2003, 481-497. <http://www.erudit.org/revue/meta/2003/v48/n4/008533ar.html>
- Sanchez, P. M. (October, 2006). Electronic tools for translators in the 21st century. *Translation Journal*, 10(4). Retrieved from <http://accurapid.com/Journal/38tools.htm>
- Stubbs, M. (2004). Language corpora. In A. Davies and C. Elder (Eds.) *The handbook of applied linguistics* (pp. 54-82). Blackwell Publishing Limited.
- WorldOne Research (April, 2009). LexisNexis Technology Gap Survey (Online) Retrieved from <http://www.lexisnexis.com/media/pdfs/LexisNexis-Technology-Gap-Survey-4-09.pdf>
- Yazıcı, M. (2005). *Çeviribilimin temel kavram ve kuramları*. Çemberlitaş, İstanbul: Multilingual.

QUESTIONNAIRE

- a) I strongly disagree b) I disagree c) I am not sure d) I agree e) I strongly agree

PART A. Translation activities

1. Translation is one of the important targets in English Language Teaching (ELT).
AU: 3.9474 (.95712) NKU: 3.4762 (1.03049)
2. Translation activities have a beneficial impact on learning English.
AU: 4.1579 (.59395) NKU: 3.9524 (.86465)
3. The translation demands that are made by academicians other than the ELT departments take my time and energy that I prefer to devote to my career.
AU: 4.3947 (.82329) NKU: 4.2381 (.99523)
4. The translation demands tend to reflect the attitude that indicates a lack of awareness towards the time-consuming and painstaking nature of translation. AU: 4.2895 (.89768) NKU: 4.3333 (.79582)
5. The recruitment of experienced professional translators at university generally makes a substantial contribution to the translation activities.
AU: 4.5263 (.68721) NKU: 4.7619 (.43644)
6. A translator's academic experience as well as professional experience in the translation market is a reason for choice.
AU: 4.3158 (.61973) NKU: 4.4286 (.67612)
7. Working with the translators recruited by the university interactively is likely to make a valuable contribution to the improvement of academicians' translations. AU: 4.1316 (.70408) NKU: 4.3333 (.65828)
8. It is a good idea to establish a translation center where experienced translators and volunteer academicians are able to work together.
AU: 4.2632 (.97770) NKU: 4.3333 (.65828)
9. It is possible to conduct translation activities in a center within the framework of a systematic organization in such a way to contribute to economy. AU: 4.1316 (.57756) NKU: 4.3810 (.58959)
10. It would be more useful if the work in a translation center is to be run and supervised by professional translators experienced in translations which are related to the academia and other fields (e.g., commerce and industry).
AU: 4.1053 (.83146) NKU: 4.5238 (.51177)
11. It would be nice to get paid in proportion to their contribution to the translation process for those academic personel who wish to work in the translation center. AU: 4.2895 (.65380) NKU: 4.4286 (.59761)
12. It would be a good idea to increase the shares of those doing translation in the working capital.
AU: 4.00 (.92998) NKU: 4.3333 (.57735)
13. If talented students too are to work in the translation center, these students may be able to improve their translation skills and contribute to the translation activities. AU: 3.8684 (1.01798) NKU: 4.2381 (.88909)
14. The contributions of the students in the translation center to the translation projects can be credited in their graduation documents under a separate title. AU: 3.5526 (1.17858) NKU: 3.8571 (1.06234)
15. The supervision of the students' work by professional translators in turns would improve the quality of the translations.
AU: 3.8158 (.89610) NKU: 4.1429 (1.01419)
16. The translation center where experienced translators are employed can function as an academic writing center, thereby contributing to an increase in the number of articles accepted to the academic journals.
AU: 4.0263 (.75290) NKU: 4.5238 (.60159)
17. The translation center can also contribute to the translation activities of the academic personel in other universities.
AU: 3.7368 (1.10733) NKU: 3.9048 (1.09109)
18. The translation centers can contribute to the industrial and commercial institutions in the city.
AU: 3.7632 (.81983) NKU: 4.0952 (.88909)
19. It is necessary for the translation center to give priority to meeting the demands from the local academic personnel.
AU: 4.00 (.81983) NKU: 4.0952 (.88909)
20. It would be good to form a database together with the solutions to the terminology problems in the translations made.
AU: 4.2632 (.60109) NKU: 4.7143 (.46291)
21. The issue of the translation center's finding solutions to the problems of parallel structures in the translations (for instance, using the phrase 'see a dream' although it is necessary to prefer the phrase 'have a dream'.)
AU: 4.1053 (.83146) NKU: 4.5238 (.67964)
22. It would be good to classify the content in the database according to fields.
AU: 4.2368 (.63392) NKU: 4.6190 (.49761)
23. It would be good to have online access to the commonly-faced translation problems and their solutions.
AU: 4.2105 (.70358) NKU: 4.6667 (.48305)

PART B.**Printed versus online source use in translation**

Directions: Circle the choice that best applies to you. (You need to circle only one choice.)

1. If you compare your use of printed and online sources in doing translation:
 1. I always use printed source
 2. I have a tendency to use printed sources more.
 3. I do not tend to prefer printed sources to online sources or vice versa.
 4. I tend to use online sources more often.
 5. I always use online sources.

2. In order to do translation most effectively:
 1. Printed sources must always be used
 2. There should be a tendency to use more printed sources.
 3. There should not be a tendency to use more printed or online sources.
 4. There should be a tendency to use more online sources.
 5. Online sources must always be used.

a) never b) rarely c) sometimes d) often e) always

Printed dictionary use

3. I ----- use printed dictionaries while doing translation.
AU: 2.9737 (.85383) NKU: 2.7143 (.84515)
4. I ----- use monolingual printed dictionaries (e.g., English-English) while doing translation?
AU: 3.4737 (.97916) NKU: 3.1905 (1.03049)
5. I ----- use bilingual dictionaries (i.g., English-Turkish or Turkish-English)?
AU: 2.9211 (.81809) NKU: 3.1905 (1.07792)
6. I ----- do translation from English to Turkish using printed bilingual dictionaries?
AU: 3.1842 (.83359) NKU: 2.9048 (1.4426)
7. I ----- do translation from Turkish to English using printed bilingual dictionaries?
AU: 3.1053 (.86335) NKU: 2.6190 (1.02353)

Online dictionary use

8. I ----- use online dictionaries while doing translation.
AU: 3.9474 (.83658) NKU: 4.1905 (.60159)
 9. I ----- use online monolingual dictionaries (e.g., English-English) while doing translation?
AU: 3.6379 (.99786) NKU: 3.4286 (.74642)
 10. I ----- use bilingual online dictionaries (e.g., English-Turkish or Turkish-English) while doing translation.
AU: 3.6579 (.87846) NKU: 3.8571 (.79282)
 11. I ----- use bilingual online dictionaries while doing translation from English to Turkish.
AU: 3.4474 (.89132) NKU: 3.2857 (.64365)
 12. I ----- use online bilingual dictionaries while doing translation from Turkish to English.
AU: 3.3158 (.93304) NKU: 3.1905 (.67964)
- Use of the search engine**
13. I ----- use the search engine while doing translation. AU: 3.5789 (.97625) NKU: 3.6190 (.97346)
 14. I ----- use both the search engine and dictionary in turns while doing translation.
AU: 3.2895 (.86705) NKU: 3.2381 (.99523)
 15. The dictionary which I use with the search engine in turns is ----- a printed one.
AU: 2.8421 (.94515) NKU: 2.2381 (.94365)
 16. The dictionary which I use with the search engine in turns is ----- an online one.
AU: 3.5789 (.97625) NKU: 3.9048 (.76842)

Working with an expert and special field

17. I have ----- worked with an expert of the special field beyond the scope of your area of specialization.
AU: 2.6579 (.99394) NKU: 2.4286 (.97834)
18. The reason the frequency I am referring to in the response to 11th question is ----- the prospect of having terminology problems.
AU: 3.3947 (1.12801) NKU: 4.0952 (.94365)
19. I have ----- had opportunities to work with an expert who is familiar with the terms and the English equivalents of the special field beyond the scope of my area of specialization.
AU: 2.4737 (1.03289) NKU: 1.8095 (.81358)
20. I ----- use terminology databases while doing translation.
AU: 3.0263 (.94402) NKU: 2.9524 (1.07127)

Machine translation

21. I ----- make use of machine translation while doing translation from Turkish to English (translations done via online or offline translation programs).
AU: 1.8684 (.99107) NKU: 1.0476 (.21822)
22. I ----- make use of machine translation while doing translation from English to Turkish (translations done via online or offline translation programs).
AU: 1.7105 (.95600) NKU: 1.0476 (.21822)
23. Machine translation is ----- reliable in translations from Turkish to English (translations done via online or offline translation programs).
AU: 1.9211 (1.04962) NKU: 1.3810 (.66904)
24. Machine translation is ----- reliable in translations from English to Turkish (translations done via online or offline translation programs).
AU: 1.9211 (1.02355) NKU: 1.3810 (.66904)

Parallel Texts

25. Using sources where the translated equivalents of the texts (bilingual parallel texts) in translations are presented next to one another (together) is an effective method.

AU: 3.2368 (.78617) NKU: 3.7143 (.64365)

26. It is important to make use of parallel texts in English to check whether the translation is a close approximation of natural English in terms of style and structure.

AU: 3.8684 (.70408) NKU: 4.0476 (.58959)

27. I ----- refer to parallel texts in English to check whether my translation is a close approximation of natural English in terms of style and structure.

AU: 3.1053 (.89411) NKU: 3.0952 (.94365)

28. It is necessary for a non-native speaker to check the accuracy of the language he/she has used in his/her translations from Turkish to English in terms of style and structure to the maximum.

AU: 4.2632 (.55431) NKU: 4.3810 (.49761)

29. I cannot look at parallel texts as often as I would like to as my time is limited.

AU: 3.5263 (1.17948) NKU: 3.5714 (.87014)

30. If there are time-saving technological possibilities to enable my translation to approximate to natural English in terms of style and structure. I would like to be informed of how to use them.

AU: 4.0789 (.67310) NKU: 4.5238 (.60159)

31. It is necessary to increase the number of databases for translations from Turkish to English.

AU: 4.00 (.83827) NKU: 4.1905 (.81358)

32. It is necessary to increase the quality of databases for translations from Turkish to English.

AU: 4.2105 (.66405) NKU: 4.3333 (.65828)

PART C**Parallel expressions and formulaic expressions**

1. (open ended question) Suppose that you would like to describe a person who smokes a lot and you are in a dilemma between 'heavy smoker' and 'much smoker'. Please briefly explain below the strategy that you employ to use expressions as natural as native speakers use:

2. (open ended question) For example, if we accept that you would like to determine the more-frequently-used one (i.e., 'expansive access' or 'widespread access'), could you briefly explain below the practical strategies you employ to solve this problem:

3. Using both the dictionary and the search engine to ensure the accuracy of the translations in terms of style and structure is likely to solve the problem.

a) I strongly disagree b) I disagree c) I am not sure d) I agree e) I strongly agree

AU: 2.5526 (1.08297) NKU: 2.8095 (.96304)

4. I have a high level of technical knowledge related to how to use the search engine to ensure the accuracy of the translations in terms of style and structure.

a) I strongly disagree b) I disagree c) I am not sure d) I agree e) I strongly agree

AU: 2.7895 (.98077) NKU: 2.8571 (.79282)

If you are using the dictionary or the search engine, please choose one of the following alternatives (ONLY ONE) that best describes your situation)

C5:

1. I only use the dictionary.
2. I use the search engine (except for looking for a dictionary in the search engine) and the dictionary in turns (I use the dictionary more often than the search engine)
3. I use both the dictionary and the search engine (except for looking for a dictionary in the search engine) in turns, but I do not have a tendency to use one more than the other.
4. I use the search engine (except for looking for a dictionary in it) more but I use the dictionary and the search engine in turns.
5. I only use the search engine (except for looking for a dictionary in it)

C6:

1. Only the dictionary should be used.
2. The search engine should be used in turns with the dictionary (but the dictionary should be preferred more often).
3. Both the dictionary and the search engine should be used in turns but there should not be a tendency to use one more than the other.
4. Both the dictionary and the search engine should be used in turns but the search engine should be used more often.
5. Only the search engine should be used.

TÜRKİYEDE TEKNİK EĞİTİM FAKÜLTELERİNİN DÜNÜ BUGÜNÜ VE YARINI

PAST PRESENT AND FUTURE OF TECHNICAL EDUCATION FACULTIES IN TURKEY

Adnan KAKİLLİ
Marmara Üniversitesi Teknik Eğitim Fakültesi Kadıköy, İstanbul
kakilli@marmara.edu.tr

ÖZET

Bu çalışmada Milli Eğitim Bakanlığına bağlı okullara Teknik Öğretmen yetiştiren Teknik Eğitim Fakültelerinin tarihsel gelişimi incelenmiştir. Ülkemizde çok sayıda Teknik Eğitim Fakültesi bulunmasına rağmen özellikle son 10 yılda bunların kalitesi düşmüştür. Bu çalışmada nitelik ve nicelik açısından bu düşüşün sebepleri kuruluşundan bu güne kadarki süreçte değerlendirilmiştir. 2010-2011 Eğitim-Öğretim yılı itibarıyla öğrenci kabul etmeyen Teknik Eğitim Fakültelerinin yerine Teknoloji Fakülteleri kurulmuştur.

Kalitenin düşmesi, unvan ve yetki sorunlarının çözülemez hale gelmesi teknik eğitimde yeni düzenlemeleri zorunlu hale getirmiştir. Bu çalışmada Teknik Eğitim Fakültelerinin dünü, bugünü ve yarını değerlendirilmiştir. Teknoloji Fakülteleri için model önerilmiş ve yurt dışı uygulamalarından örnekler verilmiştir. Sonuç olarak ülkemizde Teknoloji Eğitiminde yaşanan sorunlar ve bunlara ilişkin çözüm önerileri sunulmuştur.

ABSTRACT

In this study, structure and historical development of Technical Education Faculty are examined. Technical Education Faculties were established in order to educate Technical Teachers who work for vocational high school depending on Ministry of National Education. We have a number of Technical Education Faculty at present, but their qualification degreased in last decade. In this paper, reasons of falling down are presented and Technical Education Faculties, from its established to now, have been investigated in point of quantity and quality. Technical Education Faculties will have not accepted student any more after 2010-2011 education terms so these Faculties will be taken into Technologies Faculty.

It has been necessitated new regulations about Technical Education in Turkey. In this study, several Technical Teaching models are suggested in order to educate Technical Teacher and Technical Staff. Among the proposed models have been compared to the international samples.

GİRİŞ

Mesleki eğitim ülkemizin geleceği açısından hayati önem taşımaktadır. Gelişmiş ülkelerin ekonomik göstergeleri ve refah düzeyleri gelişmekte olan ülkelere göre daha iyidir. Ülkelerin teknolojik düzeylerini arttırmaları yapacakları AR-GE çalışmalarına bağlıdır. AR-GE çalışmalarının yapılabilmesi için mali destek ve fiziksel imkanların sağlanması tek başına yeterli değildir. Burada önemli olan AR-GE çalışmalarını yürütebilecek donanımlı bilim insanlarının olmasıdır. Bu bağlamda ülkeler kendi gelecekleri açısından her düzeyde teknik personel yetiştirme politikalarını iyi analiz ve sentez etmek durumundadırlar.

Tarihi süreç içerisinde, değişik yollardan birbiriyle mücadele eden toplumlar; günümüzde işlevsel açıdan eğitimin döner sermayesi olan beyin gücüne verdikleri önem ile ön plana çıkmaktadırlar. Beyin gücüne önem veren toplumlarda, kendi eğitim sistemlerinin kalitesini ve verimini arttırmak için sürekli arayış içinde olmaktadır. Özellikle eğitimde kalitenin ve verimin gelenekselleşmesi; eğitim sisteminin işlevliliği ve oturmuşluğu ile doğrudan bağlantılıdır (Kanat, 2004).

Mesleki ve Teknik Eğitim Fakülteleri grubunda yer alan Teknik Eğitim Fakülteleri, parlak bir geçmişi olan Teknik Yüksek Öğretmen Okullarına dayanmakla birlikte bugün, mesleki eğitim alanında en büyük sorun yaşayan kurumlar arasındadır. Sayıları 19 olan bu fakülteler, ihtiyacı çok üzerindedir. Bu nedenle mezunların öğretmen olarak atanma oranı sadece %5 civarındadır. İş dünyasında çalışmak durumunda olan mezunların unvan ve yetki sorunu bulunmaktadır. Öte yandan, AB ülkelerinde bu fakültelere eşdeğer herhangi bir yüksek öğretim kurumu olmadığından öğrenci ve öğretim elemanı değişim programlarının uygulanmasında güçlük yaşanmaktadır. Tüm bu olumsuzluklar, Teknik Eğitim Fakültelerine gelen öğrenci niteliğinde ve motivasyonunda büyük düşüşe yol açmaktadır (Eşme, 2007).

Milli Eğitim Bakanlığına bağlı mesleki ve teknik liselere öğretmen yetiştirmek amacıyla kurulmuş olan bu fakülteler misyonunu tamamlamıştır. Mesleki ve Teknik Eğitim Fakültelerinin kapatılması ve yerine Teknoloji Fakültelerinin kurulması hakkındaki Kanun 13 Kasım 2009 tarihinde 27405 sayılı Resmi Gazetede yayımlanarak yürürlüğe girmiştir.

TEKNİK EĞİTİM FAKÜLTELERİNİN GEÇMİŞİ

Teknik Eğitim Fakültelerini temelini oluşturan Erkek Meslek Öğretmen Okulu 1937-1938 öğretim yılında Ağaçlıları ve Demircilik Bölümleriyle faaliyetine başlamıştır.

Erkek Meslek (Ertik) Öğretmen Okulu, 1739 sayılı Milli Eğitim Temel Kanunu'nun kabulü ile her derecedeki okul öğretmenliği için en az 2 yıl yüksek öğrenim görmüş olma şartı getirilmesi üzerine Kültür Bakanlığı Kültür Kurulu'nun 6/11/1936 tarih ve 118 sayılı kararı ile Erkek Sanat okullarının mesleki ve uygulamalı dersleri için öğretmen yetiştirmek üzere Ankara Bölge Sanat Okuluna eklenmiş 3 yıllık öğrenim süreli bir okuldur.

1940 yılında Erkek Meslek Öğretmen Okulu'na Elektrik Şubesinin de eklenmesiyle Sanat Enstitülerinin Elektrik Şubelerinin teknik ders öğretmeni ihtiyacı 1943-1944 öğretim yılından itibaren Erkek Meslek Öğretmen Okulu tarafından karşılanmıştır.

1946 yılında Milli Eğitim Bakanlığı kararı ile Erkek Meslek Öğretmen Okulu'nun adı Erkek Teknik Öğretmen Okulu olarak değiştirilmiş ve öğretim süresi 1946-1947 öğretim yılından itibaren 4 yıla çıkarılmıştır (Kentli, 1998).

1959 yılına kadar Teknik Öğretmen Yetiştiren kaynak olarak Erkek Teknik Öğretmen Okulu sadece Ankara'da ve tek şube halinde bulunurken 1959-1960 öğretim yılında İstanbul'da Maçka Sanat Enstitüsü Tesislerinde de açılması sonucu 2 şube haline gelmiştir.

1962-1963 öğretim yılında Erkek Teknik Öğretmen Okullarının adı Erkek Teknik Yüksek Öğretmen Okulu olarak değiştirilmiştir. İstanbul Yüksek Teknik Öğretmen Okulu 1962-1963 ve 1963-1964 öğretim dönemlerinde iki dönem mezun verdikten sonra kapanması üzerine Ankara Erkek Teknik Yüksek Teknik Öğretmen Okulu tekrar tek şube haline dönmüştür (Kentli, 1998).

6/11/1981 tarih, 17506 sayılı resmi gazetede yayınlanan 2547 sayılı Yüksek Öğretim Kanunu'nun Geçici 28. maddesi uyarınca Yüksek Öğretim Kurumlarının yeniden teşkilatlayan 20/07/1982 tarih, 17760 sayılı resmi gazetede yayınlanan 41 sayılı kanun hükmünde kararname ile o tarihe kadar Milli Eğitim Bakanlığına bağlı olan Ankara Yüksek Teknik Öğretmen Okulu Teknik Eğitim Fakültesi adıyla Gazi Üniversitesi Rektörlüğüne, İstanbul Yüksek Teknik Öğretmen Okulu Teknik Eğitim Fakültesi adıyla Marmara Üniversitesi Rektörlüğüne bağlanmıştır. Aynı kararname ile Elezığda Fırat Üniversitesine bağlı yeni bir Teknik Eğitim Fakültesi kurulmuştur (Kentli, 1998). 2009 yılına kadar değişik tarih ve üniversitelerde 16 tane daha Teknik Eğitim Fakültesi kurulmuş ve bu gün sayıları 19'a ulaşmıştır. Bu Fakültelerden Gebze Yüksek Teknoloji Enstitüsü Teknik Eğitim Fakültesi ve KTÜ Teknik Eğitim Fakültesi hiç öğrenci almamıştır.

Erkek Teknik Öğretmen Yüksek Okulu döneminde uygulamalı dersler yoğun bir şekilde programlarda yer alma iken, Teknik Eğitim Fakülteleri döneminde uygulama saatleri hızla azaltılmıştır.

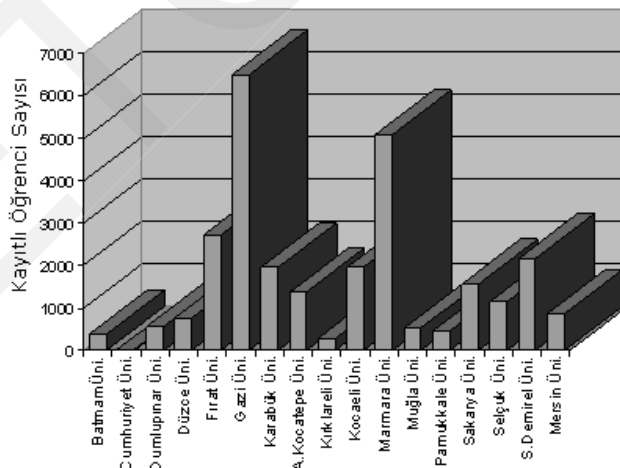
TEKNİK EĞİTİM FAKÜLTELERİNİN BUGÜNÜ

Teknik Eğitim Fakültelerinin kapatılmasına ilişkin karar, 13 Kasım 2009 tarih ve 2009/15546 karar sayısı ile Resmi Gazetede yayınlanmıştır. Hukuken kapanmış olan bu fakülteler, mevcut öğrencilerin mağdur olmaması için 2015-2016 öğretim yılı sonuna kadar fiili varlıklarını devam ettireceklerdir (13 Kasım 2009 tarih ve 2009/15546 sayılı Resmi Gazete).

Bazı Teknik Eğitim Fakülteleri, değişen ve gelişen teknolojiye ayak uydurmakla birlikte ne yazık ki gelişmiş ve kadro alt yapısı yetersiz olan diğer Teknik Eğitim Fakülteleri bu gelişmelere ayak uyduramamıştır. Ayrıca Milli Eğitim Bakanlığının Teknik Öğretmen talebi ve arzı arasındaki fark yıllar içinde giderek açılmıştır. Bunun sonucunda istihdam sorunu yaşayan Teknik Öğretmenler endüstriye kaymak zorunda kalmışlardır. Endüstride çalışacak Teknik Öğretmenleri ise başka bir sorunlar beklemektedir. Özlük hakları, unvan ve yetki sorunları nedeniyle "mavi yakalı personel" diye bilinen teknisyen veya ön lisans mezunları ile eşdeğer statüde çalışmak zorunda bırakılmışlardır. Bu durum Teknik Öğretmeni hem maddi hemde manevi açıdan yıpratmış ve Teknik Eğitim Fakültelerinin cazibesini yitirmesine neden olmuştur. Üniversite sınavlarında katsayı problemi yaşayan öğrencilerin mesleki ve Teknik Eğitimi tercih etmemesi ise öğrenci kalitesini düşürmüştür.

Teknik Öğretmenler açısından mezuniyet sonrası unvan ve yetki konusunda sıkıntılar yaşanmaktadır. 12 Mayıs 1992 tarih ve 21226 sayılı resmi gazetede yayınlanarak yürürlüğe giren "Bazı Lise, Okul ve Fakülte Mezunlarına Unvan verilmesi" hakkındaki 3795 sayılı kanun bu sıkıntıyı gidermek amacıyla çıkartılmıştır (Kakilli, 2003). 3795 sayılı kanunun çıktığı 1992 yılından günümüze kadar sadece 10 kişinin faydalanabildiği Mühendislik Tamamlama programı, Teknik Eğitim Fakültelerinin kapatılmasıyla da hukuken geçerliliğini kaybetmiştir.

Yukarıda açıklanan nedenlerden dolayı Teknik Eğitim Fakültelerinin kalitesi düşmüş ve kör bir döngüye girmiştir. Öğrenci kabul eden 17 Teknik Eğitim Fakültesine ait 2008/2009 öğretim yılındaki 28381 öğrencinin fakültelere göre dağılımı Şekil 1 de verilmiştir. Şekil 1 incelendiğinde Gazi Üniversitesi 6507 öğrenci ile 1. sırada, Marmara Üniversitesi 5085 öğrenci ile 2. sırada ve 2713 öğrencisi ile Fırat Üniversitesi 3. sırada yer almaktadır. Bu 3 üniversitenin toplam öğrenci sayısı, diğer 14 üniversitenin toplamından fazladır. Bu fakültelerde 903 öğretim elemanı görev yapmaktadır. Zaman içerisinde fakülte ve öğrenci sayıları artırılarak Teknik Öğretmen enflasyonu yaratılmıştır. 2007/2008 öğretim yılında 4996 Teknik Öğretmen mezun olmuştur (OSYM 2008-2009 Öğretim Yılı Yüksek Öğretim İstatistikleri). Bu rakam Milli Eğitim Bakanlığının ihtiyacının çok çok üzerindedir.



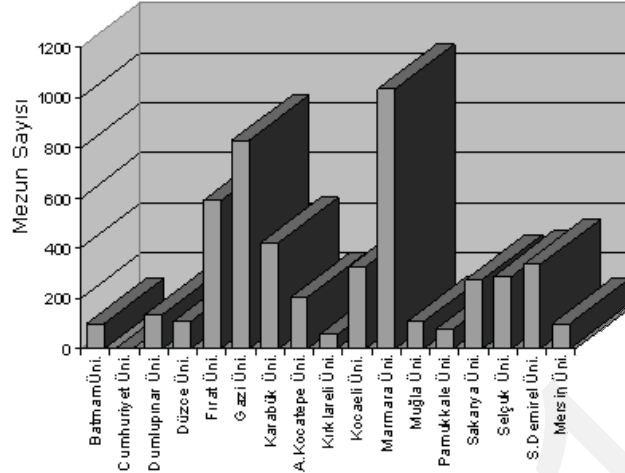
Şekil 1 2008/2009 Öğretim Yılı İtibariyle T.E.Fakültelerinin Toplam Öğrenci Sayıları

Nitelikli insan gücü yetiştirme görevi eğitimin ve özellikle de mesleki teknik eğitimin öncelikli görevidir. Mesleki eğitimin görevini etkili bir şekilde yapabilmesi için bilimsel araştırmalara ve inovasyona gerek vardır. İnovasyon, "toplumsal, kültürel ve idari ortamda yeni yöntemlerin kullanılmaya başlanması" anlamındadır. Başka bir ifade ile hem bir süreci hem de bir sonucu ifade eder. Günümüzün hızla değişen rekabet ortamında, her alanda olduğu gibi mesleki ve teknik eğitimin de hizmetlerini ve yöntemlerini sürekli olarak değiştirmesi ve yenilemesi gerekmektedir (Özkan, 2009).

Bireyin, toplumda sağlıklı bir birey olarak yaşayabilmesi, sosyal yaşamda yerini alabilmesi için iş sahibi olmasının yanında, bu işi en iyi şekilde yapabileceği bilgi ve beceriye, bu bilgi ve beceriyi ürüne ve sonuca dönüştürebileceği yapabilme potansiyeline ihtiyacı vardır. Bireyin topluma karşı olan sorumluluklarının başında üretime katılmak gelmektedir. Mesleki ve teknik eğitime olan toplumsal ihtiyaç, bireyin toplumsal etkinliklere katılmasının gerçek bir sonucudur. Günümüz toplumunda, bireyinin artan sorunlarının çözümünde, okul ile

çalışma dünyasını uyumlu şekilde birleştiren mesleki ve teknik Eğitime ve bu alanda yapılacak yenilikçi çalışmalara daha çok ihtiyaç duyulmaktadır (Özkan, 2009).

Teknik Eğitim Fakültesi mezunlarının yaklaşık %5'i öğretmen olarak atanabildiği bilinmesine rağmen sayıları hızla artırılmış ve Teknik Öğretmen kitleleri oluşturulmuştur. 2007/2008 öğretim yılında mezun olan 4996 öğrencinin fakülterele göre dağılımı Şekil 2 de verilmiştir.



Şekil 2 2007/2008 Öğretim Yılı İtibarıyla T.E.Fakültelerinden Mezun Olan Öğrenci sayıları

TEKNİK EĞİTİM FAKÜLTELERİNİN GELECEĞİ

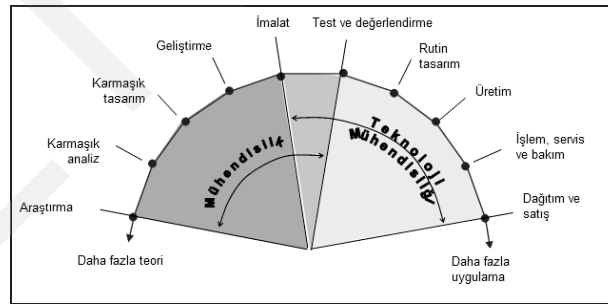
Kayıtlı öğrencileri mezun oluncaya kadar Teknik Eğitim Fakülteleri fiili mevcudiyetlerini devam ettireceklerdir ve yeni öğrenci kabul etmeyeceklerdir. Milli Eğitim Bakanlığı Teknik Öğretmen ihtiyacını formasyon eğitimi almış, Teknoloji Fakültesi ve Mühendislik Fakültesi mezunları arasında karşılayacağı düşünülmektedir. Teknik Eğitim Fakültesi mezunlarının Yüksek Lisans ve Doktora öğrenimleri devam etmekle birlikte kapatılıp kapatılmayacağı hususunda belirsizlikler devam etmektedir. Ayrıca Teknik Öğretmen kökenli Öğretim Üyesi ve yardımcıların da yeni kurulan Teknoloji Fakültelerinde görev alınamayacakları da belirsizliğini korumaktadır.

Teknik Eğitim Fakülteleri ve mezunlarının problemlerini çözmek amacıyla Teknoloji Fakültesine dönüşümü amaçlayan bu yeni yapılanma, beraberinde yeni sorunları ortaya çıkarmıştır. Teknik Eğitim Fakülteleri Teknoloji Fakültelerine dönüştürülmemiştir. Aksine bir fakülte kapatılmış ve yeni bir fakülte açılmıştır. Bu bakımdan TEF Mezunları unvan ve yetki konusunda hak ve iddia sahibi olamayacaklardır. Ayrıca TEF'lerinde görevli akademik personelin de Teknoloji Fakültelerinde nakli doğrudan gerçekleşmeyecek, belkide birtakım sınırlamalar getirebilecektir.

Teknik Eğitim Fakültelerinin sorunlarına çare olması beklenen Teknoloji Fakülteleri, teknoloji eğitiminde tamamen yeni bir sayfa açmayı hedeflemektedir. YÖK bu alanda yeni bir sayfa açarken Teknik Eğitim Fakültelerini sorunları ile birlikte tarihe gömmüştür.

TEKNOLOJİ FAKÜLTELERİ

Teknoloji Fakülteleri Avrupa Birliği ülkelerinde ve ABD'de benzer uygulamaları olan fakültelerdir. Mühendislik ve Teknoloji Fakültesi programları karşılaştırmalı olarak Şekil 3 de verilmiştir.

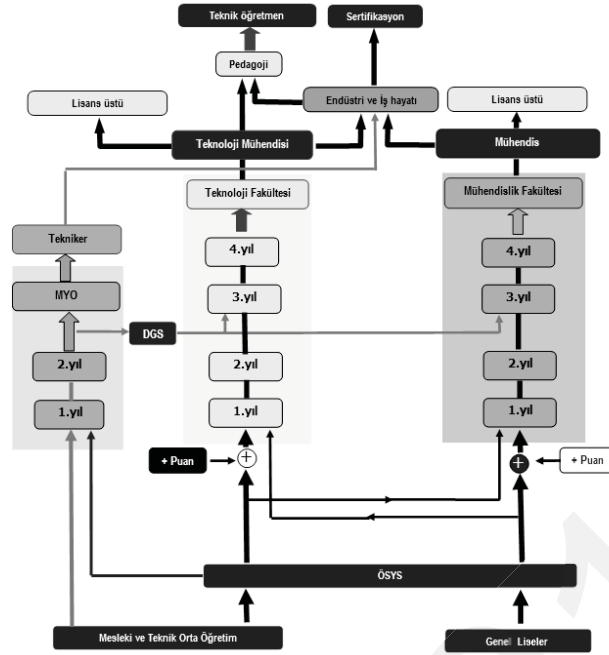


Şekil 3 Mühendislik ve Teknoloji Mühendisliğinin karşılaştırılması[8]

Gelişmiş ülkelerde, teknoloji eğitimi Teknoloji Fakülteleri tarafından verilmektedir. Bu fakültelerin temel kuruluş amacı endüstriye teorik ve daha çok uygulama becerisi olan teknoloji mühendisi yetiştirmektir. Bu okullar, eğitim öğretim faaliyetlerinde de yoğun bir şekilde sanayi kuruluşları ile işbirliği yapmakta ve müfredat programlarını endüstrinin ihtiyaçları ile gelişen teknolojiye uyumlu olabilecek şekilde dinamik yapıya kavuşturmuşlardır. AB, ABD ve bazı gelişmiş ülkelerdeki Teknoloji Fakültesi (School of Technology, College of Technology veya Faculty of Technology) mezunlarından sanayi tecrübesi olması kaydı ile pedagojik formasyonu olanlar öğretmen (Teknik Öğretmen) olarak atanmaktadır (http://www.obitet.gazi.edu.tr/tek_fak.htm, erişim tarihi 14/01/2010).

Mühendislik Fakültesi mezunu araştırmacı mühendisler AB ülkeleri ve ABD de "Chartered Engineer" olarak, Teknoloji Fakültesi mezunları ise "Incorporated Engineer" olarak anılmaktadır. Bu iki mühendislik eğitimi arasındaki en önemli fark birincisinin bilgi-teori ve tasarım temelli diğerinin beceri ve uygulama temelli oluşudur (http://www.obitet.gazi.edu.tr/tek_fak.htm, erişim tarihi 14/01/2010).

Teknoloji Fakülteleri kurulmuş olmakla birlikte 2010-2011 öğretim yılında öğrenci kabul edeceği belirsizdir. Çünkü bu fakültelerin alt yapısı tamamen oluşturulamamıştır. Öncelikle bu fakültelerde bölümlerin oluşturulması ve görev yapacak akademik personelin ataması henüz tamamlanmamıştır. Bölüm adları henüz kesinlik kazanmamış olup akademik personel atamasında ise hangi kriterlerin uygulanacağı netlik kazanmamıştır.



Şekil 4. Teknoloji Fakültesi Modeli

Bu çalışmada Elektrik Bölümü için Elektrik Teknolojisi Mühendisliği Bölümü ve mezunlarına da Elektrik Teknolojisi Mühendisi unvanının verilmesi önerilmektedir. Bu isimlerin kullanılması durumunda daha önce Teknik Eğitim Fakültelerinde yaşanan akreditasyon sorunları yaşanmayacaktır. Sonuç olarak öğrenci ve öğretim üyesi değişim programları rahatlıkla uygulanabilecektir. Şekil 4'de yaygın olarak benimsenmiş Teknoloji Fakültesi modeli yer almaktadır (http://www.tekob.org/sayfa_haber/Tek_Fakultesi.htm erişim tarihi, 14/01/2010).

SONUÇ VE ÖNERİLER

Teknik Eğitim Fakültesi mizanlarının unvan, yetki, özlük vs. gibi sorunları çözmek amacıyla başlatılmış olan Teknoloji Fakültelerine dönüşüm projesi, TEF öğrencisi ve mezunlarının lehine sonuçlanmıştır. Yeni yapılanmada geçmiş dönem sorunlarına ait bir çözüm önerisi getirilmemekle birlikte Teknoloji Fakülteleri ile bir organik bağ kurulmamıştır.

Teknoloji Fakülteleri, yeni öğrencilerinin unvan ve özlük sorunlarını çözmek ve akreditasyon problemlerinin yaşanmaması için önlemler almayı hedeflemektedir. Uygulama Mühendisi unvanı verilmesi düşünülen öğrencilerin güncel ve uygulamalı öğretim görmeleri kendilerine bir ayrıcalık sağlayacaktır. Mesleki ve Teknik Orta Öğretim yanı sıra Genel Liselerden öğrenci almaları ise bu fakültelelere tercih eden öğrenciler arasında kalitenin artmasına neden olacaktır. Teknoloji Fakültelerini akademik kadroları oluşturulurken, Teknik Eğitim Fakültelerinde görev yapan akademik personelin aktarılmış da uygulamalı teknoloji ve bilgi birikiminin aktarılması adına faydalı olacaktır.

KAYNAKLAR

Eşme, İ., Türkiye'de Mesleki ve Teknik Eğitimin Bugünkü Durumu ve Sorunları, T.C.Yüksek Öğretim Kurulu, Uluslararası Mesleki ve Teknik Eğitim Konferansı, sayfa 20, 15-16 Ocak 2007, Ankara.

Kakilli, A., Akuner C., Teknik Eğitim Fakültelerinde Mühendislik Eğitimi, III. Uluslararası Eğitim Teknolojileri ve Fuarı, 28-29-30 Mayıs 2003, Doğu Akdeniz Üniversitesi, Kuzey Kıbrıs Türk Cumhuriyeti.

Kanat, Ö., Türk-Alman Eğitim Sisteminin Karşılaştırılması, M.Ü.Fen Bilimleri Enstitüsü Yüksek Lisans Tezi, Sayfa 1, 2004, İstanbul.

Kentli, F. Elektrik Teknik Öğretmeninin Yetiştirilmesinde Yer Alan Program Değişiklikleri, 16.Milli Eğitim Şurası Hazırlık Dökümanı Mesleki Ve Teknik Eğitim, sayfa 365-366, 1998, Ankara

OSYM 2008-2009 Öğretim Yılı Yüksek Öğretim İstatistikleri

Özkan, H.,H., Mesleki ve Teknik eğitimde İnovasyon İhtiyacı, I.Uluslararası Türkiye Eğitim Araştırmaları Kongresi, 1-3 Mayıs 2009, Çanakkale

http://www.obitet.gazi.edu.tr/tek_fak.htm, erişim tarihi 14/01/2010

http://www.tekob.org/sayfa_haber/Tek_Fakultesi.htm erişim tarihi, 14/01/2010

13 Kasım 2009 tarih ve 2009/15546 sayılı Resmi Gazete

UNDERGRADUATE EDUCATION PERFORMANCE ANALYSIS USING CLUSTERING WITH EM ALGORITHM

Volkan CAKIR, Old Dominion University, cvolk002@odu.edu
Adrian GHEORGHE, Old Dominion University, agheorgh@odu.edu

ABSTRACT: In this study we examined whether clusters of students emerged from their performances at the applied sciences courses of freshman year in samples of military academy cadets. Samples are from Industrial Engineering Department at the Turkish Air Force Academy (TuAFA). Data is gathered from different data management systems, combined into a single database and converted into different file types that the software we used in this study are using. Our database has records of total 276 undergraduate students that enrolled in the academy between years 2003-2006. The Expectation-Maximization algorithm (EM algorithm) is selected in the clustering process and open-source code data-mining tool named WEKA is chosen as software. The results showed performance of the clusters follows same patterns throughout the education.

Keywords: clustering analysis, academic achievement, engineering education, military academy, Weka.

1. INTRODUCTION

Academic success in the college student population has been of interest to researchers, practitioners, educators, and policy makers for over 75 years. First Spearman (1927) introduced general intelligence as a key factor. Later studies on academic performance can be categorized according to input types. First category studies are based on traditional cognitive measures such as pre-undergraduate education grade point average (GPA) and test scores (SAT, ACT, OYS). Second category studies are based on non-cognitive measures such as interests, personality changes (Poropat 2009), background experiences, motivational characteristics (trait-based personality assessments, college admissions tests) (Kuncel et al. Ones, 2004, Brown et.al 2008) and demographic measures (geographical region, sex). The last category is studies using mixture of the both cognitive and non-cognitive measure (Schmitt et al. 2007, Shivpuri et al. 2006). However, studies concerning academic performance in Military Academies are limited. Military Academies differ from other academic environments especially in terms of student expectations. A cadet is already employed when he/she is enrolled to military academy although he/she is not paid. This leads to a different perception, because all he/she has to do is satisfying necessary conditions for graduation. Barnes (1983) tried to explain academic performance in terms of GPA tried to be explained using stress in relations with parents and faculty. Ercan (2005) tried to explain graduation GPA using linear and nonlinear multiple regression methods with both type of inputs. Evans (2003) explored relationships among approaches to learning (deep, surface), need for cognition, and three types of control of learning (adaptive, inflexible, irresolute) using factor analysis.

As being a metric of academic performance, GPA is one of the most studied variables. However individual course grades would tell more information about the student's personality, general intelligence and academic background. In our literature survey, a gap in academic performance studies using freshman year course grades was identified. In almost all four-year undergraduate engineering education curriculums, the first year is occupied with applied sciences courses. We defined our goal as creating clusters of students based on their academic performances at the first semester of the freshman year. This study is a part of new curriculum development project with new passing algorithm which started in 2009 and continuing in TuAFA.

Weka (Waikato Environment for Knowledge Analysis) is open-source software, which includes a collection of tools for completing many data mining tasks. We used clustering tool of Weka with EM algorithm which comes with the software. EM algorithm is a probabilistic clustering method assumes that data comes from a mixture of several populations.

1.1 Turkish Air Force Academy

Our study samples are from TuAFA, which is the major source of officers in Turkish Air Force (TuAF). There has been a four year academic education in TuAFA since 1974. Bachelor degree education on Aeronautical (Aviation until 1995), Electronics, Computer and Industrial Engineering programs which began to be applied since 1991-1992 and legalized on 17th May 2000. Since then the officers graduated from TuAFA as pilot candidates started to be given an additional diploma of BS in Engineering (Dönmez, 2001). Education program is formatted according to the goals of the TuAF and also in the standards of engineering by the Council of Higher Education like all engineering programs in Turkey. There are also courses like military training lessons, physical education lessons, leadership and commandship training and practices that are called coefficient lessons.

2. PRE-PROCESSING

2.1 Data Structure

Our database includes records of totally 276 industrial engineering undergraduate cadets enrolled, between the years of 2003-2006, in the Academy. In TuAFA group of students who enrolled at the same year are members of the same "fleet" and we used the same attribute name in our study. Data structure is given in Table 1.

Table 1: Data structure

| Enrollment year | Fleet Name | Number of Students examined |
|-----------------|------------|-----------------------------|
| 2003 | Fleet 2 | 72 |
| 2004 | Fleet 1 | 54 |
| 2005 | Fleet 4 | 59 |
| 2006 | Fleet 3 | 91 |

Before moving further into our analysis, brief information about the education and grading system of TuAFA should be given. Like all other industrial engineering curriculums the first year curriculum consists of applied sciences lectures. There are four calculus/mathematics, two physics and a chemistry course in the first three semester of the undergraduate curriculum. These courses keep 18, 8 and 3 course-hours respectively and have 28.5 credits in total. There is a midterm and a final examination for each course. Every cadet gets a project/assignment/quiz grade from each course which has an effect up to 40% on the midterm examination score. Course semester grade is calculated by multiplying 0.4 of the midterm grade and 0.6 of the final examination grade. Fixed based and fixed letter spaced marking system is being applied in order to evaluate end of semester grades. There are different bases and limits for credit letters for three different categories of courses which are determined and announced by the Council of Academic Education of TuAFA at the beginning of each education year. These categories are:

- Technical: Applied sciences courses and departmental courses. Base is 50 for DD and 5 point increments for each letter.
- Military and Social: Base is 70 in current year (was 60 for DD at the periods of analysis) and 4-5 point increments for each letter.
- Foreign Language: English. Base is 69 for freshman year and 65 for the other years for DD and 3-5 point increments for each letter

At the end of each semester a cadet is required to pass base limits otherwise takes make-up exams. If cadet fails to pass every course taken at that year he/she fails whole lectures and repeats the year.

2.2 Data Analysis

Our study implies that cadets are showing same academic performances throughout their undergraduate education and these performances can be identified by course grades of the first semester of the freshman year. Three applied science courses; namely Calculus-I (MAT101), Physics-I (FIZ101) and Chemistry (KIM100); identified as clustering lectures since our data is coming from engineering students. Our database consists of four consecutive years and we have to check if means of each year's grades are same and if they are all coming from the same population. In order to proceed, we have to check assumptions for ANOVA tests. The first assumption of this test is the equality of the variances of the samples. Error bar charts for each of the clustering courses are given in Figure 1.

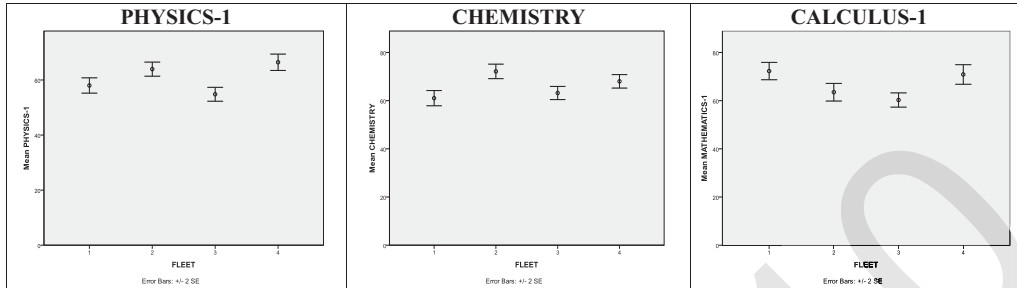


Figure 1: Sample error bar of the clustering courses

If we check the error bar charts we can say that even though variances are not changing the mean values of scores are changing year by year. This paper does not exhaustively address the causes of variability and mean differences among fleets. Assumption of equal variances seems to hold for all three lectures roughly looking at figures. For further analysis we conducted Levene's test of homogeneity. Level of significance is accepted as 0.05 in statistical tests of this study.

The null hypotheses we are checking in Levene's test is the equal variances between fleets for each lecture. Since significance values exceed 0.05 for all three clustering courses (Table 2). We can conclude that the Levene statistic fails to reject the null hypothesis and our assumption about group variances is justified.

Table 2: Test of homogeneity of variances for clustering lectures

| | Levene Statistic | df1 | df2 | Sig. |
|------------|------------------|-----|-----|------|
| PHYSICS-1 | .995 | 3 | 272 | .396 |
| CHEMISTRY | 1.464 | 3 | 272 | .225 |
| CALCULUS-1 | 1.698 | 3 | 272 | .168 |

The normality assumption should be checked before moving forward to ANOVA. We checked normality assumption heuristically and statistically. The Q-Q plots and goodness of fit test results were given in Figure 2 for only Calculus-I for space saving.

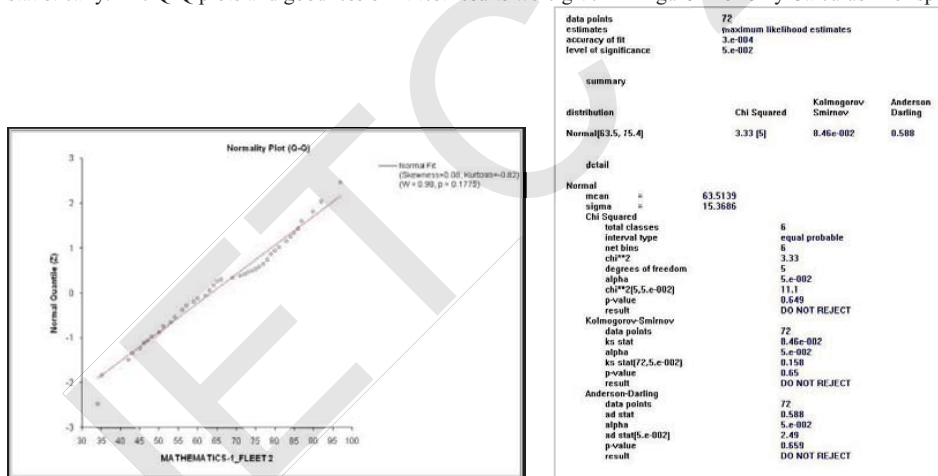


Figure 2: Normality check of Calculus-I using Q-Q plot and goodness-of- fit tests for Fleet 2.

Q-Q plots showed no substantial deviation from normal distribution and goodness of fit test results did not reject normality assumption for all three clustering courses.

ANOVA table constructed in order to test hypothesis of equal means of course grades between fleets is given in Table 3. Hypothesis of equal means does not hold with significance level 0.05.

Table 3: ANOVA table of course grades with grouping variable fleet

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--------|----------------|----------------|-----|-------------|--------|------|
| FIZ101 | Between Groups | 6206.290 | 3 | 2068.763 | 16.328 | .000 |
| | Within Groups | 34462.144 | 272 | 126.699 | | |
| | Total | 40668.435 | 275 | | | |
| KIM100 | Between Groups | 5020.708 | 3 | 1673.569 | 11.166 | .000 |
| | Within Groups | 40769.103 | 272 | 149.886 | | |
| | Total | 45789.812 | 275 | | | |
| MAT101 | Between Groups | 6943.215 | 3 | 2314.405 | 10.850 | .000 |
| | Within Groups | 58019.405 | 272 | 213.307 | | |
| | Total | 64962.620 | 275 | | | |

2.3 Standardizing via Normalization

Clustering process searches for an association between similar data items in an existing database. Our data consists of four different fleets and clustering is based on three different and independent courses. Data integration should be done before clustering study in order to

avoid inconsistency and speed up the mining process. Data transformation such as normalization may improve the accuracy and efficiency of mining algorithms clustering classifiers (Han and Kamber, 2001, Shalabi et.al. 2006). There are many methods for data normalization such as linear normalization, normalization with respect to mean or median, and normalization by decimal scaling.

Since we don't have enough evidence for rejection of normality assumption for three clustering courses we preferred using statistical normalization.

$$Z_{ijk} = \frac{X_{ijk} - \bar{x}_{jk}}{s_{jk}} \quad (1)$$

In statistical normalization \bar{x} is the estimator of mean value of population where s is the estimator of σ which is the standard deviation of the population. In above normalization formulas "i" stands for case number, "j" stands for course and "k" for fleet.

3. CLUSTERING

If classes of a dataset are not explicitly defined or well-known, clustering methods would well divide instances into natural groups. Instances may be a member of exclusive groups, may fall into several groups, may be assigned to each cluster with a certain probability or may be a member of a hierarchical tree type clusters based on the problem and the algorithm issued. Determining which algorithm to use is generally based on estimation of the error using cross validation and the type of the data.

3.1 EM Algorithm

In creating clusters we used EM algorithm, which comes with Weka software. The EM algorithm is a stable (Watanabe and Yamaguchi 2004) finite-mixture model. A mixture is a set of probability distributions, representing k clusters, which govern the attribute values of that cluster. EM assigns a probability distribution to each instance which indicates the probability of belonging to each of the clusters. This means that each of the distributions gives the probability that a particular observation would have one of a certain set of attribute values, if it were truly a part of that cluster. An observation belongs to only one cluster, but which one is not known at the start of analysis. It has normality assumption of the clusters. The EM algorithm is an iterative algorithm, in each iteration of which there are two steps, the Expectation step (E-step) and the Maximization step (M-step). The probability represents the expectation, and the calculation of the distribution parameters is the process of maximization (McLachlan and Krishnan 2008, Witten 2005, Nisbert et al. 2009). EM algorithm starts iteration with a single cluster and increase cluster number after some pre-specified iterations. EM can decide how many clusters to create by cross validation. It converges toward a fixed point but never reaches. EM algorithm does not converge to a global optimum and it is recommended running the algorithm with different initial guesses about the parameters of the normal distributions.

3.2 Clustering Using Applied Sciences Course Z-scores

Braten (2005) studied clusters of student profiles and their changes over one academic year. Clusters are based on self-reported measures of interest, mastery goals, task value and self-efficacy. Our study implies that clusters that could be emerged from Calculus-I, Physics-I and Chemistry would give information about future performances of undergraduate engineering students. We conducted several experiments as proposed by the literature on EM algorithm with different seed values and standard deviation settings in Weka. Output model of three clusters with the highest loglikelihood value (e.g. 3.78319), is shown in Table 4. As seen from results, 18% of the samples were assigned to cluster-1, 28% of the samples were assigned to cluster-2 and the 54% of the samples were assigned to cluster-3.

Table 4: Weka output of cluster analysis with EM algorithm using applied sciences courses Z-Scores.

| Number of clusters selected by cross validation: 3 | | | | |
|--|-----------|----------|---------|--------|
| Attribute | Cluster | | | |
| | 0 | 1 | 2 | |
| | -0.18 | -0.28 | -0.54 | |
| FIZ101Z | | | | |
| mean | | 1.2952 | -1.0629 | 0.1159 |
| std.dev. | | 0.4776 | 0.6292 | 0.6178 |
| KIM100Z | | | | |
| mean | | 1.0425 | -0.8495 | 0.0901 |
| std.dev. | | 0.5821 | 0.8348 | 0.7774 |
| MAT101Z | | | | |
| mean | | 1.0352 | -1.0624 | 0.2031 |
| std.dev. | | 0.5908 | 0.7023 | 0.6835 |
| Clustered | Instances | | | |
| 0 | 51 (18%) | | | |
| 1 | 76 (28%) | | | |
| 2 | 149 (54%) | | | |
| Loglikelihood: | | -3.78319 | | |

Mean values of the clusters given in Table 4 are telling us that cluster-1 is representing the higher graded part of the sampled population; the cluster-3 is representing the lower graded part of the sampled population and finally cluster-2 is for the middle graded.

When we examine clusters using ANOVA test results in Table 5 we observe that three clusters created using three applied sciences courses differs in term of group means.

Table 5: ANOVA Table of Course Grades with Grouping Variable Cluster

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---------|----------------|----------------|-----|-------------|---------|------|
| FIZ101Z | Between Groups | 22995.312 | 2 | 11497.656 | 177.606 | .000 |
| | Within Groups | 17673.122 | 273 | 64.737 | | |
| | Total | 40668.435 | 275 | | | |
| KIM100Z | Between Groups | 18299.400 | 2 | 9149.700 | 90.863 | .000 |
| | Within Groups | 27490.412 | 273 | 100.697 | | |
| | Total | 45789.812 | 275 | | | |
| MAT101Z | Between Groups | 32148.917 | 2 | 16074.458 | 133.735 | .000 |
| | Within Groups | 32813.703 | 273 | 120.197 | | |
| | Total | 64962.620 | 275 | | | |

3.3 Projections of the Clusters for Later Stages of the Education

Our study is based on identifying clusters of students based on core technical lectures (applied sciences), and analyzing these clusters' performances at later stages of the education, which can be thought as projections. Since not all course grades follow normal distribution we used the following linear (min-max) transformation formula for linear normalization where grades were transformed into scale values between 0 and 1. In the formula "i" stands for case number, "j" stands for course and "k" for semester year.

$$Y_{ijk} = \frac{X_{ijk} - \text{Min}_{jk}}{\text{Max}_{jk} - \text{Min}_{jk}} \quad (2)$$

We used these linear transformation scores and statistical normalization scores obtained from equations (1) and (2) in mean rank tests of later stages of the education performances.

4. RESULTS

Total number of courses examined in our study, with their associated course hours and credits, were tabulated according to their categories given in Table 6. In our study we examined 59 courses, which represent 83% of the curriculum. This ratio increases to 90% if we exclude English courses, which were thought all semesters (total of 8 courses), 40 course hours and has 29.5 credits. Courses that are not examined in the curriculum are courses that are planned to be dropped if ongoing project with new curriculum and passing system is adopted.

Table 6: Examined courses categories and totals.

| | Applied Sciences Courses | | | Industrial Engineering Courses | | | Social and Military Courses | | |
|-----------|--------------------------|--------------------|--------------|--------------------------------|--------------------|--------------|-----------------------------|--------------------|--------------|
| | Total # of Courses | Total Course Hours | Total Credit | Total # of Courses | Total Course Hours | Total Credit | Total # of Courses | Total Course Hours | Total Credit |
| Freshman | 5 | 23 | 18.5 | 2 | 5 | 4 | 4 | 7 | 7 |
| Sophomore | 2 | 8 | 8 | 8 | 17 | 15.5 | 5 | 11 | 10 |
| Junior | | | | 11 | 31 | 29 | 7 | 15 | 14.5 |
| Senior | | | | 12 | 36 | 32 | 5 | 10 | 10 |

Kruskal –Wallis nonparametric analysis of ranks results for some of the selected courses are given in Table 7 (not all examined courses were tabulated here because of the page limitations). In our study we found out that only in two courses, which are 3.34% of the total courses examined, clusters were not valid. These courses are Graduation Project (END491) and Leadership (LID402). We observed that clusters created are valid for all courses in first three years of education. Mean ranks of clusters were given in Table 8 for some selected courses. These tables indicate that cluster means are different for all freshmen, sophomore and junior year's courses. Courses are tabulated according to their order of appearance in the curriculum.

Table 7: Kruskal-Wallis test statistics with grouping variable cluster of some selected courses

| | (Freshman Year) | | | | (Sophomore Year) | | | | (Junior Year) | | | | (Senior Year) | | | |
|-------------|-----------------|----------|----------|----------|------------------|----------|----------|----------|---------------|----------|----------|----------|---------------|----------|----------|----------|
| | FIZ 102Z | MAT 102Z | BLG 102Z | ITA 101Z | END 251Z | BGL 100Z | EKO 201Z | HVC 282Z | END 341Z | END 361Z | END 303Z | YON 304Z | HVC 381Z | END 452Z | END 491Y | LID 402Y |
| Chi-Square | 108.85 | 88.64 | 70.08 | 24.95 | 69.86 | 15.67 | 41.65 | 58.27 | 44.66 | 42.17 | 37.53 | 16.49 | 22.26 | 27.13 | 1.33 | 4.32 |
| df | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Asymp. Sig. | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .515 | .115 |

5. CONCLUSIONS

Human performance analysis is a very demanding and difficult research area. In our study, academic performance in a Military Academy which is a very complex phenomenon is tried to be understood rather than making point estimation. This is also one of the major advantages of clustering methodology (Witten 2005).

When we examine the courses where clusters are not different in mean ranks, we need to give more information about these courses' grading methods. Graduation Project is submitted in teams of two and these teams are not created according to academic performance. Generally, friendship among cadets plays major role in formation of the teams. Leadership course distinguishes itself from other courses in terms of team projects and presentation assignments where non-cognitive input may play a significant role.

In this analysis we showed that there are clusters of students created with EM algorithm, which reveals the way underlying cognitive and non-cognitive input variables are affecting academic performance. There are clusters of cadets that are showing distinct performances all throughout undergraduate education.

Table 8: Mean ranks of clusters of some selected courses

| (Freshman Year) | | | | (Sophomore Year) | | | | (Junior Year) | | | | (Senior Year) | | | |
|-----------------|---------|-----|-----------|------------------|---------|-----|-----------|---------------|---------|-----|-----------|---------------|---------|-----|-----------|
| | cluster | N | Mean Rank | | cluster | N | Mean Rank | | cluster | N | Mean Rank | | cluster | N | Mean Rank |
| FIZ102Z | 1 | 50 | 216.96 | END251Z | 1 | 49 | 179.86 | END341Z | 1 | 49 | 170.48 | HVC381Z | 1 | 28 | 113.11 |
| | 2 | 74 | 69.36 | | 2 | 63 | 67.07 | | 2 | 58 | 79.06 | | 2 | 35 | 57.91 |
| | 3 | 145 | 140.24 | | 3 | 140 | 134.57 | | 3 | 137 | 123.73 | | 3 | 97 | 79.24 |
| | Total | 269 | | | Total | 252 | | | Total | 244 | | | Total | 160 | |
| MAT102Z | 1 | 50 | 202.03 | BGL100Z | 1 | 49 | 162.02 | END361Z | 1 | 49 | 171.96 | END452Z | 1 | 28 | 113.55 |
| | 2 | 74 | 71.42 | | 2 | 63 | 109.51 | | 2 | 58 | 83.10 | | 2 | 35 | 52.43 |
| | 3 | 145 | 144.33 | | 3 | 140 | 121.71 | | 3 | 137 | 121.49 | | 3 | 97 | 81.09 |
| | Total | 269 | | | Total | 252 | | | Total | 244 | | | Total | 160 | |
| BLG102Z | 1 | 50 | 205.20 | EKO201Z | 1 | 49 | 170.97 | END303Z | 1 | 49 | 166.64 | END491Y | 1 | 28 | 86.80 |
| | 2 | 74 | 86.01 | | 2 | 63 | 82.52 | | 2 | 58 | 82.82 | | 2 | 35 | 83.63 |
| | 3 | 145 | 135.80 | | 3 | 140 | 130.73 | | 3 | 137 | 123.51 | | 3 | 96 | 76.69 |
| | Total | 269 | | | Total | 252 | | | Total | 244 | | | Total | 159 | |
| ITA101Z | 1 | 50 | 173.49 | HVC282Z | 1 | 49 | 179.67 | YON304Z | 1 | 48 | 154.09 | LID402Y | 1 | 28 | 94.02 |
| | 2 | 74 | 103.05 | | 2 | 61 | 75.23 | | 2 | 56 | 101.93 | | 2 | 35 | 69.80 |
| | 3 | 145 | 138.03 | | 3 | 137 | 125.80 | | 3 | 134 | 114.45 | | 3 | 96 | 79.63 |
| | Total | 269 | | | Total | 247 | | | Total | 238 | | | Total | 159 | |

REFERENCES

- Barnes V, Potter E H and Fiedler F E (1983) "Effect of interpersonal stress on the prediction of academic performance" *Journal of Applied Psychology*, Vol 68, No 4, 686-697.
- Braten I and Olaussen B S (2005) "Profiling individual differences in student motivation: A longitudinal cluster-analytic study in different academic contexts" *Contemporary Educational Psychology* 30, 359-396
- Brown S D, Tramayne S, Hoxha D, Telander K, Fan X and Lent R W (2008) "Social cognitive predictors of college students' academic performance and persistence: A meta-analytic path analysis" *Journal of Vocational Behavior*, 72, 298-308
- Dönmez B (2001) *Tarihi Gelişimi İçinde Hava Harp Okulu-II 1988-2001*" Hava Harp Okulu Komutanlığı Yayınları, İstanbul.
- Ercan S, Isik O and Cakir V (2005) "HHO öğrencilerinin akademik başarılarına etki eden faktörlerin çoklu regresyon yöntemiyle incelenmesi" *V. Ulusal Üretim Araştırmaları Sempozyumu*, İstanbul, 635-641.
- Evans C J, Kirby J R and Fabrigar L R (2003) "Approaches to learning, need for cognition, and strategic flexibility among university students" *British Journal of Educational Psychology*, 73, 507-528
- Shalabi L A, Shaaban Z and Kasasbeh B (2006) "Data mining: A preprocessing engine" *Journal of Computer Science*, 2 (9), 735-739.
- Han J and Kamber M (2001) *Data Mining: Concepts and Techniques*, Morgan Kaufmann, USA.
- Kuncel N R, Hezlett S A and Ones D S (2004) "Academic performance, creativity, and job performance: Can one construct predict them all?" *Personality and Social Psychology*, 86, 148-161.
- Mclachlan G and Krishnan T (2008) *The EM Algorithm and Extensions* 2nd ed. Wiley, New Jersey, NY.
- Nisbert R, Elder J and Miner G (2009) *Handbook of Statistical Analysis and Data Mining Applications* Elsevier Inc. Oxford, UK.
- Poropat A E (2009) "A meta-analysis of the five-factor model of personality and academic performance" *Psychological Bulletin*, Vol. 135, No. 2, 322-338.
- Schmitt N, Oswald F L, Kim B H, Imus A, Merritt S, Friede A and Shivpuri S (2007) "The use of background and ability profiles to predict college student outcomes" *Journal of Applied Psychology*, Vol. 92, No. 1, 165-179.
- Shivpuri S, Schmitt N, Oswald F L, Kim B H (2006) "Individual differences in academic growth: Do they exist, and can we predict them?" *Journal of College Student Development*, Vol 47, No 1.
- Spearman C (1927) *The Abilities of Man*, Macmillan, London.

Watanabe M and Yamaguchi K (2004) *The EM Algorithm and Related Statistical Models* Marcel Dekker Inc. USA
Witten I H and Eibe F (2005) *Data mining: practical machine learning tools and techniques* 2nd ed. Morgan Kaufmann, USA.

IETC 2010

USE OF FLICKR FOR LANGUAGE TEACHING

Yasemin Gülbahar
Baskent University
Ankara, TURKEY

Filiz Kalelioğlu
Baskent University
Ankara, TURKEY

ABSTRACT

The social network tools via Internet provide a wide range of opportunities for educational activities. Especially some tools have been come front for specific subject areas. This study focuses on the use of a social network tool named as Flickr for language teaching. Flickr is an online photo repository popular with many users. By using Flickr, it is possible to design various learning experiences like finding images licensed for use under the creative commons licensing framework, sharing products for carrying out collaborative works, and tagging items for sharing with other social network tools. Creative Commons offers a number of licensing schemes that allow some materials to be used for many different purposes. As an educator, it is important to experience good examples of technology integration into curriculum with ours students. Hence, the purpose of this study is to provide practical ideas for using Flickr for language teaching.

KEYWORDS

language teaching, social networks, flickr

1. INTRODUCTION

In recent years, numerous social network sites are emerged and these sites are reshaped the ways that people communicate, interact, collaborate, work and even learn. Murray (2008) also stated that social networking and software has transformed the way people communicate and share information with one another in today's society.

Hamid, Chang and Kurnia (2009), defined online social networking as "a range of activities enabled by social technologies and operationalised by a group of people" (p. 419). Jones and his colleagues (2010) declared that "Social software is not about technology or computer system. It is an ideal that drive the student/educators to reflect their learning and teaching practice" (p. 782). Boyd and Ellison (2007) also defined social network sites as web-based services that allow users to create a public or semi-public profile within a bounded system, share and view a list of other users with whom they share a connection within the system.

Murray (2008) mentioned that social networking provides new opportunities for personal expression, the creation of interest communities, collaboration and sharing. Blackey and Chew (2009, as cited by Jones et al., 2010) underlined the benefits of social software for higher education for students, academics and institutions in terms of enhancing learning and teaching experiences. According to researchers, social networking enhances communication skills, widening participation and social engagement and collaboration, encourages peer-support and review, and creates learning interest through community of learning for students.

Recently, the number of users of social networks has dramatically increased and the number of illegal uses of existing materials has also increased. Even though this illegal utilization is done for educational purposes, everyone must obey copyright laws. On the other hand, in order to maximize the potential use of Internet and online technologies for educational purposes, some arrangements should be done to exchange of intellectual and creative materials.

2. A SOCIAL NETWORKING SITE: FLICKR

Flickr is not only a digital photo sharing but also an online photo management and sharing application with almost 8 million users. Flickr can be used to upload photos through mobile devices and if sharing options are enabled; those photos can be posted automatically or with a mouse click to Twitter, Facebook, Blogger and other locations.

By uploading your photos to Flickr site, one can either release his/her images under certain common usage licenses or label them as 'all rights reserved'. The licensing options primarily include the Creative Commons 2.0 attribution-based and minor content-control licenses. Users of Flickr can reach many photos and use them under the conditions offered by the Creative Commons licensing terms. Using Flickr it is possible to modify tags, descriptions, and set groupings, place photos on a world map, and edit photos online via an online photo-editing application. By the help of groups within Flickr, some inspiration for creative ways to use Flickr as a learning resource can also be used effectively (Gonzales & Vodicka, 2010).

3. LICENSING IN FLICKR

While accessing images in Flickr, it should be taken into consideration of copyrights. Many Flickr users have chosen to offer their work under a Creative Commons license, and it can be browsed or searched through content under each type of license.

Creators choose a set of conditions they wish to apply to their work as "Attribution", "Share Alike", "Non-Commercial" and "No Derivative Works" (creativecommons.org). Attribution means that you let others copy, distribute, display, and perform your copyrighted work - and derivative works based upon it - but only if they give you credit the way you request. Share Alike means that you allow others to distribute derivative works only under a license identical to the license that governs your work. Noncommercial means that you let others copy, distribute, display, and perform your work - and derivative works based upon it - but for noncommercial purposes only. Lastly, No Derivative Works means that you let others copy, distribute, display, and perform only verbatim copies of your work, not derivative works based upon it.

Attribution (cc by)

This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered, in terms of what others can do with your works licensed under Attribution.

Attribution Share Alike (cc by-sa)

This license lets others remix, tweak, and build upon your work even for commercial reasons, as long as they credit you and license their new creations under the identical terms. This license is often compared to open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use.

Attribution No Derivatives (cc by-nd)

This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.

Attribution Non-Commercial (cc by-nc)

This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.

Attribution Non-Commercial Share Alike (cc by-nc-sa)

This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. Others can download and redistribute your work just like the by-nc-nd license, but they can also translate, make remixes, and produce new stories based on your work. All new work based on yours will carry the same license, so any derivatives will also be non-commercial in nature.

Attribution Non-Commercial No Derivatives (cc by-nc-nd)

This license is the most restrictive of our six main licenses, allowing redistribution. This license is often called the “free advertising” license because it allows others to download your works and share them with others as long as they mention you and link back to you, but they can’t change them in any way or use them commercially.

4. EDUCATIONAL USES OF FLICKR IN LANGUAGE TEACHING

In educational settings, Flickr has various uses for both teachers and students. Users of Flickr have the ability to search a vast and growing photo archive, using tags, or keywords. Flickr provides various opportunities for teaching many of the skills like digital literacy, visual arts, and language skills. Creating a virtual museum tour, teaching vocabulary, teaching how to use a digital camera, telling stories, and brainstorming on paintings are among the activities, which can be carried out through Flickr in or out of classroom.

The photos uploaded to Flickr can be edited online and also be shared and use for preparing different slide shows or videos by other programs like Animoto, BigHugeLabs and PhotoPeach. Based on the tagging feature of Flickr, geotagging, in other words mapping the location of the picture, is also possible via use of Google Earth. Moreover, Flickr can be used for the creation of visual arguments, for illustrating poetry, for the visual documentation of school events, and for creation of e-portfolios.

Campbell (2007), mentioned one of the advantages Flickr for language learners as the presence of few linguistic barriers to participation. Having the text-based communication with short sentences is “ideal for beginning and intermediate level learners, who can receive a great deal of pleasure and satisfaction seeing their photos commented on in positive ways by other people” (p. 3). Moreover, Campbell (2007) suggested some activities that language teachers and their learners can use both in and out of class. In computer room, students can search for photos, upload photos, make friends, leaving comments and notes, joining groups, exploring geotags, blogging photos, e-mailing other Flickr users, creating slideshows, use Flickrtoys, and use combinations of these activities.

Moreover, teachers can create slideshows, photo sets of images related to the lesson and can aggregate RSS feeds of tags, or groups use them in class to stimulate conversation. In addition to these, teachers can search tags to show a photo of the vocabulary word in question--"worth a thousand words."

Graham (2009) conducted a study with the students of 4th year English major students who are part of the Bachelor of Education program at Udon Thani Rajabhat University to increase their writing fluency whilst exposing them to different people and cultures in Southeast Asia. By using the Flickr, students were required to make contact and exchange ideas and cultures with students from Bali, Hong Kong and Japan. As a result of the project, students have benefited from this type of social interaction as they are experiencing better understanding of other cultures and beliefs, at the same time as increasing their computer skills and their writing fluency. Moreover, there is a considerable amount of positive feedback from students and teachers.

Speak (2006) summarized the educational uses of Flickr in his blog as followings:

- For single image analysis
- For single image writing prompt
- For multiple image digital storytelling projects
- For creating slides shows within Flickr
- For creating posters, movie posters, and mosaic makers
- For virtual Field Trips,
- For the creation of visual arguments,
- For illustrating poetry with Flickr
- For geotagging images in Flickr
- For the visual documentation of school events
- For the visual documentation of student artwork and other school learning products
- For the creation of digital visual portfolios, using the photoset function of Flickr
- For the delivery of school/classroom visual information via RSS

5. CONCLUSION

Flickr can be used effectively to create visual presentations, collections and videos, and can be used in all subject areas for many diverse activities like discussing, brainstorming, and preparing visuals for learning, and moreover as preparing e-portfolios for both learning and assessment. Many activities similar to the above mentioned ones can be carried out effectively educational settings, not only for language teaching but also in different subject areas especially based on visual presentations like biology, science teaching, visual arts etc. Research studies should be conducted to investigate effectiveness of such activities in educational settings for different disciplines.

REFERENCES

- boyd, d. m., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), article 11. <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>
- Campbell, A. P. (2007). Motivating language learners with Flickr. *TESL-EJ*, 11(2). Retrieved March 1, 2010 from from <http://tesl-ej.org/ej42/m2.html>
- Graham, S. (2009). A Case Study of University Students' Use of Flickr Photographic Networking to Develop Confidence, English Language Fluency and Shape World Consciousness. *Acta Didactica Napocensia*, 2(1), 109-114. http://adn.teaching.ro/article_2_1_11.pdf
- Gonzales, L. & Vodicka, D. (2010). Top Ten Internet Resources for Educators. *Leadership*. 32-37
- Hamid, S., Chang, S. & Kurnia, S. (2009). Identifying the use of online social networking in higher education. In *Same places, different spaces. Proceedings ascilite Auckland 2009*. <http://www.ascilite.org.au/conferences/auckland09/procs/hamid-poster.pdf>
- Jones, N., Blackey, H., Fitzgibbon, K. & Chew, E. (2010). Get out of MySpace!. *Computers & Education*, 54, 776-782.
- Murray, C. (2008). Schools and Social Networking: Fear or Education?. *Synergy Perspectives: Local*, 6(1), 8-12.
- Speak, J. (2006). Classroom Uses of Flickr. Retrieved February 12, 2010 from <http://jakespeak.blogspot.com/2006/03/classroom-uses-of-flickr.html>

USE OF LEARNING AND STUDY STRATEGIES: DOES GENDER MAKE A DIFFERENCE?

Shahida Sohail^a 1*,
s.sohail06@gmail.com,

Shumaila Shahzad^a,
shumaila608@hotmail.com

Dr. Hafiz Mohammad Iqbal^a
drhmiqbal@gmail.com

University of the Punjab, Quaid-e-Azam Campus Lahore, Pakistan -54590

Abstract

University students enjoy different learning and study strategies. Generally, male and female students exhibit different study behaviors. Gender differences in learning and study strategies do not all the time support one sex. Aim of the present study is to investigate whether there are any gender differences in the use of learning and study strategies among Pakistani university students. Learning and study strategies inventory (LASSI) was administered to the sample of 465 students: 206 females and 259 males. Mean score of all the scales was calculated for both the groups. Independent sample t test was applied to find out the differences between their mean scores on each scale. Female students have performed better on nine scales whereas male students are slightly better than females in study aids scale. This difference is significant on attitude, concentration and time management scales only in favor of female students.

Key words: Gender, Learning and study strategies.

Introduction

Entwistle, McCune, and Hounsell (2002) depicted that a number of variables are involved which affect the quality of learning at university and approaches to learning and studying are included in these variables. Students show variant strategic behaviors at different levels (Alexander, Graham & Harris, 1998). Learning strategies are “behaviors of a learner that are intended to influence how the learner processes information” (Mayer, 1988, p.11). Good strategy users possess three kinds of knowledge about strategies: declarative, procedural and conditional (Hartman, 2001). Declarative knowledge is to know about a variety of strategies, procedural knowledge designate how to use these strategies and conditional knowledge is to decide when to use those strategies (Carrel, Gajdusek & Wise, 2001).

Regarding gender, there subsists a general argument that males and females differ vastly on psychological traits. But Hyde (2005), reviewing 46 research studies, advocates the gender similarities hypothesis that males and females are similar on most, but not all, psychological variables. He pointed out variation in gender differences at diverse age levels depending on different perspectives. As far as use of learning and study strategies is concerned, almost all the researchers agree that female students use more learning strategies than their male counterparts. Downing (2009) viewed gender differences initiated from two decisive features, natural distinction and different social images. He advocates that gender is usually based on biological foundations. “Gender” in the present study is the term to discriminate male and female participants. It includes their biological sex as well as their psychological and social character. Sizoo, Malhotra and Bearson (2003) found adult females significantly more motivated than adult males, while exploring relationship between anxiety and academic success they mentioned that both groups undergone through anxiety which reduced their academic success. Rusillo and Arias (2004) administered four questionnaires including LASSI on 521 grade 9th and 10th students. Results of their study showed that no gender differences exist in various cognitive motivational variables in which learning strategies’ use was also included. Girls showed lower level of motivation but were better in use of information processing strategies.

Downing, Chan, Downing, Kwong, and Lam (2008) found that females demonstrated significantly higher levels of self-regulation and a more positive attitude to academic study than their male counterparts.

Braten and Olaussen (1998) found that on the motivation, time management, and study aids subscales, the female students reported using more strategies than males, while it was the other way around on the anxiety and information processing subscales. Overall, female students tended to be somewhat more effective in their use of learning and study strategies than males. Yeung and Ha (2007) investigated the learning and study strategies of year one HKUST students. Statistically significant differences between male and female students on attitude and study aids scales were found. On the contrary, Nambiar (2009) concluded that factors as gender, age and ethnicity are not visible reflectors of strategy use rather may be the reflectors of strategy use. Agar and Knopfmacher (1995) investigated that students professed the most troublesome components of learning in motivation and anxiety. Whereas selecting main ideas and test taking strategies were emerged as their weak areas. Regarding the variable of gender few differences were found.

As mentioned earlier there is a growing body of research in various parts of the world on the use of study strategies by college and university students. In Pakistan, this tradition is almost fictional. Some researchers from Pakistan have explored this concept but in a somewhat different way i.e. investigating learning styles and study habits. Jameel (2001) and Iqbal and Shahzadi (2002) investigated study habits of students of university of the Punjab, Pakistan and revealed that they lacked good study habits and effective study skills. However, the instruments used to collect data for these studies were limited in terms of coverage for various elements of study. Secondly, in these studies researchers tired to make comparison between students of various departments of the same university. Siddiqui (2004) used revised version of the questionnaire (R-SPQ-2F) to investigate study approaches of Pakistani students and reported that there was no statistically significant gender difference.

One of the studies was conducted on Pakistani students’ learning and study strategies who were studying in American Universities (Iqbal, 2005). He compared Pakistani and American students’ scores on LASSI scales but gender differences were not measured. Iqbal, Sohail, and Shahzad (2010) examined this issue in one of the universities of Pakistan by comparing Pakistani students’ LASSI profile with that of American norm on percentile ranks. The present study is conducted in continuation of the previous study. In this study, gender differences are taken into account. Main purpose of it is to investigate whether there are any gender differences in the use of learning and study strategies among Pakistani university students.

* Shahida Sohail . Tel.: 0-423-7842850;
E-mail address: s.sohail06@gmail.com

Method and Procedures

Sample

465 students from university of the Punjab constituted sample of the study. There were 206 female students and 259 male students.

Instrument

Data collection tool was LASSI developed by Weinstein, Palmer and Shulte (2002). It consists of ten scales, and eighty items, like anxiety (ANX), attitude (ATT), concentration (CON), information processing (INF), motivation (MOT), self testing (SFT), selecting main ideas (SMI), study aids (STA), time management (TMT), and test strategies (TST). Standardized scores (percentile score equivalents) and national norms are provided in LASSI. LASSI is used for diagnosis and prescription. Each scale contains eight items developed on five-point scale 1-5. Coefficient Alpha ranges from .68-.82.

Procedure

Students' responses were added to have total score for each scale. The maximum score against each scale may be recorded 40 while minimum as 8, because each scale contains 8 items constructed on five point scale.

Analysis of data

Mean score of all the scales was calculated for both the groups. Independent sample t test was applied to find out the differences between their mean scores on each scale.

Results

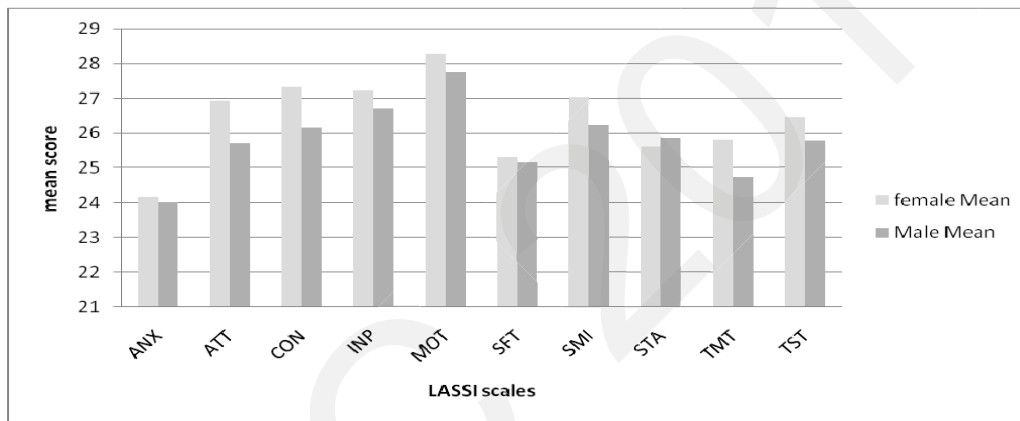


Figure 1. Mean score of LASSI scales for male and female students

Figure 1 displays a great gender difference in favor of female students. On anxiety, attitude, concentration, information processing, motivation, self testing, selecting main idea, time management and test strategies scales females have outperformed their male counterparts. Male students have scored somewhat higher on study aids scale.

Table 1. Independent sample t test for gender differences

| LASSI Scales | GENDER | Mean | SD | df | t value |
|------------------------------|--------|-------|------|-----|---------|
| Anxiety (ANX) | female | 24.18 | 5.19 | 422 | .30 |
| | male | 24.02 | 5.69 | | |
| Attitude (ATT) | female | 26.94 | 4.84 | 409 | 2.48* |
| | male | 25.71 | 5.12 | | |
| Concentration (CON) | female | 27.31 | 4.70 | 438 | 2.51* |
| | male | 26.16 | 4.79 | | |
| information processing (INP) | female | 27.22 | 5.45 | 434 | .95 |
| | male | 26.71 | 5.54 | | |
| Motivation (MOT) | female | 28.28 | 5.94 | 434 | .99 |
| | male | 27.74 | 5.42 | | |
| self testing (SFT) | female | 25.31 | 4.96 | 424 | .36 |
| | male | 25.14 | 4.91 | | |
| selecting main idea (SMI) | female | 27.03 | 5.79 | 421 | 1.49 |
| | male | 26.22 | 5.30 | | |
| study aids (STA) | female | 25.61 | 4.45 | 422 | -.55 |
| | male | 25.86 | 4.73 | | |
| time management (TMT) | female | 25.80 | 3.94 | 391 | 2.71** |
| | male | 24.74 | 3.76 | | |
| test strategies (TST) | female | 26.45 | 4.83 | 422 | 1.33 |
| | male | 25.79 | 5.30 | | |

** $p < .01$, * $p < .05$

Male students' mean score is slightly better than females in study aids scale. In rest of the nine scales, female students have performed better. This difference is significant on attitude, concentration and time management scales in favor of female students.

Discussion

The profile comparison between the female and male students indicated differences between these two groups on all of the LASS1 subscales. Female students scored higher on nine of the subscales. The groups were found to differ significantly on three of the subscales. Female students reported using more strategies than males on attitude, concentration and time management scales while it was the other way around on the study aids subscale. Overall, our analysis of gender differences suggests that female students tend to be somewhat more effective in their use of learning and study strategies than males. This is consistent with several recent studies of gender differences in students' strategy use (e.g., Downing, 2009; Sizoo et al., 2003; Rusillo & Arias, 2004; Downing, et al., 2008; Braten & Olaussen, 1998; Yeung & Ha, 2007). These differences seem to emerge from the fact that female students have attributes of strategic learners more than males. Female students are more careful, responsible, serious and emotional as compared to male students who are careless, irresponsible and tension free (Iqbal, Shahzad & Sohail, 2010). Du, Weymouth and Dragseth (2003) also declared the girls to be more engaged in school and classroom learning, hard worker and more recognized than boys. Further investigation is required to find out other possible reasons of this difference.

Male students are diagnosed to be weak on attitude, anxiety, concentration, motivation, information processing, selecting main idea, self testing, time management and test strategies scales whereas their mean score is slightly better than females in study aids scale. Students with low score on attitude scale may need to develop a better understanding of how their academic performance relates to their future life goals. Students with low score on anxiety scale may need to develop techniques for coping with anxiety and reducing worry so that attention can be focused on the task at hand. Low scoring students on concentration scale may need to learn to monitor their level of concentration and develop techniques to redirect attention and eliminate interfering thoughts or feelings so that they can be more effective and efficient learners. Students who score low on motivation scale need to accept more responsibility for their academic outcomes and learn how to set and use goals to help accomplish specific tasks. Students who score low on information processing sub scale need to make information meaningful and to store it in memory in a way that will help them recall. Students who score low on selecting main ideas scale may need to develop their skill at separating out critical information on which to focus their attention. Low scoring students on self testing scale may need to learn effective techniques for reviewing and monitoring the level of understanding. Students who score low on time management scale may need to develop effective scheduling and monitoring techniques in order to assure timely completion of academic tasks and to avoid procrastination while realistically including non-academic activities in their schedule. More effective techniques for preparing for and taking test are required from low scoring students at test strategies. Low scorers on study aids scale may need to develop a better understanding of the resources available to them and how to use these resources to help them be more effective and efficient learners. Courses related to learning and studying strategies should be included in curriculum and special lectures, seminars and workshops should be arranged to create awareness among students to make them strategic learner.

References

- Agar, D. L., & Knopfmacher, N. (1995). The learning and study strategies inventory: A South African application [Electronic Version]. *Higher Education*, 30(1), 115-126.
- Alexander, P.A., Graham, S., & Harris, K.R. (1998). A perspective on strategy research: Progress and prospects. *Educational Psychology Review*, 10(2), 129-149.
- Braten, I. & Olaussen, B. S., (1998). The learning and study strategies of Norwegian first-year college students [Electronic Version]. *Learning and Individual Differences*, 10(4), 309-327.
- Carrell, P. L., Gajdusek, L., & Wise, T. (2001). Metacognition and EFL/ESL reading. In H. J. Hartman (Ed), *Metacognition in learning and instruction: Theory, research and practice* (pp.229-244). London: Kluwer Academic Publishers.
- Downing, K. (2009). Gender and cognition. Proceedings of the 2nd International Conference of Teaching and learning (ICTL 2009). INTI University College, Malaysia. Retrieved January 05, 2010, from [http://ictl.intimal.edu.my/proceedings/Parallel%20Sessions%201/1A/1A-01-P24%20\(Hong%20Kong\).DOC](http://ictl.intimal.edu.my/proceedings/Parallel%20Sessions%201/1A/1A-01-P24%20(Hong%20Kong).DOC)
- Downing, K., Chan, S., Downing, W., Kwong, T., & Lam, T. (2008). Measuring gender differences in cognitive functioning [Electronic Version]. *Multicultural Education & Technology Journal*, 2(1), 4-18.
- Du, Y., Weymouth, C. M., & Dragseth, K. (2003). *Gender differences and student learning*. Paper Presented at the Annual Meeting of the American Educational Research Association at Chicago, April, 21-25, 2003. Retrieved December 12, 2009, from http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/23/a5.pdf
- Entwistle, N., McCune, V., & Hounsell, J. (2002) *Approaches to Studying and Perceptions of University Teaching-Learning Environments: Concepts, Measures and Preliminary Findings* Enhancing Teaching-Learning Environments in Undergraduate Courses Project. Retrieved January 02, 2010, from <http://www.tltp.org/dspace/retrieve/142/ETLreport1.pdf>
- Hartman, H. J. (2001). Developing students' metacognitive knowledge and skills. In H. J. Hartman (Ed), *Metacognition in learning and instruction: Theory, research and practice* (pp. 33-68). London: Kluwer Academic Publishers.
- Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist*, 60(6), 581-592. DOI: 10.1037/0003-066X.60.6.581.
- Iqbal, H. M. (2005). What learning strategies American and Pakistani students use at college level? An exploratory study. *Bulleting of education and Research*, 27(1), 1-12.
- Iqbal, H. M. & Shehzadi, S. (2002). Study habits of Female Students of University of the Punjab. *Bulleting of education and Research*, 23(1), 53-61.
- Iqbal, H. M., Shahzad, S., & Sohail, S. (2010). *Gender differences in Pakistani high school students' views about science*. Paper presented in World Conference on Educational Sciences, Bahcesehir University, Istanbul, Turkey. 04-08 February, 2010.
- Iqbal, H. M., Sohail, S., & Shahzad, S. (2010). *Learning and study strategies used by university students in Pakistan*. Paper presented in World Conference on Educational Sciences, Bahcesehir University, Istanbul, Turkey. 04-08 February, 2010.

- Jamil, A. (2001). *Study habits of university students*. An unpublished dissertation, IER, University of the Punjab.
- Mayer, R. E. (1988). Learning strategies: An overview. In C. E. Weinstein, E. T. Goetz & P. A. Alexander (Eds.), *Learning and study strategies: Issues in assessment, instruction, and evaluation*. (pp. 11-24). San Diego: Academic Press.
- Nambiar, R. (2009). Learning strategy research- where are we now? *The Reading Matrix*, 9(2), 132-149. Retrieved January 2, 2010, from http://www.readingmatrix.com/articles/sept_2009/nambiar.pdf
- Rusillo, M. T. C., & Arias, P. F. C. (2004). Gender differences in academic motivation of secondary school students [Electronic Version]. *Electronic Journal of Research in Educational Psychology*, 2(1), 97-112.
- Siddiqui, S. Z. (2006). *Study approaches of students in Pakistan: the revised two-factor study process questionnaire experience*. HEC occasional report (1). National Academy of Higher Education, Higher Education Commission, Islamabad, Pakistan. Retrieved January 2, 2010, from http://www.hec.gov.pk/MediaPublication/HECPublication/Documents/684_Study-Approaches-of-Students-in-Pakistan.pdf
- Sizoo, S., Malhotra, N., & Bearson, J. (2003). A gender-based comparison of the learning strategies of adult business students. *College Student Journal*. FindArticles.com.
- Weinstein, C.E., Palmer, D.R., & Shulte, A. C. (2002). *LASSI 2nd edition*. Clearwater, FL: H & H Publishing Company.
- Yeung, L. & Ha, T.S. (2007). *How do they manage it? An investigation on the study and learning strategies of year 1 HKUST Students*. [PowerPoint Slides]. Retrieved July 12, 2009, from http://celt.ust.hk/tlsymp07/pdf/powerpoint_presentation/LuciaYeung.pdf.

USE OF ONE FACEBOOK APPLICATION - "COURSES": CEIT STUDENTS' PERCEPTION AND EXPERIENCES

Zülfü GENÇ
University of Firat, ELAZIG, TURKEY
zgenic@firat.edu.tr

Abstract

Facebook is one of the most fast growing and popular social network site among all university students. This study examined students' perception and experiences on use of one Facebook courseware application called as Courses. In this research, a quantitative method was used. Students' perception and experiences from application with instructional, usability and social communication features were collected via online Facebook Application Experience Survey. From the analysis of data, it is clear that preservice teacher liked this application in their courses and "Courses" fulfilled their instructional needs, even though they ask for some alterations.

Keywords: Social networking sites, Facebook applications, Courses application, Facebook in education

1. INTRODUCTION

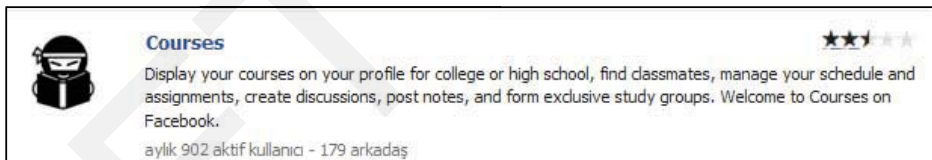
Web 2.0 is a web technology which provides online collaboration and participation among web users. This service enables dispersed users to create sharing points over the Web 2.0 applications. Web 2.0 technologies, and especially social networking sites (SNS) have a extremely pressure on the life of millions of students (Stamford, 2007), leading many educators to wonder what role, if any, social networking could have in education (Joly, 2007). The 2008 Horizon Report, released by the New Media Consortium and the EDUCAUSE Learning Initiative suggests that educators should develop strategies to utilize social networking for educational purposes (New Media Consortium and EDUCAUSE, 2008).

Facebook is a large SNS that boasts more than 400 million members, and it is one of the fastest-growing and best-known sites on the Internet today. Also it is the social networking site of choice for most college students and faculty members (Schroeder & Greenbowe, 2009). Members can create easily profiles about themselves, create and join groups with other members, make friends, and share opinion, pictures and messages. In addition, Facebook is equipped with many downloadable applications that make it suitable to educational purposes. These applications have provided additional functionality and increased interactivity to the users of Facebook. Due to the high usage rates and technological advantages of Facebook, it can provide an alternative environment with several educational benefits to both teachers and students (Munoz & Towner, 2009). Recent investigation have pointed out that Facebook can provide positive effect on the student-to-student and student-to-teacher relationship and lend to a more comfortable classroom climate (Mazer et al., 2007). Other studies have supported that concept of using social network sites in education. One study found that 39% of college students surveyed wanted regular on-line discussions with faculty (Fischman, 2008) and most (66%) of students (n=176) surveyed in another study were comfortable with faculty on Facebook (Hewitt & Forte, 2006).

1.1. Courseware Application in Facebook

A detailed example of educational use of Facebook is presented in this study. In the 2009-2010 Fall semester, four undergraduate courses which are *Information Technology in Education I*, *Internet Programming*, *Web Design*, and *Computer Ethics* and one graduate course which is *Changing Education and New Technologies* were offered to the students on Facebook courseware application (called as Courses) in Firat University, Faculty of Education, Department of Computer Education and Instructional Technology. Courses which is given Figure 1 has a number of functions including mainly the organization of the courses, forming student groups, sharing the course documents, adding the announcements, creating discussion boards, and etc.

Figure 1: Courses Application



1.2. The Utilization of the Application

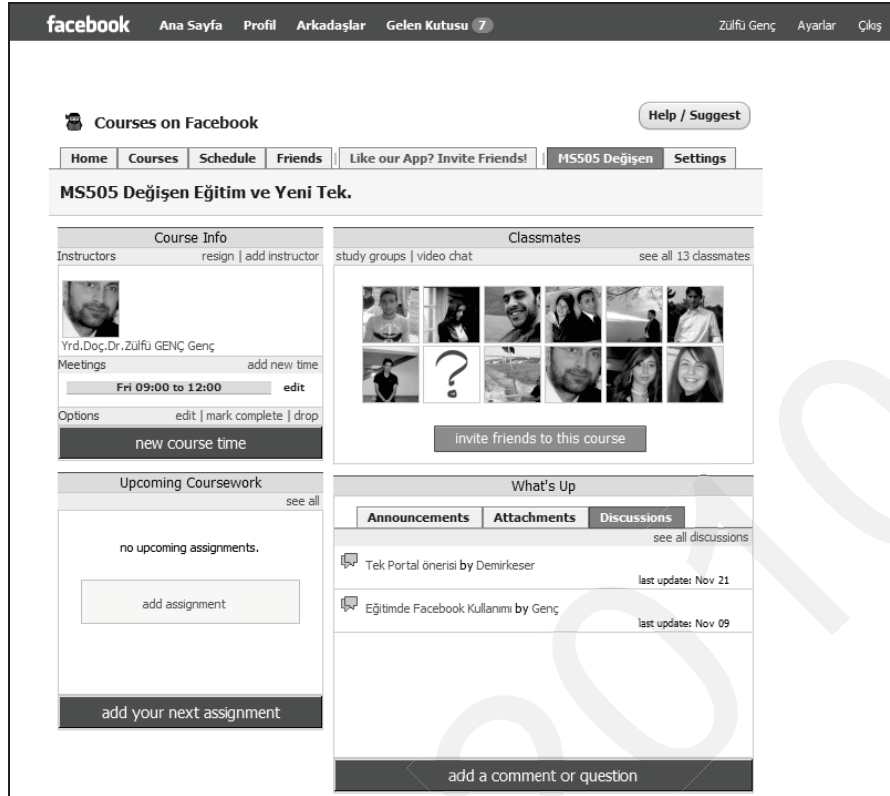
After the Courses application is added to the profile by the

lecturer, the creation of the course should be completed by carrying out the procedure in three steps. Firstly, after deciding if the course will be accessible for all Facebook users (public) or just the identified users (private), the academic year and the semester should be defined. In the second step, the information about the name of the course, the lecturer, the place of the course, the day and hour for the course is described. In the last step, the lecturer confirms the course creation.

1.3. Lecturer Interface and Functions

Lecturer interface in Figure 2 consists of five tabs which are *Home*, *Courses*, *Schedule*, *Friends*, and *Settings* and four main sections which are *Course Info*, *Classmates*, *Upcoming Coursework* and *What's Up*. Access from *Home* tab to My User and My Instructor pages, from *Schedule* to detailed calendar illustration, from *Courses* to the interfaces of the related courses and from *Settings* to all setting functions of the application are possible. The information about the lecturer of the selected course, the profile photo and class hours can be found in the *Course Info* section. The lecturer can manage the basic course information such as adding and removing a lecturer, cancelling the course, changing the course date and hour. In the *Classmates* section, one can see the students taking the course and their photos. When you click on the photos of the students, you can jump to their Facebook pages. This section has the functions of forming groups in class, sending and receiving messages visually, seeing all the students, sending an invitation to a new student. In *Upcoming Coursework* section, by clicking on the activity-attachment button, detailed information can be got about an article, an exam, a problem, an argument, a project, a laboratory work and other activities which will occur in a close time. In *What's Up* section, there are three tabs which are Announcements, Attachments and Discussions. It is possible to make announcements about the course by using the Announcements tab, to load files pertaining to the course by using the Attachments tab and to initiate a discussion or ask a question by using the Discussions tab.

Figure 2: Lecturer Interface



1.4. Student Interface and Functions

The Student Interface in Course Application is same with the lecturer interface in Fig.2. There is a functional difference in that *Course Info* and *Upcoming Coursework* sections are used only for getting information by students. By using the *Classmates* section, students can see their friends who are taking the same course, send and receive messages and talk visually with their friends in the student groups. The student can access to the content of Announcements, Attachments, Discussions sections and benefit from the functions like reading, attaching a new announcement, loading the course documents on their own computers, loading files, reading the discussions and writing comments about them actively by using these tabs.

2. METHOD

The researcher developed an instrument in the form of a survey for assessing the usability of the Facebook application called "Courses". This study includes not only results of this instrument but also the development of the instrument. The developed survey was checked by subject matter experts and Turkish language experts. Since it is a none-experimental study, the instrument was offered preservice teachers to fill it voluntarily manner. Basic demographic information about participants was tabulated in Table 1. This study focuses on the preservice teachers of Computer Education and Instructional Technology department of Fırat University (n=203, 90 female and 113 male).

Table 1: Basic Demographics of Participants

| Having a PC | Gender | Grade Level | | | | | Total |
|---------------------|--------|-------------|---|----|----|--------|-------|
| | | 1 | 2 | 3 | 4 | Master | |
| PC with Internet | Female | 24 | 0 | 15 | 7 | 4 | 50 |
| | Male | 14 | 0 | 26 | 11 | 6 | 57 |
| | Total | 38 | 0 | 41 | 18 | 10 | 107 |
| PC without internet | Female | 9 | 0 | 14 | 3 | 0 | 26 |
| | Male | 10 | 4 | 16 | 6 | 0 | 36 |
| | Total | 19 | 4 | 30 | 9 | 0 | 62 |
| No PC | Female | 12 | 0 | 2 | 0 | 0 | 14 |
| | Male | 16 | 0 | 2 | 2 | 0 | 20 |
| | Total | 28 | 0 | 4 | 2 | 0 | 34 |

3. FINDINGS

After basic demographical information, the preservice teachers were asked how they perceive themselves about their professional level of using computers. Among five predefined levels, half of the participants chose "moderate level" (n=111) of expertise. The rest of the participants could be summarized namely as; "good level" (n=52), "novice level" (n=24), "expert level" (n=11), and "beginner level" (n=5). Moreover, the preservice teachers were given three questions about Facebook with the options of "Yes" and "No" (Table 2). Only a small number of students didn't have a Facebook account earlier than using this application, whereas most of the students want to use such applications in the future.

Table 2: Yes-No answered questions

| Items | Yes | No | Total |
|---|-----|-----|-------|
| Before you use "Courses" application, do you have an account on Facebook? | 166 | 37 | 203 |
| Before you use "Courses" application, do you have your "instructor" as a friend on your Facebook account? | 89 | 114 | 203 |
| Do you want to use Facebook applications like "Courses" in your courses? | 168 | 35 | 203 |

The latter question offered eight functions of "Courses" application to preservice teachers to choose which one(s) of the functions they used in their courses (Table 3). As Table 3 shows, the preservice teachers were mostly the passive users of the application whom download files and read the announcements.

Table 3: Functions of "Courses" application and their frequency of use

| Name of the Function | n | Name of the Function | n |
|----------------------|-----|------------------------------|-----|
| Upload a file | 53 | Add an announcement | 29 |
| Download a file | 174 | Read the announcement | 149 |
| Open a discussion | 50 | Messaging with my classmates | 87 |
| Join a discussion | 71 | Study groups | 88 |

The preservice teachers were given twenty-two questions on their perceptions and experiences about "Courses" application in Facebook as an instructional media in their courses. Participants asked to state their agreement level on a five point Likert scale from "strongly agree" to "strongly disagree".

Initially, a factor analysis implemented on twenty-two items starting checking for data adequacy for the analysis. On this data set, the KMO coefficient was found .91 and the approximate X^2 (153, n=203) is equal to 1765,039, $p < .000$. Since the test results were satisfactory, the data were taken to factor analysis. The dimensionality of the twenty-two items were analyzed using principal component exploratory factor analysis. Four criteria were used to conclude the number of factors to rotate: the a priori hypothesis measuring the unidimensional, the Cattell scree test, the variance explained and the interpretability of the factor solution. The scree pilot indicated that the initial unidimensionality hypothesis was false and there were several breaking points on the graph. Initial solution created four factors and several overlapping eigenvalues. Therefore, items which appeared on more than one factor with a less than 0.100 eigenvalue difference were dismissed from the analysis and factor analysis re-run for several times. At the end of factor analysis, four (10, 18, 20 and 22) items were deleted from the survey. The resting eighteen items were distributed on three exploratory factors using a Varimax rotation procedure which fulfilled the interpretability and total variance explained (58.47 %) criterion.

The researcher named the factors as; factor 1: Application with instructional features, factor 2: Application with usability features, and factor 3: Application with social communication features. At the end of the factor analysis, eighteen items were checked for its reliability creating satisfactory level of Cronbach coefficient ($\alpha = .90$). Additionally, in order to compare how much reliability had affected by deletion of four items, another reliability analyses conducted with all twenty-two items ($\alpha = .93$). From the analysis, it was found that by the deletion four items, the general reliability had affected 0,03 percent. Moreover, three sub factors were checked for their reliability coefficients. It was found that all three sub factor yielded a satisfactory level of reliability. Factor 1 (with nine items) was 0.89, Factor 2 (with five items) was .76 and Factor 3 (with four items) was .78.

Table 4 summarizes the items, their numbers in the survey, the factor they belong and their mean scores with standard deviations. For better understanding, items were written as their original forms in Turkish and their translation versions of English. It is remark that since the survey was online on questionpro.com, the preservice teachers had a chance of looking at "Courses" application as filling the survey. From Table 4, it was observed that the preservice teacher liked this application utilization in their courses, even though they ask for some alterations.

In subsequent to factor analysis and basic statistics, independent sample t-test was conducted in the data set to see whether or not gender makes a different on the items. Table 5 demonstrates that six items significantly differs on gender variable. For all six items, female participants have higher mean scores than male participants.

The last question was an open-ended question asking about what changes they might offer to make the "Courses" application more useful. All students answered this question and answers were clustered around the following points;

- More seductive for students,
- Sending simultaneous emails about changes in the application,
- Increasing file upload size,
- Adding more instructional objects, such as games,
- Different language options, especially Turkish,
- Adding chat feature inside of application,
- Supporting more video file format,
- Better visual design,
- Better application loading speed,
- More customizable structure,
- More control on addition and/or deletion of application objects,
- Better embedding into Facebook.

Table 4: Mean scores and standard deviations on items

| Items | Item Number | Factor Number | M. | S.D. |
|---|-------------|---------------|------|------|
| It was beneficial to see the course instructor information in "Courses Info" section. | 1 | 1 | 3,72 | 0,96 |
| It was beneficial to see the course information in "Courses Info" section. | 2 | 1 | 4,10 | 1,06 |
| It was beneficial to see the exam information in "Upcoming Coursework" section. | 3 | 1 | 4,13 | 1,02 |
| It was good to messaging with my classroom friends in "Classmates" section. | 4 | 3 | 3,52 | 1,03 |
| I liked group work in "study groups" in "Classmates" section. | 5 | 3 | 3,40 | 1,02 |
| It was beneficial to read instructor announcements in "Announcements" tab of "Whats Up" section. | 6 | 1 | 3,93 | 1,06 |
| I used most of the course documents in "Add In" tab of "Whats Up" section. | 7 | 1 | 3,94 | 1,16 |
| The course documents in "Attachments" tab of "Whats Up" section were suitable with course objectives. | 8 | 1 | 4,00 | 0,97 |

| Items | Item Number | Factor Number | M. | S.D. |
|---|-------------|---------------|------|------|
| The discussion topics in "Discussions" tab of "Whats Up" section were beneficial. | 9 | 3 | 3,35 | 1,04 |
| The design of "Courses" application was good from aesthetic perspective. | 11 | 2 | 3,07 | 1,12 |
| I didn't have any technical problem while I was using "Courses" application. | 12 | 2 | 3,18 | 1,21 |
| In general, it was easy to use "Courses" application. | 13 | 2 | 3,30 | 1,17 |
| In general, I was satisfied with "Courses" application. | 14 | 2 | 3,61 | 1,02 |
| I wish to see any changes in "Courses" application on my Facebook wall. | 15 | 1 | 3,97 | 1,12 |
| I wish to be informed via email about any changes in "Courses" application. | 16 | 1 | 3,99 | 1,17 |
| I prefer another Facebook application with better features. | 17 | 1 | 3,76 | 1,12 |
| With "Courses", I communicated effectively with my classmates. | 19 | 3 | 3,24 | 1,08 |
| "Courses" fulfilled my instructional needs. | 21 | 2 | 3,26 | 1,06 |

Table 5: The independent sample t-test on items

| Item | Gender | n | M | t | p |
|---|--------|-----|------|-------|-------|
| 7. I used most of the course documents in "Add In" tab of "Whats Up" section. | Female | 90 | 4,15 | 2,416 | 0,017 |
| | Male | 113 | 3,76 | | |
| 13. In general, it was easy to use "Courses" application. | Female | 90 | 3,58 | 3,133 | 0,002 |
| | Male | 113 | 3,07 | | |
| 15. I wish to see any changes in "Courses" application on my Facebook wall. | Female | 90 | 4,18 | 2,500 | 0,013 |
| | Male | 113 | 3,79 | | |
| 16. I wish to be informed via email about any changes in "Courses" application. | Female | 90 | 4,20 | 2,247 | 0,026 |
| | Male | 113 | 3,83 | | |
| 19. With "Courses", I communicated effectively with my classmates. | Female | 90 | 3,41 | 1,998 | 0,047 |
| | Male | 113 | 3,10 | | |
| 21. "Courses" fulfilled my instructional needs. | Female | 90 | 3,46 | 2,497 | 0,013 |
| | Male | 113 | 3,09 | | |

4. DISCUSSION

It is obvious that both the instructor and the student might benefit from Facebook's networking and social communication capabilities such as providing an alternative to the traditional lecture format, creating an online classroom community, and increasing teacher-student and student-student interaction. The widespread use of Facebook encourages many companies to develop web applications for Facebook. Blackboard, which is one of the leading Learning Management Systems (LMS) of the education sector, is in search of solutions to use its applications in Facebook and this gives a clue about the efficiency of Facebook. Courses Application which is summarized above is perceived as a small scale LMS although it has many limitations.

Advantages:

- It is easy to use
- It helps to gather all students in one platform and make organizations
- It facilitates the communication between lecturer – student and student – student
- It enhances the collaboration between student groups
- It provides the share of the lecture notes
- It permits discussions in class
- It helps the students to be informed about all the topical announcements

Limitations:

- The obligation to connect in order to see instant messages and announcements.
- 1 MB size limit for attachments
- The lecturer cannot step in the announcements written by the students and discussions.
- The lack of permission to remove a student from Classmates list once he/she has been added accidentally
- Although there is a video chatting feature, it is not usable.

REFERENCES

- Fischman, J. (2008). Dear Professor, students want to chat with you. The Chronicle of Higher Education, October 13. Retrieved on Feb 20, 2010 from <http://chronicle.com/wiredcampus/article/3384/dear-professor-students-want-to-chat-with-you>
- Hewitt, A. & Forte, A. (2006). Crossing boundaries: Identity management and student/faculty relationships on the Facebook. Computer Supported Cooperative Work Conference, Banff, Alberta, Canada.
- Joly, K. (2007). Facebook, MySpace, and Co.: IHEs ponder whether or not to embrace social networking sites, University Business, April. Retrieved on Feb 20, 2010 from <http://www.universitybusiness.com/ViewArticle.aspx?articleid=73>
- Mazer, J. P., Murphy, R.E., & Simonds, C. J. (2007). I'll see you on 'Facebook': The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication Education*, 56, 1-17
- Munoz, C. & Towner, T. (2009). Opening Facebook: How to use Facebook in the college classroom. Proceedings of Society for Information Technology & Teacher Education International Conference (pp. 2623-2627). Chesapeake, VA: AACE.
- New Media Consortium and the EDUCAUSE Learning Initiative. (2008). The Horizon Report, 2008 edition. The New Media Consortium. Retrieved on Feb 20, 2010 from <http://www.nmc.org/pdf/2008-Horizon-Report.pdf>
- Schroeder, J., & Greenbowe, T., J. (2009). The chemistry of Facebook: Using social networking to create an online community for the organic chemistry laboratory export. *Innovate Journal of Online Education*, Vol. 5, No. 4. Fischler School of Education and Human Services at Nova Southeastern University.
- Stamford, Conn. (2007). Many college professors see podcasts, blogs and social networking sites as a potential teaching tool. CENGAGE Learning, May 7. Retrieved on Feb 20, 2010, from <http://www.cengage.com/press/release/20070507.html>

USE OF TUTORIAL VIDEOS IN COMPUTER ACTIVITIES

C. Roldán López de Hierro, A. Roldán López de Hierro, J. Martínez-Moreno, R. Pascual Fernández
University of Jaén (SPAIN)

iroldan@ujaen.es, afroldan@ujaen.es, jmmoreno@ujaen.es, rpascual@ujaen.es

Abstract

The process of convergence to the European Higher Education Area (EHEA) demands methods that must now be mainly focused on learning processes and therefore provides an opportunity of innovation and improvement on the educational methodology. Much research shows that these innovative methods could be a successful experience. In the subjects “Statistical Methods in Labour Relations” and “Financial Mathematics” that appear in the current plan of studies of the University of Jaén, a common problem is that to understand the theory, computer practice is needed. The diversity of students in our classes means that some students understand the use of mathematical or statistical package very quickly but others need more attention. This paper uses new information technologies to design multimedia didactical material for computer practice to promote self-learning and enhance the acquisition of computer skills. Students were surveyed to discuss the acceptance and learning effectiveness of this methodology.

1. INTRODUCTION

Computer practice constitutes a fundamental didactic resource in the education of technical disciplines. It allows students to verify the degree of assimilation of the theoretical contents. Taking into account the importance of the acquisition of these skills and abilities we have developed strategies to stimulate and guide their effort. With this aim, tutorial videos have been designed as a support for more effective and efficient students' work.

Sometimes students have problems solving activities with computer packages (Statgraphics or Mathematica). Some of them only need a general explanation but others need more time to learn how to solve the activities. The use of multimedia videos in our subjects has the following advantages: On the one hand, students only need a short time to watch every video and on the other hand they promote students' individual work and motivation. These reasons led us to use them the past academic year.

2. METHODOLOGY

Lecturers can guide the students in their work planning, trying to make an effective and efficient use of their learning time. In this sense, some teaching materials are included in a pen drive which is supplied to students at the beginning of the courses to be completed during each course (see [5]). Teaching materials have also been included in learning modules that appear in tune with the development of the classroom lectures using online resources (see [1], [4]). In this sense, we have used a notes platform (NT) at the virtual campus to keep in contact and provide the students with the following (see [3]):

- Notes from the classes.
- List of problems.
- Solutions for checking the results.
- Templates (Applets Java) to solve standard exercises easily without the need for doing the volume of calculations and focus on the interpretation of the results that are very important for the clear comprehension of the subject (see also [2]).
- Summaries that students can use in the exams.
- Tasks and solutions of seminars.
- Activities and guidelines for them.
- Electronic meetings, etc.

Learning modules also include the tutorial videos developed that student can download to their computer. In order to stimulate the ability to relate the theoretical contents with their practical applications as well as to motivate student's independent learning, the activities solved in the videos show the analysis of real cases, connected with their degree of knowledge.

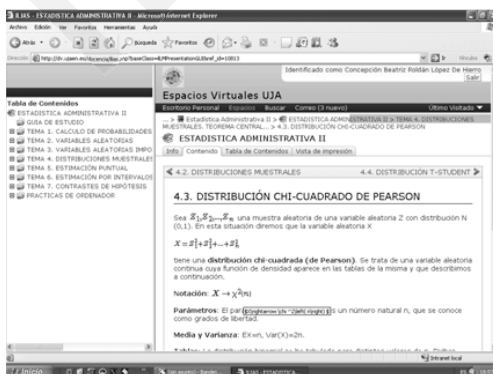


Figure 1. Learning modules created with LaTeX

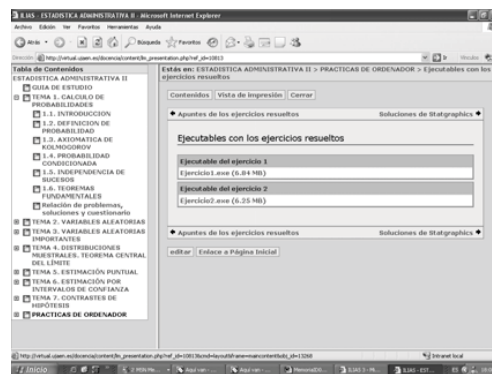


Figure 2. Downloading a tutorial video

After an introductory session to show students how they work and to explain the use of the package, students begin to download the activities developed in the videos and solve, individually, activities proposed by the lecturer at the end of the notes related to each video as we describe below. Students find different types of problems to be solved. The method of solution that should be applied to each problem is described in the tutorial in the form of solved examples. Students can follow the instructions, step by step. Tutorial videos give special emphasis to describing aims, commands in Mathematica and routes in Statgraphics.

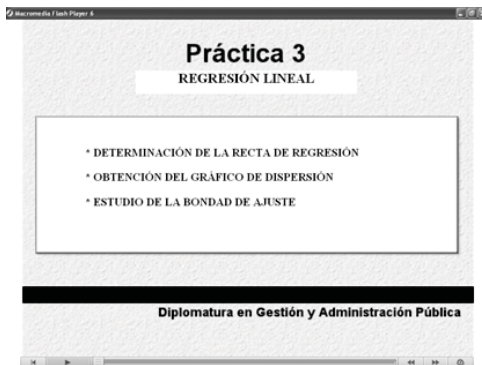


Figure 3. Aims of the video

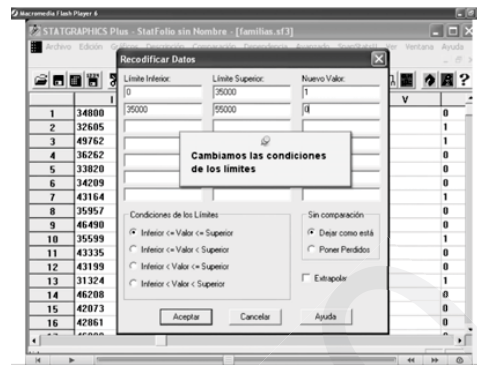


Figure 4. Instructions in the development of the video

Each tutorial video is displayed in approximately 3 minutes. The content of the tutorial file must be easily understood by the student, so it could be necessary to add documents dealing with the most complex technical details in order to introduce them gradually. The data and questions that are addressed in the video, the solution obtained and these technical details are attached in a file type pdf. Students may be reading this file and pausing or rewinding the video until they have a complete understanding of the use of the statistical or mathematical package to solve the problem. When the student has understood how to obtain the solution he does an obligatory individual exercise (proposed at end of these notes by the lecturer, see Fig. 5) to put into practice what he learns watching the tutorial and reading the notes.

PRÁCTICA INDIVIDUAL

Ejercicio 1

Se tomó una muestra aleatoria de los salarios por hora de 31 administrativos de cierta empresa A, en euros, obteniéndose:

| | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 18,20 | 2,30 | 14,20 | 15,70 | 14,40 | 17,20 | 10,20 | 10,20 | 12,20 | 12,20 | 14,20 | 14,20 | 12,20 |
| 14,20 | 12,20 | 2,30 | 11,20 | 11,20 | 11,20 | 11,20 | 11,20 | 11,20 | 11,20 | 11,20 | 11,20 | 11,20 |
| 8,20 | 7,20 | 11,20 | 12,20 | 12,20 | 12,20 | 12,20 | 12,20 | 12,20 | 12,20 | 12,20 | 12,20 | 12,20 |

Se pide:

- Estimar puntualmente el salario medio y su desviación típica.
- Determinar si los salarios de la empresa A se comportan según una ley normal.
- Calcular un I.C. al 95%, otro al 80% y otro al 99% de confianza para el salario medio por hora de los administrativos de la empresa A.
- Calcular un I.C. al 95%, otro al 80% y otro al 99% de confianza para la desviación típica del salario medio por hora de los administrativos de la empresa A.
- El jefe de la empresa A asegura que el salario medio por hora es superior a 12,25 euros. ¿Se puede rechazar la afirmación del jefe? Resolver el contraste a un nivel de significación del 2%.
- Contrastar si la desviación típica del salario por hora es inferior a 5,8 euros utilizando un I.C.

Solución

a) Ruta:

b) Ruta:

c) Ruta:

Página 1 de 11

d) Ruta:

e) Ruta:

f) Ruta:

Página 2 de 11

Figure 5. Individual activity related to a video

In the activity proposed at the end of every video, students indicate the route or the instruction following to solve the item, copy the solution obtained with the package and give the interpretation of the solution.

When the students finish the activities related to the videos, they will have acquired enough computer skills to propose and solve a group activity. This new task includes the following stages: description of the task, data collection to solve the task, analysis of the information and presentation of the main conclusions. Group activities are optional and will be conducted in groups of up to 3 students.

The set of files with the computer activities done by the student shall be included in the file created for each activity in Virtual Teaching on delivery date. The solutions can be sent from home or from the computer lab on the delivery date established. Good presentation will be valued together with correct writing, form (spelling) and content (style and structure) and the originality of the work developed in groups.

For the evaluation of the practical part of the course we use two levels:

- Level 1 (obligatory): This level corresponds to the minimum exercises on the computer. The maximum to which one can aspire in this case is 2.5.

• Level 2 (improvement): In this second level, the student must include other documents proving their skill level with the computer tools and the group activity. The maximum score that a student can obtain is 5.

The computer activities may be rated up to 8, it being necessary to obtain at least 1.5. The exam may be rated to 2, at least 0.5 still being needed. The final mark is the sum of the scores obtained in computer activities and exam. To pass the student needs to obtain 5 points or more.

3. RESULTS

Inside the frame of the EHEA, it is important to highlight that the material developed leads the students to acquire the competences corresponding to the subjects. So, some competences that they can acquire by means of the use of the developed material, are:

General competences:

- C1: Analysis and synthesis capacity.
- C2: Ability to apply knowledge in practice.
- C3: Troubleshooting.
- C4: Critical reasoning and autonomous learning.
- C5: To know the possibilities offered by the resolution of problems with a computer.

Students were surveyed and interviewed and the results obtained are shown in the following diagrams.

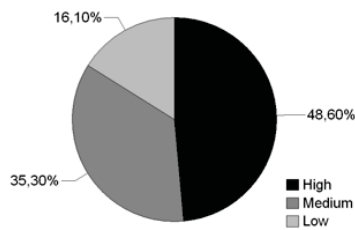


Figure 6. Analysis and synthesis capacity obtained

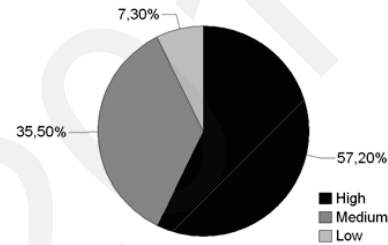


Figure 7. Ability to apply knowledge in practice

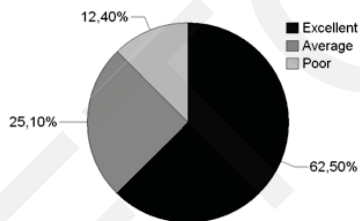


Figure 8. Documentation and materials

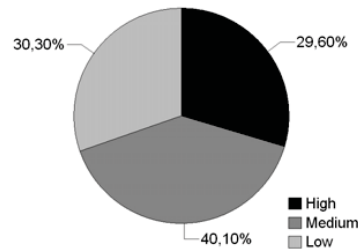


Figure 9. Difficulty of activities

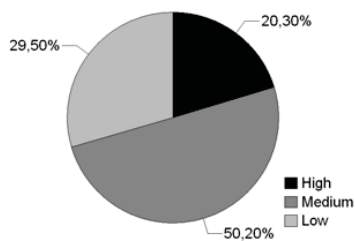


Figure 10. Effort

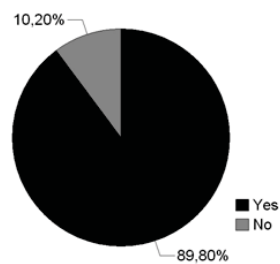


Figure 11. Tutorial videos are useful for learning

4. CONCLUSIONS

Based on these results provided by the students and on their comments, we can conclude:

- ✓ Students can choose the time, the place and the rhythm of learning.
- ✓ The material is comprehensive and can be downloaded as the student progresses in knowledge.
- ✓ Majority consider that schedule, delivery dates, documentation and activities were appropriate and useful.
- ✓ Students recognize an increased ability to apply knowledge in practice.
- ✓ Tutorial videos encourage collaborative work, self-management and planning.
- ✓ This new methodology implies an important dedication to do the activities proposed.
- ✓ Tutorial videos help students to increase their interest in the computer activities.

Finally, our teachers' opinion based on our experience, is summarized in:

- ✓ The lecturer can address questions and doubts of students in computer classes individually.
- ✓ The lecturer does not have the sense of time oppression and time waisting because the coordination between the time for explanations and time for questions is optimal.
- ✓ The relationship with the student is strengthened.
- ✓ Continuous evaluation is made easier.
- ✓ Distance learning is possible.
- ✓ The final mark is not dependent on a single exam, but the marks obtained in the activities proposed throughout the course.
- ✓ Students need to investigate, contrast, experiment and communicate their findings and other difficulties.

However, their use also presents some limitations:

- A certain resistance on the part of the students to self-learning. The lecturer relinquishes being the source of knowledge and becomes the guide of the students, and this requires on the part of student an active participation in the learning process and a certain capacity of assuming responsibilities that up to now were not demanded of them.
- Lecturers need to have been previously trained to do a tutorial video. Therefore they need free time to attend different courses offered by our university.
- Lecturers need to dedicate much time to preparing teaching material.

Therefore implementation of the referred strategies of motivation and supervision of the students' work implies an important time dedication from the lecturer and a considerable adaptation effort from the students. However, assessment of the experiences that have been carried out is positive and provides valuable educational information on the learning process. Students develop their independent work in a more effective and efficient way. Results show a positive contribution of this methodology to the academic performance of students. They are really motivated by this way of learning using computer packages.

References

- [1] Fernández, R., González, S., Roldán C., Montoro, D. (2008) Experiences of didactic innovation in the subject of Statistics in Social Sciences. *International Conference of Education, Research and Innovation (ICERI 2008), Madrid*, ISBN: 978-84-612-5367-8.
- [2] Roldán, C., Alba, M.V., Ruiz-Fuentes, N. (2008) Applets JAVA to contribute the self-learning of Statistics and Statistic Sampling in Management and Public Administration for undergraduates. *International Conference of Education, Research and Innovation (ICERI 2008), Madrid*. ISBN: 978-84-612-5367-8.
- [3] Roldán, C., Alba, M.V., Ruiz-Fuentes, N. (2008) "Complementos on-line para la docencia de de Estadística y Muestreo Estadístico en la Diplomatura de GAP", V International workshop on innovation and education for undergraduates, European University of Madrid, ISBN: 978-84-691-2665-3.
- [4] Roldán, C., Alba, M.V., Ruiz-Fuentes, N. (2007) "Incorporation of the ICT to the process of teaching Statistics and Statistic Sampling in Management and Public Administration for undergraduates", 8th International Conference on Technology in Mathematics Teaching (ICTMT 2007), Praga.
- [5] Roldán, C., Roldán, A., Alba, M.V., Ruiz-Fuentes, N. (2009) Active learning materials for use in statistics courses for undergraduates. *International Conference on Education and New Learning Technologies (EDULEARN 2009), Barcelona*, ISBN: 978-84-612-9801-3, 978-84-612-9802-0.

RUNNING HEAD: Relational Expressive Play Therapy

**USING A RELATIONAL EXPRESSIVE PLAY THERAPY APPROACH
THERAPY TO ENHANCE PRO-SOCIAL BEHAVIOR
IN PRIMARY SCHOOL CHILDREN**

Dr. Diana-Lea Baranovich
University of Malaysia
Faculty of Education; Dept. of Ed. Psych. and Counseling
Kuala Lumpur, Malaysia

Abstract

This paper discusses the author's original therapy theory in which she calls Relational Expressive Play Therapy (REPT). Furthermore, this paper discusses the ongoing action based, qualitative research using REPT approach with primary school children between the ages of 7 – 11 who are "at risk" due to rebellious behaviors in school, at home and in their communities. This action based, qualitative research study began in January 2009 and is ongoing. Case studies of the participants from the 2009 school year will be reviewed. This paper will also address the importance of parental involvement in the therapeutic process of the child. At the core of the rebellious behavior is the lack of a "secure base" attachment with the primary caregiver. The case studies qualifies the need to allow the child to regress to the stage of development and work through what he has missed; furthermore, the cooperation and active involvement of the parents is paramount to the emotional health and growth of the child.

**Using a Relational Expressive Play Therapy Approach Therapy to Enhance
Pro-social Behavior in Primary School Children**

Background of the Problem:

Usually children from low socio-economic backgrounds lead stressful lives. The immediate family members are usually educationally, financially, and environmentally disadvantaged. Some of them are the primary or partial care givers for their younger siblings or even for their parents. Furthermore, the children help the family supplement the income by taking on a part time job with meager pay. This interferes with the child's ability to perform his best with regard to schoolwork. At times the culture, the socio economic background, and lack of exposure or knowledge of different parenting styles means that these children are at the receiving end of harsh physical punishment.

In Eastern culture, in particular the Asian culture, children are not encouraged to be autonomous from parents and the extended family. If the child has an unconscious or conscious wish to be independent and to make choices for himself, he could be viewed as aggressive and obstinate; meaning a failure to conform and respect authority. The common family structure is usually authoritarian with respect to parenting the child. Pressure may also be exerted on the child from adults who are members of the extended family system such as grandparents, immediate uncles and aunts, or close friends. The independence exerted by the child is then often viewed as misconduct, and this behavior is a bad reflection on the family by the community. Generally speaking, children who are rebellious have more of a tendency to perform poorly in school, and engage in dangerous behaviors such as drug abuse or criminal activity. Yet underneath their seemingly tough exterior, these children could most likely be suffering from low self-esteem.

In Malaysia, counselors usually focus on traditional approaches of verbal counseling with their clients. This skill, though appropriate for adults, is not entirely suitable for children who have not yet reached that developmental stage of "abstract thought." Just as verbalization is the medium of expression for adults, play is the medium of expression for children. The teachers and parents could feel that the child has "problems" and refer him for counseling intervention. It is likely that this child could become very sensitive and defensive if he feels the counselor, a stranger and an authority figure similarly judges him. Building rapport and a trusting relationship with the "referred" child is of paramount importance. REPT, being a humanistic approach, offers this child a place where he could feel unconditionally accepted, safe and not judged by authority. In this atmosphere the child could work on issues that seem to trouble him consciously or unconsciously.

Play, the language of children, is one of the ways in which they learn that their feelings can be safely expressed without fear or rejection from others. During unstructured play, children feel free to act out their issues and the inner feelings associated with those issues; for example, feelings of fear, anger or loss that may otherwise become overpowering. Play is also an area that children can control. Play gives children an avenue to work out feelings of anxiety and fear; and reestablish some sense of balance and control in their lives. It is this "feeling of control," rather than actual control, which contributes to the child's positive emotional and mental health. It is important to remember that play therapy places emphasis on the word "therapy." The work is about "therapy" and not about "play."

However, what continues to be absent from the play therapy process is the component of participation from the caregiver, hence the author of this paper and the supervisor of this action based research project has developed her own play therapy theory which incorporates the involvement and cooperation of the parents throughout the therapy process. Although the caregivers are involved in the therapy process, they are not present during the play therapy sessions.

Relational Expressive Play Therapy (REPT):

Dr. Diana-Lea Baranovich's original theory of Relational Expressive Play Therapy (REPT) aims to help "hurt and at risk children" along with their parents/caregivers to resolve issues in their daily lives and enhance their self-awareness and facilitate their journey of empowerment. This new found empowerment enables the family dynamic to function better, and the children are better able to understand, cope with and find fulfillment of their unmet needs. As a result, the child's pro - social skills and interpersonal relationships at home, school, and the community are greatly improved and society as a whole is benefited.

REPT is a humanistic approach, which focuses on the patient's feelings and present understanding of his situation. The significance of the word "relational" is that this therapy process involves the parents and significant others in the child's life in the therapy process. Being a humanistic approach, REPT realizes that it is a rare experience to feel understood when a child is feeling rage, fear, grief, loss or jealousy. Yet it is this very acceptance and understanding that heals. As people, whether therapist child, family or friends, we feel a need to have an answer, opinion or sound advice to give to a significant other who is in pain. However, this overlooks the very essence of what the person in pain is in most need of, and that need being the person's need and right to feel and experience the pain while working through the process, and at the same time being "truly" heard and understood by the therapist. When the therapist hears and facilitates the person's journey of finding his own answer, he is giving the person the greatest gift of all. It is this empathy and acceptance that gives the person an opportunity

to empower him self and discover his unique potential. This atmosphere of understanding and acceptance allows the person to feel safe enough to express himself.

In further accordance with the philosophy of the Humanistic School, (REPT) realizes that personal growth takes place in a safe and supportive environment, which is created by a therapist who is genuine, warm, empathic, open, honest, congruent and caring.

These qualities can be learned best by being experienced through relationships with significant others. Although the child's relationship to the therapist is significant, it is most important to develop the above aforementioned qualities through the interpersonal relationships the child has with his parents and significant others in his day to day ordinary life.

It is important to remember that children do not live alone, nor do their issues emerge and remain issues without the help of the caregivers in their lives. For play therapy to be successful, caregivers and other significant adults in the child's life must be working together as a team in the child's best interest. It is very important for the parents/caregivers to be consistently involved in the goals and objectives of the process at all times. Consultation meetings should be scheduled every four sessions. Parents must aware of how they can help. Often, the parents also need therapy and parenting skills are often needed. However, it must be noted that REPT is not the same as family therapy or group therapy. The child's parents and significant others are not the therapist's clients; they are only consulted by the therapist to come to a better understanding of the process that their child is undergoing and how they can act as a support system in this process.

Relational Expressive Play Therapy is based upon the following beliefs:

- The process of all play therapy sessions is that of grief and loss. The child has lost a sense of control over himself and his environment.
- School children are recommended for play therapy because they are demonstrating "acting out behaviors."
- Acting out behaviors are symptomatic of "unmet" needs within the child, which are making the child feel out of control.
- These unmet needs are often times the result of the parents' lack of knowledge about the child's developmental needs and parenting skills.
- REPT helps the child to explore his inner emotions and feelings, which he cannot articulate through concrete play, whereby he cannot articulate with words.
- REPT helps both the child and therapist understand the child's thoughts and feelings, which are then communicated to the parents in an appropriate manner.
- As the child journeys inward into his own self-awareness and understanding, he gains a better understanding of the community and the world around him.
- It is important for the client to have the support and understanding of the significant others in his life in order to gain a new sense of empowerment.

The overall goal of Relational Expressive Therapy is as follows:

- To facilitate the child's journey of emotional understanding, thus enabling him to have an authentic sense of control in his life.
- To facilitate the understanding and support of the child's parents and significant others in the child's journey of empowerment.

The Role of the Therapist is as follows:

- To serve as a facilitator who shares the child's journey of evolving into a more empowered being.
- To facilitate the child's ability to bring his new found empowerment into his community.
- To facilitate the understanding and support of the child's caregivers and parents in the child's grief and loss process, although they are not directly involved in the play therapy sessions.
- To appropriately mentor and educate the caregivers and parents as to how they can be of support and help.

The Therapist accomplishes his role in the following manner:

- Creating a therapeutic atmosphere, which is safe, supportive and nonjudgmental for the child and his caregivers.
- Demonstrating unconditional positive regard for the child and his journey toward empowerment.
- Allowing the child to express any and all of his feelings, and helping the child to process these feelings in order to gain insight into his self-awareness.
- Portraying empathy to the child's feelings and situation through active participation in his play, verbal clarifications, feedback, and body language.
- Allowing the child to progress at his own pace.
 - Giving appropriate mentoring and guidance to the parents in order to facilitate their understanding of the child's needs.
 - Setting appropriate limitations on the child that will keep both him and the therapist safe and provide for the child an anchor to reality.

Components of Expressive Play Therapy:

There are a myriad of expressive activities in which the child can engage, such as visual creative arts pieces, improvised music making, dance and movement, creative journaling, puppets and role play, sand tray and clay. The importance lies within the fact that the child's expressive work is spontaneous and original. It is also the child's choice which expressive modes he feels the most comfortable experiencing and when. Not all children will respond with equal enthusiasm to all expressive modalities.

As with any humanistic therapy approach, REPT does not come with a recipe and set of certain techniques for the therapist to follow and use with the client. Therapeutic techniques and activities are unique to each child and his/her emotional journey. This is very dependent upon the unique situation of the child and where he is in his grieving and self-empowerment process.

Objective of Study:

The objective of this qualitative action based research project of using Dr. Diana-Lea Baranovich's original theory of Relational Expressive Play Therapy (REPT) is to help selected primary school students, along with their caregivers, who fit the minimum selected criteria, of good school attendance and come from an environmentally disadvantaged resolve emotional, hence enhancing pro-social behavior. Furthermore, it is the objective of this research project to have the caregivers and the teachers of these children understand the unmet needs and to enhance their pro-social skills and interpersonal relationships at home, school, and the community. This will be accomplished by giving them the opportunity to connect with their authentic selves by participating in the above research program.

The chosen method of interacting with the child in order to facilitate his awareness issues is play. Firstly, play is the natural medium of expression for a child. Secondly, most children below the age of eleven lack a fully developed capacity for abstract thought. The latter is necessary for the understanding of complex problems and feelings. This can be clearly seen by the frustration faced by many teachers and parents who say that when they try their best to talk and rationalize with their child, he seems to understand at that given point in time; however, this does not translate into positive changes in the child's behavior. Hence, behavioral counseling techniques, or rational emotive behavioral techniques were not chosen as the medium of communication with the said children.

Thirdly, early childhood experiences makes up the invisible framework of one's emotional life, buried and outside one's consciousness. A child unconsciously internalizes and imitates the patterns of relationships from his surroundings and these patterns direct his life in that particular direction. It may seem like many small differences; however all put together leads to hugely different outcomes. An

adult cannot consciously recall any of it, with specific strategies such as hypnosis he may be able to recall part of it; yet those un-accessed memories are not forgotten because it is built into that adult's emotional skeleton and it influences his expectations and behavior (Gerhardt, 2009).

Furthermore, if an emotional imbalance is being observed as dysfunctional behavior it seems reasonable to assume that therapy work in the field of emotions could serve to help to correct this imbalance. In a therapeutic atmosphere with a trained therapist in this form of therapy, the child through the process of play re-visits those traumatic affective periods in his life and the issues are worked through on a conscious or unconscious level, resulting in a healthier framework of his emotional life.

Each human being is unique, and each household, surroundings, atmosphere he comes from is unique to him. Based on this, this study could not be a quantitative one. It is not possible to control or manipulate the above external factors. This study involves interactive research and quantitative research, which was founded on a particular approach to validating a given hypothesis, cannot be applied to emotions. Quantitative analysis has to be linear and predictable; cause followed by effect, stimulus followed by response. Feelings and emotions on the other are neither predictable nor measurable. They seemed to have little to do with the technical advances that science could contribute. (Gerhardt, 2009)

Furthermore, if an emotional imbalance is being observed as dysfunctional behavior it seems reasonable to assume that therapy work in the field of emotions could serve to help to correct this imbalance. In a therapeutic atmosphere with a trained therapist in this form of therapy, the child through the process of play re-visits those traumatic affective periods in his life and the issues are worked through on a conscious or unconscious level, resulting in a healthier framework of his emotional life.

Literature Review:

According to PlayTherapy.org:

Therapeutic play is a very effective, nondirective intervention for helping children deal with their concerns and fears, and in time gain mastery of their environment. At the same time it often helps the therapist to gain insights into children's needs and feelings. According to Play Therapy, United Kingdom, Therapeutic Play has as its main objective the emotional well being of the child. It differs from fully-fledged play therapy only in degree, with therapeutic play being at the lower end of the play therapy continuum.

A meta-analysis of play therapy that evaluated 93 research studies on play therapy, filial therapy, and combined play and filial therapy indicated that play therapy was an effective therapeutic intervention with children across age and gender, in various settings, and with a variety of emotional and behavioral difficulties (Bratton et al. 2005).

From an extensive review of research related to the use of play therapy, it was observed that the Client Centered Approach or Virginia Axline's Play Therapy is considered to be the foundation that all other Play Therapy techniques seem to build upon (Bratton & Ray, 2000, Allen, Folger, & Pehrsson, 2007).

Axline's Philosophy of Non Directive Play Therapy

The non-directive approach to play therapy was developed most fully by Axline (1946, 1987, as cited in Mader, 2000).

Axline's (1982) eight guidelines for a non-directive approach to play therapy are:

The CCTP therapist does have goals and objectives, but the goals and objectives are not specific to the session. Landreth suggested that since child centered therapy focuses on the person of the child, the inner self of the child, rather than specifically on the child's problem, the emphasis is on facilitating the child to become more adequate as a person in coping with current and future problems which may impact the child's life (Carmichael, 2006, p112, Sweeney & Landreth, 2003).

As the uniqueness of the child is accepted by the play therapist, the former internalizes that acceptance and begins to accept value and appreciate his own uniqueness. He slowly starts moving to an internal locus of control (Landreth, 2001).

The Therapist- Child Relationship

According to Landreth & Sweeney, (2001, p186) the therapeutic relationship is, in fact so powerful that, it is the central factor determining the success or failure of therapy. The therapist focuses on the "person rather than the problem, present rather than the past, feelings rather than thoughts or behaviors, understanding rather than explaining, accepting rather than correcting, child's direction rather than the therapist's instruction, and the child's wisdom rather than the therapist's knowledge" (Landreth & Sweeney, 2001, p186).

The process takes time depending on the nature of the child, the nature of the therapist and the seriousness / depth of the presenting problem. Therefore, it is necessary that the therapist be completely open to what happens in the playroom and not influenced by the demands of external sources, for example parents, teachers, care givers, funding agencies. This is paramount to making the child centered therapy successful (Carmichael, 2006, p 112).

An increasing number of youths/ juveniles of Malaysian Indian origin from educationally, financially, and environmentally disadvantaged backgrounds seem to be getting into trouble with the law, as observed from the newspaper reports. It could be that these rebellious youth have unfulfilled emotional needs and developmental delays in one or more of the psychosocial developmental stages of Erik Erikson. This hinders their developing a sense of self. Often times, it goes back to the first stage of "Basic Trust versus Basic Mistrust." John Bowlby's Attachment Theory further qualifies it.

Erikson has often expressed that given an opportunity and space, over time the child could "backtrack," and to some extent fulfill those unmet needs at those particular stages in his developmental growth (Bratton et al. 2005).

Erikson's Theory of Psychosocial Development

Erik Erikson observed that the chronological age of a child or an adult does not appropriately indicate developmental age. He studied the psychosocial development of people over many years and then identified various crucial stages throughout the lifespan of an individual. He assumed that each stage in development is a turning point, a crucial period in the child's life, and a period of "increased vulnerability and heightened potential." Because of the natural growth process, children necessarily experience major changes in their perspectives and interactions with persons and objects. Each stage has potentially two opposite attitudes that may develop, depending on how the conflicts are resolved. Of course, some of the above are culturally as well as developmentally determined.

Erikson's theory of child / psychosocial development defines the stages as below. Only the first five stages of the eight stages are mentioned here, as it was relevant to this study.

Stage 1-Trust versus Mistrust (Birth to One Year) – the infant develops consciousness and learns to trust by having his own needs consistently met by a caregiver to whom he has a "secure base" attachment.

Stage 2- Autonomy versus Shame and Doubt (One to Three Years) – the toddler is given appropriate freedom to explore his environment and perform task that he can accomplish alone and is given the appropriate help when needed on tasks that he is not capable of performing alone.

Stage 3- Initiative versus Guilt and Shame (Three to Six Years) – further self-esteem is developed through allowing the child to initiate activities and validating him when he accomplishes them.

Stage 4- Industry and Competence versus Inferiority (Six to Puberty) - the school aged child learns to contribute through team work with his peers and helping with adult tasks and continues to be validated when he accomplishes these tasks well.

Stage 5- Identity versus Role Confusion (Puberty to Adulthood / Adolescence) – the adolescent begins to develop an authentic sense of self in terms of his interests, proclivities, gender, sexual orientation and how he can best contribute to society. (Wilson & Ryan, 2005).

Attachment Theory

This theory provides a clear, concise, and explanatory framework for understanding interpersonal relationships between human beings. This theory proposes that the human infant has a need for a secure relationship with significant others/ primary adult caregivers in his life. Without this “secure base,” normal social and emotional development will not occur.

According to John Bowlby, the father of Attachment Theory, a child's early experience of social interactions with significant others helps him form an internal working model of social relationships. Feeding and relieving an infant of his pain does not cause the infant to become attached to a caregiver. Infants become attached to adults who are sensitive to them; respond to them in social interactions, and who remain as consistent caregivers for some time (Bowlby, 1988).

Later on in life, the relationship a child has with his peers has an influence on his mental schema that is different from that of parents. However, parent-child relationships can influence the peer relationships. For example, secure attachment in infancy and later early childhood is said to promote social competence and positive peer relationships (Bowlby, 1988).

The Influence of Culture

There is limited literature addressing the effectiveness of play therapy with culturally diverse children. Child Centered Play Therapy addresses the importance of the therapeutic relationship and counselor's communication of total acceptance of the “self” to the child. Complete acceptance of the child means including any cultural aspects related to the relationship and the child (Arredondo et al., 1996, as cited in Chang, Ritter & Hays, 2005).

Therapists working with children of diverse cultures need to work hard to build rapport and trust with the child. Involving the family, and assessing the level of acculturation of the child and family will be of immense help to the therapist (Acosta, 1985; Carmichael, 1991, 2001; Coleman et. al., 1993; Glover, 1999, 2001; Glover & Landreth, 2000; Inciler, 1993; Kao & Landreth, 2001; Kerl, 1998, 1999; Martinez & Valdez, 1992; Shelby & Tredinnick, 1995).

The more knowledgeable a therapist is in a child's culture, and the meaning of symbols in that child's culture, the greater will be the therapist's ability to “achieve cross- cultural identification” (Glover, 2005). For example, the symbol of a snake is feared in some cultures, in another culture it could be revered as a God form.

Traditionally, Asian children are expected to be well behaved and hard working. Parents expect their children to contain strong emotions in obedience to parental authority and family honor. Children are not encouraged to be independent from parents and family. Autonomy, independence and self-directedness could be seen as aggressiveness and obstinacy. The family structure is authoritarian. Pressure may also be exerted from adults who are members of the extended family system, or close friends to control children's behaviors. In many sub-cultures the family structure is also patriarchal. Boys are usually cherished over girls, because boys carry the family's name and are expected to bring honor to the family. Childhood is viewed as a training ground for adulthood; therefore, working hard for academic performance and learning survival skills for real life are important.

Because children are the hope for the family, parents tend to impose great pressure on their children to excel in their studies. Children from lower socioeconomic groups could face even greater pressure to work hard and excel academically. “High achievement brings honor and prestige to the family, whereas failure brings shame” (Lee, 1989; Shen & Mo, 1990; as cited in Kao, 2005, p180-185). A child could feel shame if he failed to achieve “success” as expected by the family. The parents of children who struggle with the above may also suffer emotionally, as they interpret their children's failure at school as their own parenting failure and feel anxious for the family's future (Csikszentmihalyi, 1997, as cited in Kao, 2005, p 186)

A therapist should be aware that Asian parents tend to have high expectations and respect for teachers, as they have authority over their children's schooling. Such parents are likely to view therapists in the same light, and could be cautious about starting a relationship with an authority figure. To these expectations a therapist's patience and explanation about play therapy will be helpful. If the parents are educated on how their involvement could help the child improve, they could be more inclined to cooperate.

Play therapy has been used in elementary schools to reduce antisocial behaviors associated with social, emotional, behavioral, and learning difficulties. It was also observed that when children engage in play with a trained therapist, they develop skills and knowledge that contribute to pro-social behaviors (Baker & Gerler, 2004; Bratton & Ray, 2000; Green & McCollum, 2004; Newsome & Gladding, 2003; Packman & Bratton, 2003, as cited in Green & Christensen, 2006).

Methodology:

Participants:

A national primary school in the Kuala Lumpur area was selected as the site in which to carry out the action based research, and written permission for the Ministry of Education was granted. An empty, isolated room (approximately 14x14) on the school campus was given to the research team in order to set up the play therapy toys and materials and conduct the play therapy sessions.

The school principal recommended fifteen participants who met the criteria of being from a low family income, good attendance, a history of discipline issues and parents who have shown an interest in their child's schooling. All the parents of all recommended children were called by phone told the basics of the research project and invited to come to the school for a personal interview and more detailed information about the project. All participating teachers, parents and children agreed to the purpose of the research project, answered the intake questionnaires, agreed to attend the four workshop programs and signed an informed consent letter agreeing to the terms and conditions of the research project.

Field Work:

Each of the 15 participants receives 25 one-hour per week (REPT) sessions throughout the duration of the school year (200 school days). There are two - master's level counselors and one Ph. D. level counselor facilitating the (REPT) sessions. The master's level counselors each counsel two children and the Ph.D. level counselor counsels 11 participants. The research supervisor meets once every two weeks for a two - hour supervision session with the counselors. Each counselor meets with the teachers of her participants to assess the progress of each of her participants on a monthly basis. Furthermore, the parents of the 15 participants meet with the participant's counselor after every four (REPT) sessions to assess the participant's progress.

The parents of the 15 participants attend four experiential workshops (workshops related to the enhancement of knowledge pertaining to positive discipline, school involvement, and bonding and attachment of family members) throughout the course of the project to enhance their knowledge of parenting skills. These workshops are also open to non -participating parents and teachers who are interested.

Data Collection:

Pre and Post interview sessions are conducted for the research project – interview answers will be analyzed for assessment as related to the research project. The instrument used is the Goodman Strength and Difficulties Questionnaire, which assesses the four areas of conduct, self-esteem, hyperactivity and peer relationships. An original questionnaire created by the research supervisor is also given which addresses the background history of the child in terms of his physical, cognitive, social and emotional development as well as family dynamics. On going observations during the REPT sessions are written and evaluated to assess the child's progress in correlation to this play

therapy treatment and behaviors at both home and school. Regular feedback from teachers and parents will be evaluated to determine what progress can be observed from the child outside of therapy sessions.

At the end of the school year, the parents and the teachers again answer the Goodman Strengths and Difficulties Questionnaire to help assess the growth of the child. This questionnaire assesses the four areas of behavior, self-esteem, peer relationships and hyperactivity. A formal case study is written on each of the participants detailing their progress throughout the duration of the school year. The overall results are then analyzed to determine the success and limitations of the REPT in enhancing children's pro-social behavior. If need, the REPT will be modified for any continuing research, regarding this project, in order to help enhance the benefits obtained by the children; *i.e.* the outcome of observable pro-social behavior. At the end of each school year, a final research report along with the data for this research is stored under lock and key in the office of Dr. Diana-Lea Baranovich, for no less than a period of two years. Furthermore, at the end of each school year the project is assessed overall and necessary modifications are made in order to enhance the program for the next school year.

Discussion (Data Collection for the 2009 school year):

Time Span and Duration of Sessions:

Each referred participant is taken from the classroom for forty minutes per week to participate in REPT. A total of fifteen sessions are held each week. There is a preliminary interview with each child before the start of the actual sessions. In this interview the child was told about the process of therapy and what it entailed, and more information about the child is elicited from him about himself. Detailed notes were kept of each session. Photographs are taken of the participant's artwork, sand trays and creations. These are as much a significant aspect of the child's records as are written case notes.

Termination occurs when the subject has shown an ability to transfer his empowered self, as observed by new behaviors and skills incorporated into his daily life within his community, or at the end of the school year, whichever comes first. At termination session, the facilitator has a closure session with parent and child. Together options for future therapy work are discussed.

Bearing in mind legal and ethical issues posed when working with minors, as well as the facilitator's limitations, the problem cases are discussed for an hour every week with the research supervisor. This was a lecturer in the Department of Guidance and Counseling, Dr Diana Lea Baranovich, University of Malaya. The inputs and suggestions given by the Supervisor are kept in mind and applied by the facilitator at an appropriate time in a REPT session with the said subject.

A talk explaining Erik Erikson's theory on psychosocial development from birth to puberty, and the difference between chronological age and developmental age in a child is held for some teachers in the school. The intention is to enable the teachers to understand their students better. They could then utilize this understanding to help their students develop stronger self-concepts and enhance their students' self-esteem.

Discussion:

During the REPT intervention process, the play therapist is presented with significant information about each subject through observing and/or interacting in the participants' play and verbal dialogue. A non-judgmental, empathetic, genuine atmosphere, where the therapist's words and actions are congruent is suggested to be of paramount importance. It could be said that this underlying atmosphere of "total acceptance of the child" is a significant contribution to the success of the REPT process. Only in an atmosphere where a child feels totally safe- cognitively, emotionally and socially will he allow himself to regress, look within and fulfill unmet emotional needs. With these needs satisfied, he can now progress developmentally towards his chronological age.

This safe atmosphere helps to foster varying degrees of self - confidence in most of the participants. The play therapist fosters the participants's belief that he is a worthy and capable individual. This, for example, is done by accepting and encouraging a subject during his struggle and effort (either in the playroom during an activity, or outside as in classroom exams), rather than just acknowledging his accomplishments. Furthermore, reflection of feelings of satisfaction and pride after the participants masters a particular task in the playroom (or for example, a particular topic in a subject in the classroom) helps foster his new found motivation. All of the participants felt that having their feelings reflected to them, and talking about their feelings is initially a new and strange experience for them.

For some participants, the feeling of a sense of belonging in a group (such as the classroom) is lacking. Believing that one is a part of a group, rather than viewing oneself as outsider, is essential for building self-confidence. Helping some subjects discover their own innate potential helped to tilt the balance in a positive manner toward pro-social behavior. This automatically increased their acceptance by other groups of children and thus fostered a sense of belonging. For example, two subjects in the same grade took the initiative and helped each other study the math time's tables, something they had not done before. The class teacher's praise for their efforts encourages them to study further. These subjects were usually ranked at the bottom end of their grade; slowly and steadily they move up academically in ranking. In school, better rankings usually translate to "more friends." In short, the subjects have in a space of time, moved from "rebellious behavior to pro-social behavior." They now belonged to the dominant group of peers in their class, instead of being on the fringe of the group.

Some participants are helped in terms of coping skills with their limitations and sub-standard abilities in certain areas (for example, in classroom tests and exams). They are helped to view their experience in these areas as a stepping stone for learning and growth. This is important to the process of building self confidence. On the other hand, a fear of failure/ repeated failure can be a major setback to their progress. The play therapist's emotional support and trust in the subject's innate potential to succeed in life is one of the key factors in helping some of them cope with their life situations.

A few of the parents responded, either the father or the mother of the subject. These parents were helped with parenting skills. It took some time to build rapport with these parents, once they felt secure / not threatened and not judged based on their child's behavior, they seemed to cooperate willingly in learning basic parenting skills.

During the 2009 school year, two of the participants in this study did not show much progress. The parents of these subjects had given verbal informed consent over the phone; they were too busy to attend even a preliminary interview with the play therapist. In the above two cases, it seemed to the play therapist that the REPT intervention was minimally effective. In one of the above participants, the theme of aggression seemed to dominate in almost every session. As the UPSR (a national standard examination approached), the themes observed were one of aggression and also of fear. From information obtained from the teachers, the play therapist was informed this subject was at the receiving end of much negative punishment. With no parental cooperation, the play therapist could only hope to offer this subject a safe place during REPT sessions to release some of the anger and tension bottled within.

From conversations with the second subject, the facilitator was given to understand that the parental goals and objectives for this participant was very different from that of the class teacher's desire to help him raise his self esteem and improve in his studies. It seemed to the facilitator that the subject was receiving mixed messages. The parental expectations for this subject did not seem congruent with the goal of therapy. Once again, with no parental involvement, there was no avenue for the facilitator to confirm the parent's expectations of this subject; she had only the subject's word on the above. With no parental cooperation and with the presenting problem seeming to stem partly from home; it is difficult to say that REPT was not the best possible intervention in these cases.

It can be inferred that the positive changes in the behavior of the participants was due to both the REPT atmosphere during the sessions and parental involvement in the therapeutic process. Hence for the 2010 school year more parental workshops have been implemented.

Conclusion

Further qualitative research studies are being done in the Kuala Lumpur area. The experience gained from this study has been of help to conduct further research in this field. The same underlying skills of “non-directive, non-judgmental, empathetic and congruence” would be used with the subjects in the proposed study. However during the 2010 school year, the focus is equally on the child, parent / care giver, and the parent-child relationship or the caregiver / child relationship. This is a more holistic approach to helping the child, and his family in the process. The positive changes seen in the child due to the therapeutic intervention can be maximized and sustained.

This current research is currently being continued throughout the 2010 school year. This study includes the addition of a parent training workshop to further help the parents with understanding their children and enhancing their parenting skills. It is currently being discussed for this research to be continued in the 2011 school year at an additional school whereby girls can be included in the research. Furthermore, a qualitative component will be introduced. Three more counselors are presently being trained in the REPT approach in order to help reach more children in more schools for further research.

References

- Abrams, L., Post, P., Algozzine, B., Miller, T., Ryan, S., Gomory, T., & Cooper, J.B. (2006). Clinical experiences of play therapists: Does race/ethnicity matter? *International Journal of Play Therapy, 15, 2*; 11-34.
- Allen, V.B., Folger, W.A., & Pehrsson, D. (2007). Reflective process in play therapy: a practical model for supervising counseling students. *Education, Chula Vista 127, 4*; 472-480.
- Arad, D. (2004). If your mother were an animal, what animal would she be? Creating play stories in family therapy: the animal attribution story telling technique (AASTT). *Family Process, 43, 2*; 249-263.
- Axline, V. (1969). *Play therapy* (Rev.ed). New York: Ballantine Books.
- Baggerly, J., & Parker, M. (2005). Child-Centered Group Play Therapy with African American boys at the elementary school level. *Journal of Counseling and Development: JCD, 83(4)*, 387-396.
- Baranovich, D.L. (2006). Toward the development of a Rogerian based visual expressive arts person centered group to facilitate post secondary education and career choices of high-achieving, low socio-economic, inner city high school juniors and seniors. Unpublished doctoral dissertation, California Coast University.
- Bowlby, J. (1988). *A secure base*; 10-25. London and New York: Routledge Classics.
- Bratton, S., & Ray, D. (2000). What the research says about play therapy. *International Journal of Play Therapy, 9, 1*; 47-88.
- Bratton, S., Ray, D., Rhine, T., & Jones, L. (2005). The efficacy of play therapy with children: A meta-analytical review of treatment outcomes. *Professional Psychology: Research and Practice, 36, 4*; 376-390.
- British Association of Play Therapy. (2008). A history of play therapy. Retrieved April 5, 2008, from <http://www.bapt.info/historyofpt.htm>
- Carmichael, K. D. (2006). Legal and ethical issues in play therapy. *International Journal of Play Therapy, 15, 2*, 83-99.
- Carmichael, K.D. (2006). Child centered play therapy. In *play therapy- an introduction*; 104-119. New Jersey: Pearson Merrill Prentice Hall.
- Carroll, J. (2002). Play therapy: the children's views. *Child and Family Social Work, 7*; 177-187.
- Cates, J, Paone, T.R., Packman, J. & Margolis, D. (2006). Effective parent consultation in play therapy. *International Journal of Play Therapy, 15, 1*; 87-100.
- Chang, C.Y., Ritter, K.B., & Hays, D.G. (2005). Multicultural trends and toys in play therapy. *International Journal of Play Therapy, 14, 2*; 69-85.
- Chazan, S.E. (2005). Observing play activity. In *Profiles of play-assessing and observing structure and process in play therapy*. London & Philadelphia: Jessica Kingsley Publishers.
- Crane, J. (2001). The parents' part in the play therapy process. In G.L. Landreth (Ed.) *Innovations in play therapy issues, process and special populations 2e*. London: Brunner-Routledge.
- Dougherty, J. & Ray, D. (2007). Differential impact of play therapy on developmental levels of children. *International Journal of Play Therapy, 16, 1*; 2-19.
- Diagnostic and statistical manual of mental disorders*. (2005) Washington, DC: American Psychiatric Association.
- Erikson, E. (1972) Play and actuality. In M.Piers (ed) *play and development*. New York, W.W. Norton.
- Gale Encyclopedia of Children's Health: Infancy through Adolescence (2006)
- Garza, Y., & Bratton, S.C. (2005). School based child-centered play therapy with Hispanic children: outcomes and cultural considerations. *International Journal of Play Therapy, 14, 1*; 51-79.
- Gil, E., & Drewes, A. (2005). *Cultural issues in play therapy*. New York: Guilford Press.
- Glover, G. (1999). Multicultural considerations in group play therapy. In D.S. Sweeney & L. E. Homeyer (Eds.). *The handbook of group play therapy* (pp 278-295). San Francisco: Jossey-Bass.
- Glover, G. (2005). Musings on working with Native American Children in play therapy. In E.Gil. & A.Drewes (Ed.) *Cultural issues in play therapy*. (pp.168-179). New York: Guilford Press
- Goodman, R., & Scott, S. (1999). Comparing the strengths and difficulties questionnaire and the child behavior checklist: Is small beautiful? *Journal of Abnormal Child Psychology, 27, 1*; 17-24.
- Green, E.J., Christensen, T.M. (2006). Elementary school children's perceptions of play therapy in school settings. *International Journal of Play Therapy, 15, 1*; 65-85.
- Guerney, L.F. (2001). Child centered play therapy. *International Journal of Play Therapy, 10*; 13-31.
- Hall, T.M., Kaduson, H.G., & Schaefer, C.E. (2002). Fifteen effective play therapy techniques. *Professional Psychology: Research and Practice, 33, 6*; 515-522.
- Harris, T.E., & Landreth, G.L. (2001). Essential personality characteristics of effective play therapists. In G.L.Landreth *Innovations in play therapy- issues, process and special populations 2e* (pp 23-29). London: Brunner-Routledge.
- Hinds, S. (2006). Play therapy in the African American 'village'. In E. Gil, & A.A. Drewes (Eds). *Cultural issues in play therapy*. (pp117-147). New York: The Guilford Press.
- Hinds, S. (2005). Play therapy in an African American "village". In E.Gil. & A.Drewes (Ed.) *Cultural issues in play therapy*, 115-147. New York: Guilford Press.
- Hinman, C. (2003). Multicultural considerations in the delivery of play therapy services. *International Journal of Play Therapy, 12*;107-122.

- Hopkins, S., Huici, V., & Bermudez, D. (2005). Therapeutic play with Hispanic clients. In E. Gil, & A.A. Drewes (Eds.) *Cultural issues in play therapy*; 148-167. New York: The Guilford Press.
- Jephcott, M. (2007). Retrieved on June 6, 2006, from, <http://www.playtherapy.org.uk>
- Jeyakumar, D. (2008). The Indian poor in Malaysia: problems and solutions. In K.S. Sandhu, & A. Mani (Eds.). *Indian communities in Southeast Asia*; 405-437. Singapore: Institute of Southeast Asian Studies.
- Jones, K. D., Casado, M., & Robinson, E.H.M. (2003). Structured play therapy: a model for choosing topics and activities. *International Journal of Play Therapy*, 12, 1; 31-47.
- Kao, S. (2005). Play therapy with Asian children. In E. Gil & A. Drewes (Eds.) *Cultural Issues in play therapy*; 180-194. New York: Guilford Press.
- Kim, K.K. (2008). Malay attitudes towards Indians. In K.S. Sandhu, & A. Mani (Eds.). *Indian Communities in Southeast Asia*; pp 266-287. Singapore: Institute of Southeast Asian Studies.
- Knell, S.M. (2003). Cognitive behavioral play therapy. In C.E. Schaefer (Ed.) *Foundations of play therapy*; p 180. New Jersey: John Wiley & Sons, Inc.
- Lambert, S.F., LeBlanc, M., Mullen, J.A., Ray, D., Baggerly, J., While, J., & Kaplan, D. (2005) Learning more about those who play in session: the national play therapy in counseling practices project (phase 10). *Journal of Counseling & Development*, 85, Winter; 42-46.
- Landreth, G. L. (2002). Therapeutic limit setting in the play therapy relationship. *Professional Psychology: Research & Practice*, 33, 6; 529-535.
- Landreth, G.L. (2001). Facilitative dimensions of play in the play therapy process. In G.L. Landreth (Ed.) *Innovations in play therapy- issues, process and special populations 2e*; 3-22. New York: Brunner-Routledge.
- Landreth, G.L. (2002). *Play therapy: the art of the relationship 2e*. Philadelphia: Brunner/ Routledge.
- Landreth, G.L. & Sweeney, D.S. (2001). Child centered group play therapy. In G.L. Landreth (Ed.) *Innovations in play therapy- issues, process and special populations 2e*; 181-202. New York: Brunner-Routledge.
- Mader, C. (2000). Child centered play therapy with disruptive school students. In H.G. Kaduson (Ed.) *Short term play therapy for children*. New York: The Guilford Press.
- Malchiodi, C., Kim, D.Y., & Choi, W.S. (2003). Developmental art therapy. In C.A. Malchiodi (Ed.), *Handbook of art therapy*; 93-105. New York: Guilford Press.
- McGuire, D.K., & McGuire, D.E. (2001). *Linking parents to play therapy*. Philadelphia, PA: Brunner-Routledge.
- Milgram, M. (2004). Therapeutic play: a way to enhance parent-child relationships. *Prince George's Sentinel*, August.
- Palmieri, P.A., & Smith, G.C. (2007) Examining the structural validity of the strengths and difficulties questionnaire (SDQ) in a U.S. sample of custodial grandmothers. *Psychol Assess.* 19, 2; 189-198.
- Play Therapy (2007). Retrieved on June 6, 2006, from, <http://www.playtherapy.org.uk/AboutPlayTherapy/TherapeuticPlayDefinition1.htm>
- Ray, D., & Muro, J. (004). Implementing play therapy in schools: lessons learned. *International Journal of Play Therapy*, 13, 1; 79-100.
- Ritter, K.B. & Chang, C.Y. (2002). Play therapist's self perceived multicultural competence and adequacy of training. *International Journal of Play Therapy*, 11, 1; 103-113.
- Rogers, C. (1970). *Carl Rogers on encounter groups*. New York: Harbor and Row.
- Scott, T.A., Burlingame, G., Starling, M., Portor, C., & Lilly, J.P. (2003). Effects of individual client centered play therapy on sexually abused children's mood, self-concept, and social competence. *International Journal of Play Therapy*, 12, 1; 7-30.
- Sue, D.W., & Sue D. (2003). *Counseling the culturally diverse: theory and practice 4e*. New York: John Wiley & Sons.
- Sunderland, M. (2007). All about discipline: *what every parent needs to know*
- Sweeney, D.S. & Landreth, G.L. (2003). Child centered play therapy. In C.E. Schaefer (Ed.) *Foundations of Play Therapy*; 76-96. John Wiley & Sons, Inc. New Jersey.
- United States Department of Health and Human Services. (2001). Report of the Surgeon General's conference on children's mental health. A national action agenda. Retrieved on April 9, 2008, from <http://www.hhs.gov/surgeogeneral/topics/cmh/childreport.htm#sum>
- U.S. Public Health Service (2001). *Report of the Surgeon General's Conference on Children's Mental Health: A national action agenda*. Washington, DC: U.S. Department of Health and Human Services
- Wilson, K., Ryan, V. (2005). Child therapy and non-directive play therapy. In *Play Therapy- a non-directive approach for children and adolescents 2e*; 1- 100. New York: Bailliere Tindall.
- Wilson, K., & Ryan, V. (2001). Helping parents by working with their children in individual child therapy. *Child and Family Social Work*, 6; 209-217.
- Yasenik, L. & Gardner, K. (2004). Play therapy dimensions model: an overview. *Play therapy dimensions model a decision making guide for therapists*; 39. Rocky Mountain Play Therapy Institute.

USING DIGITAL EXERCISES TO HELP CHILDREN WITH CEREBRAL PALSY IN PRIMARY MATH TEACHING: A CASE STUDY

M. G. A. D. Reis^b, Luciana C. Pereira^c, E. Peres^a, M. Bessa^{ad}, A. Valente^{af}, R. Morais^{ab}, S. Soares^{af},
J. Baptista^a, A. P. Aires^g, J. J. Escola^b, J. A. Bulas-Cruz^a, M. J. C. S. Reis^{af}

^aDept. Engenharias, UTAD, 5001-801 Vila Real, Portugal. Tel./Fax: +351 259 350 356;

^bDept. Educação e Psicologia, UTAD; ^cCITAB-UTAD; ^dINESC Porto; ^eCITCEM; ^fIEETA; ^gCM-UTAD

ABSTRACT: A satisfactory level of intellectual performance and social competence of a primary school pupil is indeed highly dependent on the type of participation parents offer their children, even though the educational role of parents are often ignored by various experimental works on educational learning models. Meanwhile, Internet may well provide a new paradigm, setting forth that education and communication approach is truly more complex than ever before. Hence, it is on the basis of such paradigm that we present a case study where a set of digital exercises were used in order to possibly improve the mathematical skills of pupils with cerebral palsy. Being part of an Internet based system to support students' homework, the referred set of digital exercises proved to be the favorite among children, rather than exercises in paper form, also showing the children a fair more positive attitude. Furthermore, we have noticed that the use of computers has made children able to exercise and develop their tactile sensitivity and motor coordination.

KEY WORDS: Teaching/learning strategies, improving teaching, primary education, cerebral palsy

1 INTRODUCTION

According to several authors educational practices may be moving in the direction of a “digital learning” (e.g., Rogers (1995); Weller (2002); Roberts (2005); Warschauer (2007); Bull and Hammond (2008); Willoughby and Wood (2008)), and yet, in such educational context, mathematics still represents a main subject, standing for a fundamental human activity, a way of making sense of the world. When it comes to mathematics, children possess a natural curiosity and interest in the subject, and come to school with an understanding of mathematical concepts and problem-solving strategies resulting from what they have discovered through explorations of the environment that surrounds them. According to Johnson (2004) and the Expert Panel on Mathematics (2004), primary education is an important time of transitional growth in students' mathematical thinking. Therefore, in order to become more accurate in their work, both in reading problems and in working out solutions, primary students need more practice to reinforce what they are learning, a process which traditionally takes place on paper. In general, after students have completed practical exercises or homework, very often they have to wait for their teacher to check it and provide the respective feedback. And although this is a widespread experience, interruptions such as these can in fact reduce the students learning efficiency, much due to the lack of fair interest on the subject, an aspect much recognized as of major importance in the didactic process of acquiring knowledge.

The Expert Panel on Mathematics (2004) have shown through a research that mathematically literate students think flexibly about how to solve best a problem, and whose approaches are nonetheless adopted from textbooks or tutoring books. Consequently, these didactic materials are usually designed for average learners, being frequently and unfortunately difficult to find the best-fitting content for students with differing abilities. For example, in Portuguese school classes pupils are expected to learn from one single textbook designed for all students, however, while literate students may need a higher-level tutoring, the illiterate students, on the other hand, may indeed require a lower-level tutoring. Therefore, the depth and flexibility of ability provided by these textbooks are obviously restricted. Also, if it is true that some programs based on e-learning technology may provide personalized contents for learners by collecting the learning process, it shall be also noticed that primary students may become restless and unfocused when staying in front of computers as means of learning mathematics during long periods of time.

Concerning effective strategies thought of to improve illiterate students' learning, teachers, together with parents, have an important role to play, as recognized by the majority of contemporary educational theories. In fact, there are several authors showing awareness of such fact. Such is the case of Warschauer (2007) who stresses that “the teacher must be centrally involved actively instructing and

mentoring students, especially at the initial stages of work on a project. Unfocused instruction can leave students rudderless, and this is particularly harmful to at-risk students, such as those with learning disabilities, limited literacy, and language skills, or insufficient background knowledge". Also, the Scottish Executive (2003) has pointed out that "Parents have a vital role to play as prime educators of young children and some children will have many achievements at home using ICT that can be celebrated and built on. Young children and their families may access learning available in the community, for instance community networks, libraries and learning centers, well before entry to early years establishments. Some parents will have developed ICT skills and knowledge that can usefully be shared with the early years setting." Meanwhile, Selwyn and Bullon (2000) have also admitted that "the primary school more so than ever has an important role in ensuring that as many pupils as possible are engaged in sustained, meaningful and equitable use of IT" and "teachers should strive for constructing meaningful and genuinely opportunities for children to use computers and, therefore, stimulating continued desire to use IT".

The present paper therefore presents a case study of a pupil with cerebral palsy, and by following the methodological procedure as proposed by Yin (1984), the research was conducted in its working context. We have then produced a set of exercises in both digital and paper formats, corresponding to a total of twenty-two cases (eleven on paper and eleven on the computer) from which we observed, recorded and analyzed the pupil's behavior, as it is reported in section 4.

2 CONTEXTUALIZATION

Since 2006, the Portuguese government has been supporting some interesting projects concerning computer technology. Hence, in the same year of 2006, the "E-School" Programme (e.escola—<http://www.eescola.net/indexA.aspx>) enabled both teachers and students, from the 5th up to 10th grades, to purchase laptops for a low price of 150 euro. More recently, there has also been some protocols set by the national government with Intel, the leading telecommunications operators (Optimus, TMN, Vodafone, and Zon), Microsoft, "Magic Box" (Caixa Mágica), and the local members, allowing primary schools students accessing portable computers known as "Magalean" (Magalhães), for a maximum cost of 50 euro (<http://www.eescolinha.gov.pt/portal/server.pt/community/e-escolinha/200/apresentacao>). Additionally, a huge effort is being lately made in equipping all the classrooms with interactive "blackboards".

The existence of computers at schools, as this Portuguese example shows, is obviously necessary to integrate IT effectively in the learning process, but it is by no means sufficient. Setting-up infrastructures is a relatively simple process when compared to its actual handling, since both the necessary training and the change of habits of the entire school community that lead to an everyday practice are the result of a slow and gradual process, and entails a number of technical and cultural difficulties as well, Reis et al. (2008); Brown et al. (2008); Pratt (2008); Gil and de Vasconcelos (2007); Wishart (2004); Watson et al. (1998). Moreover, several researchers claim that it is what teachers think and believe that ultimately shapes the activities in the classroom Hargeaves (1993); Lampert and Ball (1998); Pijlc and Meijer (1997).

3 LITERATURE REVIEW

The most effective educational practices should be built upon all the ways in which humans are especially gifted at picking up certain kinds of information and causal patterns. On the contrary, educational approaches have frequently adopted *deficit model* in which it is assumed that children enter the schools with bundles of misconceptions to be overridden and corrected. Despite such educational approach and its corresponding limited practices, a primary goal of education should coincide with engendering explanatory ideas that are just at the right level of detail, the right grain size.

However, far from being an easy challenge to confront, such goal actually requires several things such as: determining what students do really know, presuming what they may become to learn after a reasonable period of instruction, and calculating what kind of new information would do them most good while increasing their understanding of the world. Meanwhile, modern teaching and researching communities agree that it is through the strategic didactic approach based on the use of exercises and games, that learning becomes potentially effective (Fontoura, 1971), regardless of the educational model or philosophy used. For example, proponents of sociocultural theory claim that learning is primarily a social process mediated through interactions using tools, Vygotsky (1978); Wertsch (1992). Accordingly, Vygotsky do consider that, mediation occurs through the use of 'semiotic' and 'material' tools. The

semiotic tools include symbols, signs, and spoken languages. Material tools include such items as pens, spoons, and particularly networked (Internet) computers. Most importantly, not only do these tools simply facilitate the set of activity that might take place, but also they fundamentally shape and define the type of activities that might be developed Wertsch (1992). Furthermore, Seymour Papert proposed the use of tools, particularly the computer, considered as “a mighty education tool”, in serving the process of building knowledge, from which the “constructionist” theory would emerge, adapting the very beginnings of the cognitive constructivism of Jean Piaget in order to make a better use of technology, Papert (1980).

Becoming competent in mathematics can be conceived of as acquiring a mathematical disposition (see, for example, Corte and Verschaffel (2006); Council (2001)).

Traditionally, the dominant form of learning in schools has been the teacher directed learning or guided learning, that is, “a trainer or teacher takes all the relevant decisions and the learner can and should follow him or her. He decides about the goals of learning, the learning strategies, the way to measure outcomes and he takes care of feedback, judgments, and rewards” Simons et al. (2000). However, besides the guided learning, there are two additional types of learning experiences as identified by Simons et al. (2000), namely the experiential and action learning. And there has been a strong and widespread awareness regarding the advantages of novel classroom practices and cultures thought of to facilitate and support learners through the gradual and progressive acquisition of adaptive mathematical competence. Indeed, such practices and cultures are therefore expected to create the necessary conditions for a substantial shift from a poorer guided learning experience towards a richer experiential one, as well as action learning, regarded as a successful learning strategy from the didactics standpoint (Fontoura, 1971), resulting in a balanced and integrated use of the three ways of learning: constructive, self regulated, and contextual or situated (Corte, 2007).

The constructivist view of learning has become common ground among educational psychologists (see, for example, Phillips (2000); Simons et al. (2000); Steffe and Gale (1995)). Actually, constructivism implies that constructive learning is self-regulated. According to Zimmerman (1994), self-regulation “refers to the degree that individuals are metacognitively, motivationally, and behaviorally active participants in their own learning process”. Moreover, Corte (2007) emphasizes that “constructive and selfregulated learning processes should be preferably chosen and studied in context”, and because learning is collaborative, the learning efforts are distributed over the individual student, his/her partners in the learning environment, and the (technological) resources and tools that are available Salomon (1993).

Again, Corte (2004) underlines that “starting as much as possible from tasks and problems that are meaningful and challenging for students, learning environments should initiate socially supported constructive learning processes that enhance students’ cognitive and volitional self-regulatory skills”. It is expected that students will be able to use their acquired knowledge and skills to solve mathematics-related situation and problems in everyday life, something that Bransford and Schwartz (1999); Bransford et al. (2006) call *preparation for future learning*.

4 SOME RESULTS

In total we have produced a set of eleven digital exercises together with its corresponding paper format, and we have also observed, recorded and analyzed the pupil’s behavior in twenty-two cases, namely eleven on paper and eleven on the computer. The set of digital exercises is part of an Internet based system to support students’ homework, therefore successfully transferring from the teacher to the Internet system the role of regulated teaching and responsibility of mentoring closely the pupil, offering support according to his/her difficulties, stimulating the intellectual progress and motivating the pupil while exploiting the digital exercises. Consequently, the prompt feedback about the exercises correctness, added to the training with different exercises sets about the same subject, besides the utilization of video, color, sound, etc., that positively reinforce child’s senses, are elected as the main advantages of these exercises. For details on the complete system please refer to Peres et al. (2010).

The exercises were presented to a child/primary school pupil between the months of April and June of the 2008/2009 academic year and are shown in the following figures. Thus, figure 1 presents the screen-shots of two examples of digital exercises; in figure 1(a), the student is asked to drag an elephant, a cat and a dog to the circle, and in figure 1(b), the student is asked to count the number of elements and drag the corresponding number to the blank space. As it can be seen from the mentioned figures, the character in this template says “Olá Ana!” (that is, “Hello Ana!”; this information was retrieved from the user login name). Also, all the exercises provide the pupil automatic feedback about its correctness, by simply clicking the button named as “Verificar” (“verify”).

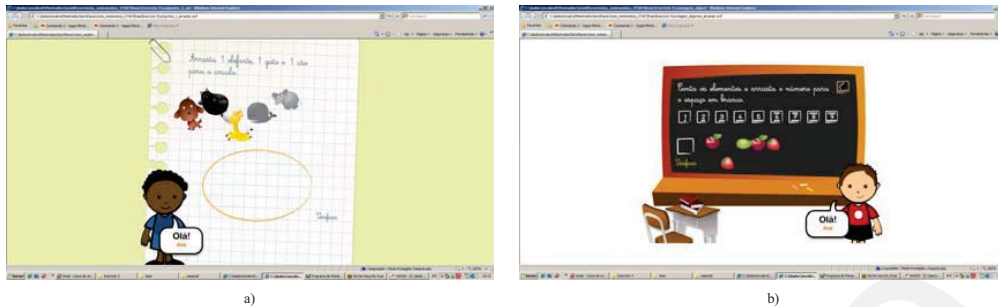


Figure 1. Sample exercises.

As we can observe from the results concerning the paper exercises as presented in table 1, on average, there was 28.0 seconds less total time of concentration, the run time of the exercise itself was higher, precisely 13.6 seconds. That is, for the digital exercises, although the total time the child was involved is on average below the time of the ones in paper format, the child took longer time to solve these exercises. Such fact may well indicate that the child may be less time “involved” in the resolution process of the exercise, but actually being more “focused” in its resolution. It shall be noticed that the only cases in which this appears to be partially untrue is for exercises number 1 (5 seconds), 9 and 10 (20 seconds) where the child took less time to solve the exercises on paper. Also, the mode (most frequent case) is the same for the indicators “anxiety”, “attention”, “withdrawal” and “difficulty solving the exercise” and in both types of digital and paper exercises. We may also conclude that there were always more manifestations of interest, persistence, less anxiety and greater willingness to continue on solving exercises in digital format rather than in paper format. It is also clear that, on average, hear less help, more joy, less anxiety, less apathy, more attention, less disinterested, less withdrawal, fewer difficulties in solving the exercise, easier to perform/run the exercise and less indifference.

These facts are also reinforced by the child’s comments (noted in our “diary-board”) “It’s fun playing this! And now teacher...? Teacher, and now, what will I do?” or “Let’s make another?”, referring to the digital exercises, or “I no longer work more!”, “This is boring!”, “When we work on the computer?” or “I’m sick of work! It’s just work, work, work, ...!”, when commenting on the paper exercises.

Table 1. Recorded indicators of involvement and success (1—None, 2—Low, 3—High); Avg—average, Std—standard deviation, Mod—mode.

| Indicator | Digital format | | | | | | | | | | | Paper format | | | | | | | | | | | | | | | | |
|--------------------------|-----------------|----|----|-----|----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----------------|----|----|-----|----|-----|-----|-----|-----|-----|-----|-------|-----|-----|
| | Exercise number | | | | | | | | | | | Avg | Std | Mod | Exercise number | | | | | | | | | | | Avg | Std | Mod |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | |
| Time focused | 60 | 80 | 82 | 155 | 96 | 210 | 600 | 540 | 600 | 900 | 660 | 362.1 | | | 50 | 70 | 80 | 140 | 80 | 180 | 550 | 545 | 580 | 800 | 600 | 334.1 | | |
| Execution time | 50 | 45 | 30 | 60 | 60 | 90 | 420 | 360 | 540 | 600 | 540 | 254.1 | | | 45 | 50 | 40 | 70 | 60 | 120 | 470 | 405 | 520 | 580 | 585 | 267.7 | | |
| Help | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2.4 | 0.7 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2.5 | 0.5 | 3 |
| Joy | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 2.8 | 0.6 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1.6 | 0.5 | 2 |
| Anxiety | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1.5 | 0.5 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.7 | 0.5 | 2 |
| Apathy | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1.3 | 0.5 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1.5 | 0.5 | 2 |
| Attention | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.0 | 0.0 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2.5 | 0.5 | 3 |
| Disinterest | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 0.0 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1.5 | 0.5 | 2 |
| Withdrawal | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 0.0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1.5 | 0.5 | 1 |
| Manual dexterity/f.motor | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2.7 | 0.5 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2.5 | 0.5 | 2 |
| Resolution difficulties | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2.4 | 0.8 | 3 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2.5 | 0.8 | 3 |
| Easy in run | 3 | 2 | 3 | 2 | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 1.9 | 0.8 | 2 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.5 | 0.8 | 1 |
| Indifference | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1.1 | 0.3 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2.1 | 0.7 | 2 |
| Absorption | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.0 | 0.0 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 0.0 | 2 |
| Persistence | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.0 | 0.0 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 0.0 | 2 |
| Sadness | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.1 | 0.3 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2.4 | 0.5 | 2 |
| Will to continue | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.0 | 0.0 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 0.0 | 2 |

We remark that this set of exercises represents a promising didactic strategy concerned with promoting the rich teaching practice that brings together both “inductive” and “deductive” methods, obviously depending on the particular dynamic of the teaching/learning process. Also, the affective and motivating attitude of the teacher, along with the more “technical-objective” one shall be object of major concern, Zabalza (1994), as the child is frequently put at the center of all our decisions. This means that it

is the pupil who has to be able to withstand all the technical and emotional situations which s/he is exposed to, therefore justifying the study of the attitudes and cognitive strategies and actions from which that is brought out, Zabalza (1994).

5 CONCLUSIONS

Students with disabilities are known for possessing a set of unique characteristics that hinder their integration in school and consequently their learning. With this work we hope that, somehow, have contributed to promoting inclusion, improve teaching practices (in both personal and professional dimensions) and promote the educational success of children with disabilities.

Therefore, once acknowledged the importance of the pupil's active and thoroughly participation in the learning experience, Perrenoud (1999), for a fully and finer intellectual progress, we have concluded that the child to whom this work refers prefers the exercises in digital format (using the computer) to exercises in paper form (using more traditional materials) and shows a more positive attitude to the first ones, as can be shown from the results presented. Also, the use of computers has enabled the development of tactile sensitivity and motor coordination (by using the keyboard and the mouse).

We therefore believe that the prompt feedback about the exercises correctness, together with the training provided by the different exercises sets about the same subject, besides the exploitation of video, color, sound, etc., positively reinforce the diverse child's senses, definitely contributing to capture and motivate the child. In fact, according to Warschauer (2007), "New technologies do not replace the need for strong human mentorship, but, indeed, amplify the role of such mentorship". Obviously that the students must become into contact with the new teaching/studying tools progressively, in order for they to become a part of the learning environment as smoothly as possible.

REFERENCES

- Bransford, J. D., Schwartz, D. L., 1999. Rethinking transfer: A simple proposal with multiple implications. In: Iran-Nejad, A., Pearson, P. (Eds.), *Review of research in education*. Vol. 24. American Educational Research Association, Washington, DC, pp. 61–100.
- Bransford, J. D., Stevens, R., Schwartz, D., Meltzoff, A., Pea, R., Roschelle, J., Vye, N., Kuhl, P., Bell, P., Barron, B., Reeves, B., Sabelli, N., 2006. Learning theories and education: Toward a decade of synergy. In: Alexander, P. A., Winne, P. H. (Eds.), *Handbook of educational psychology*, 2nd Edition. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 209–244.
- Brown, K. S., Welsh, L. A., Hill, K. H., Cipko, J. P., Nov. 2008. The efficacy of embedding special education instruction in teacher preparation programs in the United States. *Teaching and Teacher Education* 24 (8), 2087–2094.
- Bull, G., Hammond, T., 2008. The future of E-Learning in schools. In: Adelsberger, H. H., Kinshuk, Pawlowski, J. M., Sampson, D. (Eds.), *Handbook on Information Technologies for Education and Training*, 2nd Edition. Springer-Verlag Heidelberg, pp. 345–361.
- Corte, E. D., 2004. Mainstreams and perspectives in research on (mathematics) learning from instruction. *Applied Psychology: An International Review* 53, 279–310.
- Corte, E. D., 2007. Learning from instruction: the case of mathematics. *Learning Inquiry* 1, 19–30.
- Corte, E. D., Verschaffel, L., 2006. Mathematical thinking and learning. In: Renninger, K. A., Sigel, I. E., Damon, W., Lerner, R. M. (Eds.), *Handbook of child psychology*, 6th Edition. Vol. 4: Child psychology and practice. John Wiley & Sons, Hoboken, NJ, pp. 103–152.
- Council, N. R., 2001. Adding it up: Helping children learn mathematics. In: Kilpatrick, J., Swafford, J., Findell, B. (Eds.), *Mathematics Learning Study Committee*, Center for Education, Division of Behavioral and Social Sciences and Education. National Academy Press, Washington, DC.
- Expert Panel on Mathematics, 2004. Teaching and learning mathematics. Tech. rep., The Report of the Expert Panel on Mathematics in Grades 4 to 6 in Ontario, Toronto, Canada: Ontario Ministry of Education. URL <http://www.edu.gov.on.ca/eng/document/reports/numeracy/panel/numeracy.pdf>
- Fontoura, Aurora, 1971, *Didáctica Geral [General Teaching]*, Rio de Janeiro
- Gil, H. T., de Vasconcelos, F., 2007. e-learning as a "Magical" way to teach and learn in a modern world?! In: Remenyi, D (Ed.), *2nd International Conference on E-Learning*, Proceedings. Academic Conferences Ltd, Curtis Farm, Kidmore End, Nr Reading, RG4 9AY, England, pp. 173–178, 2nd International Conference on e-Learning (ICEL 2007), New York, NY, JUN 28-29, 2007.
- Hargeaves, A., 1993. Foreword. In: Huberman, M. (Ed.), *The lives of teachers*. Teachers College Press, Columbia University, DC, pp. vii–ix.

- Johnson, J., 2004. Teaching and learning mathematics: Using research to shift from the “yesterday” mind to the “tomorrow” mind. Tech. rep., State Superintendent of Public Instruction, Washington. URL <http://www.k12.wa.us/research/pubdocs/pdf/mathbook.pdf>
- Lampert, M., Ball, D. L., 1998. Teaching, multimedia and mathematics. Teachers College Press, New York.
- Papert, S. M., 1980. Mindstorms: Children, Computers, and Powerful Ideas. Basic Books, New York.
- Peres, E., Bessa, M., Reis, M. G. A. D., Meira, D., Escola, J. J., Bulas-Cruz, J. A., Reis, M. J. C. S., 2010. Collaborative e-exercisebook system for primary math teaching, submitted to Computers & Education.
- Perrenoud, P., 1999. Avaliação: da excelência à regulação das aprendizagens — entre duas lógicas [Rating: from excellence to the regulation of learning — between two logics]. Artmed, Porto Alegre, Brasil.
- Phillips, D. C. (Ed.), 2000. Constructivism in education: Opinions and second opinions on controversial issues. Ninety-ninth yearbook of the national Society for the Study of Education. Part I. National Society for the Study of Education, Chicago, IL.
- Pijl, S. J., Meijer, C. J., 1997. Factors in inclusion: A framework. In: Pijl, S. J., Meijer, C. J. W., Hegarty, S. (Eds.), Inclusive education: A global agenda. Routledge, London, UK, pp. 8–13.
- Pratt, N., Aug. 2008. Multi-point e-conferencing with initial teacher training students in England: Pitfalls and potential. Teaching and Teacher Education 24 (6), 1476–1486.
- Reis, M. J. C. S., Santos, G. M. M. C., Ferreira, P. J. S. G., 2008. Promoting the educative use of the internet in the Portuguese primary schools: a case study. Aslib Proceedings 60 (2), 111–129.
- Roberts, T. S., 2005. Computer-Supported Collaborative Learning in Higher Education. Idea Group Publishing Inc., London, UK.
- Rogers, E. M., 1995. Diffusion of innovations, 4th Edition. Kindle Edition, New York.
- Salomon, G. (Ed.), 1993. Distributed cognition. Psychological and educational considerations. Cambridge University Press, Cambridge, UK.
- Scottish Executive, 2003. Early learning, forward thinking: The policy framework for ICT in early years. Tech. rep., Learning and Teaching Scotland, Scottish Executive. URL http://www.ltsotland.org.uk/Images/ict_framework_tcm4-122121.pdf
- Selwyn, N., Bullon, K., Oct. 2000. Primary school children’s use of ICT. British Journal of Educational Technology 31 (4), 321–332.
- Simons, R. J., van der Linden, J., Duffy, T., 2000. New learning: Three ways to learn in a new balance. In: Simons, R. J., van der Linden, J., Duffy, T. (Eds.), New learning. Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 1–20.
- Steffe, L. P., Gale, J. (Eds.), 1995. Constructivism in education. Lawrence Erlbaum Associates, Hillsdale, NJ.
- Vygotsky, L. S., 1978. Mind in society: Development of Higher Psychological Processes. Harvard University Press.
- Warschauer, M., 2007. The paradoxical future of digital learning. Learning Inquiry 1, 41–49.
- Watson, D., Blakeley, B., Abbott, C., January-February 1998. Researching the use of communication technologies in teacher education. Computers & Education 30 (1-2), 15–21.
- Weller, M., 2002. Delivering Learning on the Net: the why, what & how of online education. RoutledgeFalmer, Taylor & Francis Group, London and New York.
- Wertsch, J. V., 1992. The voice of rationality in a sociocultural approach to mind. In: Moll, L. C. (Ed.), Vygostky and education: Instructional implications and applications of sociohistorical psychology. Cambridge University Press, New York, NY, pp. 111–126.
- Willoughby, T., Wood, E. (Eds.), 2008. Children’s Learning in a Digital World. Blackwell Publishing Ltd, 350 Main Street, Malden, MA 02148-5020, USA.
- Wishart, J., August-September 2004. Internet safety in emerging educational contexts. Computers & Education 43 (1-2), 193–204.
- Yin, R. K., 1984. Case study research: Design and methods, 2nd Edition. Sage, Newbury Park, CA.
- Zabalza, M. A., 1994. Planificação e Desenvolvimento Curricular na Escola [Planning and Development in the School Curriculum], 2nd Edition. Edições ASA, Rio Tinto, Portugal.
- Zimmerman, B. J., 1994. Dimensions of academic self-regulation: A conceptual framework for education. In: Schunk, D. H., Zimmerman, B. J. (Eds.), Selfregulation of learning and performance: Issues and educational applications. Lawrence Erlbaum Associates, Hillsdale, NJ, pp. 3–21.

USING INFORMATION AND COMMUNICATION TECHNOLOGIES IN SCHOOL IMPROVEMENT

Assist.Prof.Dr. Nilgün TOSUN
Trakya University, Faculty of Education, Turkey
nilgunt@hotmail.com

ABSTRACT

Advances in information and communication technologies, shortly called as ICT, require educators to present a more efficient and modern education by using these technologies. Therefore; the role of ICT in the development of education has been a popular research subject nowadays. Even not only education content but it has started to be dwelt on how to develop education documents, education management, school libraries and an entire education institute via ICT as well. In this study, using facilities of ICT in the improvement of a school has been examined. In addition, the materials and equipment necessary for the use of ICT, teaching staff that are capable of using these technologies and difficulties that are met during practices have been discussed. It has been tried to determine what it takes to deal with these hardships. Within the scope of the research, it has been dwelt on how some European countries tackle and practice this subject through data and samples collected in the common- subject study visit to the Estonia, Kohtla-Jarve, in 13-17 October 2008.

Keywords: School improvement, Information and communication technologies, Education technologies.

INTRODUCTION

Using information and communication technologies in education has been continuing about a century. The investments of information and communication technologies which started with radio transmissions in 1920s have developed via television transmissions and investments after 1976s. The planning towards using technology in education in Turkey started with 3rd five year development plan which suggested using radio and television for adult education in 1970s. However; the use of computer and internet, which are products of advanced technology, has become widespread after 1995 (Aziz, 1982).

The ministry of education defined the skills that teachers should have in the area of ICT in the general competencies of teaching in 2006. According to this; teachers must have the competencies of being able to know legal and ethical responsibilities of ICT and teach these to learners, be technology literate, follow the advances in ICT, make use of ICT to support vocational development and increase effectiveness, benefit from ICT to share information (e-magazine, practice software, e-mail), prepare suitable learning environments to learners who have different experiences, features, and skills via ICT, give place to how to use ICT in lesson plan, utilize computer and other technological devices to prepare materials, have an access to sources about teaching and learning in technological environments, assess them in terms of accuracy and suitability, be model in effective use of technological sources, and teach them, use technologies that support learner-centered strategies while taking into consideration different needs of learners, develop and apply strategies for behavior management in densely technological learning environments, analyze data via ICT, inform parents, school management, and other educators about results through ICT (Cüre & Özden, 2008).

The importance of using ICT in school development can easily be understood from the scope of this notice. In addition to the ICT competencies of the teachers mentioned above, many other parameters play an important role in school improvement. It may be said that the process of school improvement is on the right track when these parameters are provided adequately and on time.

PARAMETERS IN SCHOOL IMPROVEMENT

Improvement process of school where our knowledge and skills are started in a planned and controlled way begins with erecting buildings, and providing teaching staff and basic school materials and equipment, and continues. We say it continues since improvement of a school never ends. It should not finish. It is wrong to think the maintenance of improvement in a school just improving its physical, managerial and hardware facilities. If school increases the quality of the education and the success of its learners via these facilities and reaches its aim in education through training individuals who are required by the age to be qualified, it means that the school maintains its improvement.

There are some parameters that play an important role in reaching the mentioned targets for an effective school improvement. These parameters can be summarized as follows:

Building: A school contains many components such as; class, laboratory, gym, or, playing ground, library, dining hall, canteen, dormitory, and garden. As well as the sufficiency of the numbers of the components, their place in the building, colors, lighting and heating systems are also important. The improvements that will be made in all the features that have been mentioned will play a crucial role in school improvement.

Physical Equipment: Providing, reconstructing, and renewing physical equipment needs such as desk, table, and board in the course of time in accordance with the type of school, and the goals and objectives of education will contribute to school improvement.

Technical Equipment: School should have technical materials and equipment (ruler, map, laboratory equipment, computer, internet, data projector, writer, scanner, etc.) compatible with the type of school. Updating and increasing their numbers will contribute to school improvement.

Management and Service Staff: School must have knowledgeable, skillful, and open-minded managers in order to conduct managerial works appropriately. In addition, adequate and qualified service staff is needed in order to create and maintain a suitable learning environment. For example; in all the schools which were visited in Estonia in 2008 it was seen that there were a great number of service and supporting staff. Even in a school where the number of the teachers is 29 it was seen that there were 25 service and supporting staff (cleaning, cloakroom, dining hall, ICT, etc.) (Kılıç, 2008).

Teaching Staff: Having sufficient teaching staff in each subject and keeping them updated through seminars and in-service training will play a crucial role in school improvement.

Information and Communication Technologies (ICT): In our changing and developing world it is very important to use information and communication technologies in education, as with all other areas. ICT are one of the most indispensable parameters in school and increasing the quality of education since they are sources in every aspect of life.

All of these parameters which are necessary for school improvements are very important and each of them is a research subject. In this study, ICT's role on school improvement has been stressed. In developing and globalized world, education models and pedagogical approaches change, as well. Dependably, technologies that are used in education change, too. Using ICT in education has become widespread rapidly and even it has become indispensable. Many people believe that computers make the works easier, more effective and more fun (Seferoğlu,

2002). Taken into consideration these features it might be said that using ICT is a main component in school improvement. Therefore; this point has especially been emphasized in this study.

USING THE FACILITIES OF ICT IN SCHOOL IMPROVEMENT

As stated in the previous section, one of the most important parameters in the improvement of a school is using Information and Communication Technologies (ICT). Using ICT should be understood as not only technological development but the development in pedagogical method and the level of education, as well. When ICT is said, not only tools such as telephone, fax, computer, data projector, and smart board come to mind but software such as word processor program (MS Word), calculation and table program (MS Excel), presentation preparing program (MS PowerPoint), website designing programs, and concepts of network such as network, internet, width of band, and sharing information come to mind, too.

Using ICT has brought about some difficulties and costs like every innovation and technology. However; the yields of these hardships and costs are fairly high and effective. As Peter Rudd stated in the conference titled Educational Conference and Education Research in 2000, the role of ICT in its effect on school development and learner performance had been disregarded. In fact, there is a direct relationship between the motivation of learner and his learning.

Researches about school improvement have dwelt on the positive effects of ICT on the effectiveness of teaching and the development of learning. Especially these two questions have been focused (Higgins, 2003):

- What is the evidence that ICT can have a positive impact on pupils' learning in school?
- How can ICT be used effectively in schools to improve pupils' learning?

A great many studies have been undertaken to find answers to these questions. As a result, it was seen that when ICT was integrated in a planned, effective, and structural way it might contribute to the learning and teaching to a great degree. These answers also put forward how effective ICT is in school improvement which is our subject.

A General View To The ICT Used In Education

Blackboard that has been used in the schools for years has been replaced by smart board, books and notebooks have been replaced by flash discs, overhead projectors have been replaced by data projectors, and text-based assignments have been replaced by presentations and slide shows. When ICT is said, it is very natural that computer is the first thing that comes to mind. Other concepts have existed and developed depending on computer. Rapidly developing technology and technological services and products which are becoming cheaper day by day have showed their effects on school improvement. There is nearly no school which does not have computer and internet connection. In this section, technologies that are used in the schools will be discussed, and the most important ones among these will be mentioned shortly.

Computer: It is the origin and the main component of ICT. Other technologies have taken shape as hardware and software in accordance with the development of computer. Almost all schools have computer laboratories right now. These laboratories are used for both ICT courses and other courses. In addition, teachers' rooms in schools have computers so that teachers can make preparations for their lessons.

Software: They cost as much as hardware and even cost more than them nowadays. For this reason; many countries have signed agreements with big software companies (Microsoft, Macromedia, etc.). They have aimed at decreasing the cost of licensed software used in schools. Along with licensed software, open source software such as moodle, viko iva, and hot potato are used in schools, as well (Estonia Study Visit Group Report, 2008).

Data Projector: They replace overhead projectors which were used in the past. Data projector is indispensable in computer-based methods or methods where education documents prepared with computers are used as supporting documents. Therefore; it is very important that not only laboratories but also all classes have data projectors so that the quality of education and learner's motivation can increase.

Internet and Web-based Tools: Network technologies have developed rapidly in the last years and depending on this, connection speed and bandwidth have also increased. However, costs have decreased even if not wanted degree (Augar and et al, 2006). This has resulted in using internet in education. The presentations of text-based contents have been replaced by audio-visual contents and animations. In addition, instead of text-based assignments, concepts such as on-line assignments, and project works have become common. Forms of learning and teaching such as distance learning, in-service training, and mobile learning have become rivals with face-to-face education due to the developments in internet and web tools.

Providing Adaptation Of Learner And Teacher In Using ICT

Using ICT brings a number of adaptation problems as with other innovations. In the origin of all discussions in recent years such as teacher-learner centered education, class-based, computer-based education, face-to-face, and distance education lies ICT. Therefore; when usage of ICT is mentioned, concepts of education system, form of education, and pedagogical method are also mentioned. Under this heading, the issue of adaptation during using ICT in school improvement will be discussed.

Using ICT might be very beneficial to both learner-centered and teacher-centered education. Many learners can adapt to new technology and using ICT in school more rapidly today on account of their environment. However it is not the same case for teachers. They find it hard to adapt this new system because they have a social background distant from ICT and they have taught for years with traditional methods and deprived of technology. Yet, ICT might be shown as a support to the traditional academic methods, especially problem-based view. For example; for a teacher who has a homepage, the tools that are on his web page are excellent tools for maintaining lesson-based teaching tradition (Notland, Johannesen & Vavik, 2001).

Setting out from this approach, first of all teachers should be convinced of value of ICT as an educational learning tool and there should be some professional enterprises in order to increase the interest of teachers in ICT. It is beneficial to raise the consciousness of teachers that their duties will never end but will change form, their duty will be leaders in the system, and there will be no education without teacher no matter what the system is in technology-based education (Varol, 2002).

INFORMATION OBTAINED IN THE STUDY VISIT

Teacher trainers, education consultants, guidance counselors, school inspectors, and lecturers from faculties of education can participate in study visits activities which are included in the Lifelong Learning Program of the Presidency of European Union Education and Youth Programs Centre. In this section, the information obtained in the study visit hosted by Kothla-Jarve Municipality from Kothla-Jarve city in Estonia in 13-17 October 2008 titled as "Using ICT in School Improvement" will be presented: 2 teacher trainers from Turkey, 1 education consultant from England, 1 principal, 1 education consultant from Spain, 1 teacher from Poland, 1 researcher from Hungary, 2 lecturers from France, 1 teacher from Slovakia, 1 teacher trainer from Germany, 1 school consultant from Greece have participated in this visit (totally 12 education specialists).

The study visit included cultural visits, school visits, and the presentations of host Estonia and representatives of other participant countries about their own educational systems and implementation of ICT in education. In all the activities, using ICT has been stressed and successful samples have been presented.

It has been emphasized that there is a high national agenda and a central study so that ICT can acquire a high profile in Estonia. It has been stated that wireless internet connection is highly widespread and provided for free in small towns, airports, public buildings, and even in some rural areas. As it is understood from observations and reports, Estonia has been giving a high priority to education since 1997. Within this scope increased investments have been directed towards establishing ICT and making them common in the name of improving management systems and enriching education-teaching. This national trend has been reflected in policies and implementations in Kothla-Jarve thanks to local government. Both mayor and his assistant display a strong leadership on this issue and education specialists of the host country of this visit develop policies and strategies in order to guarantee that investments of ICT affect the students at schools directly. It was seen that managers, teachers, and supporting staff who work in the schools and institutions that were visited are role models and encourage learners, other staff, and families actively in using ICT as a tool for both increasing the quality of education-teaching and improving the processes of management and communication. This joint approach which was conducted at the levels of national, local and school is assessed as both impressive and an effective model for the successful improvement activities that will take place in the future (2008-218 Group Report).

Schools that are host in this visit have showed their desires in sharing good examples in education including ICT. Staff and even students have displayed a constructive attitude towards finding innovative methods that will improve their learning. It has been stated that the ones who have been in the process and have been successful have been awarded. Even though some restrictions have been experienced, it has been observed that sufficient importance has been given to reading, music, drawing, and other hobbies since it is a balanced approach for educational development. It has been understood from all the observations and statements that ICT are assessed as a “tool of change” in order to realize success. Same statements might also be said easily for other European countries. Estonia is seen as a different country due to its large scale co-operation promise for sharing good examples in education and support for teachers who develop new approaches and curriculums. The schools that we visited utilize e-learning environments that were either established or supported by government or local authorities effectively.

Within the scope of the study visit many good examples have been presented relating to the topic of visit “Using ICT in school improvement” and reconstruction of education. These examples were evaluated in the meetings at the end of every day. Each participant told if there were similar implementations in their countries and if there were any, their similarities and differences were discussed. The most important issue seen during the visits is the success of teachers in preparation for lessons that are presented via smart board or computer. It was seen that they made at least 1 hour preparation for preparing lesson materials. In addition, widespread use of ICT in school-student-parent co-operation, office work, and library were other interesting issues. Correspondences, book registration operations and operations of informing parents are conducted professionally via ICT.

Examples From Applications In Different Countries

Similarities between the education systems and applications of host and participant countries and Turkish education system:

- Education information system which is used in Estonia, EHIS, Turkish National Education Ministry system, ILSIS, is quite similar. If you need to make a superficial comparison between ILSIS and EHIS, ILSIS has a more complex structure and has more details.
- Also the ekol.ee which is a student management system includes some similarities with the e-okul.meb.gov.tr.
- In Estonia and other schools, informatics classes, which is supplied with nearly 15 computers, 1 smart board and surrounding devices to be used in informatics technological courses and in leisure time in other courses, have been established.
- In schools, information and communication technologies specialist teachers who have very few courses and help the other branch course teachers in their spare time have been employed...
- Necessity for branch teachers, coming together with the teachers in their own sub branches, to prepare annual activity plan and plan an independent project for each branches.
- Employing a large number of support personnel in educational institutions.
- Academic year consists of 5 periods of 7 weeks in planning.
- Examinations take place within last three days of each semester and the dates of the examinations are certain at the beginning of the courses.
- Thanks to the fact that school web sites are widely published in several languages, more participation and sharing are ensured.
- Money allocated to schools depends on the number of students in the school and when a student move to another school, allocation also goes with the student.
- In Spain, administrators of schools are selected in an election attended by parents and teachers after a nomination period in which nominates campaign the projects they have prepared.

The staffs, who are appointed to management position in Estonia, can start working after completing a 160-day course about management with informatics technology and communication processes, and this is repeated in regular specific time periods (Kılıç, 2008).

DISCUSSION AND CONCLUSION

It is inevitable to implement publicities in order to design an education system that enriches the variety of learning opportunities for students and is developed through the use of informatics technologies. It is possible for schools to reach new technologies by purchasing expensive hardware and software. For these, available financial sources and high license prices are common limitations for all countries. In comparison with others, some countries are at a better point in this respect. While all countries have been experiencing a gradual development, some priority order differences can be seen in the supply of the hardware, teacher training, and curriculum content development.

- In European countries, the methods employed to increase school’s inventory of computer hardware have common features: 1 computer and data projector in each classes (for teacher use) - Classes equipped with smart boards - Establishment of, at least, an information technology class (for the use of students in a room separate from the class; 15 computers, which can be allocated for the courses other than informatics technologies courses.) - Also establishment of classrooms with more than one computer to be used in courses other than informatics technologies courses. - Teachers and students are given laptop computers for individual use.
- Although staff training and motivating are the most important investment areas in all countries, integration of information technology as an effective learning tool with the development of teaching methods is a must. In some countries like Estonia, state and local governments conduct regulation and financing of education together. Though this condition is more positive in the other countries, it is

witnessed only in local schools. In all countries, teachers are encouraged to improve their informatics technology skills, to be able to use ready programs, to be able to reach open source software, to spend more time in the direction of developing their own materials and web sites. This visit revealed that while communication between the staff helps in the development of trust and support between them, it also encourage individuals to share their good ideas.

- Another important issue is the development of pedagogy .In many examples, it is observed that students use information and communication technologies to gather information and make analyses in individual/group researchers which they conduct in the framework of problem-based learning approaches.
- Learning platforms increasingly make it possible for teacher and students to access and share content and software applications. In countries like Estonia, all schools have orientation toward using this platforms and this orientation encourage cooperation. At the same time, this makes it possible for local and state governments to encourage future cooperation by rewarding contest and projects.
- Innovative methods are employed in curriculum content and software development, and in the spread of staff resources; it is observed that other people are invited make contributions to build their websites and they benefit from open source software.
- Information technology management and its use in communications processes: Now, many countries tend to have systems that let school information to be used even for very different purposes once they are saved. In this context, the EHS available in Estonia, because of different levels of details in stored data, has a really impressive way of integrating state, local and school systems. - Reducing paper/ bureaucracy, has made all the schools we have visited compatible with the systems that will minimize the use of papers in correspondences. In addition, in these schools, all the documents of the staff asked to be presented in electronic media in details. - Ability to evaluate success of schools at local level by local and national politicians and determining high quality decisions about teachers' training needs. - Integrated library system of host country, RISK, has connected local, school and the other networks to each other and provides electronic media opportunities of book and literary researches, which can only be seen in higher education institutions in other countries.

Providing effective communication with parents, supplying parents with systems which make it possible to monitor development of their children online, sharing detailed information about activities to be done in the school such as teachers' daily lesson plans and daily food menus. School statistics shows that most of the parents use these systems in order to check status of their children.

As a conclusion, it is observed that the use of ICT not only encourage the students and teachers in terms of education but also they motivate students in a positive direction. In the restoration and development of education, use of ICT which is actively integrated with www (World Wide Web) is a significant catalyst. For the active integration of ICT with education, firstly a good hardware platform must be presented and better training of teachers is required. Finding technical support staff for solving problems which may arise during education is also important. As the use of ICT gets widespread in schools, students will have equal opportunities to access ICT. A situation research, which was conducted in 2001 in the UK, concludes that thanks to use of ICT academic level in the schools has increased. In this respect, although it is more costly and troublesome compared to classical methods, it is suggested that it can or will be preferable due to its positive contribution to education (Kington and et al, 2001).

REFERENCES

- Augar N., et al. (2006). Building virtual learning communities. *Web-Based Intelligent E-Learning Systems: Technologies And Applications*, Chapter IV, 76-77.
- Aziz, A. (1982). Radyo ve televizyonla eğitim. A. Ü. Eğitim Fakültesi Eğitim Araştırmaları Merkezi (EFAM). Yayın no: 1,2.
- Cüre F. & Özdeger N. (2008). Teachers' success in using ICT and their attitudes towards ICT. *H. U. Journal of Education*, 34: 41-53.
- Estonia Study Visit Group Report (2008).
- Higgins S. (2003). Does ICT Improve Learning and Teaching. *British Educational Research Association*. Nottingham, Pp 4.
- Kılıç M. (2008). Possibilities of using ICT for school improvement, *European Centre for the Development of Vocational Training-CEDEFOP, Study Visit Individual Report*, Kohtla-Jarve, Estonia.
- Kington A., et al (2001). Information and communications technology and whole school improvement: case studies of organizational change. *Paper presented at the British Educational Research Association Annual Conference, University of Leeds, 13-15 September 2001*.
- Notland M., Johannesen J. & Vavik L. (2001). A case study of ICT and school improvement at Ringstabekk Lower Secondary School, Baerum. *OECD/CERI ICT Programme*. Norway.
- Seferoğlu, S. (2002). The opinions of teacher about using information and communication technologies. *Sakarya University Journey of Faculty of Education, January-February- March*, (4), pp. 334-350.
- Varol, N. (2002). The usage of ICT at schools and the role of educators. *Akademik Bilişim Konferansları*, 6-8 Şubat 2002, Selçuk Üniversitesi, Konya.
- 2008-218 Group Report. Possibilities of using ICT for school improvement. *European Centre for the Development of Vocational Training-CEDEFOP*, Kohtla-Jarve, Estonia.

USING LSL TO CREATE STUDENT'S ASSIGNMENTS IN SLOODLE COURSE COMPUTER GRAPHICS

Maja Božović
Technical Faculty Cacak, Serbia
maja_boz@tfc.kg.ac.rs

Danijela Milošević
Technical Faculty Cacak, Serbia
danijela@tfc.kg.ac.rs

Andelija Mitrović
Technical College Cacak, Serbia
mitrovic.andjelija@gmail.com

ABSTRACT

The paper provides a basic overview of preparation and creation of Computing Graphics course in Sloodle. Some of Sloodle's key features such as Sloodle Presenter, Chat, Quiz, Choice, Glossary, Blog etc., are used for presenting content to students in the mentioned course. These elements are briefly described. Also, it is used Second Life (SL) scripting language for creating students' assignment. This language is called Linden Scripting Language (LSL). LSL script can create different events that can help manipulation of the SL object that students will see in SL. Using LSL (or scripting) in the Computing Graphics course is important for better understanding how to draw 2D view based on 3D model. Detailed example of creating assignment and use of script is described in the paper.

Keywords: e-learning, Second Life, moodle, sloodle, 3D graphic, Linden Scripting Language

INTRODUCTION

Within the subject Computing graphics on Technical College Cacak students are expected to solve the problem of visualization of three-dimensional models or objects. 3D models by which the problem of visualization is solved up to a point are designed for the students who do not have well developed sense of spatial abilities. However, models designing are quite expensive and therefore it is not efficient enough.

Overcoming the problem is envisaged by introducing Sloodle and its adjustments to the needs of Computing Graphics. Sloodle is an open source project, which provides the tightest integration of a virtual world and an online LMS (About Sloodle, 2009). The Sloodle projects provide a Moodle ("About Moodle," 2009) module, which communicates with interactive 3D Sloodle teaching tools inside Second Life, which is a free 3D digital world imagined and created by its Residents. Universities, colleges and large companies already have their representatives on the Second Life islands ("What is Second Life," 2009).

The preparation for the Computing Graphics course started by setting the course on the Key to School site (<http://www.keytoschool.com>) which provides free Moodle hosting. It is envisaged realization of 15 topics within the course according to the length of the duration of the semester. The Sloodle provides a lot of different tools which make managing educational activities in Second Life easier (Sulčić, 2009). Some of the tools will be used for delivering lectures or collecting feedback and assignments related to Second Life activities. Using of these tools will be described in the next chapter.

Beside Sloodle tools, for creating students' assignment it is noted the need for using scripts within Second Life. The Linden Scripting Language (LSL) is used for creating interactive content in Second Life. LSL is a simple, yet powerful scripting language, used to attach behaviors to the objects found in Second Life. By using scripts students will be able to fulfill their assignment in the best possible way.

SLOODLE TOOLS USED IN THE COURSE

Currently, Sloodle provides two categories of tools, educational and enrolment tools. Educational tools allow students to work with Moodle activities in Second Life (currently supported Moodle activities are Chat, Quiz, Choice, Glossary and Blog). These tools also includes Second Life specific tools (currently includes Sloodle Presenter, a set of tools for creating mixed media Second Life presentations, and tools for the distribution and collection of Second Life objects). Enrollment tools checks student access permission for a virtual classroom, help students register on a Moodle site and enroll them in the appropriate Moodle course. During the explanation of the course preparation some of above mentioned tools will be further described.

The first two topics, *Basic concepts of computer graphics* and *Procedures for displaying objects in the drawing* are posted on the Computing Graphics course (figure 1). It is chosen Caribou Beach (slurl.com/secondlife/Caribou%20Beach/195/128/22) to be the start island for the course. This choice was made, because Caribou Beach has sandboxes that return objects made by avatars after time that is longer than time in other islands. It should be noted that this is only temporarily solution because purchasing or renting a land on which the course will be maintained is planned.

The first thing students need to do is to link their avatar with their account in Moodle. This is called "avatar authentication" or "avatar registration". There are different ways of doing this. In this course it is used the object called "RegEnrol Booth".

Figure 1: The first two topic in the Computing graphics course

In the *Basic concepts of computer graphics* topic is used Chat/Webintercom feature. The WebIntercom connects the public text chat in Second Life to a chatroom in Moodle. This allows chat to be shared between students that are in Second Life with those that are in Moodle, which is useful if some students do not have access to Second Life (Sloodle, 2009). Because the WebIntercom-chat is a synchronous activity, students will be able to discuss about basic concepts of computer graphics led by the course tutor, at the scheduled time.

Also, students can find basic concepts of computer graphics by using Glossary/MetaGloss which is also one of the very useful Sloodle feature. The MetaGloss is the Second Life's object that allows accessing a Moodle's glossary.

It can be said that Technical drawings represent set of rules which must be apply in the practice. To evaluate students' knowledge about these rules the quiz is chosen as evaluation tool. Student could choose to take quiz in Moodle or in Second Life, as it shown in picture 2. The Sloodle Quiz Chair is used for that purpose. In order to activate quiz student should sit on a chair. The quiz is presented as a dialogue prompt. Choosing one of the offered answers, the chair rises or stays at the same place depending on the fact whether the answer is correct or not. Once they have completed the quiz in Second Life, students can click on the quiz below to see their score (or even have another attempt - answering the questions in Moodle instead of in Second Life). Tutors can see the scores from all attempts.

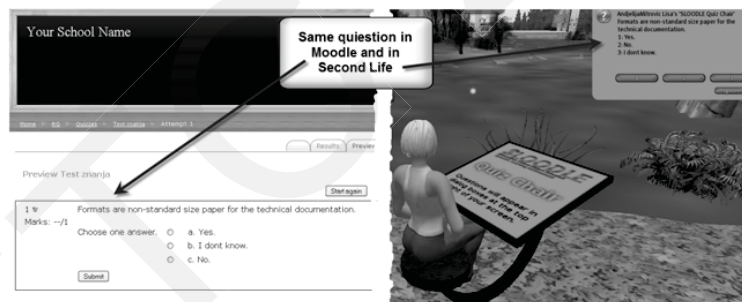


Figure 2: Example of question in Moodle and Second Life

ASSIGNMENT CREATION

After evaluation of theoretical knowledge, students should be able to apply this knowledge in practice. For that purpose certain assignment which is posted in the *Procedures for displaying objects in the drawing* is created. The main goal of this assignment is to help students to learn how to draw 2D view based on the 3D model and vice versa. Creating assignment would require several steps: Defining assignment requirements, Object creation and Scripts applying.

Defining Assignment Requirements

The assignment is envisaged so that students log in to Second Life on the anticipated location. There, the object in the shape of pedestal would be posted. The pedestal would rotate so the students could see model from every side. Students would be able to touch surface of pedestal, and the touching would trigger note which will inform student which surface is touched. The color of the text is the same color as touched surface. Based on the shown pedestal students have to draw 2D view in AutoCad or CATIA and then upload file in moodle system. Requirements of the described assignment that would be presented to student are shown in figure 3.

In order to fulfill this assignment you need to do following:

- Login to Second Life
- Based on the shown pedestal which is on this location slurl.com/secondlife/Caribou%20Beach/195/128/22 (and which is shown in the picture below) , show necessary 2D views and intersect.
- Drawing should be made in AutoCAD or CATIA.
- Poste your drawing in the attachment.

Students that can not access in to Secod Life, can draw necessary 2D views and intersect based upon shown picture.

Note: Manual for manipulatin the pedestal can be seen in the tutorial for assignment.

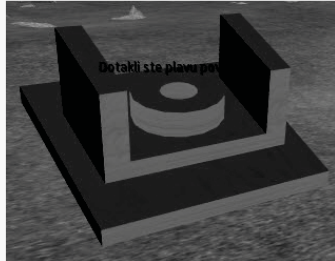


Figure 3: Assignment requirements

Object Creation

After posting requirements of the assignment, next step would be to create object in Second Life. The name of the object is *pedestal* and it's a complex object. To create such a complex object it was necessary to create a several prims. Prim is short for primitive and prims are the building blocks of Second Life. It can be said that in Second Life everything is constructed of prims. There are 15 different original shapes of prims which can be chosen and the default prim shape is a cube. The mentioned pedestal is consisted of five prims, and that prims are two cubes with holes, two cubes without holes and one cylinder with hole. These primes are shown in figure 4.



Figure 4: Prims for the pedestal

Shown prims are linked to form a set that will allow movement of prims in unison. Prim linking is relatively simple. To make a permanent link, prims must be selected by using **shift-select** option, and then by pressing **Ctrl + L** for linking them. There is limit the number of objects and distances between objects that may be linked. It can be linked up to 255 prims together in one grand object. The prims must be no farther than 30 m apart from each other. The prims that are used for pedestal are linked and the final object i.e. pedestal is shown in figure 5.

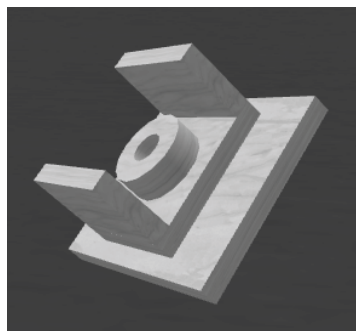


Figure 5: Pedestal

Using Scripts

Linden Scripting Language is based on events. An event is when something happens in Second Life world such as when person touches an object, adding behaviors to objects or someone paste an object etc. There are 33 events which can trigger the code. There are many sites that provide lessons for learning how to use scripts in Second Life, such as LSL Wiki (<http://www.lslwiki.net/>), LSTutorials (<http://www.slututorials.net/>) etc. Also, there are islands in Second Life that lead avatars through different level of scripting. One of such island, College of Scripting, Music and science (<http://slurl.com/secondlife/Horsa/45/198/103>) was consulted in creating scripts for mentioned pedestal.

In the step *defining assignment requirements* several events was anticipate. When student touch surface the following events happen:

- Color changing of the touched surface.
- Hovering text above the object that informs which surface is touched. Text is the same color as the touched surface.
- Object rotating depending on the surface and the given angle.

To achieve all of mentioned events appropriate script was written. During the process of creating the script several functions were used:

- *llDetectedTouchFace* is function that determinates which surface of the object was touched.
- *llSetText* is function that sets the contents of text as floating text over the prim using the specified color and transparency (alpha).
- *llSetColor* is function that sets the color on one or more sides (faces) of a linked prim.
- *llTargetOmega* is function that makes an object rotate smoothly, without "choppy" steps.
- *llSetColor* is function that sets the color of surface the object.

Given that the pedestal has more than one surface *if loop* was used. Written script, with explanation of each function is shown in figure 6.

```

0 default
1 {
2   touch_start(integer x)
3   {
4     integer side=llDetectedTouchFace(0);
5     if(side==0)
6     {
7       llSetColor(<1,0,0>,0);
8       llSetLinkColor(LINK_SET,<1,0,0,0.0>,0);
9       llSetText("You have touched red surface",<1,0,0>,1.0);
10      llTargetOmega(<1,0,0>,PI/4,0.5);
11    }
12    else if(side==2)
13    {
14      llSetColor(<1,0,0,1.0>,2);
15      llSetLinkColor(LINK_SET,<1,0,0,1.0>,2);
16      llSetText("You have touched pink surface",<1,0,0,1.0>,1.0);
17      llTargetOmega(<0,0,1>,PI/4,0.5);
18    }
19    else if(side==3)
20    {
21      llSetColor(<0,0,0,1.0>,3);
22      llSetLinkColor(LINK_SET,<0,0,0,1.0>,3);
23      llSetText("You have touched blue surface",<0,0,0,1.0>,1.0);
24      llTargetOmega(<0,0,-1>,PI/4,0.5);
25    }
26  }
27 }
28 }
29 }

```

Compile successful!
Save complete.

Insert... Save Reset
Running Mono

Figure 6: Written script for pedestal

After successful compiling the script, object was tested. Touching the pedestal caused planned events as shown in figure 7. Surface changed color, pedestal rotated and the text is written above in the same color as touched surface.

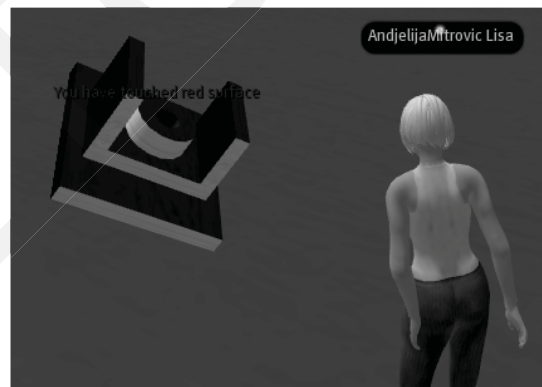


Figure 7: Pedestal after triggering events

Based upon created object and requirements of the assignment student should be able to draw 2D view and upload file on Moodle system. Expected solution of the assignment requirements is shown in figure 8.

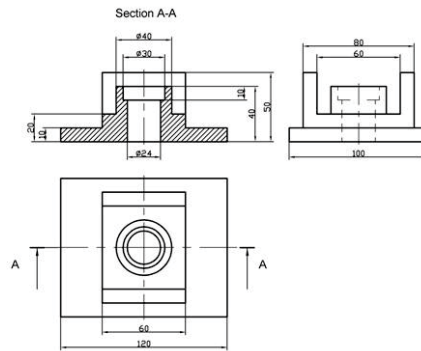


Figure 8: Expected 2D view of created 3D object

CONCLUSION

According to Sloodle potential for better understanding and visualization of three-dimensional models it has been noticed that it can be extensively used for Computing graphics course creation. Students can benefit a lot and thus gain new possibilities for object reconstruction and experience. The course is still in the stage of preparation and implementation. In this paper we:

- Presented some Sloodle tools used in the Computing graphics course that would help students to enroll to course and help them check their theoretical knowledge about rules in Technical drawings.
- Described creating of the assignment that would help students to learn how to draw 2D view based on the 3D model. Creating assignment would require several steps: Defining assignment requirements, Object creation and Scripts applying.
- Designed complex object in Second Life by using prims. Also we use scripts for triggering different events that would help students to better understand requirements of the assignment.

Further development of the course, will include real time implementation and application. We will also investigate and evaluate how students will react to this new kind of learning environments.

REFERENCES

- About Moodle. (2009, September 2). Retrieved October 12, 2009 from http://docs.moodle.org/en/About_Moodle
- Simulation Linked Object Oriented Dynamic Learning Environment (n.d). Retrieved October 12, 2009 from <http://www.sloodle.org>
- Sloodle. (2009, August 5). Sloodle User Docs for Tutors and Teachers. Retrieved November 2, 2009 from <http://slisweb.sjsu.edu/sl/index.php/SloodleUserDocs>
- Sulčić, A. Virtual worlds in education and Moodle (2009). Retrieved November 2, 2009 from <http://www.scribd.com/doc/15731198/Virtual-worlds-in-education-and-Moodle>
- What is Second Life (n.d). Retrieved November 1, 2009 from http://secondlife.com/whatis/?lang=en-US#Education_&Enterprise

USING MOBILE PHONES TO IMPROVE ENGLISH VOCABULARY ACQUISITION

Emrah Baki Başıoğlu
Zonguldak Karaelmas University
Email: emrahbaki@hotmail.com

Associate Prof. Ömür Akdemir
Zonguldak Karaelmas University
Email: omurakdemir@gmail.com

Abstract

Today, knowing a foreign language has become crucial to reach information. Learning vocabulary is the fundamental step to learn a foreign language. New devices are invented everyday to fulfill the needs of citizens of the twenty-first century. Widely used, mobile phones offer many opportunities in language learning (Saran, Çağıltay, Seferoğlu, 2008). They have provided great advantages in learning process and taken away the problems such as learning time and place, two of the factors preventing learning to occur outside the classroom walls (Chen-Chung, 2007). The effects of using vocabulary learning programs in mobile phones on students' vocabulary acquisition are investigated using the pre-test post-test with control group experimental research design with sixty students studying in the Undergraduate Compulsory Preparatory Program of a state university located in the Black Sea region. Results indicated that using mobiles phones as a vocabulary learning tool is more effective than traditional vocabulary learning techniques.

Key Words: mobile learning, language learning, vocabulary acquisition, instructional technology

INTRODUCTION

As technology is developing at a great speed today, together with the internet develop, we have every reason to believe that learning scientific information has become more than a necessity. As a matter of fact, the importance of knowing a foreign language turned out to be more important in an environment where information is so crucial. Learning vocabulary is the fundamental step to learn a foreign language. Hence lots of studies are carried out in order to increase efficiency in vocabulary learning in language learning (Akın & Seferoğlu, 2004; Bruton, 2007; Erten & Tekin, 2008; Genç, 2004; McCarten, 2007; Moras, 2001; Newton, 2001; Tang & Nesi, 2003). In spite of various studies in vocabulary learning, learners show very little effort to deal with their problems about vocabulary (Meara, 1982). During the class time, teachers often tend to have an attitude to make the students deal with this problem outside the class on their own (Baykal & Daventry, 2000). However, learners don't have enough knowledge about the vocabulary learning techniques and they have difficulty in dealing with this problem themselves (Akın & Seferoğlu, 2004). One of the most widely used techniques in language learning is flashcards. With the importance given to foreign language, the development of information and communication technologies has evoked innovations in educational activities. Additionally, mobile technology is getting more popular and mobile tools such as PDAs, tablet computers and mobile phones have begun to gain more importance. These tools provided great advantages in e/m-learning process and took away the problems about learning time and place, two of the factors preventing learning process (Chen-Chung, 2007). In a review of European Union about mobile learning, it is stated that mobile phones are the most frequently used devices in the projects, followed by PDAs (Pecherzewska & Knot, 2007).

Recently, mobile phones are less expensive, lighter and more powerful and they have become more important part of language learning. As mobile phones become increasingly popular, new examples of language learning experiences in everyday surroundings are expected to be seen more often. Learning via mobile phones can create different learning opportunities for students. Thus students don't need to be dependent on any learning curriculum and can completely focus on the learning process. Even though the studies about the use of mobile phones in language learning are recent, results show that they have positive effects on the learning process because these studies create alternating ways for the traditional language learning techniques. When students' needs are taken into consideration, PDAs can be used in more flexible and extended ways for language learning. Song and Fox (2008)'s study indicated that students made various uses of the PDAs to improve their vocabulary learning. Similar to the PDAs, mobile phones offer many opportunities in language learning since they are widely used and have various features such as personalization, localization and mobility. In Saran, Çağıltay and Seferoğlu(2008)'s study, results showed that students specified positive feedback to the use of mobile phones in language learning. Students stated that they were delighted to use the instructional materials in their mobile phones. It is understood that using mobile phones as learning tools has many potential benefits to the language learning and takes learning out of the classroom walls, often beyond the reach of the teacher (Kukulka-Hulme, 2009). In Stockwell (2007)'s study, on the other hand, investigating mobile-based intelligent vocabulary learning system, learners completed vocabulary activities through either their mobile phones or personal computers. It suggested that mobile phones were less preferred than computers in vocabulary learning and students achieved better scores on computers.

Results of the studies are conflicted. It is still not clear whether using a mobile phone as a language learning tool is effective on students' vocabulary acquisition or not. Although many studies related to mobile phone use in language learning are carried out in the world, the number of studies in Turkey is not satisfactory. Therefore more studies should be carried out to understand the effectiveness of using mobiles phones in language learning. In this respect this study was designed to determine the effectiveness of mobile phone use in vocabulary learning. Three research questions investigated are as follow:

- Is there a difference between the vocabulary learning level of the students using vocabulary learning program in mobile phones before and after the study?
- Is there a difference between the vocabulary learning level of the students using flashcards before and after the study?
- Is there a difference between the gain scores of the students who used the vocabulary learning program in mobile phones and the gain scores of the students who used the flashcards?

METHOD

Instructional Context

The study was conducted at a public university located in the Blacksea region of Turkey with undergraduate students enrolled in the Undergraduate Compulsory Preparatory Program. A multifunctional language learning program is applied to make students acquire the lessons in the language structure throughout their university education. Students are required to attend speaking, writing, video and grammar lessons and acquire the skills necessary for learning English as a second language. At the end of the academic year students are aimed to reach B1 level in European Language Portfolio "Global Scale" and attend English courses covering 30 percent of the total education period in their departments.

Participants

The participants were 60 students studying in the Undergraduate Compulsory Preparatory Program of a state university in the Blacksea region. The students were selected to the university according to their scores and preferences in the university entrance exam. Within the student group having the same characteristics, students whose mobile phones are compatible and incompatible with the

vocabulary learning program were determined. Among the student groups, 30 students whose mobile phones were compatible with the vocabulary learning program were assigned to the experimental group and other 30 students who would use the traditional vocabulary acquisition techniques to learn vocabulary were assigned to the control group.

Research Design

In order to conduct the study, the effects of using vocabulary acquisition programs in mobile phones on students' vocabulary learning was investigated using the pre-test post-test with control group experimental research design. A list of new words was taught to the experimental and control groups in the six-week period. Before the experiment process was started, a vocabulary acquisition program to be operated on students' mobile phones was selected. The program, ECTACO Flash Cards, is especially made to run on mobile phones. After the content was scanned, vocabulary lists suitable for the students' level were selected from the Flash Cards application and made available for student use. Among various topics such as business, general, law and medicine, the most suitable one for the students' level, General 2 level (see Figure-1) available in the program was chosen. The application helped the users memorize approximately 1000 words under this topic.

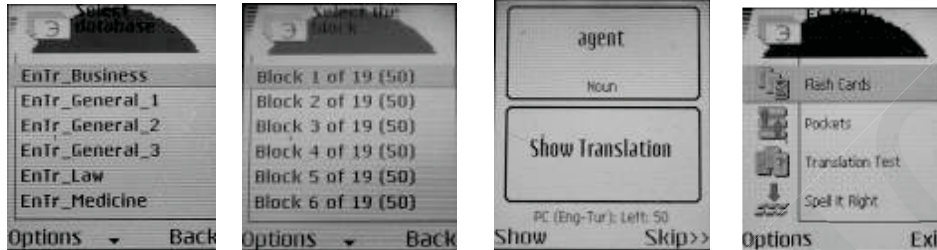


Figure 1: Screen Views of Vocabulary Learning Program Executing on Mobile Phones

Before the application, the purpose of the study and expectations from the students during the experiment process were explained to the students. During the six-week period, students were expected to use the vocabulary program on their mobile phones in their extracurricular times. Students in the control group were given the vocabulary flashcards including words available in the mobile phones and they were expected to use the traditional vocabulary acquisition techniques. Using these vocabulary flashcards, students in the control group studied the new words on paper for six weeks. Students in the control group were not able to interact with the vocabulary acquisition program in mobile phones. A multiple choice test to assess their English vocabulary acquisition was administered before and after the study to the experimental and control groups.

Data Collection Instrument

Students' English vocabulary acquisition was measured through a multiple question test. Initially a 80-item multiple-choice test containing frequently used vocabularies in the mobile phone program was constructed. The test was administered to 50 students taking the same course to find the measure of internal consistency. Point Biserial values of items falling below 0.3 were removed and the measure of internal consistency of the multiple choice test was found 0,783. The final version of the test had 25 items, with four choices for answer. This 25-item multiple choice test was administered before and after the study to the experimental and control groups.

ANALYSIS

Students in the study were received four points for each of their correct answer in the pre-test and post-test. Scores of the students ranged from 0 to 100 in the multiple-question test. In order to answer research questions, descriptive statistics, independent and dependent t-tests were used for the analysis of quantitative data. One participant from the experimental and control group was excluded from the data analysis since they did not take the post-test.

RESULTS

The descriptive analyses of pre-test and post-test results of participants are presented at the Table-1.

Table-1: The Descriptive Analysis of Pre and Post-test Results of Participants

| | | N | Mean | Std. Deviation | Std. Error Mean |
|-----------|--------------------|----|-------|----------------|-----------------|
| Pre-test | Experimental Group | 29 | 24.82 | 16,33 | 3,03 |
| | Control Group | 29 | 26.27 | 18,07 | 3,35 |
| Post-test | Experimental Group | 29 | 38.62 | 22,07 | 4,09 |
| | Control Group | 29 | 34.89 | 21,08 | 3,91 |

The first research question investigated whether there is a difference between the vocabulary learning level of the students using vocabulary learning program in mobile phones before and after the study. The result of the paired sample t-test showed that post-test score of the experimental group (M= 38.62) is statistically higher than the pre-test score of the experimental group (M=24.82) ($t_{(29)} = -7.6$; $p < 0.05$) (See Table-2). Students in the experimental group used the vocabulary learning program in their mobile phones outside the school and students' active participation was expected to complete the levels in the vocabulary learning program. The use of vocabulary learning program in the mobile phone improved the acquisition of students' vocabulary learning.

Table-2: Pre-Post Test Comparison of the Experiment Group

| | Mean | Std. Deviation | Std. Error Mean | Paired Differences | | t | df | Sig. (2-tailed) |
|---------------|--------|----------------|-----------------|---|--------|------|----|-----------------|
| | | | | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Pre-Post Test | -13,29 | 9,77 | 1,81 | -17,51 | -10,07 | -7,6 | 28 | 0,000 |

The second research question searched whether there is a difference between the vocabulary learning level of the students using flashcards on papers before and after the study. The result of the paired sample t-test showed that post-test score of the control group (M= 34.89) is statistically higher than the pre-test score of the control group (M=26.27) ($t_{(29)} = -5.7$; $p < 0.05$) (See Table-3). Students achieved better scores on the vocabulary acquisition test at the end of the study than their pre-test scores. The control group was given the vocabulary flashcards on paper and they memorized them through self-study. This finding shows that instruction used for the control group also enabled students to improve their vocabulary learning.

Table-3: Pre-Post Test Comparison of the Control Group

| | Mean | Std. Deviation | Std. Error Mean | Paired Differences | | t | df | Sig. (2-tailed) |
|---------------|-------|----------------|-----------------|---|-------|------|----|-----------------|
| | | | | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Pre-Post Test | -8,62 | 8,12 | 1,5 | -11,71 | -5,5 | -5,7 | 28 | 0,000 |

The third research question investigated whether there is a difference between the gain scores of the students who used the vocabulary learning program in mobile phones and the gain scores of the students who used the flashcards on papers. The gain score was calculated for the control and the experimental group and was compared. There is a statistically significant difference between the mean score of the experimental group (M= 13.79) and the mean score of the control group (M= 8.62) ($t_{(56)} = 2,191$, $p < 0.05$) (See Table-4). This finding indicates that using vocabulary learning programs in mobile phones improves students' achievement more than the use of vocabulary flashcards to learn vocabulary.

Table-4: The Comparison of the Mean Gain Scores

| Groups | N | Mean | Std. Deviation | df | t | p |
|--------------------|----|-------|----------------|----|-------|-------|
| Experimental group | 29 | 13,79 | 9,77 | 56 | 2,191 | 0,033 |
| Control group | 29 | 8,62 | 8,12 | | | |

CONCLUSION AND IMPLICATIONS

This study has three findings. The first result indicated that the use of vocabulary learning program in the mobile phone improved the acquisition of students' vocabulary learning. The second finding showed that students' vocabulary learning was also improved when flashcards on paper were used. The last finding of the study illustrated that using vocabulary learning programs on mobile phone is more effective to improve students' acquisition of vocabulary than using flashcards on paper.

Nowadays mobile phones have already become a routine part of our lives. Increased features and decreased cost of mobile phones have made them popular devices not only for communication but also for educational purposes. This study demonstrated that utilizing vocabulary programs run on mobile phones improves students' acquisition of English vocabulary more than traditional vocabulary learning tool, flash cards. Using PDAs for vocabulary learning, Song and Fox (2008) achieved similar results. Also, Kukulska-Hulme (2009) emphasized the chief benefit of mobile language learning as a tool taking learning out of the classroom walls. Besides accessing to the vocabulary programs in mobile phones whenever and wherever they preferred, students could have developed a positive attitude in using mobile phones for language learning (Saran, Cagiltay and Seferoglu, 2008). The combination of these factors might have contributed to achieve such results with increased vocabulary learning in this study when mobile phones are used.

Learning vocabulary is the fundamental step to learn a foreign language. As the mobile phone use becomes more common and vocabulary programs running on phones become more appealing, students seem to use mobile phones more often as an instructional tool for language learning. Although simple and primitive form of English vocabulary learning program executing on mobile phones is used, this study demonstrated that using such a program on mobile phone is more effective in vocabulary learning than traditional vocabulary learning techniques. Therefore it is concluded that vocabulary learning program executing on mobile phones can be used to teach vocabulary as an effective mean. Being among the pioneers, this study demonstrates that mobile language learning is an effective tool to teach English vocabulary to Turkish students. It is recommended that further studies should investigate the effects of using vocabulary learning programs having multimedia features since only the text-based vocabulary learning program executing on mobile phone is used in this study.

REFERENCES

- Akın, A. & Seferoğlu, G. (2004). Improving Learners' Vocabulary Through Strategy Training and Recycling the Target Words, *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 27, 1-10.
- Baykal, G., Daventry, A. (2000). Vocabulary for interacting with. *Proceedings of the 5th METU international ELT convention: Interaction on the threshold of a new millennium*, 168-173
- Bruton, A. (2007). Vocabulary Learning From Dictionary Reference in Collaborative EFL Translational Writing, *ScienceDirect*, 35, 353-367.
- Chen, C. M. & Chung, C. J. (2007). Personalised Mobile English Vocabulary Learning System Based on Item Response Theory and Learning Memory Cycle, *Science Direct*, 51, 624-645.
- Erten, İ. H. & Tekin, M. (2008). Effects on Vocabulary Acquisition of Presenting New Words in Semantic Sets versus Semantically Unrelated Sets, *ScienceDirect*, 36, 407-422.
- Genç, B. (2004). New Trends in Teaching and Learning Vocabulary, *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13(2), 117-126.
- Kukulska-Hulme, A. (2009). Will Mobile Learning Change language Learning?, *European Association for Computer Assisted Language Learning*, 21(2), 157-165.
- McCarten, J. (2007). Teaching Vocabulary – Lessons from the Corpus, *Cambridge University Press*, Retrieved February, 02.2009 from www.cambridge.org/elt/touchstone/images/.../McCarten_booklet.pdf
- Meara, P. (1982). Vocabulary Acquisition: A Neglected Aspect of Language Learning. Cambridge: Cambridge University Press.
- Moras, S. (2001). Teaching Vocabulary to Advanced Students: A Lexical Approach, Retrieved February, 21.2009 from <http://www3.telus.net/linguisticsissues/teachingvocabulary.html>
- Newton, J. (2001). Options for Vocabulary Learning Through Communication Tasks, *Oxford Journals*, 55(1), 30-37.
- Pecherzewska, A. & Knot, S. (2007). Review of Existing EU Projects Dedicated to Dyslexia, gaming in Education and M-learning. *WR08 Report to CallDysc Project*.
- Saran, M., Cagiltay, K. & Seferoglu, G. (2008). Use of Mobile Phones in Language Learning: Developing Effective Instructional Materials, *5th International Conference on Wireless, Mobile and Ubiquitous Technologies in Education-WMUTE2008*, p.39-43.
- Song, Y. & Fox, R. (2008). Using PDA for Undergraduate Student Incidental Vocabulary Testing, *European Association for Computer Assisted Language Learning*, 20(3), 290-314.
- Stockwell, G. (2007). Vocabulary on the Move: Investigating an Intelligent Mobile Phone-Based Vocabulary Tutor, *Computer Assisted Language Learning*, 4,365-383.
- Tang, E. & Nesi, H. (2003). Teaching Vocabulary in Two Chinese Classrooms: Schoolchildren's Exposure to English Words in Hong Kong and Guangzhou, *Language teaching Research*, 7(1), 65-97.

USING MOVIES IN LANGUAGE CLASSROOMS AS MEANS OF UNDERSTANDING CULTURAL DIVERSITY

Assist.Prof.Dr. Nafi Yalçın
Melikşah University
nafiyalcin@yahoo.com

Abstract

In a globalised world of people with different languages and cultures, learning foreign languages is a necessity for ensuring international communication and understanding. Language and culture being inseparable, learning a language may mean learning the associated culture.

The close interdependency between culture and language can be used to contribute to social cohesion and stability, in areas where cultural bias, political and religious hostility is prevalent. Therefore, language teaching practices can be used to eradicate stereotypes and to promote intercultural understanding, universally shared values, which will serve to the peaceful coexistence of different people in the world.

Movies chosen appropriately for this purpose, with a rich source of cultural events and varying patterns of human behaviors, seem to be an appropriate tool to enhance the understanding of cultural diversity.

This study describes the rationale, ways and activities of using movies in language classrooms as a means of developing the understanding for cultural diversity.

1. Introduction

Rapid advancement in information, telecommunications and transportation, has transformed societies, with different languages and cultures, into bilateral and multilateral relationships of a globalised world. Therefore learning foreign and second languages has become a great need for ensuring international communication and understanding.

Language and culture cannot be separated. Therefore, learning a language, in a way comes to mean learning the culture of people speaking that language.

The close interdependency between culture and language can be used as a vehicle to contribute to social cohesion and stability everywhere, especially in parts of the world where cultural bias, political and religious hostility seem strong and influence people's motives, beliefs and behaviors.

Language teaching practices can be used effectively in order to eradicate stereotypes and to promote intercultural understanding, universally shared values and human rights.

Classrooms of language education seem to be appropriate medium to play a key role in forming the base for mutual understanding and collaboration in terms of cultural pluralism.

Movie films chosen appropriately for the purpose of learning or teaching a foreign or second language, are a rich source of cultural events. Therefore using movies with rich content describing different aspects of culture of different people in language classrooms seems to be a very appropriate tool to enhance the understanding of cultural diversity and to get the sense of cultural awareness and the sense of the humanity of other people.

In this study, we will describe the rationale, ways, and activities of using movie films as a means of developing an understanding for cultural diversity while teaching a language (basically English) in classrooms.

2. Language and Culture

2.1. Definitions of Culture

The National Center for Cultural Competence defines culture as,

An integrated pattern of human behavior that includes thoughts, communications, languages, practices, beliefs, values, customs, courtesies, rituals, manners of interacting and, relationships and expected behaviors of a racial, ethnic, religious and social group; and the ability to transmit the above to succeeding generations. (Goode, Sockalingam, Brown & Jones, 2000)

According to this definition language is not only a part of culture but it also reflects culture.

In the 2nd UNESCO World Report, the diversity of human cultures is described as including "the wealth of languages, ideas, beliefs, kinship systems, customs, tools, artistic, works, rituals and other expressions they collectively embody" (UNESCO 2009, p.25).

In both explanations above, culture seems as a broad concept that is deeply linked to language concepts.

It is indicated in Baker (2003) that Halliday's socio-semiotic view of language emphasizes the social meanings that language both represents and shapes, "The social structure is not just an ornamental background to linguistic interaction...It is an essential element in the evolution of semantic systems and semantic processes." (1979, p.114). According to this view every language will reflect the values, beliefs and assumptions of the culture it represents. Thus learning a language will also involve learning the culture that the language expresses.

Kramersch (2006, pp.6-10) on the other hand, defines culture as "membership in a discourse community that shares a common social space and history, and common imaginings". Members of that community may retain a common system of standards for perceiving, believing, evaluating and acting, which is their 'culture'. Common attitudes, beliefs, and values are reflected in the way members of the group use language. This is a view of culture that focuses on the ways of thinking, behaving, valuing currently shared by members of the same discourse community. Thus culture is implied to have influence over the use and development of language.

2.2. Interdependency between Language And Culture

Language being the main medium of expression of the culture, as we use language we often represent a particular identity and give clues of our roles and memberships in social environment. Culture does not exist from language or apart from us, as language users. Therefore no use of language and no individual language user can be considered to be 'culture-free,' rather we are always carriers and agents of culture. Hence learning a language, at the same time, means learning the culture of the people who speak that language.

2.3. Benefits of Teaching Culture in Language Classes

Learning culture also contributes to and enhances the learning of the language. It gives students a reason to study the target language. It helps learners to relate the forms of languages to real people and places. These benefits, however, are not limited to learning the target language, but they are also related to understanding cultural diversity and peaceful coexistence of different people in the same world.

Some of such benefits of teaching culture were listed in Genç and Bada (2004) as:

- Increasing learners' curiosity, interest, and motivation in target countries,
- Nurturing tolerance towards different ideologies, religions, and cultures,
- Giving learners a liking for the native speakers of the target language,
- Playing a useful role in learning the geography, history, etc of the target culture,
- Helping learners to observe similarities and differences among various cultural groups.

In short teaching culture would lead the language learners to get a sense of the humanity of other people. Teaching culture in language classrooms seems to play a key role in forming the base for mutual understanding and collaboration in terms of cultural pluralism. Furthermore there is an indispensable link between understanding cultural diversity and peaceful coexistence of different people in the globalizing world, which seems closely related to getting over the problems of social stability, national security, the maintenance of human rights and humanistic values.

This practice will also be in line with the tasks of the UNESCO concerning the world community, and its aim of elaboration of innovation strategies of a modern cultural policy.

For these reasons, intercultural understanding poses itself as an important issue in language learning and teaching. Incorporating the study of culture into the curriculum of foreign language teaching has been considered a matter of priority by language educators in the United States. In fact it is believed that students cannot really master a language unless they have also mastered the cultural contexts in which the language occurs (Peterson and Coltrane, 2003).

2.4. Cultural Awareness

Cultural awareness involves an understanding not only of the culture of the target language but also that of the learners' own culture.

According to Byram and Fleming two important communicative competences in language learning require the development of cultural awareness: While communicative competence requires an understanding of the norms of social interaction of one socio-cultural community, intercultural communicative competence necessitates an understanding of the differences of interactional norms between different speech communities and an ability to "reconcile or mediate between different modes present" (1998, p.12). Therefore the notion of 'cultural awareness' is central to intercultural communicative competence. Without considering this cultural awareness as a basic part of language learning a successful communication may be impossible.

2.5. Confrontation of Different Cultural Elements

When people with different cultural sets come together, confrontation of different cultural elements and values may often end up in mutual understanding and compromise, while in other cases it may result in clash and conflict. If we look at the case of mutual understanding and compromise we may make up a theory about the development of the process most probably in the following order: After a certain period of cohabitation, members of these different cultural elements may begin to look for the reasons behind those cultural behaviors and actions.

Once the process of recognition starts, it is carried to a further point of understanding each other. As soon as the mutual understanding is reached, the empathy follows and finally comes sympathy and appreciation at the end of the gradual proceeding of the natural development.

But this is not always the case. Sometimes the opposite happens and the confrontation of different cultures concludes in a crises. In other words in some cases members of different cultures may misunderstand and misinterpret the others behaviors and cultural values.

The second case of learning about the other culture and of recognizing the members of the other group may turn out to be very expensive in the end. Therefore another less risky, but a secure method should be sought to introduce a new culture to the learners of a language without leaving them in discouraging confrontational situations. One of these methods can be the use of movie films in language classrooms for the purpose of getting acquainted the learners of that language with the cultural elements of the speakers of that language. Thus novice language learners may learn a lot about the traditions, manners, and the other cultural elements of the native speakers of the new language in the peaceful medium of the classroom, with no fear of criticism.

This practice will also be in line with the tasks of the UNESCO concerning the world community, and its aim of promoting the cultural diversity through innovative strategies of a modern cultural policy.

2.6. Modern Cultural Policy

The promotion of cultural diversity – the "common humanity heritage" according to the UNESCO Universal Declaration on Cultural Diversity, 2001 has become one of the most important issues in maintaining dialogue and peace in the world. Intercultural dialogue was considered as the guarantee of peace and of preventing "the inevitable clash of cultures and civilizations" (UNESCO 2002, p.11).

Cultural diversity is a driving force of development, not only in the growth of economic life but also in the growth intellectual, emotional, moral and spiritual life. In order to provide a solid basis for the promotion of cultural diversity, a number of international conventions have been promoted by UNESCO since 2001.

21 May has been celebrated as the World Day for Cultural Diversity for Dialogue and Development. The aim of this Day is to nurture the experience of the diversity with curiosity, by engaging in dialogue and listening to one another through cultural enterprises, creative industries, cultural tourism and protecting cultural heritage.

The year 2008 was declared by UNESCO as the International Year of Languages, which proves that languages and multilingualism is a vital item, having considerable effects on the making and practice of national language policies.

At the same time, acceptance and recognition of cultural diversity – in particular through innovative use of media and ICTs – are conducive to dialogue among civilizations and cultures, respect and mutual understanding.

It is believed that this approach will recover the sense of a joint commitment to promoting the intellectual and moral solidarity of mankind. (The ideas and information mentioned in this section were taken from the portal of UNESCO <http://portal.unesco.org>)

Using movie films in promoting cultural understanding in language classrooms can be regarded as a part of these innovative strategies.

3. Movie Films as Rich Sources of Culture

3.1. Rationale of Using Movie Films

Movie films chosen for the purpose of learning or teaching a foreign or second language may enable us to observe varying patterns of human behaviors, including thoughts, beliefs, values, customs, courtesies, rituals, manners of interacting, etc. Thus using movies with rich content describing different aspects of culture of different people seems to be a very appropriate tool to enhance the understanding of cultural diversity and to get the sense of cultural awareness and the sense of the humanity of other people.

There are many reasons for why movie films and video documents are believed to be good means to enhance the understanding of cultural diversity:

First, movie films are windows into culture. They highlight particular sectors from the general cultural life of a society. While watching a film with a topic describing presidential elections in the United States, we also come up with information about let us say, American political system, the ways of motivating American voters, the social and political circles that are influential in the presidential elections, etc. Similarly when we watch a movie film with a topic on the school life of the hero, we learn and observe many things about the educational environment, the interracial relations, and the traditions and details about the routines of the daily life in that society. In the same way we may acquire knowledge and information about particular places and times, about how people live, think and behave, about body language, styles of dress, table manners, gender roles, ways of treating children and talking to bosses, elders and peers, etc.

Second, all kinds of discourse showing the use of language in most contexts, can be found in movie films. This is something which cannot be provided in textbooks and classroom with much effect. The context in which the discourse take place display very clearly to the viewer the contextual variables of the language such as status, age, and sex of participants, the speaker's feelings and communicative intentions, the relationship the speaker has with the hearer, the content of the utterance, and the situation where the utterance occurs, etc.

Therefore the viewer can easily set up a relationship between the above contextual variables and the stylistic differences such as the language's being tentative vs. direct, polite vs. impolite, formal vs. informal, strong and blunt, etc (Arnold & Harmer; 1984).

Third, as a moving picture book, video gives access to things, places, people, events, and behavior, (regardless of the language used) and is worth thousands of picture dictionaries and magazines

It is difficult to fulfill this range of functions except by living in an English-speaking country. It brings the English-language world to the learner.

Now let us describe some of the ways of using movie films in language classrooms as a means for the purpose of developing in students' minds an understanding for cultural diversity.

3.2. *Ways of using Movie films*

The movie films must be selected appropriately in terms of types and content of the material to be used. First of all, the video resources that can be used is not limited to popular feature films but they may show a wide range of variation such as drama programs (films, sitcoms, soaps), documentaries on interesting subjects, daily news and weather broadcasting, sports programs, talk and game shows, commercials, movie trailers and TV cartoons (animated cartoons).

Secondly, when selecting material for students from different cultures, videos containing taboo language and taboo subject matter should be avoided. Therefore the language teacher must be aware of the taboo issues in the culture of the students.

Finally, language teachers should not forget that feature films are not always suitable for all ages. So the rating systems must be taken into consideration.

Now let us consider certain general activities that the teacher may perform or that the teacher may encourage the students to perform before, during or after viewing the video material (Sherman, 2003, pp.123-170).

3.3. *General Activities in Using Movie films*

After choosing an appropriate video material, the teacher may prepare the students by **doing certain general activities, before viewing**, such as:

- a) Making some research in internet about the cultural topics and themes covered,
- b) Finding some background information about these cultural topics and themes,
- c) Preparing a list of key vocabulary related to cultural subjects in question,
- d) Generating some class discussion on the cultural elements covered in the movie.
- e) Passing out some worksheet about the cultural elements discussed in the class.

Similarly the teacher may carry out some general activities **during or after viewing like:**

- a) Assigning written homework on subjects concerning culture,
- b) Analyzing behaviors, habits, customs of characters,
- c) Letting students telling cultural events,
- d) Letting students talk about the way the theme is dealt with,
- e) Explaining the characteristics of the language, (i.e. the stylistic properties of the discourse),
- f) Discussing the traditions and beliefs of people etc,
- g) Letting students act out the roles in some scenes,
- h) Generating some class discussion on students' impressions about the cultural elements in the movie or video elements.

3.4. *Some Specific Activities in Using Movie films*

3.4.1. *Different Cultural Elements*

The teacher should watch the movie together with students episode by episode and ask them to find out the unusual, strange or different behaviors, attitudes, beliefs, and body language they were able to observe during viewing. Then the teacher may ask the students to explain why they are like that. After the students' replies are given and compared in the class, the teacher should relate his own answer and explain what they mean and what message should be understood from them.

3.4.2. *Focusing on specific cultural elements*

Such a specific cultural element can be, for instance, *greetings*. The teacher may give students a form or an outline to complete while they watch and listen to a dialogue in the video. After the class views the episode, the teacher can invite students to discuss the cultural norms and values of greetings in that society. Topics may be extended to cover nonverbal behaviors like, the physical distance between speakers, gestures, mimics, eye contact, social roles, and how people in different social roles relate to each other. Students can also describe the behaviors they observe and they can discuss which of them are similar to their native culture and which are not. Then the class can talk about the ways of an effective communication with the native speakers of the target language.

3.4.3. *Role Playing*

Another effective way of raising awareness in the different cultural elements is the teacher's asking students to act out certain roles based on miscommunication and cultural differences. The aim is learning about ways of addressing different groups of people in the target culture, such as people of the same age and older people. After watching scenes where such dialogues take place, students learn their roles of speech in a situation in which an inappropriate greeting is used. Other students observe the role play and try to identify the reason for the miscommunication. Then they replay their roles in the same situation using a culturally appropriate form of address.

3.4.4. *Body language*

The aim of this activity is to recognize and describe body language. Any sequence where gestures and body language are very clear and reveal significant feelings and reactions in drama, speeches, sports, and competitions can be chosen. The teacher views with the sound off, gets the students to observe carefully and say what the characters do with body, hands, legs, face and head. Then the teacher asks the students to imitate the body language and then write down in two columns what the person does and what this reveals.

4. Conclusion

In this research, first the need for learning foreign and second languages was stressed as an inevitable part of life in a globalizing world where communication has to be maintained among nations speaking different languages. Then the possibility of benefiting from the close and interdependent relationship between language and culture for the purpose of contributing to social cohesion and peace in the world, particularly in parts of the world where all sorts of cultural biases and hostilities are strong and threaten a peaceful cohabitation of different people in the same area. This possibility was explained to be realized in the language teaching practices through using various types of video materials, especially movie films to eradicate cultural stereotypes and to promote intercultural understanding, universally shared values and human rights. Video materials chosen appropriately and with rich content describing different aspects of culture of different people in language classrooms was considered to be a very appropriate tool to enhance the understanding of cultural diversity and to get the sense of cultural awareness and the sense of the humanity of other people. This practice of using movie films in promoting cultural understanding in language classrooms was claimed to be in line with the tasks of the UNESCO and its aim of promoting the cultural diversity through innovative strategies.

Then the reasons for why movie films and video documents are believed to be useful in enhancing the understanding of cultural diversity were explained and an account of the ways, certain general and specific activities of using movie films as a means of developing an

understanding for cultural diversity while teaching a foreign or second language was given. It is believed that the practice of learning about the other culture and of recognizing the members of the other groups by means of observing the cultural elements in video documents in the peaceful environment of a classroom is a secure and beneficial way to enhance intercultural understanding among members of different cultural groups. Without considering this cultural awareness and understanding in language learning, a successful communication cannot be achieved.

5. References:

1. Arnold, J & Harmer, J. (1984). *Advanced Writing Skills*. England: Longman Group Ltd.
2. Baker Will (2003). Should culture be an overt component of EFL instruction outside of English speaking countries? The Thai context. *Asian EFL Journal* December 2003. Retrieved February 5, 2010, from http://www.asian-efl-journal.com/dec_03_sub.wb.php
3. Byram, M. and Fleming, M. (1998) *Language Learning in Intercultural Perspective*. Cambridge: Cambridge University Press.
4. Genç, B. & Bada, E. (2005). Culture in Language Learning And Teaching. *The Reading Matrix* Vol. 5, No. 1, April 2005. pp:73-84. Retrieved February 5, 2010, from http://www.readingmatrix.com/archives/archives_vol5_no1.html
5. Goode, Sockalingam, Brown & Jones, (2000). Culture in Second Language Teaching. *Eric Digest* EDO-FL-03-09. Center for Applied Linguistics. Retrieved March 10, 2010, from www.seasite.niu.edu/jsealt/Vol13No12007/PDF/EditCultureBound.pdf
6. Halliday, M. A. K. (1979). *Language as social semiotic: The social interpretation of language and meaning*. London: Edward Arnold.
8. International Year of Languages Activity Report. (2008). Paris: UNESCO. Retrieved March 10, 2010, from http://portal.unesco.org/culture/en/ev.php-URL_ID=38467&URL_DO=DO_TOPIC&URL_SECTION=201.html
9. Kramsch, C. (2006). *Language and Culture*. New York: Oxford University Press.
10. Peterson, E. & Coltrane, B. (2003). Culture in Second Language Teaching. *Eric Digest* EDO-FL- 03-09. Center for Applied Linguistics. Retrieved March 10, 2010, from www.seasite.niu.edu/jsealt/Vol13No12007/PDF/EditCultureBound.pdf
11. Sherman, J. (2003). *Using Authentic Video in the Language Classroom*. Cambridge: Cambridge University Press
12. The 2nd UNESCO World Report: Investing in Cultural Diversity and Intercultural Dialogue, (2009). Paris: UNESCO. Retrieved March 10, 2010, from http://portal.unesco.org/en/ev.php-URL_ID=46748&URL_DO=DO_TOPIC&URL_SECTION=201.html
13. UNESCO Universal Declaration on Cultural Diversity, (2002). Paris: UNESCO. Retrieved March 10, 2010, from <http://unesdoc.unesco.org/images/0012/001271/127160m.pdf>.

USING PARALLEL CORPORA IN DATA-DRIVEN TEACHING OF TURKISH IN SWEDEN

Éva Á. Csató, eva.csato@lingfil.uu.se
 Songül Kilimci, songul.kilimci@lingfil.uu.se
 Beáta Megyesi, beata.megyesi@lingfil.uu.se
 Department of Linguistics and Philology, Uppsala University

Abstract

The paper demonstrates how data-driven learning methods are applied in teaching Turkish as a foreign language at the Department of Linguistics and Philology, Uppsala University. In data-driven teaching, language corpora, concordance programs, and annotation tools developed in collaboration with computational linguists are employed. This paper illustrates how resources developed initially for research purposes in different subjects (such as Computational Linguistics, Linguistics, Turkic languages), are now being used in teaching environments.

We present the Swedish-Turkish parallel corpus providing students and researchers with easily accessible annotated linguistic data. The web-based corpora can be used both by regular and distance students. They function also as learning tools for formulating and testing hypotheses concerning lexical, morphological and syntactic aspects of Turkish. Furthermore, they help the students to practice contrastive studies and translation between Swedish and Turkish.

Key Words: Parallel Corpora, Data-Driven Learning Method, Language Teaching, Computational Linguistics.

Introduction

Recently, different types of linguistic corpora have become a primary source in the study of languages. The word *corpus* is used to describe “a collection of naturally occurring examples of language, consisting of anything from a few sentences to a set of written texts or tape recordings, which have been collected for linguistic study” (Hunston, 2002: 2). Corpora are stored and accessed electronically and are often used “to give information about how a language works, to make comparisons between languages, to compare the use of apparent translation equivalents in two languages, and to investigate cultural attitudes expressed through language” (Hunston, 2002: 13-14). Hunston gives several examples of the use of corpora to study, e.g. frequency, phraseology, usages of words or phrases, collocations, statistical tendency of words to co-occur (2002: 13-14).

Parallel corpora contain texts that have been translated from one language into another. In parallel texts, learners can find potential equivalent expressions in the given languages and investigate semantic, syntactic and collocational differences. Such investigations can lead to comparative language studies (Johansson 2007).

Data-driven learning (DDL) makes use of corpora, which allow learners to act as ‘language detectives’ (Johns, 1997:101). Students are inspired to discover themselves how words, idioms, phrases and grammatical phenomena are used in the target language. They can access the database and utilize information from the corpora (Dash, 2003). The authenticity of the data ensures that learners are presented with samples, which reflect the way people actually speak or write. Teachers can present regularities in the parallel texts to make learners aware of grammatical, lexical or discourse features, which distinguish their interlanguage from the target norm. (Granger, 1998).

Less Commonly Taught Languages at Uppsala University

Over forty different languages are taught at the Faculty of Languages at Uppsala University. Of these, more than twenty, so-called less commonly taught languages, such as Arabic, Hindi, Kurdish, Persian, Swahili, Turkish, and Uzbek, are taught in the Department of Linguistics and Philology. As crucial methodological issues are specific to the less commonly taught languages, American universities have created the *National Council of Organizations of Less Commonly Taught Languages*. The aim of this council is to develop a uniform set of goals, common guidelines for curricula, pooling teaching materials, and arranging conferences for exchange of experience. In Sweden, several of the less commonly taught languages are taught only at Uppsala University. Thus, there is a need in our department to pool our resources in order to meet the demands of teaching these languages.

In our language courses, students are expected to acquire not only practical skills in speech and writing. They are expected to study the target language from a linguistic point of view, i.e. they have to learn about the typological, grammatical, lexical properties of the language and acquire skills and methods in order to be able to carry out research on the language. We give some examples below to demonstrate how this multifaceted task can be achieved using the data-driven learning method. This method uses resources such as language corpora, concordance programs, and annotation tools – the tools developed in collaboration with the computational linguists. Resources developed initially for research purposes in different subjects (such as Computational Linguistics, Linguistics, Turkic languages), are now being used also in various teaching environments. Internet resources create a new social context for learning and enhance the students’ engagement (Kilimci, 2010). Here we will demonstrate one example - the use of parallel corpora.

The Turkish-Swedish Parallel Corpus

The Swedish-Turkish parallel corpus consists of original texts, both fiction and non-fiction and their translations provided by professional translators. In total, the corpus consists of 288,701 tokens in Swedish, and 162,302 tokens in Turkish. Table 1 below gives an overview of the corpus data with the number of tokens in the two languages.

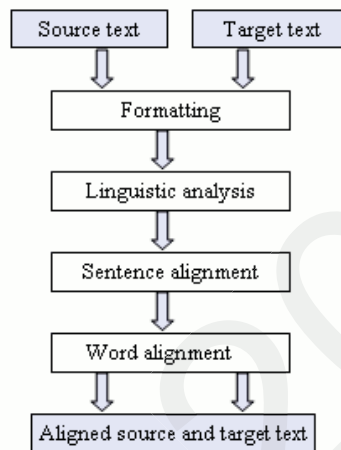
Table 1. The Swedish-Turkish parallel corpus data

| Type of Text | Swedish | Turkish |
|--|---------|---------|
| The White Castle (O. Pamuk) | 58 684 | 44 176 |
| Sofie’s world (J. Gaardner) | 7 393 | 5 651 |
| The royal physician’s visit (PO Enquist) | 20 780 | 16 983 |
| Islam and Europe (I Karlsson) | 61 529 | 58 353 |
| Info about Sweden (Migration Office) | 26 649 | 28 139 |
| Pregnancy and Giving Birth | 1 076 | 1 221 |
| Exercise and Food | 616 | 685 |
| Psychological Issues | 385 | 330 |
| Retirement | 3 770 | 4 267 |
| Dublin | 451 | 469 |
| UN Declaration of Human Rights | 1 831 | 1 604 |
| What is unicode | 539 | 424 |

| | | |
|-------|---------|---------|
| Total | 288 701 | 162 302 |
|-------|---------|---------|

The corpus is automatically created by using and adjusting existing tools for the linguistic analysis, the automatic alignment, and visualization. Figure 1 shows the annotation procedure. The texts are first cleaned up and formatted into text files. Then, the words, punctuation marks and the sentences are segmented by a tokenizer and a sentence segmenter, developed separately for each language. The tokens are morphologically analyzed with part of speech and inflectional features. For the morphosyntactic annotation, external morphological analyzers and part-of-speech taggers are used for the two languages. The Swedish texts are annotated with the HunPoS tagger (Halácsy et al., 2007), an open source reimplementation of the Trigrams'n'Tags (TnT) tagger (Brants, 2000), with an average accuracy of 96% (Megyesi, 2008). The Turkish material is morphologically analyzed using a Turkish analyzer (Ofłazer, 1994) and a disambiguator, which automatically learns morphological disambiguation rules from a decision list induction algorithm achieving an accuracy of approximately 96% (Yuret and Türe, 2006). The sentences are also syntactically annotated in both languages with dependency structures by using MaltParser (Nivre et al., 2006) trained on each language separately to build a syntactically annotated corpus, so called treebank. The sentences, phrases and words in the two languages are also aligned text by text. The output is linguistically analyzed parallel texts. The corpus is under development and partly manually corrected.

Figure 1. Annotation procedure



Learning Tools in the Turkish-Swedish Parallel Corpus

The aim of the Swedish-Turkish parallel corpus is to provide Swedish speaking students and researchers with easily accessible annotated linguistic data on Turkish. The web-based corpora can be used both by regular and distance students in their acquisition of new vocabulary items and their usage. They function also as a learning platform for testing hypotheses concerning the morphological and syntactic aspects of Turkish grammar. Further, they help the students to practice translation between Swedish and Turkish. All that is possible due to the fact that the Swedish-Turkish parallel corpus is available in annotated form. The annotations, on request, are visualized in pop-up windows, as shown in Figure 2.

Figure 2. Morphological analysis in a pop-up window

| | | |
|-----|--|--|
| SL6 | »Att tänka sig att en person som förbrillar oss , har tilltråde till ett sätt att leva som är okänt och som känns mera attraktivt för dess mystik , att tro att vi kommer att börja leva endast genom dennes kärlek -vad annat är det , än början på en stor passion ? « | " Alakamızı uyandıran bir kimseyi , bizce meçhul ve meçhullüğü derecesinde cazibeli bir hayatın unsurlarına karışmış sanmak ve hayata ancak onun sevgisiyle girebileceğimizi düşünmek bir aşk başlangıcından başka neyi ifade etir " |
|-----|--|--|

The interface for displaying syntactic information is not ready yet. A search tool assists the students to create concordance lists. They can search for whole words, beginnings of words, and parts of words or ends of words in Turkish or Swedish. The concordance lists display whole sentences in which the target item appears and it is highlighted. The selected sentences are aligned with their translational equivalents, as illustrated in Figure 3.

Figure 3. Concordance list: Search results for the word 'insan'

The screenshot shows the ITG software interface. The main window displays search results for the word 'insan'. The interface is divided into several sections: a sidebar on the left with navigation options like 'Modulfönster', 'Lära mig mer', 'Övningar', 'Korpus', and 'Hjälp'; a central search area with tabs for 'Textvisning', 'Konkordanser', 'Annoteringseditor', and 'Inställningar'; and a results table. The table has columns for 'Ord', 'Lemma', 'Grammatisk beskrivning', and 'Intervall'. Below the table, there is a zoomed-in view of a specific result showing the context: 'Sonraki gün poyraz çıktı , püfür püfür bir hava , insan istemese de bu havada iyileşir , diye düşünüyordum , ama kimse beni aramadı .'

This form of displaying the linguistic data is much more suitable for learning than KeyWords In Context (KWIC) lists in which only the immediate environment of the target item is shown. Such lists are used to find frequent patterns of usage, transformational equivalents, different meanings of polysemic words, translational equivalents of Turkish grammatical categories, etc. Different types of exercises are designed and published on the Internet.

In a data-driven learning approach, students use corpora directly in their own learning. They use the corpora, for example, to discover linguistic patterns and to organize linguistic patterns, which they observe, arriving at generalizations inductively and verifying deductive rules (Saxena et al., 2008). See, for instance, the result of a search of translations of the Turkish word *baş* 'head' into Swedish in Figure 4. The students have to find different meanings of the Turkish and the Swedish words and describe how the different meanings correspond in the two languages.

Figure 4. Swedish translations of the Turkish word *baş* 'head'

The screenshot shows a search result page for the Turkish word 'baş'. The page has a search bar and a magnifying glass icon. Below the search bar, there are search statistics: 'Text: Vita Borgen', 'Söksträng: huvud', 'Antal funna meningar: 38', and 'Antal förekomster: 38'. Below the statistics is a table with three columns: 'num', 'swedish', and 'turkish'. The table contains several rows of text with the word 'baş' highlighted in blue boxes.

| num | swedish | turkish |
|-----|---|--|
| 11 | I marginalerna hade en barnhand ritat människor med små huvuden iklädda plagg med många knappar . | Kenarlarına ve sayfa baş larına bir çocuk elinin bol düğmeli elbiseler giyen küçük kafa insanlar çizdiği kitabı hemen , büyük bir keyifle okudum . |
| 144 | Jag gav medicin till gamla pirater som led av reumatism och till unga soldater med magsår , jag tappade blod från dem som hade klåda , dem som blivit bleka och dem som hade huvudvärk . | Romatizmaları tutan ihtiyar korsanlara , mideleri yanan genç baş larına ilaçlar veriyor , kaşintısı olanlardan , rengi atanlardan , baş ağrısı tutanlardan kan alıyordum . |
| 308 | De lät mig falla på knä och luta huvudet mot en stubbe som fanns där . | Orada bir kütük varmış , diz çökertti baş ını dayadılar . |
| 320 | Just som jag skulle lägga huvudet mot stubben , blev jag förvånad när någon liksom flygande passerade förbi mellan träden ; det var jag , mitt skägg hade blivit långt och jag gick där ryst utan att mina fötter berörde marken . | Baş ını kütüğe dayamadan önce ağaçların arasından uçar gibi geçen birini göyerek şaşırđım : Ben , sakallarım uzamış , orada , ayaklarım toprağa değmeden sessizce yürüyordum . |
| 460 | Han blev upphetsad när han såg att barnet blev påverkat . Pojken höjde då och då huvudet och tittade fascinerat mot himlen . | Arada bir baş ını kaldırarak göğe hayranlıkla bakan çocuğun etkilendiđi gördükçe coşuyordu . |
| 522 | " Nå , de är inte dumma , men det fattas något i deras huvuden . " | " Peki , aptal değiller , ama kafal arında bir şey eksik . " |

Such exposure to corpora provides students with the chance not only to extract relevant examples of one or the other linguistic structures, but also provides them material for discussion when they find gaps, to verify and extend their hypothesis and to arrive at generalizations (Saxena et al., 2008). One advantage of using corpora in teaching is that instead of learning about linguistic theories in vacuum - which is considered to be a *more passive learning method*, where facts are fed to students in form of lectures - students have a chance to test theories themselves against real world data represented in corpora. They are able to learn about the theories or concepts themselves, which is a *more active learning method*. When syntactically annotated corpora, i.e., treebanks, are used by students as part of their learning, distinction between teaching and research is "blurred", as students, by discovery procedure (thus, research), learn things for themselves. The use of corpora in teaching can, in this way, affect both teachers' as well as students' role. This approach is as equally relevant in a classroom set-up as in self-study situations.

References

- Brants, T. 2000. Tnt — a statistical part-of-speech tagger. In *Proceedings of the 6th Applied Natural Language Processing Conference*.
- Csató, É. Á. 2009. Rendering evidential meanings in Turkish and Swedish. In: Éva Á. Csató et al (eds.) *Turcological Letters to Bernt Brendemoen*, 77-86. Oslo: Novus.
- Dash, N. S. 2003. Use of Language Corpora in Second Language Learning. *South Asian Language Review*. VOL.XIII, Nos.1&2, January-June, 2003.
- Granger, S. and Tribble, Ch. 1998. Learner corpus data in the foreign language classroom: form-focused instruction and data-driven learning. In: Sylviane Granger (ed.) *Learner English on Computer* Addison Wesley Longman Limited (199-209).
- Halácsy, P., Kornai, A., and Oravecz, Cs. 2007. Hunpos - an open source trigram tagger. In *Proceedings of the 45th Annual Meeting of the Association for Computational Linguistics*, Companion Volume, Proceedings of the Demo and Poster Sessions, pages 209–212, Prague, Czech Republic. Association for Computational Linguistics.
- Hunston, S. 2002. *Corpora in Applied Linguistics*. Cambridge University Press.
- Johanson, E. C., and Kilimci, S. 2009. Türkçe Öğretiminde İnternet: İsveç Örneği. In A. Ince & V. Sultanzade (Eds.). *International Symposium on Turkish Language Teaching and Instruction*. *Eastern Mediteranen University Publication*. (1-9).
- Johansson, S. 2007. Seeing through multilingual corpora. In: Roberta Facchinetti (ed.) *Corpus Linguistics 25 Years on*. Rodopi B.V., Amsterdam - New York, NY 2007 (51-71).
- Johns, T. 1997. Contexts: the Background, Development and Trialling of a Concordance-based CALL Program. In Wichmann, A., Fligelstone, S., McEnery, T. and G. Knowles (eds.) *Teaching and language corpora*. London and New York: Longman. 100-115.
- Kilimci, S. 2010. Integration of the internet into a language curriculum in a multicultural society. *TOJET: The Turkish Online Journal of Educational Technology* – January 2010, 9 (1), 107-113.
- Megyesi, B. 2008. The open source tagger hunpos for Swedish. In *Report, Department of Linguistics and Philology, Uppsala University*.
- Megyesi, B., Dahlqvist, E. Pettersson and J. Nivre. 2008. Swedish Turkish Parallel Treebank. In: *Proceedings of the Sixth International Conference on Language Resources and Evaluation (LREC'08)*, 470-473. Marocco.
- Nivre, J., Hall, J., Nilsson, J. 2006. Malt- Parser: A Data-Driven Parser-Generator for Dependency Parsing. In *Proceedings of the 5th International Conference on Language Resources and Evaluation (LREC 2006)*.
- Oflazer, K. 1994. Two-level description of Turkish morphology. *Literary and Linguistic Computing*, 9:2.
- Saxena, A. & Megyesi, B. & Csató, É. Á. & Dahlqvist, B. 2008. Using parallel corpora in teaching & research: The Swedish-Hindi-English & Swedish-Turkish-English parallel corpora. In: A. Saxena & Å. Viberg (eds.) *Proceedings of the Scandinavian Conference of Linguistics, Uppsala University*. Uppsala. Acta Universitatis Upsaliensis.
- Saxena, A. 2003. Some advantages of using corpora in teaching: IT-based collaborative learning in grammar. *Nordisk Sprogteknologi. Årbog for Nordisk Språkteknologisk Forskningsprogram 2000–2004*, 75–78. Kobenhavns Universitet: Museum Tusulanums forlag.
- Yuret, D. and Türe, F. 2006. Learning morphological disambiguation rules for Turkish. In *Proceedings of HLT NAACL '06*.

USING PODCASTS AS LANGUAGE LEARNING OBJECTS AND ITS EFFECT ON FIRST-YEAR TURKISH UNIVERSITY STUDENTS' LANGUAGE LEARNING BELIEFS

Nese CABAROGLU
Faculty of Education, Cukurova University, Turkey
Email: ncabar@cu.edu.tr

Suleyman BASARAN
Faculty of Education, University of Gaziantep, Turkey
Corresponding Author, Email: basaran@gantep.edu.tr Tel: (+90) 5065361921

Abstract

Mobile technologies such as Mp3 players, iPods, smart phones, hand-held computing devices, and Third Generation (3G) networks have revolutionized traditional concepts of education. Common use of such devices has brought about mobile learning as a plausible alternative to or a good complement for conventional classroom-based teaching applications. Podcasting, which entails automatic free download of audio files into portable devices, has led to new practices especially in language learning. The most striking feature of such practices is the flexibility in learning time and location. This quite recent innovation has not been studied as a phenomenon that might affect psychological constructs in language learning processes despite the fact that it holds a high potential for leading to a paradigm shift in foreign language learning. This study aimed at investigating possible effects of the use of podcasts via mobile devices upon language learning beliefs. Detailed analysis of data revealed that podcasts had positive effects on certain types of language learning beliefs.

Key words: podcast, language learning beliefs, belief change

INTRODUCTION

Internet is the most important innovation of late 20th and early 21st centuries. The advent of Internet and developments in communication technologies are cited with and compared to the discovery of electricity and of the light bulb (e.g. Zukowski, 2007). In fact, it is the Internet that has accelerated globalization and thus turned the world into a real global village, creating a knowledge economy (Loy, 2000) that has changed all conventions. This new eco-system not only curbed distances in terms of immediate access to the furthest corner of the world, but also created abundant and diverse resources and even 'parallel worlds' such as SecondLife.

Educational conventions and practices must certainly change in this constantly evolving world (Collis, 2005). Easy access to fast Internet and common use of mobile devices must have certain implications for second or foreign language learning. Delivery of individualized and comprehensive content in real-time via the Internet and digital technologies provides an effective means for creating appropriate learning environments that meet personal needs (Zhang & Zhou, 2003). Hence, a paradigm shift has occurred in academic issues in general and English Language Teaching (ELT) in particular. According to Hedberg & Lim (2004), educators have adopted e-learning and/or mobile learning related technologies both to extend conventional methods and to develop new skills and tools for learning and instruction. Such technologies have provided instructors with new possibilities and choices to overcome persisting problems stemming from lack of resources and time constraints and also enabled students to enjoy new learning experiences. Current technological means provide effective applications such as collaborative learning, digital storytelling, oral conversations, multimedia messages and podcasting, which are all expected to have deep impact on second and/or foreign language learning.

In parallel with the increase in the number of technological innovations, there has been a surge of research concerning the effect of mobile technology upon language learning. Earlier research asserts that mobile technologies can motivate foreign language learners via portable and flexible learning more than localized classroom learning (Norbrook & Scott, 2003). Here worth mentioning is a study by Kukulska-Hulme (2005), who reports the findings of three studies to underline the potential of mobile technology applications for foreign and/or second language learning. In another study, Kukulska-Hulme and Shield (2007) elaborated the effectiveness of mobile technologies such as podcasting in foreign language learning by asserting that podcasting can provide students with an affective and low-cost tool for taking control of what they learn and thus improving their language proficiency.

Podcasts and Language Learning

Podcasting is defined in Wikipedia (February 2008) as:

"the method of distributing multimedia files, such as audio programs or music videos, over the Internet using either the RSS or Atom syndication formats, for playback on mobile devices and personal computers."

Cebeci and Tekdal (2006:47) propose that podcasts can be used as effective language learning objects and underline two main features of podcasting:

"1. Podcasting is an audio content delivery approach based on Web syndication protocols such as RSS and/or Atom. 2. Podcasting aims to distribute content to be used with mobile and digital audio/video players such as iPods including all other MP3 players, cell phones and PDAs."

As the use of podcasts as learning objects is a quite recent phenomenon, it is not surprising to see that there is little research on pedagogical potential and implications of podcasting in foreign language learning (Rosell-Aguilar, 2007). Although there are some descriptive and informative studies that mostly detail positive impact of podcasts in education (e.g. Zukowski, 2007; Toutner, 2007; Dlott, 2007; Cebeci & Tekdal, 2007), the lack of a sound and comprehensive theory is quite apparent and even the ways and practices in which podcasts can effectively be used is still under debate (e.g. Stanley, 2006; Beheler, 2007; Zielke, 2007).

Language Learning Beliefs

Beliefs about language learning are accepted as learners' metacognitive knowledge about themselves as language learners, their goals and needs (Bernat & Gwozdenko, 2005). Beliefs affect attitudes and motivation (Baker, 2008) and students' efficiency in classroom setting (Horwitz, 1988). In literature on constructs that affect language learning and acquisition, the terms belief and perception are used interchangeably (e.g. Tse, 2000; Schulz, 2001; Mori, Sato, and Shimizu, 2007) for it seems to be quite difficult to differentiate between them. Therefore, for the purpose of this study belief and perception will be taken as synonymous.

With regard to student beliefs, in 1985, Horwitz developed a 34-item Likert-scale data collection instrument; namely, Beliefs about Language Learning Inventory (BALLI). Horwitz (1988) suggested that if students have preconceptions and negative beliefs about the way languages are learnt and particularly if their beliefs are different from teachers' beliefs and practicum, this may lead to poor confidence in the teacher, dissatisfaction with the course, and poor achievement. This idea was later verified by a number of researchers. For instance, Mantle-Bromley (1995) stated that some students may come to FL classes "with certain attitudes, beliefs, and expectations that may actually prove harmful to their success in the classroom" (p. 383). Teachers need to investigate their students' beliefs so that they can be supportive, help them overcome their

feelings of “isolation and helplessness” and “offer concrete suggestions for attaining foreign language confidence” (Horwitz, Horwitz and Cope, 1986, p.132).

Learners’ language learning beliefs, which may differ across learner groups (Horwitz, 1999) need to be investigated before implementing any program or introducing any innovation (Sakui & Gaies, 1999). Horwitz (1995) explains how students’ affective reactions such as motivation for language learning and foreign language anxiety, and students’ beliefs about language learning affect the language learning process and stresses that it is essential for teachers to give priority to the emotional needs of their students because of the fact that affective factors represent the learner’s willingness to engage in the activities, which is necessary to develop second language proficiency. In a study on the comparison of learners’ and the teachers’ beliefs about language learning and syllabus design, Bulut and Ügüten (2003) found out that learners’ perceptions did not match with those of the teachers and that unlike teachers, students had highly positive perceptions towards grammar. The study also revealed that listening and speaking were the most enjoyable skills, while reading was the second and writing was the least favorable. The findings, they reported, changed classroom activities formerly used by the teachers; for instance, a future program included more listening comprehension activities. According to Schulz (2001), discrepancy between teachers’ and learners’ beliefs about language learning can be detrimental; therefore teachers should investigate their students’ beliefs and make sure that they are modified to avoid any conflicts between students’ beliefs and classroom activities. Horwitz, Bresslau, Dryden, McLendon and Lu (1997) provide further evidence for the need to adjust instruction to learners’ needs and expectations and suggest multiple ways of teacher collaboration to do so (See also Horwitz, 1988 Fox, 1993).

The assertion that mobile applications may enhance face-to-face communication and even replace it in language learning settings is well grounded in previous research. Yet, continued research is crucial to explore and define characteristics and effects of mobile language learning and more specifically foreign language learning through language learning podcasts. Especially the impact of language learning podcasts on language beliefs needs to be investigated. A deep understanding of such psychological constructs in mobile settings might facilitate development and implementation of novel educational strategies for more efficient foreign language learning.

The purpose of this study is to describe and explain the process and the impact of using podcasts as language learning objects and aids on learners’ beliefs about learning English as a foreign language. The study is geared to investigate whether there is a positive change in EFL students’ beliefs about EFL. It also aims to explore cognitive and affective aspects of listening to podcasts outside classroom setting and the ways in which language learning podcasts can effectively be integrated into collaborative classroom tasks.

The exploratory questions that guide the study are:

1. What are the students’ beliefs about language learning on entry into podcast-based language learning program?
2. What language learning beliefs do students have after the podcast-based language learning program?
3. Is there any difference between students’ beliefs about language learning before and after using podcasts as language learning objects and aids?

METHODS AND PROCEDURES

As the main aim of the present study was not to make broad generalizations about the effects of using podcasts as language learning objects, but to analyze the process and the impact in a specific social context, a purposive sampling strategy is adopted. Purposive sampling is more viable when description rather than generalization is the goal (Dawson, 2002). To collect quantitative data and find plausible answers for the research questions, which required description of language learning beliefs before and after a twelve-week program that was based on repetitive listening to podcast and doing related tasks and track possible changes, 187 first-year students at the Education Faculty of a newly founded state university in south-eastern Turkey were taken as convenience sample.

The course, which started in September 2008 and ended in January 2009, evolved around the use of podcasts as language learning objects and related tasks. The program consisted 16 weeks of study, but 4 weeks were missed due to religious holidays (two weeks) and midterm exams (two weeks). Each week, students listened to three sections of a podcast and did related task-based activities developed by British Council. They were expected to listen to the sections studied in the class throughout the week that followed. Neither coursebooks nor any other teaching materials were used so as not to mar the effects of podcasts.

In order to investigate learners’ beliefs about foreign language learning, a Turkish version of the Beliefs about Language Learning Inventory (BALLI) (Horwitz, 1987) was distributed to 187 Turkish university students (see Appendix). The instrument was given before and after the twelve-week podcast-based language learning program. The collected data were analyzed by using descriptive statistics and Wilcoxon signed rank test.

RESULTS

Students had various remarkable beliefs about language learning on entry into podcast-based language learning program (Research Question # 1). For instance, they seemed to have both parallel and contradicting views regarding foreign language aptitude. Most of them were of the opinion that it is easier for children than adults to learn a foreign language, which means that they were aware of the difficulties entailed in learning a foreign language as young adults. However, more than half of them did not believe that some people have a special ability for learning foreign languages. Also, despite the fact that they opposed the idea of some people having a special ability, at least most of them claimed that they had a special ability for language learning. Analysis of responses to the items related to the difficulty of language learning revealed that a large number of students believed that some languages are easier to learn than others. Relatively fewer students thought that English is an easy language compared to those who reported that they believe it is difficult and a great majority of students did not believe that they would learn English very well. In the area concerning the nature of language learning, participants tended to disregard the importance of knowing about English-speaking cultures for learning English. There seemed to be a consensus on the importance of learning English in an English-speaking country, and learning vocabulary and grammar. Also, almost half of all participants seemed to believe that the most important part of learning English is learning how to translate from Turkish to English. As for beliefs about learning and communication strategies, most of the participants were of the opinion that it is important to speak English with an excellent pronunciation, whereas they did not agree that you shouldn’t say anything in English until you can say it correctly. However, they did not seem to be eager to practice with native speakers. It was also clearly demonstrated that they feel timid speaking to others in English. Less than half of participants agreed that it is important to practice with cassettes or tapes. The ratio of those who feel uncertain about the role of practice with cassettes and tapes was 37,36 %, which is quite high. Motivation and expectations of students seemed to be quite low. Although a total of 64,68 % of participants were of the opinion that Turkish people perceive speaking English as important, a majority of them seemed to have rather low motivation and expectations about learning English.

Data from the second administration of BALLI and second round of interviews were analyzed to find out what language learning beliefs students had after the podcast-based language learning program (Research Question # 2). Analysis of participants’ responses to BALLI items concerning beliefs about foreign language aptitude revealed that most students agree with the assertions that it is easier for children than adults to learn a foreign language and that they have a special ability for learning foreign languages. Participants had relatively positive views about the statements that Turkish people are good at learning foreign languages, that it is easier for someone who already speaks a foreign language to learn another one, and that people who speak more than one language are very intelligent. Analysis of BALLI items about the difficulty of language indicated

that most participants accepted that some languages are easier to learn than others. As for the opinions about the difficulty of English, more than half of the participants believe that English is a language of medium difficulty. A more striking finding is that a total of 62,85 % of participants do not believe that they will learn to speak English very well. Concerning the nature of language learning, many of the participants tended to be unaware of the importance of knowing about English-speaking cultures in order to speak English. Similarly, many participants believed that the most important part of learning a foreign language is learning vocabulary and grammar. Results for learning and communications strategies verified that most of the participants did not believe that you shouldn't say anything in English until you can say it correctly, that you can guess if you don't know a word in English, and that it is important to repeat and practice a lot. Also, most participants believed that it is important to speak English with an excellent pronunciation and that they feel timid while speaking English with other people. As for motivation and expectations domain of beliefs, participants seemed to be not so much motivated about having better opportunities for a job and having friends who are native speakers of English. Participants had somewhat high motivation and expectations about speaking English and learning English so that they can get to know native speakers of English and their cultures better.

Wilcoxon Signed Rank Test, a nonparametric alternative to paired or related sample t-test, was used to compare quantitative data obtained from the administration of BALLI to the same samples before and after the program. The reason behind using a nonparametric test was the fact that BALLI data did not reflect a normal distribution. As BALLI does not give a total score, the Wilcoxon test was run for each item separately. Therefore, instead of determining whether or not participants' beliefs about foreign language learning were changed as a whole, the study focused on any possible differences in their specific views concerning each item in BALLI. This might provide more accurate and dependable results.

Concerning participants' beliefs about foreign language aptitude, Wilcoxon test results show that there is no significant difference between pre-test and post-test BALLI results for Item 1, Item 6, Item 10, Item 11, Item 16, Item 19, Item 30, and Item 33 ($p > 0,05$; Table 5.19). This means that participants' beliefs about most items about aptitude did not change after a twelve-week program of learning English with podcasts and podcast-based tasks. The only positive change occurred in students' beliefs about the assertion that some people have a special ability for learning foreign languages (Item 2; M: 2,51-2,85; $p < 0,05$).

Although there was a slight change in the beliefs about the assertions that some languages are easier to learn than others (Item 3; M: 4,04-3,93), that they believe they will learn to speak English very well (Item: 5; M: 2,25-2,31) and that it is easier to read and write English than to speak and understand it (Item 34; M: 4,18-4,10), the difference is not significant ($p > 0,05$; Table 5.20). Wilcoxon test results indicate that there was a significant difference between participants' perceptions about difficulty of English (Item 4; $p < 0,05$) and about the duration necessary for learning to speak English very well (Item 15; $p < 0,05$). This finding shows that participants gained confidence as a result of learning English with podcasts and related tasks. Similarly, test results for Item 25 show that participants became more confident about listening (M: 4,01-3,83). The difference between participants' pretest-posttest beliefs about the assertion that it is easier to speak than understand a foreign language was statistically significant ($p < 0,05$).

As for participants' beliefs about the nature of language learning, there seems to be a significant change in beliefs about all but two items (Table 5.21). The participants' views about the importance of knowing about English-speaking cultures (Item 8) and translation from Turkish to English (Item 28) did not change significantly ($p > 0,05$). However, there was a statistically significant change in the beliefs about the propositions that it is best to learn English in an English-speaking country (Item 12; M: 4,03-3,75; $p < 0,05$), that the most important part of learning a foreign language is learning vocabulary words (Item 17; M: 4,77-4,47; $p < 0,05$), and that the most important part of learning a foreign language is learning the grammar (Item 23; M: 4,03-3,83; $p < 0,05$). Students' views about the postulate that learning a foreign language is different from learning other academic subjects (Item 27) changed significantly, as well (M: 4,11-3,91; $p < 0,05$).

Test results show that there was a significant change in participants' beliefs about the propositions that it is important to repeat and practice a lot (Item 18; M: 2,16-2,37; $p < 0,05$) and that they enjoy practicing English with the native speakers of English (Item 13; M: 2,63-3,08; $p < 0,05$). Although there was a slight improvement, no significant change was observed in participants' views concerning the assumptions that it is important to speak English with an excellent pronunciation (Item 7; M: 4,01-3,86; $p > 0,05$) and that it is important to practice with cassettes or tapes (Item 26; M: 3,16-3,29; $p > 0,05$). Absence of significant change in beliefs about practicing with cassettes or tapes might have resulted from the wording of the item (cassettes or tapes) and not from participants' lack of interest in listening.

No statistically significant change was observed in the participants' beliefs about items which posit that nothing should be said in English until it can be said correctly (Item 9; M: 2,17-2,17; $p > 0,05$) and that the meaning of an unknown word can be guessed (Item 14; M: 2,13-2,03; $p > 0,05$). Beliefs about feeling timid when speaking English (Item 21; M: 3,99-3,91; $p > 0,05$) and making errors (Item 22; M: 2,32-2,33; $p > 0,05$) did not change significantly, either.

Test results clearly show that the podcast-based language learning program fostered participants' motivation and expectation. There was a positive change in participants' intrinsic motivation to learn English and thus know native speakers of English and their culture better (Item 24; M: 2,64-3,04; $p < 0,05$), to learn to speak English well (Item 31; M: 2,58-3,01; $p < 0,05$) and to have friends who are native speakers of English (Item 32; M: 2,46-2,80; $p < 0,05$). Although there was also a significant change in the beliefs concerning Item 20, which is about the perceived importance of speaking English in Turkey, the change was not in a positive direction (M: 3,60-3,01; $p < 0,05$). Beliefs about having better job opportunities as a result of learning English very well did not change significantly (Item 29; M: 2,26-2,31; $p > 0,05$). This is due to the fact that all participants of the study were students at the faculty of education, which means that it was already known to them that they would become teachers when they graduated.

CONCLUSION

Data collected from the first and second applications of BALLI were analyzed descriptively to identify participants' language learning beliefs and thus answer the first and second research questions. Descriptive analysis showed that participants had a great diversity of beliefs. Although some beliefs seemed to be interrelated and reflecting meaningful patterns, contradictory beliefs were also reported. This supports the idea in previous literature that learners' beliefs are highly complex, diverse and interrelated (e.g. Mason, 2004).

Collected data were also analyzed comparatively by running Wilcoxon signed-rank test to answer the third research question. Analyses of responses to BALLI items were based on Horwitz's original grouping of five major areas. Categories defined by Horwitz were foreign language aptitude, difficulty of language learning, the nature of language learning, learning and communications strategies, and motivation and expectation. Concerning participants' beliefs about foreign language aptitude, Wilcoxon test results showed that there was no significant difference between pre-test and post-test BALLI results. It can be inferred from this finding that beliefs reflect a hierarchical pattern and some deeply-rooted or stronger ones are more difficult or at least take longer to change. The idea that beliefs are difficult to change and that considerable efforts are needed to change detrimental beliefs is also shared by Peacock (2001). On the other hand, significant positive change was observed for most items under other belief domains such as difficulty of language learning, the nature of language learning, learning and communications strategies, and motivation and expectation, which implies that podcasts can be used as effective language learning objects (Cebeci & Tekdal, 2006) and that this can have positive effects on language learning beliefs.

Future research should focus on further investigation of language learning belief patterns. Effects of repetitive listening to podcasts on English self-efficacy perceptions and proficiency should also be investigated.

REFERENCES

- Baker, S. C. (2008). *BYU Students' Beliefs about Language Learning and Communicative Language Teaching Activities*. Unpublished MA thesis: Brigham Young University.
- Beheler, A. (2007). *The future of podcasting in postsecondary education: A Delphi study*. Doctoral Dissertation, Walden University. UMI Number: 3255225.
- Bernat, E. & Gwozdenko, I. (2005). Beliefs about language learning: Current knowledge, pedagogical implications and new research directions. *TESL-EJ*, 9 (1), 1-21.
- Bulut, T. & Üğüten, D. (2003). The importance of students' perceptions in language teaching. *Çukurova University Journal of Social Sciences*, 11(11), 90 – 99.
- Cebeci, Z. & Tekdal, M. (2006). Using podcasts as audio learning objects. *Interdisciplinary Journal of Knowledge and Learning Objects*, 2, 47-57.
- Collis, B. (2005). E-learning and the transformation of education for a knowledge economy. Retrieved October 10, 2005, from <http://www.presidenciairepublica.pt/network/appascalcollis.pdf>
- Dawson, C. (2002). *Practical Research Methods*. Cromwell Press: Wiltshire.
- Dlott, A. M. (2007). A (Pod)cast of thousands. *Educational Leadership*, 64 (7), 80-82.
- Fox, H. B. (1993). *A study of EFL teachers and the relationship between their attitudes about computer-assisted language learning usage and their expectations of language minority students*. Doctoral Dissertation, Texas A&M
- Hedberg, J. & Lim, C. P. (2004). Carting trends of e-learning in Asian schools. *Distance Education Melbourne* 25 (2), 199-213. Retrieved on March 28, 2005 from <http://proquest.umi.com/pqweb?did=804771461&Fmt=4clientld>
- Horwitz, E. K. (1995). Student affective reactions and the teaching and learning of foreign languages. *International Journal of Educational Research*, 23 (7), 573-579.
- Horwitz, E. (1988). The beliefs about language learning of beginning university foreign language students. *The Modern Language Journal*, 72, 283-294.
- Horwitz, E. (1988). The beliefs about language learning of beginning university foreign language students. *The Modern Language Journal*, 72, 283-294.
- Horwitz, E. K. (1999). Cultural and situational influences on foreign language learners' beliefs about language learning: a review of BALLI studies. *System*, 27, 557- 576.
- Horwitz, E. K., Bresslau, B., Dryden, M., McLendon, M. E. and Yu, J. (1997). A Graduate Course Focusing on the Second Language Learner. *The Modern Language Journal*, 81 (4), 518 – 526.
- Horwitz, E.K. (1985) Using student beliefs about language learning and teaching in the foreign language methods course. *Foreign Language Annals*, 18(4), 333-340.
- Horwitz, E.K. (1999). Cultural and situational influences on foreign language learners' beliefs about language learning: A Review of BALLI Studies [Special Issue]. *System*, 27, 557-576.
- Horwitz, E.K., Horwitz, M.B. & Cope, J. (1986). Foreign language classroom anxiety. *Modern Language Journal*, 70 (2), 125–132.
- Kukulka-Hulme, A. (2005). *The mobile language learner—now and in the future*. Paper presented at the Language Learning Symposium, Umea University, Sweden. Retrieved April 28, 2006, from <http://www2.humlab.umu.se/symposium2005/program.htm>
- Kukulka-Hulme, A. and Shield, L. (2007) An overview of mobile assisted language learning: Can mobile devices support collaborative practice in speaking and listening? http://vsportal2007.googlepages.com/Kukulka_Hulme_and_Shield_2007.pdf
- Loy, W. W. (2000). Globalization and knowledge economy. In A. H. Teich, S. D. Nelson, C. McEnaney, & S. J. Lita. *AAAS science and technology policy yearbook 2000* (Eds., pp. 65-99). Retrieved October 20, 2005, from <http://www.aaas.org/spp/yearbook/2000/Part3.pdf>
- Mason, J. (2004). Are beliefs believable? *Mathematical Thinking and Learning*, 6(3), 343-351.
- Mori, Y., Sato, K., & Shimizu, H. (2007). Japanese language students' perceptions on kanji learning and their relationship to novel kanji word learning ability. *Language Learning*, 57, 57–85.
- Norbrook, H., & Scott, P. (2003). Motivation in mobile modern foreign language learning. In J. Attewell, G. Da Bormida, M. Sharples, & C. Savill-Smith (Eds.), *MLEARN 2003: Learning with mobile devices* (pp. 50-51). London: Learning and Skills Development Agency. Retrieved June 20, 2006, from <http://www.lsda.org.uk/files/pdf/1421.pdf>
- Peacock, M. (2001). Pre-service ESL teachers' beliefs about second language learning: A longitudinal study. *System* 29(2), 177-195.
- Rosell-Aguilar, F. (2007). Top of the Pods - In Search of a Podcasting "Podagogy" for Language Learning. *Computer Assisted Language Learning*, 20 (5), 471-492. Retrieved January 24, 2008, from <http://www.informaworld.com/10.1080/09588220701746047>
- Sakui, K. & Gaies, S. J. (1999). Investigating Japanese learners' beliefs about language learning. *System*, 27 (4), 473-492.
- Schulz, R. A. (2001). Cultural differences in student and teacher perceptions concerning grammar instruction and corrective feedback: USA-Columbia. *The Modern Language Journal*, 85 (2), 244-258.
- Stanley, G. (2006) Podcasting: Audio on the internet comes of age. *TESL-EJ* 9 (4). Retrieved November 15th, 2007 from <http://www-writing.berkeley.edu/TESL-EJ/ej36/int.pdf>
- Tse, L. (2000). Student perceptions of foreign language study: A qualitative analysis of foreign language autobiographies. *The Modern Language Journal*, 84 (1), 69-84.
- Zhang, D. & Zhou, L. (2003). Enhancing e-learning with interactive multimedia [Electronic version]. *Information Resource Management Journal*, 16 (4), 1-14. Retrieved March 29, 2005, from <http://proquest.umi.com/pqdweb?did=411106401&Fmt=4&clientld=20894&RQT=309&VName=PQD>
- Zielke, M. A. (2007). *Emergent pedagogical agents as assistive technology in creative, collaborative and expansive projects*. Doctoral Dissertation, The University of Texas at Dallas. UMI Number: 3256516.
- Zukowski, A. A. (2007). iPods offer gateways for new learning experiences. *Momentum* (Washington, D.C.) 38 (1), 102-103.

APPENDIX

| YABANCI DİL ÖĞRENME YARGILARI ENVANTERİ (BALLI) | | | | | | | | | |
|---|---|------------|-------------|------------------------|-----------|---|---|---|---|
| Lütfen adınızı yazmayınız ve aşağıdaki her bir ifade ile ilgili gerçek duygularınızı dürüstçe belirtiniz. | | | | | | | | | |
| Her bir madde ile ilgili yanıtınızı aşağıdaki beş seçenekten birine X işareti koyarak veriniz: | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | | | | | |
| Kesinlikle katılmıyorum | Katılmıyorum | Fikrim yok | Katılıyorum | Kesinlikle katılıyorum | | | | | |
| Madde: | | | | | X koyunuz | | | | |
| 1 | Çocuklar bir yabancı dili yetişkinlere göre daha kolay öğrenir. | | | | 1 | 2 | 3 | 4 | 5 |
| 2 | Bazı insanlar yabancı bir dili öğrenmelerini kolaylaştıran özel bir yetenekle doğar. | | | | 1 | 2 | 3 | 4 | 5 |
| 3 | Bazı dillerin öğrenilmesi diğerlerine göre daha kolaydır | | | | 1 | 2 | 3 | 4 | 5 |
| 4 | Öğrenmeye çalıştığım dil 1) çok zor bir dildir, 2) zor bir dildir, 3) orta zorlukta bir dildir, 4) kolay bir dildir, 5) çok kolay bir dildir. | | | | 1 | 2 | 3 | 4 | 5 |
| 5 | Diğer insanlarla yabancı dilde konuşmaktan utanırım/çekinirim. | | | | 1 | 2 | 3 | 4 | 5 |
| 6 | En sonunda bu dili çok iyi konuşabileceğime inanıyorum. | | | | 1 | 2 | 3 | 4 | 5 |
| 7 | Yabancı bir dili mükemmel bir aksanla konuşmak önemlidir. | | | | 1 | 2 | 3 | 4 | 5 |
| 8 | Yabancı bir dili konuşmak için, o dili konuşan yabancı ülkenin kültürünü bilmek gerekir. | | | | 1 | 2 | 3 | 4 | 5 |
| 9 | Doğru söylemeyi öğreninceye kadar yabancı dilde bir şey söylememelisin. | | | | 1 | 2 | 3 | 4 | 5 |
| 10 | Bir yabancı dili konuşabilen bir kimse için başka bir dili öğrenmek daha kolaydır. | | | | 1 | 2 | 3 | 4 | 5 |
| 11 | Yabancı bir dili o dilin konuşulduğu ülkede öğrenmek daha iyidir. | | | | 1 | 2 | 3 | 4 | 5 |
| 12 | Öğrenmeye çalıştığım dili konuşan birini duyarsam, pratik yapmak için gidip onunla konuşurum. | | | | 1 | 2 | 3 | 4 | 5 |
| 13 | Yabancı dilde bir sözcüğü bilmiyorsanız, onu tahmin edersiniz. | | | | 1 | 2 | 3 | 4 | 5 |
| 14 | Bir kimse dil öğrenmeye günde bir saat harcarsa, akıcı bir şekilde konuşmaya başlaması ne kadar zaman alır? 1)1 yıldan az, 2) 1-2 yıl, 3) 3-5 yıl, 4) 5-10 yıl, 5) Günde 1 saat çalışarak dil öğrenilmez. | | | | 1 | 2 | 3 | 4 | 5 |
| 15 | Yabancı dil öğrenme yeteneğim var. | | | | 1 | 2 | 3 | 4 | 5 |
| 16 | Yabancı bir dili öğrenmek çoğunlukla çok sayıda yeni sözcük öğrenmekle olur. | | | | 1 | 2 | 3 | 4 | 5 |
| 17 | Çok tekrar ve pratik yapmak önemlidir. | | | | 1 | 2 | 3 | 4 | 5 |
| 18 | Başka insanların önünde yabancı dilde konuştuğumda utanırım. | | | | 1 | 2 | 3 | 4 | 5 |
| 19 | Başlangıçta hata yapmana izin verilirse, bu hatalar yerleşir ve daha sonra onlardan kurtulmak zor olur. | | | | 1 | 2 | 3 | 4 | 5 |
| 20 | Yabancı bir dili öğrenmek çoğunlukla çok sayıda gramer/dilbilgisi kuralı öğrenmekle olur. | | | | 1 | 2 | 3 | 4 | 5 |
| 21 | Dil laboratuvarında pratik yapmak önemlidir. | | | | 1 | 2 | 3 | 4 | 5 |
| 22 | Kadınlar yabancı dil öğrenmede erkeklerden daha iyidir. | | | | 1 | 2 | 3 | 4 | 5 |
| 23 | Bu dili çok iyi öğrenirsem, onu kullanmak için çok fırsatım olacaktır. | | | | 1 | 2 | 3 | 4 | 5 |
| 24 | Yabancı bir dili konuşmak onu anlamaktan daha kolaydır. | | | | 1 | 2 | 3 | 4 | 5 |
| 25 | Yabancı bir dili öğrenmek diğer okul derslerini öğrenmekten farklıdır. | | | | 1 | 2 | 3 | 4 | 5 |
| 26 | Yabancı bir dili öğrenmek çoğunlukla çeviri yapmakla olur. | | | | 1 | 2 | 3 | 4 | 5 |
| 27 | Bu dili çok iyi öğrenirsem, bu iyi bir iş bulmama yardımcı olacak. | | | | 1 | 2 | 3 | 4 | 5 |
| 28 | İngilizcede okuma ve yazma, konuşma ve duyduğunu anlamadan daha kolaydır. | | | | 1 | 2 | 3 | 4 | 5 |
| 29 | Matematik ve fen'de iyi olan insanlar yabancı dil öğrenmede iyi değillerdir. | | | | 1 | 2 | 3 | 4 | 5 |
| 30 | Türkler, bir yabancı dili öğrenmenin önemli olduğunu düşünür. | | | | 1 | 2 | 3 | 4 | 5 |
| 31 | Bu dili, onu ana dili olarak konuşan insanları daha iyi tanımak için öğrenmek istiyorum. | | | | 1 | 2 | 3 | 4 | 5 |
| 32 | Birden fazla dil konuşan insanlar çok zekidirler. | | | | 1 | 2 | 3 | 4 | 5 |
| 33 | Türkler yabancı dil öğrenme konusunda iyidirler. | | | | 1 | 2 | 3 | 4 | 5 |
| 34 | Herkes bir yabancı dili konuşmayı öğrenebilir. | | | | 1 | 2 | 3 | 4 | 5 |

UZAKTAN EĞİTİM İLE TEKNİK ÖĞRETMENLERİN BİLGİ İHTİYACININ KARŞILANMASI

SUPPORTING THE TECHNICAL TEACHERS' KNOWLEDGE NEED BY DISTANCE EDUCATION

Yrd. Doç. Dr. Cüneyt Birkök
Sakarya Üniversitesi Eğitim Fakültesi
cuneyt@birkok.net

Turan Tolga Vuranok
MEB Şişli Teknik ve Endüstri Meslek Lisesi
vuranok@gmail.com

Özet

Bu araştırmada üniversitelerce yürütülecek uzaktan eğitimlerine dayalı bir programın, teknik öğretmenlerin bilgi ihtiyaçlarının karşılanmasına etkisinin ne düzeyde olacağı incelenmektedir. Çalışmada teknik öğretmenlerin konuya ilişkin görüşlerini alabilmek için bir anket geliştirilmiştir. Ankete katılan 221 teknik öğretmenlerden oluşan örneklemi betimleyen veriler analiz edilerek değerlendirilmiştir.

Araştırmanın sonuçlarına göre teknik öğretmenler, zamanla unuttukları bilgileri hatırlamaya ve yeni bilgileri edinmeye ihtiyaç duymaktadırlar. Teknik öğretmenlerin bilgi ihtiyacının karşılanması, yüz yüze eğitimlerle desteklenmiş internet üzerinden gerçekleştirilecek eğitimler aracılığıyla sağlanmalıdır. Üniversiteler, oluşturacakları eğitim programları ile teknik öğretmenlerin bilgi ihtiyacını karşılamalıdır. Bu amaçla hazırlanacak bir program teknik eğitim sistemimizdeki bir boşluğu doldurarak toplumun gelişmesine ve sanayinin ihtiyaç duyduğu donanımlı ara elemanların yetiştirilmesine önemli katkılar sunacaktır.

Anahtar Kelimeler: Bilgi Çağı, Uzaktan Eğitim, Teknik Öğretmen, Eğitim Programları, Yaşam Boyu Öğrenme

Abstract

In this study, level of effect of a distance education based program carried out by university to support the technical teachers' knowledge need is examined. A questionnaire is generated in order to get technical teachers' opinions related with the subject in the study. Data that describe the sample consisting of 221 technical teachers who participated in the survey are analyzed and evaluated.

According to the results of the survey, technical teachers need to be informed and reminded of their earlier knowledge which they received through different educational programs but forgot in the course of time. The information need of technical teachers must be provided via internet education supported with face to face trainings. Universities must meet the technical teachers' need of information by organizing educational programs. A program prepared for this reason, will fulfill the emptiness in our system of technical education, thus presenting important contribution to social development and bringing up qualified staff which the industry is in need.

Keywords: Information Age, Distance Education, Technical Teacher, Education Program, Lifelong Learning

Giriş

Tarihin başlangıcından bugüne dek geçen süre boyunca toplumsal yaşamın şekli, işleyişi ve kuralları sürekli olarak değişmektedir (Gültan, 2003: 47). Bilim ve teknolojiadaki gelişmeler son yıllarda yaşanmakta olan sosyokültürel değişimi hızlandırmaktadır (Broadbent, 2003: 439). Bilgi çağında bilginin kilit kaynak haline gelmesi eğitilmiş insanların toplum içerisindeki yerini, önemini ve sorumluluklarını arttırmıştır. Bir insanın eğitilmiş insan olarak nitelendirilebilmesi için bilgiye ulaşmayı bilmesi ve bilgiyi anlayabilme yeteneğine sahip olması gerekir (Drucker, 1993: 293, 301). Her alanda yaşanmakta olan gelişmeler sebebiyle bir insanın bilmesi gereken mevcut bilgi birikiminin en fazla iki yılda bir iki kat arttığı bir gelişim çağında öğretmenlerin de bu gelişmeleri takip ederek kendisini yenilemesi gerekmektedir (Özkan, 2005). Çalışmada, teknik öğretmenlerin (T.Ö.) unuttukları bilgilerin hatırlatılmasında ve yeni bilgileri edinmelerinin sağlanmasında üniversitelere yürütülecek ve yüz yüze eğitimlerle de desteklenmiş internet üzerinden gerçekleştirilecek bir eğitim programının etkisinin ne derece olabileceğinin ortaya koyulması amaçlanmıştır.

Bu doğrultuda araştırmada sınanan hipotezler ise şunlardır:

- Teknik öğretmenler çeşitli eğitim programlarında kazandıkları bilgilerin bir kısmını zamanla unutmaktadır.
- Teknik öğretmenlerin üretilen yeni bilgileri öğrenmesi gereklidir.
- Teknik öğretmenlerin bilgi ihtiyacının karşılanması, yüz yüze eğitimlerle desteklenmiş internet tabanlı eğitimler aracılığı ile sağlanabilir.
- Üniversiteler, belli bir programla teknik öğretmenlerce unutulmuş olan ve üniversitelerce yeni üretilmiş olan bilgileri teknik öğretmenlere sunmalıdır.

Piyasanın rekabetçi ortamına uyum sağlayabilen bireyleri yetiştirebilmeleri için T.Ö.'lerin kendilerini bu sürece uydurmaları ve yaşam boyu öğrenen bireyler olmaları gerekir. Kendilerine yönelik geliştirilecek eğitim programlarının mesai dışı zamanlarda da gerçekleştirilebilir olması ve her yerden ulaşılabilir olması programın başarısında önemli bir etkidir.

Araştırmanın Önemi

Öğretmenler gerekli, yeterli ve güncel bilgi ile donatılmadığı takdirde, yeni nesilleri modern toplumun ihtiyaçları doğrultusunda eğitemeyeceklerdir. Bu durumda sağlıklı bir toplumsal yapının ortaya çıkması beklenemez. Örneğin yeni mezunların piyasalarda kullanılan en son teknolojiler hakkında en azından bilgi sahibi olmaları gerekmektedir. Çağın gereklerine uyum sağlamış insanları eğitebilecek yeterliliklere sahip öğretmenleri yetiştirmek bir ülkenin en başta gelen görevlerinden birisidir. Gelişmiş ülkelere bakıldığında en önemli avantajlarının eğitilmiş insan gücüne sahip olmak olduğu görülür (Gelen, 2008: 41). Ülke kalkınması ve gelişiminin sağlanması için eğitilmiş insanları yetiştirecek öğretmenlerin bilgi ihtiyacının uygun ortam ve yöntemlerle karşılanması gerekir.

Araştırmanın Yöntemi

Araştırmada bir konuda hali hazırda durumun ortaya koyulmasında kullanılan betimsel model kullanılmıştır (Özdamar, 1999: 7). Araştırma verileri betimsel istatistikler kullanılarak analiz edilmiştir. Katılımcılara anketler hem limesurvey programı kullanılarak internet aracılığı ile elektronik ortamda, hem de basılı olarak uygulanmıştır. Anket sonuçlarından elde edilen verilerin istatistiksel çözümleri SPSS 11.5 istatistik programı kullanılarak yapılmıştır. Bu aşamada örneklemi betimleyen tüm değişkenlerin sayı ve yüzdelik dağılımlarını içeren tablolar oluşturulmuştur.

Araştırma konusu tespit edildikten sonra hazırlanan hipotezler doğrultusunda araştırma soruları oluşturulmuştur. Bu aşamada literatür taranmaya devam edilerek kavramsal çerçeve ve anket zenginleştirilmiş ve araştırma sorularına gerektiğince yenileri eklenmiş, hipotezler ve araştırma soruları yeniden düzenlenerek güncellenmiştir. Araştırma sorularından cevabı literatürde tam olarak bulunamayanlarının cevapları, anket sorularına dönüştürülmüştür. Bu anket uygulanmadan önce, konu hakkındaki uzman kişilere sunularak fikir ve görüşleri alınmıştır. Tekrar düzenlenen anket, önce küçük bir grup T.Ö.'e ön test olarak uygulanıp her bir soruyu nasıl anladıkları,

anketi doldururken nasıl değerlendirdikleri incelenmiş, anket hakkındaki görüşleri alınmıştır. Bu veriler doğrultusunda anket tekrar düzenlenerek son halini almıştır.

Evren ve Örneklem

Araştırmanın evrenini İstanbul genelinde çalışmakta olan tüm T.Ö.'ler oluşturmaktadır. Anketlerin uygulanması esnasında İstanbul'da Erkek Teknik Eğitim Genel Müdürlüğüne bağlı olarak faaliyet gösteren toplam 65 mesleki ve teknik okuldaki 11 tanesi seçilmiştir. Örneklemi oluşturan T.Ö.'lerin çalıştığı okullar İstanbul'un her iki yakasından ve farklı bölgelerinden eşit dağılımlı bir şekilde seçilerek sonuçların geneli temsil etmesi sağlanmıştır. İstanbul'da çalışmaya konu olan mesleki ve teknik branşlarda görev yapan toplam 2225 T.Ö.'den temsil kabiliyeti olan 221 tanesine ulaşılmıştır.

Araştırmaya katılan T.Ö.'lerin demografik özellikleri şu şekildedir. T.Ö.'lerin % 10'unun kadın, % 90'ının ise erkek olduğu görülmektedir. Kadın öğretmen oranı diğer meslek grupları ile kıyaslandığında oldukça düşüktür. Eğitim durumlarına bakıldığında % 89.1'inin lisans mezunu, geriye kalan % 9.9'unun ise yüksek lisans mezunu olduğu görülmektedir. Halen yüksek lisans yapmakta olanların oranı ise % 12.2'dir.

Bulgular ve Değerlendirmeler

a- Teknik Öğretmenlerin Yaşam Boyu Bilgi İhtiyacı

Araştırma anketi ile teknik öğretmenlerin (T.Ö.) yaşam boyu bilgi ihtiyacı, bu ihtiyacın karşılanmasındaki ortam ve kurum tercihleri ile program talepleri tespit edilerek üniversitelerce gerçekleştirilecek uzaktan eğitimlere dayalı bir eğitim programı önerisine ilişkin görüşleri alınmıştır.

Araştırmadan elde edilen T.Ö.'lerin yaşam boyu bilgi ihtiyaçlarına ilişkin bulgular şöyle ortaya konabilir. T.Ö.'lerin % 72.4'ü yeni eğitimler alarak kendilerini geliştirmelerinin önündeki en önemli engel olarak zaman kısıtlılığını, % 60.6'sı yoğun iş temposunu görmekteyler. Bununla birlikte katılımcıların % 41.2'si son beş yılda herhangi bir eğitim almadıklarını ifade etmişlerdir. Son beş yılda meslekleri ile ilgili herhangi bir eğitim almış olanların % 69.3'ü bu eğitimlerin konusunu belirlerken bilinçli olarak eksiklik hissettikleri konuları tespit edip bu konulardaki eğitimlere katılmaktadırlar. % 94.1'i eğitimlerinde sunuş (anlatım) yolunu kullanırken, ancak %26.7'si işbirlikli öğrenme, %14.9'ü tam öğrenme gibi güncel eğitim stratejilerinden faydalanmaktadırlar. Üniversitede gördükleri derslerden en çok faydasını gördükleri dersler % 92.76 oranla mesleki ve teknik dersler ve % 54.75 oranla öğretmenlik meslek bilgisi dersleridir. Bu bulguya uyumlu bir şekilde % 84.9'u mesleki ve teknik derslerin, % 44.5'i öğretmenlik meslek bilgisi derslerinin kendilerine hatırlatılmasını istediklerini beyan etmişlerdir. T.Ö.'lerin % 53.8'i zaman zaman, % 29.4'ü ise nadiren öğrencilerinin farklı bilgi kaynaklarını etkin olarak kullanarak aradıkları bilgiye ulaşılabildiklerini ifade etmektedirler. Dolayısıyla T.Ö.'ler, kendi yetiştirdikleri öğrencilerin bilgiye ulaşmasını bilen öğrenciler olmadığını düşünmektedirler (Vuranok, 2009: 92, 97, 102, 103, 105, 108, 126). T.Ö.'lerin yaşam boyu bilgi ihtiyacına ilişkin diğer bulgular ise Tablo 1'de gösterilmektedir.

Tablo 1: Teknik Öğretmenlerin Yaşam Boyu Bilgi İhtiyacı

| Durum | Değişken | Sayı (N) | Yüzdeler (%) |
|--|-----------|----------|--------------|
| T.Ö.'lerin Yeni Bilgileri Öğrenme Talebi | Evet | 216 | 97.8 |
| | Hayır | 3 | 1.5 |
| | Cevap yok | 2 | 0.9 |
| Üniversitede Öğrenilen Bilgilerin Unutulma Durumu | Hayır | 116 | 52.5 |
| | Evet | 104 | 47 |
| | Cevap yok | 1 | 0.5 |
| Üniversitedeki Yeni Bilgiye Ulaşılabilirlik Durumu | Hayır | 145 | 65.6 |
| | Evet | 74 | 33.5 |
| | Cevap yok | 2 | 0.9 |

Kaynak: (Vuranok, 2009: 91, 92, 104)

Tablo 1'deki T.Ö.'lerin yeni bilgileri öğrenme talebine ilişkin bulgular değerlendirildiğinde % 97.8'inin meslek hayatında, mezun olmalarından sonra üretilen yeni bilgileri öğrenmeye ihtiyaç duydukları görülmektedir. Neredeyse tümünün hem fikir olduğu bu konu teknik eğitim sisteminin de en önemli sorunlarından biri olarak karşımıza çıkmaktadır. Mezuniyetlerinden sonra üretilen yeni bilgilere olan ihtiyaç süreklilik arz etmektedir. Yaşam boyu süren bilgi ihtiyacının karşılanması amacıyla hazırlanacak bir program, meslek hayatları boyunca sürmelidir.

T.Ö.'lerin üniversitede öğrenilen bilgilerin unutulma durumuna ilişkin bulgular değerlendirildiğinde % 47'sinin üniversitede öğrendikleri bilgilerin bir kısmını mezuniyetleri sonrasında unuttukları ve ders verirken unutmaya sebebiyle sıkıntı çektikleri görülmektedir. Ayrıca bu oran unutmaya sebebiyle ders verirken sıkıntı çekmediğini söyleyen % 52.5'inin de gelecekte bu tip sorunlar yaşayabileceğini göstermektedir. Tablo 4'deki bulgulara göre ise % 75.6'sı önceki eğitimlerde aldıkları derslere ait önemli konuların öznetlerinin üniversiteler tarafından kendilerine bildirilerek bilgilerini tazelemeyi istediklerini ifade etmektedirler. Dolayısıyla öğretmenlerin önemli bir bölümünün mezuniyetleri sonrasında üniversitede öğrendikleri bilgilerin bir kısmını unuttuğu ve bu sebeple sıkıntı yaşadıkları söylenebilir.

T.Ö.'lerin üniversitedeki yeni bilgiye ulaşılabilirlik durumuna ilişkin bulgulara göre % 65.6'sının üniversitelerde öğretilen yeni bilgilere ulaşamadıklarını ifade ettikleri görülmektedir. Tablo 4'deki bulgulara göre ise % 87.8'i önceki eğitimlerinde aldıkları derslere ait önemli konulardaki yeniliklerin öğretim üyeleri tarafından kendilerine bildirilmesini istemektedirler. Bu bulgular yeni bilgileri edinmeye çok ciddi bir oranda ihtiyaç duyduklarını göstermektedir. T.Ö.'lerin bilginin üretildiği kurum olan üniversitelerde üretilen yeni bilgilerden haberdar olamamaları, mesleki ve teknik okullarda okumakta olan öğrencilerin de yeni bilgileri edinmemelerine sebep olmaktadır. Öte yandan mezuniyetleri sonrasında üniversiteler ile mezunları arasındaki iletişimin kesilmesi nedeniyle üniversiteler de mezunlarından geri bildirimler alamamaktadırlar. Hâlbuki üniversitelerin, öğretmenle iletişim kurarak eğitimler esnasında yaşadıkları sorunlardan ve ihtiyaçlarından haberdar olmaları, verdikleri eğitimleri bu yönde geliştirmelerini kolaylaştırabilir. Üniversiteler tarafından gerçekleştirilecek bilgi ihtiyacını karşılama amaçlı programlar hem T.Ö.'lere, hem de üniversitelere faydalı olacak ve önemli bir boşluğu dolduracaktır.

b- Eğitim Programlarının Gerçekleştirileceği Ortamlar

T.Ö.'lerin bilgi ihtiyacının karşılanmasındaki ortam tercihleri ise Tablo 2'de incelenmiştir.

Tablo 2: Eğitim Ortamı Tercihi

| Cevap | Sayı (N) | Yüzdeler (%) |
|------------------------------------|----------|--------------|
| Sınıf ve internet ortamı bir arada | 148 | 67 |
| Sınıf ortamı | 33 | 15 |
| Diğer (Laboratuvar) | 19 | 8.6 |
| İnternet ortamı | 17 | 7.7 |
| Cevap yok | 4 | 1.8 |

Kaynak: (Vuranok, 2009: 111)

Tablo 2'deki bulgulara göre T.Ö.'lerin % 67'sinin eğitim almaları için kullanılacak en uygun ortamın sınıf ve internet ortamının bir arada kullanılması olacağını ifade ettiği görülmektedir. Kendilerine yönelik olarak sürdürülecek bilgi aktarma amaçlı bir programın

gerçekleştirilmesi esnasında sınıf ve internet ortamının bir arada kullanılmasını uygun bulmaktadırlar. Fakat uzaktan eğitimler geleneksel eğitime karşı bir seçenek değil geleneksel eğitim süreçlerini tamamlayıcı bir eğitim teknolojisi olarak görülmelidir (Uşun, 2006: 21).

Uzaktan eğitim araçlarının kullanılması gereği bir başka bulgu ile şöyle ortaya konabilir. Bilgisayar ve internete erişim konusundaki imkân ve becerilerine yönelik bulgulara göre T.Ö.'lerin % 93,2'si bilgisayar kullanımı becerisi seviyelerini orta, iyi ve ileri seviye olarak ifade ederken, % 91,8'i kolayca internete erişim imkânına sahip olduklarını söylemektedirler. % 72,9'u ise günde bir saatten fazla zamanını internette geçirmektedir. İnterneti kullanmak için tercih ettikleri saatler incelendiğinde % 49,3 oranla gece mesai saatleri dışında, % 34,8 oranla ise gün boyunca tercihlerinin yapıldığı görülmektedir. Bu iki tercihin kesişimi olan mesai dışındaki saatler, hem işlerini yapmalarını engellemeyen bir zaman dilimi olacak hem de interneti kullandıkları bir süreci kapsayacaktır (Vuranok, 2009: 112, 114, 116).

c- Eğitim Programlarını Gerçekleştirecek Kurumlar

T.Ö.'lerin bu eğitimleri gerçekleştirecek kurum tercihleri de çok önemlidir ve bu durum Tablo 3'de incelenmiştir.

Tablo 3: Bilgi Aktarımında Kullanılacak En Uygun Yol (Kurum Tercih)

| Cevap | Sayı (N) | Yüzdellik (%) |
|--|----------|---------------|
| Özel sektör kurumlarınca verilecek ve yüz yüze gerçekleştirilecek eğitimlerle | 83 | 37,5 |
| Üniversitelere verilecek yüz yüze eğitimlerle desteklenmiş internet üzerinden gerçekleştirilecek eğitimlerle | 78 | 35,4 |
| MEB tarafından verilecek ve yüz yüze gerçekleştirilecek hizmet içi eğitim kurs ve seminerleriyle | 60 | 27,1 |

Kaynak: (Vuranok, 2009: 118)

Tablo 3'deki bulgular incelendiğinde, bilgi sağlayacak kurum ve yolun %37,5 oranla özel sektör kurumlarınca verilecek ve yüz yüze gerçekleştirilecek eğitimler olarak belirlenmesine karşılık bu tercihlerinin çok net olmadığı görülmektedir. Üniversite, özel sektör kuruluşları ve MEB'in amaçları ve görevleri birbirinden farklıdır. Bununla birlikte bu kurumların öğretim sağlama noktasında farklı yönleri ön plana çıkmaktadır. Bu sebeple öğretmenlerin tercihleri yakın oranlarda dağılmış olabilir. Ancak vurgulanması gerekir ki, üniversiteler bilginin üretildiği ve bilgiyi bilimsel olarak en uygun şekilde sunabilecek kurumlardır. Özel sektör kurumları ise bilimsel bilgiyi uygulamada kullanan kurumlardır. T.Ö.'lerin yetiştirdikleri öğrenciler, bu kurumlarda istihdam etmektedirler. Dolayısıyla öğrencilerin sahip olması gereken nitelikleri en iyi değerlendirecek kurumların özel sektör kurumları olduğu düşünülebilir. MEB ise bağlı oldukları kurumdur. Eğitimlerini ödüllendirecek, zaman açısından gerekli kolaylıkları sağlayacak resmi kurum MEB'dir. Bu eğitimlere MEB'in destek vermesi eğitimin başarılı olabilmesi açısından oldukça önemlidir.

Nitekim araştırmada eğitim programını yürütecek kurumun belirlenmesinde katıldıkları eğitim programları sıralamaları istenerek en çok yararlandığı kurumlar da tespit edilmiştir. Buna göre T.Ö.'ler, şu ana kadar aldıkları eğitimlerden 1. sırada % 53 oranında lisans eğitiminden faydalandıklarını ifade ettikleri görülmektedir. % 9,9'u ise lisans eğitimi şimdikiye kadar aldıkları eğitimler arasında ikinci sıraya koymaktadırlar (Vuranok, 2009: 119). Yüksek lisans ve doktora eğitimi almış ve almakta olanların sayısının düşük olduğu düşünülürse üniversite eğitimlerinden diğer kurumlardan aldıkları eğitimlere göre çok daha fazla faydalandıklarını ifade ettikleri görülmektedir. Bu sonuçtan hareketle gerçekleştirilecek bilgi sunma amaçlı bir programın üniversitelere yürütülmesi gerektiği söylenebilir. T.Ö.'lerin program taleplerini ortaya koyabilmek için öncelikle bilgi tazeleme taleplerinin olup olmadığı tespit edilerek Tablo 4'de incelenmiştir.

Tablo 4: Teknik Öğretmenlerin Üniversite Kurumlarından Program Talepleri

| Durum | Değişken | Sayı (N) | Yüzdellik (%) |
|--|-----------|----------|---------------|
| Önceki Eğitimlerde Aldıkları Bilgilerinin Üniversitelere Tazelenme Talebi | Evvet | 167 | 75,6 |
| | Hayır | 44 | 19,9 |
| | Cevap yok | 10 | 4,5 |
| Önceki Eğitimlerde Aldıkları Derslerdeki Yeni Bilgilerin Üniversitelere Kendilerine Aktarılma Talebi | Evvet | 194 | 87,8 |
| | Hayır | 23 | 10,4 |
| | Cevap yok | 4 | 0,9 |

Kaynak: (Vuranok, 2009: 121)

Tablo 4'de önceki eğitimlerde aldıkları bilgilerinin üniversitelere tazelenme taleplerine ilişkin bulgular değerlendirildiğinde T.Ö.'lerin % 75,6'sının önceki eğitimlerde aldıkları bilgilerin üniversitelere tazelenmesini istedikleri görülmektedir. Bu oranın büyüklüğü üniversitelere olan güvenin ve unuttukları bilgileri hatırlamaya olan isteklerinin bir göstergesidir.

Önceki eğitimlerde aldıkları derslerdeki yeni bilgilerin üniversitelere kendilerine aktarılma taleplerine ilişkin bulgular değerlendirildiğinde T.Ö.'lerin % 87,8'inin önceki eğitimlerinde aldıkları derslere ait önemli konulardaki yeniliklerin üniversiteler tarafından kendilerine bildirilmesini istedikleri görülmektedir. Bu oran önceki eğitimlerde aldıkları bilgilerin üniversitelere tazelenmesine yönelik % 75,6'lık talepten de yüksektir. O halde geliştirilecek bir program eski bilgilerin hatırlatılmasını da içermeli fakat yeni bilgilerin aktarılmasını daha ön planda tutmalıdır. Tablo 1'deki bulgulara göre % 97,8'inin meslek hayatında mezuniyetlerinde sonra üretilmiş olan yeni bilgileri öğrenmeye ihtiyaç duymaktadır. Bu oran da Tablo 4'deki bulgularla uyumlu olarak, kendilerine yönelik yeni bilgileri aktaran bir programa olan taleplerini ortaya koymaktadır.

d- Eğitim Programı Önerisi: Üniversitenin Uzaktan Eğitimine Olan İhtiyaç

Öğretmenlerin üniversite programının katkısına olan inançlarına ilişkin durum aşağıdaki Tablo 6'da incelenmiştir.

Tablo 6: Üniversite Programlarının Katkısı

| Cevap | Sayı (N) | Yüzdellik (%) |
|-----------|----------|---------------|
| Evvet | 196 | 88,7 |
| Hayır | 16 | 7,2 |
| Cevap yok | 5 | 2,3 |
| Diğer | 4 | 1,8 |

Kaynak: (Vuranok, 2009: 125)

Tablo 6'da üniversitelere uygulanacak uzaktan eğitim yolu ile gerçekleştirilecek bir yetiştirme programlarına katılarak niteliklerini koruyup, yeni nitelikler kazanacaklarını düşünüp düşünmedikleri sorularak alınan sonuçlar gösterilmiştir. % 88,7'si üniversitelere kendilerine yönelik uygulanacak eğitim programlarına katılarak niteliklerini koruyacaklarını ve yeni nitelikler kazanacaklarını düşünmektedirler. Dolayısıyla araştırma sonuçları, öğretmenlerin üniversite kurumu tarafından verilecek uzaktan eğitime ihtiyaç duyduklarını göstermektedir.

T.Ö.'lerin eğitim programlarının gerçekleştirilme biçimine ilişkin istek ve beklentilerine ilişkin bulgular ise şu şekildedir. Bugüne kadar aldıkları üniversite eğitiminde mesleklerinde yararını gördükleri yaklaşık ders sayısını ortalama 8 ders olarak ifade etmişlerdir. Bu sayı ortalama olarak bir yüksek lisans programında verilen ders sayısına denk bir değerdir. %87,8'ine göre ise eğitim içeriklerinin 15 sayfanın altında özet bilgiler gerekmektedir. Eğitimlerin gerçekleştirileceği program dönemleri olarak % 42,5 oranla en fazla iki dönemin başlarına denk gelen eylül ve şubat aylarını, % 30,3'lük oranla da üç dönemin başları olan eylül, şubat ve haziran aylarını uygun bulmaktadır. Buna karşılık, haziran aylarındaki eğitimleri kısa tutmak kaydı ile eğitimlerin üç dönemin başlarında gerçekleştirilmesi bilgedeki değişime zamanında ulaşılabilmesi açısından daha uygun olabilir (Vuranok, 2009: 101, 113, 114, 116, 127, 130).

Sonuç

Yukarıda ortaya konulan ve değerlendirilen bulguların işaret ettiği sonuçlara göre;

Ülke sanayisinin ihtiyaç duyduğu ara elemanları yetiştiren T.Ö.'ler mezuniyetleri sonrasında üniversiteden edindikleri bilginin bir kısmını zamanla unutmakta, mezuniyetleri sonrasında üretilen yeni bilgilere de sistematik bir şekilde ulaşamamaktadırlar. Zaman kısıtlılığı, yoğun iş temposu gibi sebeplerden dolayı yeterince yaşam boyu eğitim faaliyetleri gerçekleştirememektedirler. Son beş yılda aldıkları eğitimlerin sayısı olması gerekenin çok altındadır. Farklı kurumlar tarafından T.Ö.'lere sunulan mesleki konulardaki eğitimlerin sayısı da yetersizdir. Mesleki konular ve öğretmenlik meslek bilgisi alanlardaki yeni bilgilere erişememeleri, istenen seviyede eğitilmiş bireyleri yetiştirememelerine ve verdikleri eğitimlerde yeni eğitim stratejilerini etkili olarak kullanamamalarına sebep olmaktadır.

Böyle bir durum karşısında T.Ö.'lerin bilgi ihtiyacının karşılanması amacıyla gerçekleştirilecek bir program tüm yurtta görev yapan öğretmenlerin çoğunluğuna ulaşabilmelidir. Zaman kısıtlılığı, mekân problemleri, eğitim verilen kuruma uzaktan yaşamak gibi sorunların aşılabilmesi için bu programların gerçekleştirilmesinde internetin sağladığı olanaklardan faydalanılmalıdır. T.Ö.'ler bilgisayarı ve interneti etkin olarak kullanmaktadırlar. Günlük hayatlarında böyle bir programın sürdürülmesi için yeterli sayılabilecek bir süreyi internette harcamaktadırlar. Bununla birlikte eğitimlerin gerçekleştirilmesi aşamasında kullanılacak simülasyon ve benzeri eğitimsel programlar ile ders yönetim sistemlerinden verimli bir şekilde faydalanabilecek bilgi ve deneyime sahiptirler.

Araştırma sonuçlarına göre T.Ö.'ler üniversitelere uygulanacak ve uzaktan eğitim yolu ile gerçekleştirilecek bir yetiştirme programlarına katılarak niteliklerini koruyup, yeni nitelikler kazanacaklarını düşünmektedirler. Eğitim konuları doğru saptanmış, mesleki ve teknik dersler ile öğretmenlik meslek bilgisi derslerini içerecek, yaklaşık sekiz dersten oluşacak bu programda yer alacak derslerin içerikleri 10 – 15 sayfadan oluşan özetler şeklinde oluşturulmalıdır. Hafta içi mesai saatleri dışındaki saatler T.Ö.'lerin en yüksek düzeyde katılımının sağlanabilmesi açısından uygundur. Eğitimlerin gerçekleştirilmesi için en uygun dönemler, üç akademik döneminin başı olan eylül, şubat ve haziran aylarıdır.

Yukarıdaki sonuçlar doğrultusunda bazı somut önerilerde bulunmak mümkündür.

T.Ö.'lerin bilgi ihtiyacının karşılanması için üniversiteler tarafından eğitim programı geliştirilerek mümkün olan en kısa süre içerisinde uygulanmaya başlanmalıdır.

Bu tür eğitimlerde teorik konular uzaktan eğitimler ile verilirken uygulama noktasında simülasyon programlarından ve laboratuvar ortamları içeren yüz yüze eğitimlerden faydalanılması gereklidir.

Öğretmenlere yönelik yüz yüze eğitimlerle desteklenmiş uzaktan eğitim yolu ile gerçekleştirilecek bir program üniversiteler tarafından yürütülmeli fakat bu eğitimlere MEB'in ve özel sektörün de desteği sağlanmalıdır.

MEB tarafından bu programlara katılımın özendirilmesi önemlidir. Eğitim programına katılımın, kariyer basamaklarında yükselme sistemi içerisinde bir koşul olarak yer alması yerinde olacaktır.

Özel sektör kuruluşları özellikle gerçek uygulama ortamları kullanılarak eğitimin somutlaştırılmasında eğitimlere katkı sunmalıdırlar. Bununla birlikte programın geliştirilmesi aşamasında da etken olmalıdırlar.

Eğitimlerin içeriği ve süresi, bilgideki değişimlere ve ihtiyaca göre değişebilen esnek bir yapıda olmalıdır. Program sadece belli bir zaman diliminde verilmek üzere sınırlandırılmamalı, meslek hayatı boyunca sürekli olarak devam etmelidir.

Ders içerikleri ile T.Ö.'lerin öğrencilerine sundukları müfredatlar birbirleri ile uyumlu olmalıdır. Üniversitelerce aktarılan yeni bilgiler ile mesleki ve teknik liselerdeki eğitimlerde kullanılmakta olan modüllerin içerikleri eş zamanlı olarak değişebilecek esnek bir yapıya kavuşturulmalıdır.

Eğitimler, öğretmenlerin bireysel farklılıkları ve bilgi seviyelerini de göz önüne alabilen bir yapıyla sunulmalıdır. Ön testler kullanılarak her birinin bilgi seviyesi tespit edilmeli ve her birine bilgi seviyelerine uygun eğitimler verilebilmelidir.

Sıkıştırılmış ve hızlı bir şekilde bilgi sunulması esnasında oluşabilecek olası kayıpların önüne geçilmelidir. Genel olarak öğrenmenin nasıl gerçekleştirildiğini açıklayan yaklaşımlar, davranışsal, bilişsel ve yapılandırıcı öğrenme yaklaşımları isimleri altında gruplandırılmaktadır. Fakat öğrenmeyi açıklayan hiçbir yaklaşım internet tabanlı eğitim materyalleri tasarlanmasında tek başına kullanılmamalıdır (Atasoy, 2008: 66- 7). Bu tür bir programda kullanılacak eğitim materyallerinin hazırlanmasında öğrenme yaklaşımlardan uygun olanı yerinde ve doğru şekilde kullanılmalıdır.

Böyle bir programın çalışması esnasında ortaya çıkabilecek bazı olası problemler de göz önüne alınmalıdır. Üniversitelerce T.Ö.'lere bilgi aktarmaya yönelik hazırlanacak uzaktan eğitimlerde yaşanması muhtemel sorun ve olumsuzluklar üç gruba ayrılabilir. Bunlardan birincisi üniversite ile ilgili sorunlar, ikincisi programın oluşturulması esnasında yaşanabilecek sorunlar, üçüncüsü ise öğretmenlerden kaynaklanabilecek sorunlardır. Fakat bu olumsuzluklar üzerinde titizlikle çalışılarak aşılabılır. Bilgi ihtiyaçlarının karşılanması ile sadece öğretmenlerin yetiştirilmesi sağlanmış olunmayacak ülkemizin temel dinamiğini oluşturan teknik ara elemanların güncel bilgileri edinmeleri de sağlanmış olacaktır.

Üniversiteler ile ilgili sorunların başında program ile öğretim üyelerinin normal çalışma ve eğitim faaliyetlerinin üzerine ek bir yük gelecek olmasıdır. Bununla birlikte programda görev alacak öğretim görevlilerinin yeterli özel sektör deneyimine sahip olmaması halinde T.Ö.'lerin eğitimlere ilişkin bu yöndeki beklentilerinin karşılanamamasına ve dolayısıyla motivasyonlarının düşmesine sebep olabilir.

Programın oluşturulmasında özel sektör ve MEB ile doğru yapılandırılmış ve koordineli bir işbirliğinin sağlanmasında bir takım sorunlar yaşanabilir.

Eğitimlerin gerçekleştirilmesi esnasında T.Ö.'lerden kaynaklanacak bazı sorunlarında yaşanması muhtemeldir. Bunların başında eğitimlerin öğretmenlerin çalışma saatleri dışında kalan boş zamanlarında yapılması gerekliliği gelmektedir. Eğitimlerin yüz yüze gerçekleştirilecek bölümlerinde üniversitelere ulaşmaları da bir başka sorun olabilir. Üniversitelerin bulunmadığı il ve ilçelerde çalışmakta olanların yüz yüze eğitim faaliyetlerini gerçekleştirmesinde birtakım sıkıntılar yaşanabilir. Ayrıca T.Ö.'lerin tümüne bu tip eğitimlere katılmada olabildiğince fırsat eşitliği sağlanmalıdır. Aksi halde bu durum, aralarında huzursuzluğa ve iş barışının olumsuz etkilenmesine sebep olabilir.

Kaynakça

- Atasoy, B. - Ç. Ulusoy. - K. Ç. Çakmak. - H. Çakır. - M. A. Ocak. - M. T. Üstündağ - S. Şahin. - S. Karataş. - S. Somyürek. - Ş. Karadeniz. ve T. Güyer. (2008). *İnternet Temelli Eğitim* (Ed. H.İ. Yalın). Ankara: Nobel yayın dağıtım.
- Broadbent, J. A. ve N. Cross. (2003). Design education in the information age. *Journal of Engineering Design*, 14(4). <http://web.ebscohost.com/ehost/pdf?vid=7&hid=16&sid=9d4834c1-3239-470e-63246b601a4ce78%40sessionmgr107> (08.Mayıs.2009).
- Drucker, P. F. (1993). *Kapitalist Ötesi Toplum* (Çev. B. Çorakçı). İstanbul: İnkılap kitapevi.
- Gelen, İ. ve B. Özer. (2008). Öğretmenlik Mesleği Genel Yeterliklerine Sahip Olma Düzeyleri Hakkında Öğretmen Adayları ve Öğretmenlerin Görüşlerinin Değerlendirilmesi. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 5(9), 36-55. http://www.mku.edu.tr/enstituler/sosyalbilimler/yeni_sayi/03_Ozer_Gelen.pdf (28.Aralık. 2009).
- Gültan, S. (2003). *Bilgi Toplumu Sürecinde Avrupa Topluluğu ve Türkiye*, Ankara: Avrupa toplulukları araştırma ve uygulama merkezi.
- Özdamar, K ve D. Odabaşı. ve Y. Hoşcan. (1999). *Sosyal Bilimlerde Araştırma Yöntemleri* (Ed. A. A. Bir). <http://www.aof.anadolu.edu.tr/kitap/IOLTP/2294/unite01.pdf> (23.Aralık. 2009).
- Özkan, R. (2005). Birey ve Toplum Gelişiminde Öğretmenlik Mesleğinin Önemi. *Milli Eğitim Dergisi*, (166). <http://yayim.meb.gov.tr/dergiler/166/index3-ozkan.htm> (29.Aralık. 2009).
- Uşun, S. (2006). *Uzaktan Eğitim*, İstanbul: Nobel yayın dağıtım.
- Vuranok, T. T. (2009). Uzaktan Eğitim ile Teknik Öğretmenlerin Bilgi İhtiyacının Karşılanması. Basılmamış Yüksek Lisans Tezi. İstanbul: Beykent Üniversitesi Sosyal Bilimler Enstitüsü.

UZAKTAN EĞİTİM PROGRAMLARINDA AKREDİTASYON

Serpil KOÇDAR

Özet:

Son on yılda, yükseköğretim kurumlarının ve bu kurumlarda eğitim gören öğrenci sayılarındaki hızlı artış, bu artışta özel sunum biçimlerinin payının yüksekliği ve devlet üniversitelerinin özerkliklerinin genişletilmesi ve benzeri gelişmeler, tüm ülkelerde yükseköğretimde kalite güvencesi sorununu gündeme getirmiştir. Uluslararası öğrenci hareketliliği, sınırlar ötesi üniversiteler ve küreselleşen ekonomide hizmetlerin serbest dolaşımı nedeniyle, yükseköğretimde “kalite güvencesi” ulusal ve uluslararası boyutta önem kazanmış; diplomaların tanınması ve akreditasyon konuları ikili veya çok taraflı ilişkilerde önemli gündem maddelerinden biri haline gelmiştir. Bu bağlamda, uzaktan eğitimde akademik değerlendirme, kalite kontrolü ve akreditasyon, dünyada yükseköğretim gündeminin ilk sıralarında yer alan konulardan bir olmuştur.

Araştırmanın amacı, uzaktan eğitimde akreditasyon kavramını tartışmaktır. Öncelikle akreditasyon kavramına değinilecektir. Daha sonra, uzaktan eğitimde akreditasyonun örgün eğitimde akreditasyon uygulamalarından neden farklı olması gerektiği ve bu farkların neler olduğu tartışılacaktır. Son olarak, dünyada uzaktan eğitim akreditasyonunda uygulamalardan bahsedilerek, Türkiye’de uzaktan yüksek eğitimde kurulacak bir akreditasyon sistemi için öneriler geliştirilecektir.

Anahtar Kelimeler: uzaktan eğitim, akreditasyon

UZAKTAN EĞİTİMDE BAŞARIYA ETKİ EDEN FAKTÖRLERİN BELİRLENMESİNDE SAKARYA ÜNİVERSİTESİ E-MBA ÖRNEĞİ

Yrd. Doç. Dr. Hayrettin EVİRGEN
Sakarya Üniversitesi Mühendislik Fakültesi
Bilgisayar Mühendisliği Bölümü, Sakarya / Türkiye
evirgen@sakarya.edu.tr

Öğr. Gör. Metin ÇENGEL
Sakarya Üniversitesi Eğitim Fakültesi
Bilgisayar ve Öğretim Teknolojileri Bölümü, Sakarya / Türkiye
cengel@sakarya.edu.tr

Özet

Web'e dayalı uzaktan eğitim, kısaca eğitimcilerle öğrencilerin aynı mekânda olmadan gerçekleştirdikleri bir eğitim türü olarak tanımlanabilir. Bu eğitim modeli öğrenci merkezli bir eğitim modelidir. Bu modelde öğrenciler zamandan ve mekândan bağımsız olarak verilen dersleri öğrenebilmekte ve eğitici ile iletişimi çeşitli teknolojiler vasıtasıyla kurabilmektedir. Web üzerinden uzaktan eğitimde öğrenci başarısını etkileyen bir çok faktör bulunduğu bir gerçektir. Başarıya etkileyen faktörlerden ağırlıklı faktörlerin neler olduğu iyi belirlenirse öğrencinin başarısı artırılabilir.

Bu çalışma, Sakarya Üniversitesi E-MBA öğrencilerinin başarılarına etki eden faktörlerinin belirlenmesi amacıyla yapılmıştır.

Anahtar kelimeler: İnternet, Web dayalı uzaktan öğretim, başarıya etki eden faktörler.

Giriş

Türkiye' de 1990 'lı yılların ortalarında kullanılmaya başlanan İnternet, bugün artık birçok iş sürecinin üzerine taşındığı bir platform haline gelmiştir. Artık neredeyse her birey veya kurum bankacılık işlemlerinin birçoğunu, pazarlama, reklam ve satın alma gibi ticari faaliyetlerin önemli bir bölümünü İnternet teknolojilerini kullanarak gerçekleştirmektedir.

Eğitim ve öğretim talebindeki artış sebebiyle, eğitim öğretim alanında ciddi tartışmalar ve radikal arayışlar ortaya çıkmıştır. Geliştirilen alternatif eğitim öğretim modellerinin birleştiği ortak nokta, sınıfta yapılan geleneksel eğitim ve öğretimin yetersiz kaldığı ya da işlemediği durumlarda daha değişik ve daha elverişli eğitim modellerinden yararlanılması sağlanmalıdır. Günümüzde F2F(yüz yüze eğitim) eğitim modelleri alternatif olacak Uzaktan eğitim modelleri hızla yaygınlaşmaya başlamıştır. Uzaktan Eğitim modelleri içinde son yıllarda en revaçta olan modelde WTE(web tabanlı eğitim) eğitim modelidir

Bilgi ve iletişimi teknolojilerinin kullanımının artmasıyla eğitimciler "küresel eğitim"e doğru gidişin kaçınılmaz olduğunu ve küresel eğitim uygulamalarının mutlaka başlatılması gerektiğini belirtmektedirler. İletişim teknolojilerindeki bu hızlı gelişmeler eğitimin yapısını ve biçimini etkilemekte, eğitimcileri yeni eğitim programları ve öğrenme öğretme modelleri geliştirmeye zorlamaktadır. (İşman, 2005).

Öğretim ortamlarının tasarımına etki eden çeşitli faktörler bulunmaktadır Bu faktörler:

1. İnternet destekli uzaktan eğitimde öğretim tasarımında mutlaka etkili ve uygun olan öğrenme-öğretme kuramları kullanılmalıdır. Bunun sayesinde, öğrenmeye öğretme faaliyetleri etkili olarak açıklanır. Öğretim tasarımcısının yapması gereken iş, bütün bu öğrenme kuramlarının temellerini yoğun olarak tasarımı kuramına yerleştirmesidir. Öğretim yöntemleri belirlenirken mutlaka hedef ve davranışlar göz önünde bulundurulmalıdır. Diğer önemli bir nokta ise, öğretim tasarımcısı elinden geldiği kadarı ile, bütün öğretim kuramlarını tasarımı kuramına uygun olarak yorumlamalıdır.
2. İnternet destekli uzaktan eğitimin öğretim tasarımı faaliyetlerinde eğitimde program geliştirme yaklaşımları kullanılır. Bu kullanım daha çok planlarda ve hedef ve davranış belirlemede yoğunlaşır.
3. İnternet destekli uzaktan eğitimin öğretim tasarımlarında eğitim teknolojilerinin donanım boyutu etkili olarak kullanılır. Burada tasarımcı daha çok, geliştirilen ve tasarlanan öğretim materyallerinin öğrencilere hangi yöntemler ile ulaştırılabileceği konusunda yoğunlaşır.
4. İnternet destekli uzaktan eğitimin öğretim tasarımcıları eğitim yönetimi ve planlaması konuları ile de ilgilenmektedir. Burada, tasarımcılar daha çok yapılan eğitim-öğretim faaliyetlerinin nasıl etkili bir biçimde organize edilebileceği ile ilgilenir (İşman, A., Eskicumalı, A., 2002)

90 yıllarının sonlarına doğru ülkemizde web dayalı uzaktan eğitim çalışmaları başlamış günümüze gelindiğinde bu konuda oldukça mesafe katılmıştır.

Sakarya Üniversitesi'nde İnternet destekli öğretim çalışmaları 1998'de başlatılmış, 1999'da kampus içi dersler ve 2001'de de Bilgisayar Teknolojisi ve Programlama ve Bilgi Yönetimi ön lisans Programları ile gelişmiştir. 2002'de Ön lisans programlarına İşletme Programı da eklenmiştir. Başlangıçta Sakarya Meslek Yüksekokulu'na bağlı olan İnternet destekli üç ön lisans programı, 2003 Şubat'ında Adapazarı Meslek Yüksekokulu'na aktarılmıştır. 2003-2004 Öğretim yılında ise 'Mekatronik' ve 'Endüstriyel Elektronik' bölümleri açılmış ve bölüm sayısı beşe yükselmiştir.2007 yılında web üzerinden yüksek lisan programları açılmış, 2008 yılında da lisans öğreniminde karma eğitim modelleri 5 bölümde uygulamaya sokulmuştur.

Uzaktan Eğitimde Başarıya etki eden Faktörleri bakıldığında :

İnsan faktör:İTC yeterlilik, Motivasyon, Tutum, Deneyim, Öğrenme, Bilgi, Teknoloji,

Ders faktör:Yapı / organizasyon, Kaliteli içerik, Etkinlikler / projeler, İlgi, Açık Sonuç,Açık beklentiler Motive, İlgi Çekici, Esnek

Liderlik faktörü: Teknik yeterlilik, Personel / Öğrenci eğitim, Personel /Profesyonel destek,Yardım Masaları ,İTC laboratuvarları, Destek öğretim elemanı, Diğer Destek birimleri

Teknolojik faktör:Asenkron, Senkron, Çoklu Görsel materyal,Kullanıcı Dostu,Güvenilir, katmanlar, Alternatif araçlar Kapasite/Hız, Eğitsel Faktörler, ortaklık, etkileşim, Sorun tabanlı, Süreç odaklı,Öğrenci Merkezli Esnek /Bazen Yüz yüze ders (Bekele, 2008, p. 57)

Araştırmanın Amacı

Bu çalışmanın amacı yüksek lisans düzeyinde uygulanan E-MBA programlarında kayıtlı öğrencilerin kendi görüşleri, log bilgilerine ve öğrenci işleri veritabanından alınan yılsonu notuna uygulanan veri madenciliği ile E-MBA eğitimi alan öğrencilerin başarılarına etki eden faktörlerin neler olduğu belirleyip, E-MBA Programlarındaki **Başarı Faktörleri** tespit etmektir.

Araştırmanın Evreni

Bu araştırmanın evreni, Sakarya Üniversitesi E-MBA öğrencileri kapsamaktadır. Bu çalışma İnternet üzerinden veri toplama yöntemi kullanarak 300 öğrenciye uygulanmıştır.

Araştırma Anketi

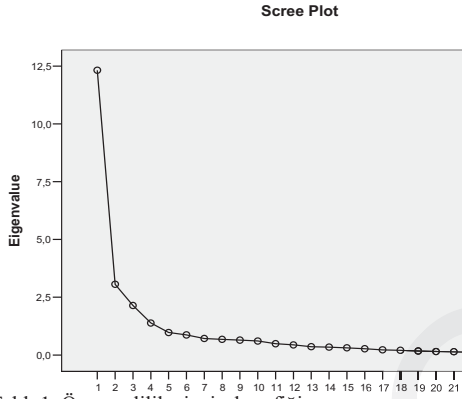
Uygulanan bu ankette öğrencilerin başarıyı hangi faktörlerin etkileyeceği hakkında görüşlerine başvurulmuştur.. Araştırmada kullanılan veri toplama aracı, araştırmacılar tarafından literatür incelenerek oluşturulmuş ve öğrencilerin başarısına etki eden faktör olarak dört faktörde belirlenmiştir. Birinci faktörde tasarımla ilgili öğrencilerin 5 soru ile, ikinci faktörde tasarımla ilgili öğrencilerin 6 soru ile, üçüncü faktörde tasarımla ilgili öğrencilerin 6 soru ile, dördüncü faktörde tasarımla ilgili öğrencilerin 10 soru ile görüşlerine başvurulmuştur. Ayrıca Sakarya Üniversitesi UEYS(Uzaktan Eğitim yönetim sistemi) loglarından öğrencilerin bir dönem boyunca EYS giriş sayıları Veri madencili uygulanarak elde edilmiştir. Öğrenci başarısı bakımından da Öğrenci işleri veritabanından öğrencilerin dönem sonu ortalamaları alınmıştır.

Araştırma Verileri

Bu araştırmada kullanılan veriler öğrencilerden, loglardan ve öğrenci işleri veritabanından elde edilmiştir.. Araştırma anketi 2008–2009 öğretim yılında 350 öğrenciye internet üzerinden doldurulmuştur. Bu ankette öğrencilerin cinsiyeti, mezun olduğu bölüm, iş durumu yaşı, haftalık olarak internete giriş sayısı, bilgisayar deneyim yılı ve çok çok azdan- Çok çok fazlaya 7 li likert ölçeği kullanılarak 4 faktörde toplanan 27 maddeden oluşan sorular sorulmuştur.

Araştırmanın İstatistiksel Yöntemi

Bu araştırmada ölçeğin faktör analizi ve güvenilirlik analizleri yapılmıştır. Demografik sorularla ilgili dağılımı ortaya koymak için SPSS ile frekans dağılımı analizi yapılmış ve bu dağılımlar aşağıda gösterilmiştir. Farklı demografik grupların Başarıya etki eden faktörleri algılama biçimleri arasında farklılık olup olmadığını ortaya konması içinde t-testi ve One-Way-Anova testleri uygulanmış ve bu test sonuçları da aşağıda tartışılmıştır. Başarı notu bağımlı değişken olarak alınıp korelasyon analizi yapılmıştır.

Yapı Geçerliliği -Faktör Analizi

Tablo1. Özgeçerlilik çizgisel grafiği

| Componen | 1 | 2 | 3 | 4 |
|----------|-------|-------|-------|------|
| 1 | ,603 | ,533 | ,539 | ,248 |
| 2 | -,480 | ,389 | -,198 | ,761 |
| 3 | ,583 | -,483 | -,409 | ,509 |
| 4 | -,256 | -,575 | ,709 | ,317 |

Tablo 2 Component Transformation Matrix

| | Component | | | |
|-----|-----------|------|------|------|
| | 1 | 2 | 3 | 4 |
| a1 | | | | ,813 |
| a2 | | | | ,881 |
| a3 | | ,492 | | ,566 |
| A4 | | ,309 | | ,678 |
| A5 | | | | ,780 |
| a6 | | ,726 | ,303 | |
| a7 | | ,838 | | |
| a8 | | ,744 | ,351 | |
| a9 | ,310 | ,783 | | |
| a10 | ,317 | ,758 | | |
| a11 | | ,676 | ,458 | |
| b1 | | ,468 | ,557 | |
| b2 | ,349 | ,341 | ,752 | |
| b3 | ,375 | ,356 | ,701 | |
| b4 | | | ,804 | |
| b5 | | | ,777 | |
| b6 | ,324 | | ,789 | |
| g1 | ,742 | | | |
| g2 | ,735 | ,304 | | |
| g3 | ,775 | | | |
| g4 | ,665 | ,318 | ,385 | |
| g5 | ,605 | | ,322 | |
| g6 | ,624 | | ,503 | |
| h1 | ,670 | | ,370 | |
| h2 | ,694 | ,327 | | |
| h3 | ,852 | | | |
| h4 | ,696 | | | |

Tablo3. Rotated Component Matrix(a)

Tablo2'deki (Component Transformation Matrix tablosu) verilen çıktılarından anlaşılacağı gibi 27 maddeden oluşan ölçek 4 faktör altında toplandığı görülmektedir. Bu dört faktörün ölçeğe ilişkin açıkladıkları varyans %70.043'dir. Maddelerle ilgili olarak tanımlanan 4 faktörün ortak varyanslarının 0.507 ile 0.0808 arasında değiştiği gözlenmektedir. Buna göre, analizde önemli faktör olarak ortaya çıkan 4 faktörün birlikte, maddelerdeki toplam varyansın ve ölçeğe ilişkin varyansın çoğunluğu açıkladığı görülmektedir.

Analizde önemli faktör sayısı, özdeğer ölçütüne göre'de 4 olarak tanımlanmıştır. Bu durum özdeğere göre tablo 2 grafikte de görülmektedir.

Tablo 3 (Rotated Component Matrix(a)) değerlere bakıldığında ölçekteki A1-A5 maddeleri 1.Faktörü (Tasarım Faktörü) ,A6-A11 maddeleri 2.faktör(Gezinme)

B1-B6 maddeleri 3. Faktör(Sunum), G1-G6, H1-H4 maddeleri 4.faktörü(İçerik ve Pedagoji) oluşturulduğu verilerle anlaşılmaktadır.

Yapı Geçerliği - Güvenirlik Analizi

| Cronbach's Alpha | N of Items |
|------------------|------------|
| ,945 | 27 |

Tablo 4. Ölçeğin tamamının güvenirliliği

| Cronbach's Alpha | N of Items |
|------------------|------------|
| ,929 | 10 |

Tablo 5. Birinci faktör güvenirliliği

| Cronbach's Alpha | N of Items |
|------------------|------------|
| ,937 | 6 |

Tablo 6. İkinci faktör güvenirliliği

| Cronbach's Alpha | N of Items |
|------------------|------------|
| ,928 | 6 |

Tablo 7. Üçüncü faktör güvenirliliği

| Cronbach's Alpha | N of Items |
|------------------|------------|
| ,840 | 5 |

Tablo 7. Dördüncü faktör güvenirliliği

Yukarıdaki tablolara bakıldığında hazırlanan ölçeğin tamamının Cronbach Alpha iç tutarlılık katsayısı hesaplanmıştır ve değer 0.945 olarak bulunmuştur. 1. Faktörün değeri 0.929, 2. Faktörün değeri 0.937, 3. Faktörün değeri 0.928, 4. Faktörün değeri 0.840. Bulunan katsayıların literatürde iyi kabul edilen değerler içerisinde oldukları görülmektedir. Literatürde 0.80'in üzerindeki değerler iyi olarak nitelenmektedir (Alpar, 1998)

Araştırmaya Katılanların Demografik Yapısı
Cinsiyet(E:Erkek B:Bayan)

| | Freque ncy | Percent | Valid Percent | Perc ent |
|---------|------------|---------|---------------|----------|
| Valid E | 207 | 74,2 | 74,2 | 74,2 |
| B | 72 | 25,8 | 25,8 | 100,0 |
| T | 279 | 100,0 | 100,0 | |

Tablo 8. Araştırmaya katılanların Cinsiyet açısından frekans analizi

İşdurum (E:Çalışıyor H:Çalışmıyor)

| | F | Percent | V. Percent | Perc ent |
|---------|-----|---------|------------|----------|
| Valid E | 247 | 88,5 | 88,5 | 88,5 |
| H | 32 | 11,5 | 11,5 | 100,0 |
| T | 279 | 100,0 | 100,0 | |

Tablo 9. Araştırmaya katılanların İşdurumu açısından frekans analizi

Fakulte 1:İşletme 2:Fen 3: Müh. 4:Diğer)

| | F | Percent | V. Percent | Percent |
|---------|-----|---------|------------|---------|
| Valid 1 | 187 | 67,0 | 67,0 | 67,0 |
| 2 | 9 | 3,2 | 3,2 | 70,3 |
| 3 | 56 | 20,1 | 20,1 | 90,3 |
| 4 | 27 | 9,7 | 9,7 | 100,0 |
| T | 279 | 100,0 | 100,0 | |

Tablo 10. Araştırmaya katılanların Fakülte açısından frekans analizi

Cinsiyet T-Testi

| | cinsiyet | N | Mean | T | P |
|---------|----------|-----|-------|-------|-------|
| icerikP | Erkek | 207 | 57,46 | 1,020 | 0,001 |
| | Bayan | 72 | 55,96 | | |
| sunum | Erkek | 207 | 34,85 | -,343 | ,566 |
| | Bayan | 72 | 35,19 | | |
| gezinm | Erkek | 207 | 31,86 | 0,233 | ,816 |
| | Bayan | 72 | 32,15 | | |
| tasarim | Erkek | 207 | 20,10 | 1,031 | 0,001 |
| | Bayan | 72 | 19,99 | | |

Tablo 11.Araştırmaya katılanların Cinsiyet açısından T-Testi analizi

T-testi, ankete katılan öğrencilerin cinsiyeti bayan ve erkek olmak üzere iki gruba uygulanmıştır. T-testi sonuçlarından $p < 0,05$ düzeyinde Sunum faktör ($p=0,566$) ve gezinme faktör ($p=816$) açısından anlamlı bir farkın olmadığı gözlenmiştir. İçerikP faktör ($p=001$) ve tasarım faktör ($p=001$) açısından bakıldığında $p < 0,05$ düzeyinde küçük olduğu gözlenmiş yapılan analizden cinsiyet açısından grup için tasarım ve İçerik faktörün gruplara arasında bir farklılık olduğu tespit edilmiştir

İş durumu T-Testi

| | İşdu. | N | Mean | T | P |
|---------|-------|-----|------|-------|-------|
| icerikP | Evet | 207 | 57,4 | 1,020 | 0,001 |
| | Hayır | 72 | 55,9 | | |
| sunum | Evet | 207 | 34,8 | -,343 | 0,866 |
| | Hayır | 72 | 35,1 | | |
| gezinm | Evet | 207 | 31,8 | 0,233 | 0,046 |
| | Hayır | 72 | 32,1 | | |
| tasarim | Evet | 207 | 20,1 | 1,031 | 0,001 |
| | Hayır | 72 | 19,9 | | |

Tablo 12.Araştırmaya katılanların İş durumu açısından T-Testi analizi

T-testi, ankete katılan öğrencilerin İşdurumu Çalışan(Evet) ve Çalışmayan(Hayır) olmak üzere iki gruba uygulanmıştır. T-testi sonuçlarından $p < 0,05$ düzeyinde Sunum faktör ($p=0,866$) açısından anlamlı bir farkın olmadığı gözlenmiştir. Gezinme faktör ($p=0,046$) İçerikP faktör ($p=001$) ve tasarım faktör ($p=001$) açısından bakıldığında $p < 0,05$ düzeyinde küçük olduğu gözlenmiş yapılan analizden bilgisayar İş durumu açısından grup için Gezinme, tasarım ve İçerik faktörün gruplara arasında bir farklılık olduğu tespit edilmiştir.

One-way-Anova analiz

| | S of Sq | df | M Square | F | Sig. |
|---------|---------|-----|----------|-------|-------|
| icerikP | 393,4 | 3 | 131,151 | 1,135 | ,335 |
| | 31783,1 | 275 | 115,575 | | |
| | 32176,5 | 278 | | | |
| sunum | 730,1 | 3 | 243,381 | 4,062 | ,003 |
| | 16477,8 | 275 | 59,919 | | |
| | 17207,9 | 278 | | | |
| gezinm | 648,3 | 3 | 216,126 | 2,706 | ,046 |
| | 21967,5 | 275 | 79,882 | | |
| | 22615,9 | 278 | | | |
| tasarim | 477,3 | 3 | 159,131 | 2,579 | ,0049 |
| | 16966,3 | 275 | 61,696 | | |
| | 17443,7 | 278 | | | |

Tablo 13.Araştırmaya katılanların İş Fakülte açısından Anova

Fakülte Yılı One-way-Anova analiz

Öğrencilerin mezun oldukları fakülte gruplarına göre yapılan one-way-anova testi sonucunda, içerik ve gezinme faktörler için hesaplanan değer, alfa değerinden büyük çıkmıştır. Başka bir ifade ile yukarıdaki faktörler için ölçülen başarı algılaması Fakültele göre farklılık göstermemiştir. Sunum ve Tasarım faktör için anlamlı farklılık oluşmuştur.

Korelasyon analizi**Başarı-Yaş Analizi**

| | | basari | yas |
|--------|-----------------|-----------|-----------|
| basari | Pearson Corre. | 1 | -,724(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| yas | Pearson Corre. | -,724(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile yaşları arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında yaşla yüksek ölçüde ters bir ilişki olduğu gözlenmektedir.

Başarı-İnternete giriş sayısı Analizi

| | | basari | internet |
|----------|-----------------|----------|----------|
| basari | Pearson Correl. | 1 | ,871(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| internet | Pearson Corre. | ,871(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile İnternete giriş sayısı arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında giriş sayısı ile yüksek ölçüde düz bir ilişki olduğu gözlenmektedir.

Başarı-Bilgisayar kul. deneyimi Analizi

| | | basari | bilgisayar |
|---------|-----------------|----------|------------|
| basari | Pearson Corre. | 1 | ,579(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| Bilgis. | Pearson Corre. | ,579(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile Bilgisayar deneyim yılı arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında deneyim ile orta ölçüde düz bir ilişki olduğu gözlenmektedir.

Başarı-EYS giriş sayısı Analizi

| | | basari | girissay |
|----------|-----------------|----------|----------|
| basari | Pearson Corr | 1 | ,773(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| girissay | Pearson Corr | ,773(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile EYS giriş sayısı arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında giriş sayısı ile yüksek ölçüde düz bir ilişki olduğu gözlenmektedir.

Başarı-İçerikPedagoji Analizi

| | | basari | icerikP |
|---------|-----------------|----------|----------|
| basari | Pearson Corr | 1 | ,644(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| icerikP | Pearson Corr | ,644(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile İçerikPedagoji faktörüne verdiği cevaplarla arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında deneyim ile orta ölçüde düz bir ilişki olduğu gözlenmektedir.

Başarı-Sunum Analizi

| | | basari | sunum |
|--------|-----------------|----------|----------|
| basari | Pearson Corr | 1 | ,889(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| sunum | Pearson Corr | ,889(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile Sunum faktörüne verdiği cevaplarla arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında deneyim ile yüksek ölçüde düz bir ilişki olduğu gözlenmektedir

Başarı-Gezinme Analizi

| | | basari | gezinme |
|---------|-----------------|----------|----------|
| basari | Pearson Corr | 1 | ,559(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| gezinme | Pearson Corr | ,559(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile Gezinme faktörüne verdiği cevaplarla arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında deneyim ile orta ölçüde düz bir ilişki olduğu gözlenmektedir

Başarı-Tasarım Analizi

| | | basari | tasarim |
|--------|-----------------|----------|----------|
| basari | Pearson Corr | 1 | ,992(**) |
| | Sig. (2-tailed) | | ,000 |
| | N | 279 | 279 |
| tasari | Pearson Corr | ,992(**) | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 279 | 279 |

Öğrencilerin Dönem sonu notları ile Tasarım faktörüne verdiği cevaplarla arasında ilişki olup olmadığı yukarıdaki korelasyon analizi çıktısı tablosuna göre yorumlandığında deneyim ile yüksek ölçüde düz bir ilişki olduğu gözlenmektedir.

Sonuç ve Öneriler.

Bu deneysel çalışmada bulgular, Web dayalı uzaktan öğretim materyallerine çalışan öğrencilerin Platforma giriş log kayıtları, Öğrenci dönem sonu notu ve Öğrencilere uygulanan anket incelenerek ve analiz edilerek elde edilmiştir. Yapılan analizlerden anlaşılacağı gibi önemli ipuçları elde edilmiştir. Elde edilen bilgilere göre tasarımın ve sunumun öğrencileri başarısını etkilediği EYS sayfaları yenilenirken bu konulara özen gösterilmesi gerekliliği anlaşılmıştır. Çalışmadan en önemli çıkarım öğrencilerin yaşları arttıkça başarı yüzdelerinin azaldığı, EYS giriş sayıları artışıyla da başarı yüzdelerinin arttığı gözlenmiştir.

KAYNAKLAR

- 1-İşman, Aytekin.(2001). Basılmamış eğitim teknolojileri ders notları Sakarya Üniversitesi Eğitim Fakültesi <http://www.sakarya.edu.tr> Sakarya Üniversitesi Web Sayfası
- 2-Kaya, Zeki. (2002). *Uzaktan Eğitim*. Uzaktan Eğitim Pagem A yayıncılık. Ankara
- 3-İşman, Aytekin(2005). *Uzaktan Eğitim*. Uzaktan Eğitim Pagem A yayıncılık. Ankara http://www.meb.gov.tr/ADSL/adsl_index.html Milli Eğitim bakanlığı web sitesi
- 4-. Alkan, C., (1987). *Açıköğretim: Uzaktan Eğitim Sistemlerinin Karşılaştırılması Olarak İncelenmesi*. Ankara: Ankara Üniversitesi Eğitim Bilimleri Fakültesi Yayınları, No:157.
- 5-Alkan, C. (1998), *Eğitim Teknolojisi*. 6. Baskı.: Anı Yayıncılık, Ankara
- 6-Çağiltay K. (2005), "Uzaktan Eğitim: Başarıya Giden Yol Teknolojide Mi Yoksa Pedagojide Mi?".
- 7-İşman, A. (1998), *Uzaktan Eğitim*. Değişim Yayınları, Adapazarı.
- 8-İşman, A (2005), *Öğretim Teknolojileri Ve Materyal Geliştirme*. 2. Baskı. Sempati Yayınları, Ankara

UZAKTAN EĞİTİMDE İLETİŞİM TEKNOLOJİLERİNİN KULLANIMI ÜZERİNE YAKLAŞIMLAR VE DEĞERLENDİRMELER

APPROACHES AND EVALUATIONS OF THE USE OF COMMUNICATION TECHNOLOGY IN DISTANCE EDUCATION

Murat Ertan DOĞAN¹

¹Doktora öğrencisi, Anadolu Üniversitesi, Sosyal Bilimler Enstitüsü, Sinema ve TV ABD,
PhD. Candidate, Anadolu University Institute of Social Sciences, Dept. of Cinema and Television,
medogan@anadolu.edu.tr

Özet

Eğitimin olduğu her yerde iletişimin ve iletişim olduğu her yerde de eğitimin olduğu savından hareketle, mobil iletişim teknolojilerinin eğitim amacıyla her an her yerde kullanılmasının toplumda sosyal bir değişme ve gelişmeyi ortaya çıkaracağı savunulabilir. Bu tür bir sosyal değişimi başlatacak kişilerince, iletişim teknolojilerine yeni bir kullanım alanı yaratacak olan, eğitimciler olacağı söylenebilir. Eğitimcilerin iletişim teknolojilerini kullanım şekli, rol model oldukları öğrenenlerin de bu teknolojileri kullanım şekli ve amacını etkileyeceğinden dolayı toplumda zincirleme bir değişim yaratılabilir.

İletişim teknolojilerinin en yoğun ve etkili kullanımının gerektiği uzaktan eğitim uygulamalarında, geleneksel yüz yüze iletişimden farklı bir enformasyon aktarımı şekli ile öğrenmenin gerçekleştiği bilinen bir gerçektir. Bu bağlamda, öğrenen ve öğretici arasındaki enformasyonun aktarımı kullanılan iletişim teknolojisi araçları ve bu araçların içerik sağlama yetisi çerçevesinde şekillenecektir. İletişim teknolojilerinin katılımcı-işbirlikçi amaçlarla, belirsizliği ortadan kaldırmak veya bir amacı gerçekleştirmek için gerekli enformasyonun sağlanmasında hangi şeklinin kullanılacağıın belirlenmesi ise kuram ve uygulama alanlarında tartışılan bir durumdur.

Bu çalışma kapsamında, uzaktan eğitim ortamlarında kullanılan iletişim teknolojisi ve bu teknolojilerin sağladıkları içeriklerin seçiminde önemli katkılar sağlayacağı düşünülen, “Medya Doğallığı” ve “Medya Zenginliği” kuramları çerçevesinde güncel uzaktan eğitim uygulamalarında süre gelen uygulamalar ve yaklaşımlar üzerine bir alan yazın taraması gerçekleştirilecektir. Yapılacak olan alan yazın taraması sonrasında mevcut uygulamaların olumlu ve olumsuz yönleri tartışılarak bir sonuca varılması hedeflenmektedir.

Anahtar Sözcükler: İletişim teknolojileri, enformasyon, uzaktan eğitim, medya

Abstract

On the basis that communication is present in all instances of education, and that education resides in all occurrences of communication, it can be argued that the ubiquitous use of mobile communication technologies for educational purposes may incur social change and development. The initiators of this change, creating a new field of use for communication technologies, are educators. A chain reaction of change in society may be spurred as the use of communication technologies by educators influences the purpose and use of these technologies by learners (who consider educators to be role models).

It is a well known fact that in distance education applications – which require the broad and effective use of communication technologies – learning takes place in a different manner as opposed to traditional face-to-face communication and information transfer. As such, the information transfer between the educator and learner is shaped by the communication tools used and the content delivery capabilities of these tools. The determination of which form of communication is to be used in circumstances such as the use of communication technologies for participative-collaborative purposes, for the elimination of ambiguity, or for providing the necessary information to achieve a purpose is a situation still under discussion through various theories and practices.

Under the scope of this study, a review of literature on contemporary applications and approaches in distance education practices in context with two theories considered to provide important contributions regarding the selection of content provided by communication technologies, and communication technologies to be used in distance education environments: “Media Naturalness” and “Media Richness” theories. Following the review of literature, the advantages and disadvantages of current practices will be discussed, resulting in conclusions drawn from the study.

Keywords: Communication technologies, information, distance education, media

Giriş

İletişim teknolojilerinin en yoğun ve etkili kullanımının gerektiği uzaktan eğitim uygulamalarında, geleneksel yüz yüze iletişimden farklı bir enformasyon aktarımı şekli ile öğrenmenin gerçekleştiği bilinen bir gerçektir. Bu bağlamda, öğrenen ve öğretici arasındaki enformasyonun aktarımı kullanılan iletişim teknolojisi araçları ve bu araçların içerik sağlama yetisi çerçevesinde şekillenecektir. Uzaktan eğitim uygulamalarında enformasyon aktarımının düzenlenmesi çerçevesinde en sık başvuru alan kuramlardan birisi Medya Zenginliği Kuramıdır. Medya Zenginliği Kuramı iletilen enformasyonun niceliksel miktarı ve enformasyonun aktarıldığı ortamın niteliklerini temel alması yönüyle eleştirilmektedir. İletişim ortamlarının seçimi ve mesaj alıcılarının davranışları konusunda öneriler sunan bir diğer kuram da Medya Doğallığı Kuramıdır. Medya Zenginliği Kuramı ve Medya Doğallığı Kuramı temelinde yüz yüze iletişimin en iyi iletişim yöntemi olduğunu savunarak birbirlerinden farklı ölçütlerle iletişim ortamlarının doğallığı ve zenginliğini belirlemektedir.

Bu çalışma kapsamında Medya Zenginliği Kuramı ve Medya Doğallığı Kuramı kısaca açıklanarak uzaktan eğitim uygulamaları tasarlanırken ne şekilde yararlanabileceği ve sözü edilen bu kuramların eksik kalan yanları tartışılarak bir sonuca varılması hedeflenmektedir.

Medya Zenginliği Kuramı

Daft ve Lengel tarafından ortaya atılan Medya Zenginliği Kuramı (*Media Richness Theory*) iletişim ortamlarının anlam sapmalarını, belirsizliği, yorum farklılıklarını gidermede ve mesajın anlaşılmasını sağlamada farklılaşan kapasitelere sahip olduğunu savunmaktadır. Medya Zenginliği Kuramı temel olarak iki varsayıma dayanmaktadır, bunlardan ilki çeşitli örgütlerde anlam belirsizliklerini ve anlaşılma zorluğunu önlemek için enformasyon üretildiğidir. Burada belirsizlikten kasıt ise herhangi bir iş veya görevi yapabilmek için gerekli olan enformasyon ile örgütün ürettiği enformasyon miktarları arasındaki niteliksel ve niceliksel farktır. Bu belirsizlikteki artışlar bireylerin yerine

getirmesi gereken ödevlerini yapmalarına engel teşkil etmektedir. Böylelikle enformasyon miktarındaki artışın belirsizliğin azalmasına neden olduğu varsayılmaktadır.

Kuramın ikinci temel varsayımı, herhangi bir örgüt içerisinde yaygın olarak kullanılan iletişim ortamlarının (media) diğer iletişim ortamlarına göre daha verimli şekilde çalıştığıdır (Daft & Lengel, 1984). Örneğin, birçok kuruluşta anlam farklılığının önüne geçebilmek için yapılacak işlerde sözlü yerine, yazılı iletişim metotları kullanılmaktadır. Bu yönüyle Medya Zenginliği Kuramı herhangi bir iletişim ortamının (medium) enformasyonu taşıyabilme yetisine dayalı bir söylem öne sürmektedir.

Genel olarak bakıldığında Medya Zenginliği Kuramına göre yüz yüze iletişim ortamı olarak en etkili iletişim sağlayan yöntemdir. Daft ve Lengel bu ortamın dışındaki iletişim şekillerini belirli bir zenginlik hiyerarşisine göre sıralamış ve bu sıralamayı yaparken dört değişik ölçüt kullanmışlardır. Bu ölçütler, (1) hızlı geribildirim alabilme yetisi, (2) ortamın vücut dili, (3) ses ve ses tonu değişikliği gibi işaretleri iletebilme kapasitesi, (4) doğal dilin kullanımı ve (5) ortama kişinin odaklanabilme hali olarak sıralanmaktadır. Yüz yüze yapılan iletişimin dışındaki iletişim yöntemlerini daha az zengin ortama doğru takip eden hiyerarşi ise kuramın ortaya çıktığı 1987 yılı itibarı ile telefon, elektronik posta, hatırlatıcı notlar ve duyuru-ilan şeklinde oluşturulmuştur (Daft, Lengel, & Trevino, Message Equivocality, Media Selection, and Manager Performance: Implications for Information Systems, 1987). Burada kuram, herhangi bir işe gerekli derecede "zengin" ortamların (media) kullanılarak iletişimsel performansın artırabileceği düşüncesinden yola çıkmakta, bu yolla da herhangi bir örgütsel faaliyetin daha verimli ve etkin bir biçimde yapılabileceğini ileri sürmektedir.

Ortaya çıkış tarihine bağlı olarak Medya Zenginliği Kuramının bilgisayar aracılı iletişim (Computer-mediated communication) çağının ortasına doğmadığını söylemek mümkündür. Bu nedenle, kuramın genel çerçevesi ses ve video içeren yeni elektronik iletişim ortamlarına uyarlanarak 2000'li yılların ilk çeyreğine kadar kullanılmaya devam edilmiştir. Bu süreç içerisinde yapılan çeşitli araştırmalarda Medya Zenginliği Kuramının önerdiği şekilde mesaj gönderenlerin, mesajın gönderileceği iletişim ortamı seçimlerini ne şekilde yaptıkları incelenmiş ve kuramın varsayımlarını doğrulayacak nitelikte veriler elde edilmiştir. Bunun yanı sıra medyanın zenginliği dışında bazı faktörlerin de mesajın gönderileceği iletişim ortamının seçimini etkileyebileceği gerçeği çoğunlukla araştırmaların sonucunda araştırmacılar tarafından tespit edilmiştir.

İletişim ortamının ulaşılabilirliği ve mesaj gönderenin bu ortamları kullanabilme yetisi ortamın seçiminde etkili bir faktördür. Çoğunlukla bireyler, çevresindeki topluluklar kullanmaya başlamadıkça yeni olan iletişim teknolojilerine adapte olmayı istemezler, aynı zamanda grup içi veya örgütsel deneyimler ve normlar doğrultusunda, özellikle bilgisayar aracılı iletişim söz konusu olduğunda, ortam zenginliği sosyal olarak tanımlanabilir, mesaj gönderenin bilgisi (knowledge) diğer katılımcıların ortam zenginliği algısını değiştirebilir bu şekilde bir gruba zengin gelen ortam bir diğerince zengin bulunmayabilir (Kinley & Dennis, 1994).

Yukarıda sözü edilen, sosyal çevre içerisinde kullanılan iletişim ortamının benzer sosyal çevre içerisindeki bireyin iletişim ortamını seçimi ve zenginlik algısındaki belirleyici rolü, genel olarak kuramın en çok eleştiri alan yönüdür. Markus, yönetsel bazı görevlerin açıklanmasını sağlamak üzere kullanılan ve Medya Zenginliği Kuramına göre zayıf bir iletişim ortamı olarak görülen elektronik postanın, yöneticiler tarafından sıkça kullanıldığını ortaya koymuştur (Markus, 1994). Bilgisayar aracılı iletişim üzerine çalışmasında Walther, kullanıcıların Medya Zenginliği Kuramı hipotezlerine zengin olmayan bir yapıda olmaları nedeniyle ters düşen eş zamanlı olmayan haber grupları veya çevrimiçi sosyal gruplar gibi etkileşim açısından zengin yapıların mesaj gönderiminde tercih sebebi olduğunu söylemektedir (Walther, 1996). Bilgisayar aracılı iletişim söz konusu olduğunda Medya Zenginliği Kuramına göre ses, görüntü ve yazının mesajın iletilmesinde, kişisel olarak algılanmasında ve doğal dilin kullanılmasında benzer yetkinlikler gösterdiğini söylemek mümkündür. Mesajın iletildiği işaretlerin (video, ses ve yazı) çokluğu ortamın zenginliğine dair olumlu bir tablo ortaya koysa da, işaretlerin sayısındaki bu çokluk mesajın alıcısını bunaltmaya başladığında zenginliği ortadan kaldırarak mesajın anlaşılmasını da sağlayabilmektedir.

Medya Zenginliği Kuramına yapılan eleştirilerin çoğunda medya zenginliğinin düşük seviyede oluşuyla iletişim ortamından kaçınma ve zengin ortamdaki daha az zengin ortama geçildiğinde iş veriminin düşmesi üzerine araştırmalar yapılmış olmakla beraber, yüz yüze iletişimden ayrı düşen bu iletişim ortamlarının nasıl algılandıkları ve ne bireylerin bu ortamlarla ne gibi etkileşimlere girdikleri üzerine çalışmalar yapılmamıştır. Bu nedenle özü itibarıyla bir örgütsel yönetim kuramı olan fakat iletişim kuramları arasında da adı geçen bu kurama yapılan en net eleştirilerden biri yine örgütsel yönetimi anlayışını temel alan Medya Doğallığı Kuramıdır (*Media Naturalness Theory*).

Medya Doğallığı Kuramı

Kock'un literatüre kazandırdığı Medya Doğallığı Kuramı (*Media Naturalness Theory*) temelinde Evrim Teorisine gönderme yapmaktadır. Medya Doğallığı Kuramı insan türünün evrim sürecinde biyolojik iletişim donanımlarının, mimikler, vücut dili ve seslerin eş zamanlı ve eş konumlu biçimde kullanımına uygun geliştiğini, be nedenle iletişim şekillerinin de bu tasarımın karakteristik özelliklerine uygun şekilde yapılması gerektiğini öne sürmektedir. (Kock, 2005)

Medya Zenginliği Kuramı iletişim araçlarının enformasyon taşıma niteliği arasındaki farktan yola çıkarken, Medya Doğallığı Kuramı herhangi bir iletişim ortamının mesajları, insan biyolojisinin yapısına uygun mimikleri, vücut dilini, konuşmaları içeren eş zamanlı ve eş konumlu bir biçimde iletebilme yetisini doğallık ölçütü olarak kullanmaktadır. Medya Doğallığı Kuramına göre "doğal" olan iletişim yönteminden uzaklaşan her iletişim biçimi, doğal iletişim kurabilmek için yapılmış insan beynine fazladan bir iş yüklemektedir. Buradan hareketle Medya Doğallığı Kuramının temel düşüncesi en doğal iletişim çeşidinin yüz yüze iletişim olduğudur. Bir iletişim ortamının doğal iletişim yoluna olan uyumsuzluk derecesi ne kadar fazlaysa o iletişim ortamının doğallığı da o kadar azdır (Kock, 2005).

Kock (2005) kuramında doğal iletişimin beş temel bileşeni olduğunu söylemektedir: (1) iletişim kurdukları sırada bireylerin birbirlerini görmelerini ve duymalarını sağlayarak etkileşimlerine imkan tanıyan yüksek oranda eş konumluluk, (2) iletişim ve etkileşim içinde bulunan bireylerin uyarıcıları arasında paylaşmalarını sağlayan yüksek oranlı eş zamanlılık, (3) mimik kullanma ve algılama yetisi, (4) vücut dili kullanma ve algılama yetisi, (5) konuşabilme ve konuşmayı algılama yetisi.

Yukarıda verilen bileşenlerin tümünün birleştiği bir elektronik iletişim (e-communication) ortamının bile yüz yüze iletişimdeki oranda doğallık sağlayamayacağı savunan Kock(2005), yüz ifadelerinin düz bir görüntü ile yansıtıldığı elektronik iletişim ortamlarında üç boyutlu algının kaybolması ile doğallığın bozulduğunu örnek vermektedir. Bu durumu daha net bir biçimde açıklamak için Medya Doğallığı Kuramı içerisinde yukarıda geçen beş bileşene bağımlı üç farklı kavramdan bahsedilmektedir: (1) bilişsel güç (cognitive effort), (2) iletişimsel belirsizlik (communication ambiguity), (3) psikolojik uyarılma (physiological arousal).

Bilişsel gücün, iletişimsel etkileşim anında meydana gelen zihinsel aktivitenin miktarı veya biyolojik anlamda beyin aktivitesinin miktarı, olarak tanımlandığı Medya Doğallığı Kuramı çerçevesinde iletişim sırasında karmaşık yolların kullanılmasının beyin (neural) aktivitesinde artışı gerektirmesinden dolayı iletişimin doğallığını azalttığı öne sürülmektedir. Buna ek olarak, bireylerin beyin yapılarının her iletişim ortamında yüz yüze iletişimin sağladığı tüm uyarıcıları arama çabasında olduğunu kabul eden Medya Doğallığı Kuramı çerçevesinde, bu uyarıcıların bir veya birkaçının eksik olduğu veya bilerek dışarıda bırakıldığı elektronik iletişim ortamlarında bireylerin istem dışı bir şekilde boşluğa düştükleri varsayılmaktadır.

İletişim ortamının doğallık seviyesinin düşmesini sağlayan bu bileşenlerin (eş konumluluk, eş zamanlılık, mimik kullanma ve algılama yetisi, vücut dili kullanma ve algılama yetisi, konuşabilme ve konuşmayı algılama yetisi) eksikliğinin aynı zamanda iletişimsel işaretlerin

yanlış yorumlanması ihtimalini yükseltmesi nedeniyle “iletişimsel belirsizliğe” yol açtığı ifade edilmektedir. Bu iki olgu çerçevesinde iletişimsel etkileşim içerisinde bulunan bireylerin psikolojik olarak uyarılması da ortamın doğallığını etkileyen önemli faktörlerdendir. Bireylerin elektronik iletişim ortamlarını yüz yüze iletişimden daha sıkıcı bulduklarını belirten Kock (2005), bu durumun iletişimin doğallığını azaltmasıyla beraber iş odaklı iletişim kurulması durumunda bireylerin görev odaklı çalışmalarında motivasyonu attırabildiğini ve verimliliğe katkısı olduğunu ampirik çalışmalar neticesinde ortaya koymaktadır.

Tartışma ve Sonuç

Yukarıda özetlenmeye çalışılan her iki kuram iletişim ortamlarının enformasyonu taşıma yetilerine birbirine benzer ölçütler çerçevesinde farklı açılardan yaklaşmaktadır. Medya Zenginliği Kuramı ve Medya Doğallığı Kuramı örgütsel iletişim kuramı olmalarına karşın çeşitli alanlarda iletişim uygulamaların model oluşturan kuramlar olmakla beraber, sadece Medya Doğallığı kuramı ortaya çıkış tarihi itibarıyla bilgisayar destekli iletişim modellerini tartışmasında temel unsur olarak görmektedir. Aşağıdaki tabloda kuramların iletişim ortamlarının zengin veya doğal olma seviyelerini belirlemekteki ölçütleri karşılaştırılabilir.

| Medya Zenginliği Kuramı | Medya Doğallığı Kuramı |
|---|--|
| hızlı geribildirim alabilme yetisi | eş zamanlılık |
| vücut dili | vücut dili kullanma ve algılama yetisi |
| doğal dilin kullanımı | mimik kullanma ve algılama yetisi |
| kişinin odaklanabilmesi | eş konumluluk |
| ses ve ses tonu değişikliği gibi işaretleri iletebilme kapasitesi | konusabilme ve konuşmayı algılama yetisi |

Tablodan da görülebileceği üzere her iki kuram, iletişim ortamlarının enformasyon taşıma nitelikleri üzerinde birbirine çok benzer ölçütler üzerinden değerlendirmeler yapmaktadır. Buna karşın, kuramların eksik kaldığı nokta ise iletişim ortamlarının nitelikleri üzerinde dururken, aktarılan enformasyonun içeriği ve bu içerikle ne gibi bir etkileşime girdikleri konusunda bir değerlendirme ölçütlerinin olmamasıdır.

Teknolojinin, kültürün bir alt ögesi olduğu düşünüldüğünde, kültürü oluşturan iletişim işaretlerinin ne gibi bir içerik oluşturdukları ve bunun toplumu oluşturan bireylerce nasıl algılandıkları sorusunun kitle iletişimini açıklayabilme doğrultusunda büyük bir öneme sahip olduğu düşünülebilir. Bireyler arası veya birey-grup arası etkileşim ve enformasyon aktarımı esnasında enformasyonun aktarıldığı iletişim ortamının kapasitesi ve gücü kadar, enformasyonun oluşturduğu içeriğin ne olduğu sorusu da ortamın seçiminde rol oynamalıdır. Buna ek olarak, enformasyonu algılayacak ve işleyecek olan bireylerin farklı yaşantılara sahip oldukları ve enformasyonun yorumlanmasında bu yaşantıların da etkili olabileceği ihtimalini göz önünde bulundurmak gereklidir.

Bu çalışmada sözü edilen kuramların, örgütsel iletişim çerçevesinde küçük ölçekli gruplarda görev odaklı enformasyon aktarımını sağlayacak iletişim ortamının seçiminde etkili olabileceği söylenebilir. Buna karşın, büyük topluluklarda çift yönlü etkileşimin söz konusu olduğu uzaktan eğitim uygulamalarında iletişim ortamı seçiminde kullanılması istenilen etkili iletişimin ve etkileşimin kurulabilmesini sağlayabileceği üzerine kanıtlanmış bir çalışma bulunmamaktadır. Bu nedenle, iletişimin temel eylem olduğu öğrenme ve öğretme süreçlerinde yapılandırılacak iletişim sürecinin hangi ortamlarda ve ne şekilde gerçekleştirileceği sorusu büyük önem taşımaktadır.

2000’li yıllar itibarıyla uzaktan eğitim uygulamalarında bilgisayar destekli iletişim teknolojileri (video, bilgisayar yazımı, e-posta vb.), basılı materyaller (kitap, bülten vb.), telefon, mektup gibi iletişim araçları bir arada kullanılmaktadır. Bu araçların hangi içeriği nasıl iletecekleri ve bu içerikleri iletmek için nasıl seçildiklerini açıklamak için Medya Zenginliği ve Medya Doğallığı Kuramlarından yararlanmak mümkündür. Bununla birlikte, her iki kuramın eksik yanlarını tamamlayacak olan kültürel, iletişimsel ve pedagojik araştırmalar yapılması etkili bir uzaktan öğretim sistemi tasarlanması için anahtar nokta olmalıdır.

Kaynakça

- Daft, R. L., & Lengel, R. H. (1984). Information Richness: A New Approach to Managerial Behavior and Organizational Design. *Research in Organizational Behavior*, 191-233.
- Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987). Message Equivocality, Media Selection, and Manager Performance: Implications for Information Systems. *MIS Quarterly*, 355-366.
- Kinley, S., & Dennis, A. (1994). Reevaluating Media Richness: Cues, Feedback, and Task. *Proceedings of the Twenty-Seventh Annual Hawaii International Conference on System Sciences*, 21.
- Kock, N. (2005). Media Richness or Media Naturalness? The Evolution of Our Biological Apparatus and Its Influence on Our Behavior Toward E-Communication Tools. *IEEE TRANSACTIONS ON PROFESSIONAL COMMUNICATION*, VOL. 48, NO. 2, 117-130.
- Markus, L. M. (1994). Electronic mail as the medium of managerial choice. *Original Science Vol. 5 No.4*, 502-527.
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, Vol. 23, No. 1, 3-43.

ÜÇ-BOYUTLU ORYANTASYON ORTAMLARINDA YÖNERGE KULLANIMI

USE OF DIRECTIONS IN 3D ORIENTATION ENVIRONMENTS

Arş. Gör. Ümmühan Avcı

Başkent Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

e-Posta: uavci@baskent.edu.tr

Mehmet Ali Çinici

Hacettepe Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

e-Posta: macinici@hacettepe.edu.tr

Gülşen Sert

Hacettepe Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

e-Posta: gulsens@hacettepe.edu.tr

Arş. Gör. Nazan Sezen

Hacettepe Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

e-Posta: nsezen@hacettepe.edu.tr

Yrd. Doç. Dr. Hakan Tüzün

Hacettepe Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

e-Posta: htuzun@hacettepe.edu.tr

ÖZET:

Öğrencilerin yeni ortamlarına ve yeni durumlarına uyum süreçlerine yardımcı olabilmek için oryantasyon hizmeti devreye girmektedir. Günümüzde oryantasyon hizmeti kapsamında 3-boyutlu ortamların kullanılması gibi farklı etkinlikler yapılmaktadır. Bu çalışmada, üniversite birinci sınıf öğrencilerine yönelik üç-boyutlu bir oryantasyon ortamı kullanılmış ve bu ortamdaki yönergelerin etkililiği araştırılmıştır. Bu amaçla, fiziksel yerleşimi üç-boyutlu ortama aktarılan Hacettepe Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi (BÖTE) bölümü oryantasyon ortamı üzerinde çalışılmıştır. Çalışmanın amacına uygunluğunun sağlanması bakımından katılımcıların kullanılan gerçek ortamı daha önce görmemiş olmalarına özen gösterilmiştir. Araştırma grubu, 2008-2009 öğretim yılında iki üniversitenin farklı bölümlerinden seçilen toplam 7 öğrenciden oluşmuştur. Uygulama, katılımcılara araştırmacılar tarafından sunulan kontrollü bir ortamda yapılmıştır. "Kullanıcı tanıtım formu" ve "görev formu" ile elde edilen verilerle uygulama sonunda katılımcıların bilgileri, görev tamamlama süreleri ve yönerge kullanma durumları karşılaştırılarak bir değerlendirme yapılmıştır.

Anahtar Kelimeler: İnsan-Bilgisayar Etkileşimi, Oryantasyon Ortamı, 3-Boyutlu Ortam, Yönergeler

ABSTRACT:

In order to help students orient themselves to new environments and situations, orientation services are used. In today's world, in terms of orientation, several different activities such as use of 3D environments are available. In this study, a 3D orientation program, which targets freshman students, was used, and the effectiveness of the use of directions in this environment was investigated. To this end, the orientation environment of Hacettepe University, Department of Computer Education and Instructional Technology (CEIT), whose physical layout was transferred into a three-dimensional environment, was used. In order to provide appropriateness to the aim of the study, it was taken into account that the users have not seen the real environment before. The research group consists of a total of 7 students who were selected among different departments of two universities in the academic year of 2008-2009. The application was implemented with the participants in a controlled environment, which was arranged by the researchers. The evaluation was done through a comparison of the data such as user information, time of task completion and the use of directions obtained from "Participant Identification Form" and "Task Form".

Key Words: Human-Computer Interaction, Orientation environment, 3D environment, Guidelines

1. GİRİŞ

Öğrencilerin yeni ortamlara ve yeni durumlara uyum sağlayabilmeleri onların yaşamlarının tüm aşamalarını önemli ölçüde etkileyecektir. Bu bağlamda öğrencilerin sosyal uyum aşamalarından biri de hiç şüphesiz ortama adapte olabilmektir. Öğrencilerin hem yeni ortamlarına hem de yeni durumlarına uyum süreçlerine yardımcı olabilmek için oryantasyon programları devreye girmektedir. Oryantasyon hizmeti ile öğrencilerin okul ortamına daha etkin bir şekilde uyum sağlamaları amaçlanmaktadır (Karagözoğlu ve Kemertaş, 2004). Bilgili (2007) oryantasyonun tanımını şu şekilde yapmıştır: "Oryantasyon (duruma alıştırma) okula yeni başlayan öğrencilerin, yeni okullarını, okulda bulunan ve kendilerine yabancı olan kişileri (yönetici, öğretmen, hizmetli vb.) kurallı ve belli bir sistem ve program dâhilinde tanımalarına yardımcı olmak amacıyla yapılan bir çalışmadır". Oryantasyon hizmeti kapsamında birçok farklı etkinlik yapılabilir. Yapılabilecek etkinliklerden bazıları şu şekilde sıralanabilir: okula yeni gelen öğrencileri karşılamak, okulu ve birimlerini gezdirip tanıtmak, kütüphane, yemekhane, ulaşım vb. olanaklar hakkında açıklamalar yapmak ve bu olanaklardan nasıl yararlanacaklarını göstermek (Yeşilyaprak, 2001).

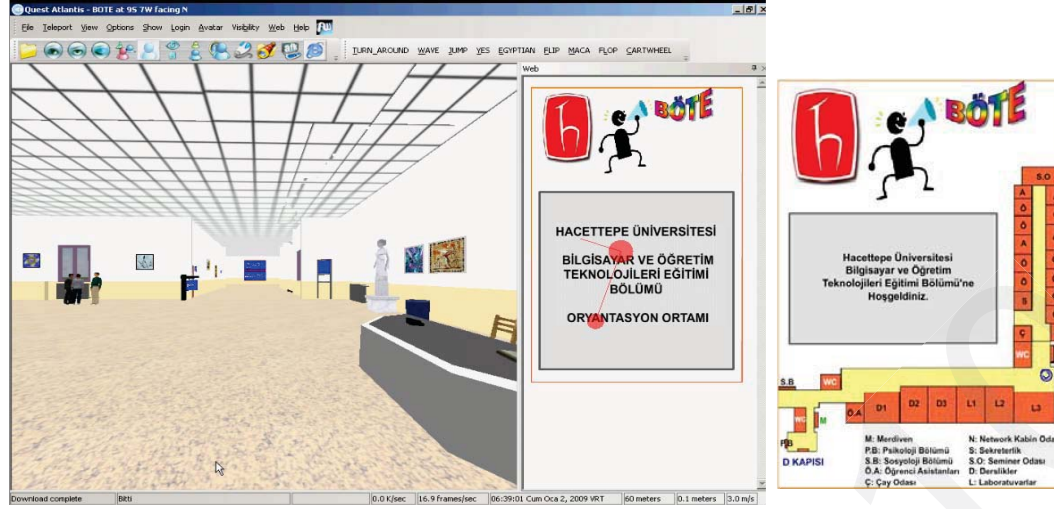
Oryantasyon hizmeti günümüzde üç-boyutlu ve çok-kullanıcılı sanal ortamlar sayesinde daha etkili bir şekilde verilebilir. Fiziksel yerleşimi üç-boyutlu ortama aktarılan birçok ortam, üç-boyut ve iki-boyut yardımıyla gerçeğe yakın hale getirilmektedir. Böylece kullanıcılar kendilerini gerçek ortamdaymış gibi hissedip, rahat hareket etmekte ve deneyim kazanmaktadır. Damer'e (1996) göre, çok-kullanıcılı sanal ortamların karakteristik özellikleri arasında üç-boyutlu ortamları içermesi, İnternet üzerinden erişilmeleri ve çok fazla sayıda kullanıcının sosyal etkileşimine avatarlar yardımı ile izin vermeleri gösterilebilir.

Bu çalışmada Hacettepe Üniversitesi Eğitim Fakültesi Bilgisayar ve Öğretim Teknolojileri Eğitimi (BÖTE) bölümü birinci sınıf öğrencilerinin fiziki yapısı hakkında bilgi sahibi olmadıkları bölüm ortamına uyum sağlamalarını kolaylaştırma amacıyla hazırlanan üç-boyutlu ortamdaki yönergelerin kullanım etkililiği araştırılmıştır. Böylece oryantasyon amacına yönelik bir ortam oluşturulup bu ortamda yönergelerin kullanım etkililiği incelenmiştir.

2. YÖNTEM

Çalışma, 3-boyutlu ortam tasarımı, geliştirilmesi ve uygulama süreci aşamalarını ortaya koymayı ve bu ortamdaki yönergelerin kullanım etkililiğinin araştırılmasını amaçlayan betimsel bir çalışmadır.

2.1. Geliştirilen Etkileşimli Sistemin Tanıtımı



Resim 1: Oryantasyon ortamı ekran görüntüsü

Hacettepe Üniversitesi BÖTE Bölümünü yeni kazanan öğrencilere bölümün gerçek hayattaki fiziksel yerleşimini tanıtmaya yönelik etkileşimli bir sistem kullanılarak bir oryantasyon ortamı hazırlanmıştır. Bu nedenle ortam, 3 boyutlu (3-B) ve 2 boyutlu (2-B, diğer bir deyişle bir Web tarayıcısı) bileşenlerle birlikte bir sohbet ortamını içeren Active Worlds programının sağladığı nesnelere kullanılarak hazırlanmıştır. Kullanıcının nerede olduğunu gösteren animasyonla desteklenmiş BÖTE'nin krokisinin bulunduğu iki-boyutlu ortam, HTML dili ve Macromedia Flash programı kullanılarak hazırlanmıştır. Kullanılan ortamda, aynı anda birden fazla kullanıcıya ortamı girebilmekte ve bireysel olarak görevleri yerine getirerek kendi hızlarında ilerleyebilmektedir. Resim 1'de oryantasyon ortamı örnek ekran görüntüsü bulunmaktadır.

2.2. Etkileşimli Sistemin Tasarım ve Geliştirilme Süreci

Tasarım ve geliştirme faaliyetlerine geçilmeden önce yapılacak olan çalışmaları sağlam temeller üzere oturtmak için geniş bir literatür taraması yapılmıştır. Literatür taramasında makaleler, elektronik kitaplar, kitaplar, konferans bildirileri, 3-B ortamlarla ilgili çalışmalar ayrıntılı bir şekilde incelenmiştir.

Tasarım aşamasına ilk olarak "Biz BÖTE'yi yeni kazanan öğrencilerin yerinde olsaydık ne görmek, ne bulmak isterdik?" sorusuyla başlanmıştır. Daha sonra hedef kitleye uygun olan BÖTE 1. sınıf öğrencilerine, bölüme geldiklerinde aradıkları yerleri bulmaları konusunda yaşadıkları sıkıntılarını ve bu sıkıntılar hakkındaki çözüm önerilerini öğrenmek amacıyla bir anket uygulanmıştır. Anketten elde edilen veriler "Sorunlar ve Ne İsterler?" başlığı altında toplanmış ve sıralanmıştır. Araştırmacılar, ankete katılan öğrencilerin önerileri doğrultusunda tasarıma başlamışlardır. Bu önerilerde dikkat çeken ve en çok bahsedilen nokta bölümün bir krokisinin ve gerekli yönlendirmelerin olmasının istenmesidir. Bu nedenle kullanıcıların beklentilerine cevap verebilecek bir etkileşimli ortam tasarımı yapılmıştır.

Geliştirme aşamasında 2-B ortamda "10 sn. uygulaması"nın yapılmasına karar verilmiştir. Bu uygulama 2-B ortamda bulunan krokinin sürekliliğini engellemek ve böylece 3-B ortamdaki "Ben Neredeyim?" tabelalarının ne derece etkin kullanıldığını belirlemek amacıyla yapılmıştır. Plana göre, 2-B ortamdaki kroki 10 saniye sonra otomatik olarak kaybolacak ve yerine "Hacettepe Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü Oryantasyon Ortamı" yazan bir metin gelecektir. Böylece ortamda kullanılan yönergelerin etkililiğinin tespit edilmesi hedeflenmiştir.

Daha sonra katılımcılarla çalışmanın amacı ve süreç hakkında bilgi veren bir tanıtım metni hazırlanmıştır. Tanıtım metninin devamında, katılımcıların yerine getirmeleri beklenen görevler yer almaktadır. Her kullanıcıdan beş tane görevi yerine getirmesi beklenmektedir. Bölümde üç tane laboratuvar, üç tane derslik mevcuttur. Her beş görevde de birer laboratuvar, birer derslik bulunmasına ve geri kalan üç görevin de idari bölümdeki odalardan seçilmesine karar verilmiştir. Görevler bu koşulları sağlayacak şekilde rastgele atanarak oluşturulmuştur. Böylece uygulama ortamı görev tanımlamalarıyla birlikte sürece hazır hale getirilmiştir.

2.3. Çalışma Grubu

Oryantasyon programının hedef kitleyi Hacettepe Üniversitesi BÖTE bölümünü yeni kazanan öğrencilerdir. Bu amaçla uygulama kapsamına alınacak katılımcıların, daha önce BÖTE bölümünün fiziksel ortamını hiç görmemiş ve hedef kitlenin yaş grubuna uyması için de Lisans birinci sınıf öğrencisi olmalarına dikkat edilmiştir. Çalışma grubu 4 kız ve 3 erkek öğrenci olmak üzere 7 kullanıcıdan oluşmaktadır. 7 kullanıcının 5'i Hacettepe Üniversitesi OFMA Fizik Eğitimi birinci sınıf öğrencisi, 1'i ODTÜ Makine Mühendisliği, 1'i de ODTÜ Gıda Mühendisliği birinci sınıf öğrencisidir.

2.4. Uygulama Süreci

Oryantasyonun amacına ulaşabilmesi bakımından uygulama yerlerinin BÖTE'den bağımsız yerler olmasına dikkat edilmiştir. Uygulama süreci boyunca katılımcıların, tepkilerini gözlemlemek ve yön bulma yönergelerine ne kadar sıklıkla ve hangi sürelerle başvurduklarını tespit etmek amacıyla video çekimleri yapılmış ve yerine getirdikleri görevlere ilişkin ihtiyaç duyulan veriler (görev başarıma durumu ve zamanı) toplanmıştır.

Tüm görevleri bitiren katılımcılara doldurmaları için birer değerlendirme formu verilmiştir. Değerlendirme formunu doldurduktan sonra katılımcılarla görüşmeler yapılmış ve onların ortam hakkındaki görüşleri video kaydedici ile kayıt altına alınmıştır. Görüşmeler ile katılımcıların neler hissettikleri, neler yaşadıkları ve düşündükleri öğrenilmiştir. Böylece katılımcıların hem yazılı hem de sözlü olarak uygulama hakkındaki fikirleri öğrenilmiştir.

2.5. Veri Toplama Araçları

Uygulama sürecinde kullanılan veri toplama araçları aşağıda sunulmuştur:

- Anket (BÖTE'yi yeni kazanan öğrencilerin, oryantasyon ortamından beklentileri)

- Kullanıcı Tanıma Formu,
- Görevler ve Yapılabilirlik Dereceleri Formu,
- Oryantasyon Ortamı Değerlendirme Formu,
- Video çekimleri.

3. BULGULAR

Bu bölümde çalışmada kullanılan veri toplama araçlarından elde edilen bulgulara yer verilmiştir:

3.1. Kullanıcı Bilgilerine Yönelik Bulgular

Kullanıcılara verilen “kullanıcı tanıma formu”na verdikleri cevaplar çerçevesinde, şu bilgilere ulaşılmıştır: 1, 2 ve 4 numaralı kullanıcılar; daha önce oryantasyon programı kullanmamış ve bu tür bir üç-boyutlu ortam kullanmamıştır. Ayrıca, bilgisayar kullanma becerisi yönünden 1 ve 4 numaralı kullanıcılar kendilerini orta düzeyde, 2 numaralı kullanıcı ise düşük düzeyde değerlendirmiştir. Kullanıcı 3 ise, daha önce bir oryantasyon programı kullandığını fakat herhangi bir üç-boyutlu ortam ile etkileşimde bulunmadığını belirtmiştir. Ayrıca bu kullanıcı, bilgisayar kullanma becerisini düşük düzeyli olarak değerlendirmiştir.

3.2. Kullanıcıların Ortamdaki Uygulamalarına İlişkin Bulgular

Kullanıcılardan elde edilen verilerin analizinden aşağıdaki bulgulara ulaşılmıştır:

- Kullanıcılar, kendilerine verilen görevleri yerine getirmek için “Ben Neredeyim?” tabelalarını kullanmışlardır. Kullanıcıların her birinin, kendilerine verilen görevleri yerine getirmek için harcadıkları toplam süreler incelenmiştir. Kullanıcıların görev tamamlama sürelerinin, yönerge tabelalarının kullanımı ile bağlantısının olup olmadığının incelenmesi için, her bir kullanıcının bu tabelalara ne sıklıkla başvurdukları gözlemlenmiştir. İlgili bulgular Tablo-1’de gösterildiği gibidir.
- Kullanıcılar, 2-B ortamdaki krokiyi de kullanmışlardır. Ancak kendileriyle yapılan görüşmeler sonucunda “Ben Neredeyim?” tabelalarının bazılarında birkaç kez basmalarının sebebinin krokinin 10 saniye sonra kapanmasından kaynaklandığı anlaşılmıştır.
- Kullanıcılar, 3-B ortamdaki yönergelerin hepsini yeterli bulduklarını belirtmişlerdir.
- Kullanıcılar, 2-B ortamdaki yönergelerin; zaman kısıtlaması olmasından ve krokide öğretim görevlilerinin adlarının belirtilmemesinden dolayı geliştirilmesi gerektiğini söylemişlerdir.
- ‘3-B ortamdaki “Ben Neredeyim?” tabelaları görevleri yerine getirmekte ne kadar faydalı oldu?’ sorusuna; kullanıcıların %43’ü (7’de 3) “çok fazla” faydalı oldu derken, %57’si (7’de 4) de “fazla” faydalı oldu demiştir.
- ‘3-B ortamdaki “Ben Neredeyim?” tabelaları yönünüzü bulmanızda ne kadar faydalı oldu?’ sorusuna; kullanıcıların %57’si (7’de 4) “orta” düzeyde faydalı olduğunu, %28,5’i (7’de 2) “fazla” faydalı olduğunu ve %28,5’i (7’de 2) de “çok fazla” faydalı olduğunu belirtmiştir.
- Oryantasyon ortamında yön bulurken kullanıcıların %85’nin (7’de 6) 2-B ortamdaki krokiyi, %15’nin (7’de 1) ise 3-B ortamdaki tabelaları kullandıkları görülmüştür.
- Kullanıcıların %85’i (7’de 6) bu oryantasyon ortamının gerçek hayatta da kullanılabileceğini, %15’i (7’de 1) ise ortamın biraz daha geliştirildikten sonra kullanılabileceğini söylemiştir.
- Kullanıcıların %57’si (7’de 4) oryantasyon ortamını “çok eğlenceli”, %43’ü (7’de 3) de “eğlenceli” bulmuştur.

Aşağıdaki tabloda, kullanıcıların kendilerine verilen her bir görevi gerçekleştirmek için harcadıkları zaman (sn) ve bu görevleri yerine getirmek için kaç kez “Ben Neredeyim?” levhalarını kullandıklarına dair sayısal verilerin tasnifi yer almaktadır.

| K.No | 1. Görev Süre / Tabela | 2. Görev Süre / Tabela | 3. Görev Süre / Tabela | 4. Görev Süre / Tabela | 5. Görev Süre / Tabela | Toplam Süre | Toplam Tıklama Sayısı |
|------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------------|-----------------------------|
| 1 | 110 sn / - | 45 sn / - | 55 sn / 1 kez | 7 sn / - | 32 sn / - | 249 sn | 1 kez |
| 2 | 74 sn / - | 60 sn / 1 kez | 46 sn / 6 kez | 31 sn / 1 kez | 32 sn / 1 kez | 243 sn | 9 kez |
| 3 | 78 sn / 2 kez | 74 sn / - | 170 sn / 3 kez | 8 sn / 1 kez | 17 sn / - | 347 sn | 6 kez |
| 4 | 167 sn / 1 kez | 60 sn / 1 kez | 50 sn / 3 kez | 42 sn / 4 kez | 54 sn / - | 373 sn | 9 kez |
| 5 | 74 sn / 1 kez | 60 sn / 1 kez | 55 sn / 1 kez | 14 sn / 1 kez | 26 sn / 1 kez | 229 sn | 5 kez |
| 6 | 122 sn / - | 124 sn / - | 152 sn / 1 kez | 59 sn / 3 kez | 88 sn / 5 kez | 545 sn | 9 kez |
| 7 | 142 sn / 1 kez | 85 sn / 1 kez | 148 sn / 1 kez | 59 sn / 6 kez | 42 sn / 1 kez | 476 sn | 10 kez |

Tablo-1: Kullanıcıların görevlerini tamamlama süreleri ve her bir görev için “Ben Neredeyim?” tabelalarına tıklama sayıları

4. SONUÇ

Elde edilen bulgular ışığında kullanıcıların bilgisayar kullanma becerileri ile görev tamamlama süreleri arasında anlamlı bir ilişki bulunmadığı görülmüştür. Benzer şekilde, kullanıcıların bilgisayar kullanma becerisi ile “Ben Neredeyim?” yönergelerine başvurma sayıları arasında da anlamlı bir ilişkiye rastlanamamıştır. Ancak, kullanıcıların görev tamamlama süreleri ile “Ben Neredeyim?” yönergelerine başvurma sayıları arasında anlamlı olarak değerlendirilebilecek bir ilişki elde edilmiştir. Oryantasyon ortamında yönlerini kaybeden öğrencilerin bu yönergeler oldukça sık başvurdukları anlaşılmıştır. Kullanıcıların 2-B ortamdaki yardım araçlarını (krokiyi) 3-B ortamdaki tabelalardan daha fazla kullandıkları, yön bulurken yönergelere ihtiyaç duydukları gözlemlenmiştir. Kullanıcı görüşleri, ortamın eğlenceli olduğunu ve geliştirilerek gerçek hayatta kullanılabilmesini göstermiştir.

Ayrıca kullanıcılarla uygulama sonunda yapılan görüşmelerde, kullanıcıların 2-B ve 3-B ortamına ilişkin görüşleri alınmıştır. Bu görüşmeler sonunda 2-B ve 3-B ortamı arasında yaşanan mesafe kargaşasının giderilmesi, 2-B ortamında iyileştirmelerin yapılması, 3-B ortamında daha fazla yönlendirme tabelası olması ve bu tabelaların görüş açılarının genişletilmesi gibi hususlar ortamın iyileştirilmesine yönelik bazı önemli noktalar olarak belirlenmiştir.

Tablo 1’i incelediğimizde, sistemde kaybolmadan ilerleyen kullanıcıların, kendilerine verilen görevleri yerine getirirken, yönlendirme tabelalarını kullanma durumlarının genel olarak olumlu katkı sağladığı sonucuna varılabilir. Örneğin, bir görevi yerine getirmek için bu tabelaları bir kez kullanan kullanıcının 60 sn zaman harcarken, üç kez kullandığında 50 sn, dört kez kullandığında ise 42 sn zaman harcadığı görülmektedir. Farklı değişkenlerin söz konusu olduğu durumlarda, bu sonuçun gözlemlenememesi araştırmacılar tarafından not edilerek çalışmanın geliştirilmesine yönelik düzeltilmesi gereken bir durum olarak dikkate alınmıştır.

5. ÖNERİLER

Bu çalışma doğrultusunda aşağıdaki öneriler geliştirilmiştir:

- Uygulamanın BÖTE'yi yeni kazanmış öğrencilerle yapılması ortamın geliştirilmesine katkıda bulunabilir.
- BÖTE'yi yeni kazanmış öğrencilerin görüşleri alınıp onlardan gelecek dönütler doğrultusunda değişiklikler yapılabilir.
- Daha fazla kullanıcı grubuna uygulanabilir.
- 2-B ortamında kullanılan krokinin daha ayrıntılı hale getirilmesi ve ekranda kalma süresinin uzatılması ile araştırma süreci tekrar edilebilir.
- Sadece 2-B ortamın ya da sadece 3-B ortamın etkililiği araştırılabilir.
- Elde edilen veriler sonucunda düzeltmeler yapıp araştırma süreci tekrarlanabilir.
- Uygulama sürelerinin net olarak elde edilmesi için belirleyici koşullar oluşturulabilir.
- Geliştirilen oryantasyon ortamının etkililiği, uygulamanın gerçek hayata geçirilmesiyle araştırılabilir.
-

6. KAYNAKLAR

- Bilgili, F. (2007). İlköğretim I. sınıfa yeni başlayan öğrencilere uygulanan eğitim-öğretime hazırlık çalışmalarının öğrenci, öğretmen ve veli görüşlerine göre değerlendirilmesi. Çukurova Üniversitesi Sosyal Bilimler Ens., Yüksek Lisans Tezi.
- Damer, B. (1996). Inhabited virtual worlds: A new frontier for interaction design. Interactions, 3(5), 27-34.
- Karagözoğlu, C. ve Kemertaş, İ. (2004). Eğitime üçüncü boyut. Psikolojik Danışma ve Rehberlik, İstanbul, Birsen Yayınevi.
- Yeşilyaprak, B. (2001), Eğitimde rehberlik hizmetleri, Nobel Yayın Dağıtım, Ankara.

ÜNİVERSİTE TARİH VE TÜRKÇE BÖLÜMÜ ÖĞRENCİLERİNİN BİLİŞİM TEKNOLOJİLERİNE YÖNELİK TUTUMLARININ DEĞERLENDİRİLMESİ

THE EVALUATION OF ATTITUDES OF HISTORY AND TURKISH LANGUAGE TEACHING STUDENTS IN UNIVERSITIES TOWARD USING INFORMATION TECHNOLOGY

Mehmet AKSÜT
Mega Eğitim Danışmanlık
dr.aksut@gmail.com

Songül ATEŞ
Uşak Üniversitesi F.Ed.Fak.
songul-20-23@hotmail.com

Onur ER
Kafkas Üniversitesi Eğt.Fak.
Onurer1827@gmail.com

Sevgi BALABAN
Uşak Üniversitesi F.Ed.Fak.
aslanknt@gmail.com

Özet

Günümüzde bilişim teknolojisi toplumun her kesiminde yaygın olarak kullanılmaktadır. Araştırmanın amacı; üniversite Tarih ve Türkçe bölümü öğrencilerinin bilişim teknolojilerine yönelik tutumlarının değerlendirilmesidir. Araştırmanın evreni Uşak Fen Edebiyat Fakültesi Tarih bölümü öğrencileri ile Kafkas Üniversitesi Eğitim Fakültesi Eğitim Fakültesi Türkçe bölümü öğrencileri, örnekleme ise bu fakültelerden tesadüfi örneklem yoluyla seçilen 101'er öğrencidir.

Araştırma bulgularına göre; katılımcıların tümü "Üniversite web sitelerinde Türkçe/Tarih Eğitimi Araştırmalarına kaynak olacak bilgiler artırılmalıdır" (4,25-4,41) görüşünü yüksek düzeyde paylaşmaktadırlar. "İnternet hayatımı kolaylaştırır" (3,80, 3,72) diyenlerin sayısı da yüksektir. İnternette araştırma yapmayı kütüphanelerde araştırma yapmaya tercih edenler de azınlıktadır. (2,71-2,83)

Sonuç olarak; üniversite öğrencileri bilişim teknolojilerini kullanmada olumlu bir tutum sergilemekte, ancak internetteki bilgilerin teyid edilmesinin gerekliliğine inanmaktadırlar.

Anahtar Kelimeler: araştırma, bilişim teknolojileri, internet

Abstract

Today information technology is widely used in every segment of society. The aim of this study is to evaluate the attitudes toward information technology of Turkish Language Teaching and History students. The population of this study is composed of History department students in Uşak University faculty of Science and Arts and Turkish Teaching department students in Kafkas University faculty of Education. The sample is composed of for the study randomly selected 101 Turkish Language teaching and 101 History students.

According to research findings; all of the participants think "Information sources about Turkish language and History education in university websites should be increased" (4,25-4,41). "Internet makes my life easier" (3,80- 3,72). A large part of the participants do not prefer research on internet, than library (2,71-2,83).

As a result, college students have a positive attitude toward using information technology but they believe that the accuracy of the information found in internet should be confirmed.

Key words: Research, information technologies, internet

GİRİŞ

İngiltere'de 1765 yılında ilk buharlı makinenin icadıyla başlayan Sanayi Devrimi, günümüze kadar devam eden ve toplumların refah düzeylerini iyileştiren hızlı bilimsel gelişme ve teknolojik ilerlemelerin ilk kıvılcımı oldu. Sanayi Devrimi'nden önceki dönemde ülkeler arasında sahip oldukları üretim teknolojileri yönünden önemli bir farklılık yoktur. Devletler birbirinden "zengin devletler- fakir devletler ya da hükmeden devletler- hükmedilen devletler" diye ayrılırken Sana Devrimi'ni gerçekleşmesi ile bilim ve teknolojiye sağladıkları ilerlemelere göre ayırma yapılmaya başlanmıştır.

Mustafa Kemal Atatürk bilimsel düşüncenin evrenselliğini, bilimin insanlığın ortak malı olduğunu şu sözlerle ifade etmiştir: "Dünya' da her şey için, medeniyet için, maneviyat için, hayat için, muvaffakiyet için, en hakiki mürşit ilimdir, fendir; ilim ve fennin haricinde mürşit aramak gaflettir, cehalettir, delâlettir. Yalnız ilim ve fennin yaşadığımız her dakikadaki safhalarının tekamülünü idrak etmek ve terakkiyetini zamanında takip etmek şarttır."

Bilimsel gelişmenin izlenmesi ile teknolojik düzeyin her gün yükseldiği çağımıza, atom çağı, uzay çağı, bilgisayar çağı vb. isim yakıştırmaları yapılırken, son yıllarda yaygınlaşan İnternet ve İnternet'in bilgi akımında sunduğu olanaklar Üçüncü Sanayi Devrimi şeklinde nitelendirilmekte ve Bilgi Toplumu'ndan söz edilmektedir. Bilgi toplumu aşamasıyla dünya gittikçe küçülmektedir. Bilimsel araştırma ve teknolojik gelişmeye önem verenler daha yüksek bir refah düzeyine erişebilirler.

Her gün gelişen ve yenilenen bilişim teknolojisi sayesinde eğitim, sağlık, haber, askeri, kamu ve özel sektörlerde hızlı, kontrol edilebilir, ekonomik vb. şekilde işlevlerini yürütmesini sağlamaktadır. İnternet sürekli ve hızlı bir şekilde insan hayatına girmekte yaygınlaştıkça da ucuzlamaktadır. Bu nedenle önceleri üst tabaka kullanırken günümüzde diğer kesimler tarafından kullanımı yaygınlaşmıştır. Özellikle teknolojiye yaşanan hızlı gelişme ve değişmelerin bilgi bilimleri alanına yansımaları internet üzerindeki kullanıcı merkezli araştırmalar artmıştır.

İnsanlara kısa sürede daha fazla bilgiye ulaşma ve paylaşmayı sağlayan bilişim teknolojileri herkes gibi üniversite öğrencileri de belirli amaçlarla bilişim teknolojisini kullanmaktadırlar. Türkçe ve Tarih bölümü öğrencilerinin öğrenim yaşantıları boyunca kullandıkları bilgi kaynakları arasında internet önemli bir yere sahiptir.

Araştırmanın Amacı

Araştırmanın amacı; üniversite Tarih ve Türkçe bölümü öğrencilerinin bilişim teknolojilerine yönelik tutumlarının değerlendirilmesidir.

Yöntem

Araştırmada tarama yöntemi kullanılmıştır. Uygulanan ankette 20 soru bulunmaktadır. Bunlarda beşi kişisel bilgilerin tespitine yöneliktir. Tutumlar beşli likert ölçeği ile değerlendirilmiştir. Araştırmanın evreni Uşak Fen Edebiyat Fakültesi Tarih bölümü öğrencileri ile Kafkas Üniversitesi Eğitim Fakültesi Eğitim Fakültesi Türkçe bölümü öğrencileri, örnekleme ise bu fakültelerden tesadüfi örneklem yoluyla seçilen 101'er öğrencidir. Araştırma Uşak ve Kafkas Üniversitesi 2009-2010 öğretim yılı öğrencileri ile sınırlıdır.

Araştırmanın Önemi

Tarih ve Türkçe bölümü öğrencilerinin bilişim teknolojilerine ilişkin tutumlarını belirlemek açısından bu çalışma önemlidir.

Araştırmanın Bulguları

Araştırma bulgularına göre; Tarih ve Türkçe Bölümü öğrencilerinin bilişim teknolojilerinin kullanılmasına ilişkin tutumlarında anlamlı bir fark bulunamamıştır. Uygulanan araştırma anketinde ilk beş soruya ilişkin veriler aşağıda gösterilmektedir. Cinsiyet gruplarına göre dağılımı Tablo 1'de verilmektedir. Tabloda görüldüğü gibi bayan katılımcılar yaklaşık % 40 oranındadır.

| Cinsiyet | Frekans | Yüzde |
|----------|---------|--------|
| Kız | 77 | 38,12 |
| Erkek | 125 | 61,88 |
| Toplam | 202 | 100,00 |

Tablo 1: Cinsiyet Grupları Açısından Yüzde ve Frekans Dağılımı(2009-2010 eğitim-öğretim yılı)

Örneklemin interneti ne kadar sıklıkta kullandığına ilişkin dağılım tablo 2'te görülmektedir. Burada görüldüğü üzere katılımcılar haftada 10 saat kadar interneti kullanmaktadır.

| Kullanım sıklığı | Frekans | Yüzde |
|------------------|---------|--------|
| 5 saatten az | 96 | 47,00 |
| 5-10 saat | 61 | 30,70 |
| 15-20 saat | 20 | 13,90 |
| 20 saatten çok | 17 | 8,40 |
| Toplam | 202 | 100,00 |

Tablo 2: İnterneti Haftada Ne Kadar Sıklıkta Kullandığına İlişkin Yüzde ve Frekans Dağılımı

Örneklemin internete nerede bağlandıklarına ilişkin dağılım tablo 3'te görülmektedir.

| Kullanım yeri | Frekans | Yüzde |
|---------------|---------|--------|
| Ev | 52 | 25,7 |
| Okul | 10 | 5,0 |
| İnternetevi | 102 | 50,5 |
| Yurt | 34 | 16,8 |
| Diğer | 4 | 2,0 |
| Toplam | 202 | 100,00 |

Tablo 3: İnternete Nerede Bağlandıklarına İlişkin Yüzde Ve Frekans Dağılımı

Tabloda görüldüğü gibi araştırmaya katılanların yarısı internetevlerinden internete girmektedirler. Kalanların içinde en yoğun kesim evden internete girmektedirler. (%25,7'si evden, %16,8'i yurttan, %5,0'ı okuldan, %2,0'ı diğer)

Örneklemin cep telefonu ile internete bağlanma durumuna ilişkin dağılım tablo 4'te görülmektedir. Burada da görüldüğü gibi cep telefonundan internete bağlanmayı tercih edenler dörtte bir oranındadır.

| Cep Telefonu ile bağlanma | Frekans | Yüzde |
|---------------------------|---------|--------|
| Evet | 56 | 27,70 |
| Hayır | 146 | 72,30 |
| Toplam | 202 | 100,00 |

Tablo 4: İnternete Cep Telefonu İle Bağlanma Durumlarına İlişkin Yüzde Ve Frekans Dağılımı

Tablo 4'te görüldüğü gibi araştırmaya katılanların %72,3'ü internete cep telefonu ile bağlanmadıklarını %27,7'si internete cep telefonu ile bağlandıklarını belirtmişlerdir.

Örneklemin interneti ve bilgisayarı en çok hangi amaçla kullandığına ilişkin dağılım tablo 5'te belirtilmiştir.

| Amaç | Frekans | Yüzde |
|--------|---------|--------|
| Eğitim | 74 | 36,60 |
| Haber | 38 | 18,80 |
| Sohbet | 48 | 23,80 |
| Oyun | 10 | 5,00 |
| Diğer | 32 | 15,80 |
| Toplam | 202 | 100,00 |

Tablo 5: İnterneti Ve Bilgisayarı En Çok Hangi Amaçla Kullandığına İlişkin Dağılımı

Katılımcıların tutumlarına ilişkin ağırlıklı ortalamaların yer aldığı tablo aşağıdadır.

| SORU | GÖRÜŞLERİNİZ | Türkçe Ağırlıklı Ortalama | |
|------|--|---------------------------|--------------------------|
| | | Türkçe Ağırlıklı Ortalama | Tarih Ağırlıklı Ortalama |
| 6 | İnternet hayatımı kolaylaştırır | 3,80 | 3,72 |
| 7 | İnterneti kullanmak başarıyı artırır | 3,36 | 3,37 |
| 8 | İnternet üzerinden oyun oynamayı severim | 2,16 | 2,83 |
| 9 | Eş zamanlı olarak insanlar ile görüşüp bilgi paylaşımında bulunabilirim | 3,25 | 3,63 |
| 10 | İnternet üzerinden bilgi araştırmak benim için zevklidir | 3,56 | 3,50 |
| 11 | İnternet üzerinden aradığım bilgiye kolayca ulaşabilirim | 3,57 | 3,65 |
| 12 | İnternet üzerindeki tarih içerikli web siteleri yeterince güvenli bilgi içermektedir | 2,59 | 2,68 |
| 13 | İnternette araştırma yapmayı kütüphanelerde araştırma yapmaya tercih ederim | 2,71 | 2,83 |
| 14 | Ödevlerimi hazırlarken çoğunlukla internette yararlanırım | 3,13 | 3,22 |
| 15 | İnternet benim için önemlidir | 3,60 | 3,52 |
| 16 | İnternet Tarih Araştırmalarının seyrini olumlu yönde etkiler | 2,94 | 3,20 |
| 17 | Tarihle ilgili sitelere üye olurum | 2,47 | 3,12 |
| 18 | İnternetteki bilgilerin doğruluğu teyid edilmelidir | 3,91 | 3,85 |
| 19 | Üniversite web sitelerinde tarih araştırmalarına kaynak olacak bilgiler artırılmalıdır | 4,25 | 4,41 |

Tablo 6: Türkçe ve Tarih Bölümü Öğrencilerinin Bilişim Teknolojilerini Kullanmalarına İlişkin Tutumları

Araştırma bulgularına göre; katılımcıların bilişim teknolojilerine yönelik tutumları aşağıdaki tabloda görülebileceği gibi; "Üniversite web sitelerinde Türkçe/Tarih Eğitimi Araştırmalarına kaynak olacak bilgiler artırılmalıdır" (4,25-4,41) görüşünü yüksek düzeyde paylaşmaktadırlar. Katılımcıların büyük bir bölümü "İnternetteki bilgilerin doğruluğu teyid edilmelidir" (3,91-3,85) görüşündedir. "İnternet hayatımı kolaylaştırır" (3,80, 3,72) diyenlerin sayısı da yüksektir.

| SORU | GÖRÜŞLERİNİZ | Tarih Ağırlıklı Ortalama |
|------|--|--------------------------|
| 19 | Üniversite web sitelerinde tarih araştırmalarına kaynak olacak bilgiler artırılmalıdır | 4,41 |
| 18 | İnternetteki bilgilerin doğruluğu teyid edilmelidir | 3,85 |
| 6 | İnternet hayatımı kolaylaştırır | 3,72 |
| 11 | İnternet üzerinden aradığım bilgiye kolayca ulaşabilirim | 3,65 |
| 9 | Eş zamanlı olarak insanlar ile görüşüp bilgi paylaşımında bulunabilirim | 3,63 |
| 15 | İnternet benim için önemlidir | 3,52 |
| 10 | İnternet üzerinden bilgi araştırmak benim için zevklidir | 3,5 |
| 7 | İnterneti kullanmak başarıyı artırır | 3,37 |
| 14 | Ödevlerimi hazırlarken çoğunlukla internette yararlanırım | 3,22 |
| 16 | İnternet Tarih Araştırmalarının seyrini olumlu yönde etkiler | 3,20 |
| 17 | Tarihle ilgili sitelere üye olurum | 3,12 |
| 8 | İnternet üzerinden oyun oynamayı severim | 2,83 |
| 13 | İnternette araştırma yapmayı kütüphanelerde araştırma yapmaya tercih ederim | 2,83 |
| 12 | İnternet üzerindeki tarih içerikli web siteleri yeterince güvenli bilgi içermektedir | 2,68 |

Tablo 7: Tarih Bölümü Öğrencilerinin Bilişim Teknolojilerini Kullanmalarına İlişkin Tutumları

“İnternet üzerindeki Türkçe/Tarih Eğitimi içerikli web siteleri yeterince güvenli bilgi içermediği” düşüncesi ağırlıklı olarak öne çıkmaktadır. (2,59-2,68) Yine İnternet üzerinden oyun oynamayı tercih etmemektedirler. (2,16, 2,83) İnternette araştırma yapmayı kütüphanelerde araştırma yapmaya tercih edenler de azınlıktadır. (2,71-2,83)

| SORU | GÖRÜŞLERİNİZ | Türkçe Ağırlıklı Ortalama |
|------|---|---------------------------|
| 19 | Üniversite web sitelerinde Türkçe Eğitimi Araştırmalarına kaynak olacak bilgiler artırılmalıdır | 4,25 |
| 18 | İnternetteki bilgilerin doğruluğu teyid edilmelidir | 3,91 |
| 6 | İnternet hayatımı kolaylaştırır | 3,80 |
| 15 | İnternet benim için önemlidir | 3,60 |
| 11 | İnternet üzerinden aradığım bilgiye kolayca ulaşabilirim | 3,57 |
| 10 | İnternet üzerinden bilgi araştırmak benim için zevklidir | 3,56 |
| 7 | İnterneti kullanmak başarıyı artırır | 3,36 |
| 9 | Eş zamanlı olarak insanlar ile görüşüp bilgi paylaşımında bulunabilirim | 3,25 |
| 14 | Ödevlerimi hazırlarken çoğunlukla internette yararlanırım | 3,13 |
| 16 | İnternet Türkçe Eğitimi Araştırmalarının seyrini olumlu yönde etkiler | 2,94 |
| 13 | İnternette araştırma yapmayı kütüphanelerde araştırma yapmaya tercih ederim | 2,71 |
| 12 | İnternet üzerindeki Türkçe Eğitimi içerikli web siteleri yeterince güvenli bilgi içermektedir | 2,59 |
| 17 | Türkçe Eğitimi ile ilgili sitelere üye olurum | 2,47 |
| 8 | İnternet üzerinden oyun oynamayı severim | 2,16 |

Tablo 8: Türkçe Bölümü Öğrencilerinin Bilişim Teknolojilerini Kullanmalarına İlişkin Tutumları

Sonuç olarak; üniversite öğrencileri bilişim teknolojilerini kullanmada olumlu bir tutum sergilemekte, ancak internetteki bilgilerin teyit edilmesinin gerekliliğine inanmaktadırlar. Tarih bölümü öğrencileri alanlarına yönelik sitelere üye olmayı yeğlemektedirler.

KAYNAKLAR

- Akkoyunlu B. (1999), İnternetin Öğretim Sürecinde Kullanımı, ODTÜ Bilişim Teknolojileri Işığında Eğitim Konferansı Bildiriler Kitabı, sf.77-82, Ankara.
- Birinci H. G. (2007) Tarihçilerin Bilgi Arama Davranışları, Türk Kütüphaneciliği Dergisi, C.21, S 1, Sf. 29-44, Ankara.
- Dinler Zeynel. (2009) Bilimsel Araştırma ve e-kaynaklar 6.Basım Ekin Yayıncılık Bursa.
- Doğan Y, E. Dinç (2007) Birinci Elden Tarih Kaynaklarının Sosyal Bilgiler ve Tarih Derslerinde İnternet Üzerinde Kullanımı: ABD ve İngiltere’den Uygulama Örnekleri. TSA / Yıl: 11, S: 2, Ağustos 2007. Ankara.
- Karahan M., E. İzci, (2001) Üniversite Öğrencilerinin İnternet Kullanım Düzeyleri ve Beklentilerinin Değerlendirilmesi, Milli Eğitim Dergisi, Sayı 150, Mart, Nisan, Mayıs 2001 Ankara.

ÜST DÜZEYDE BİLİŞSEL ETKİNLİK GEREKTİREN SOYUT KAVRAMLARIN , BİLGİSAYAR DESTEKLİ MATEMATİK EĞİTİMİ İLE SOMUTLAŞTIRILMASI VE EĞİTİME KATKISI

REIFYING THE ABSTRACT CONCEPTS REQUIRING UPPER LEVEL COGNITION IN COMPUTER AIDED MATHEMATICS EDUCATION AND THEIR CONTRIBUTION TO THE EDUCATION

Nilüfer DOYRANLI¹
¹Özel Uğur Eğitim Kurumu
doyanlin@hotmail.com

Ali GÜNEŞ²
²Istanbul Aydın Üniversitesi
aligunes@aydin.edu.tr

ÖZET: Bu çalışmada; matematik eğitiminde soyut kavramların bilgisayar yazılımlarıyla görsellik kazandırılarak somutlaştırılması ve eğitime katkısı araştırılmıştır. İstanbul Özel Uğur Lisesi 10.Sınıf öğrencileriyle Grafik Analiz Yazılımı ve öğrenciler üzerindeki etkisi incelenmiştir. Araştırmanın ortaya koyduğu bulgular ışığında, bilgisayar destekli matematik öğretim yönteminin geleneksel öğretim yöntemine göre daha etkili olduğu ve matematik yazılım sistemlerinin soyut kavramların somutlaştırılması ve anlaşılabilirliklerinin artırılmasında işlevsel bir öğretim materyali olduğu gözlenmiştir. Bu çalışmaya göre; bilgisayar destekli eğitim yazılımlarının küresel anlamda incelenmesi ve ilköğretim-lise programına uygun olarak Türkçeye çevrilerek kullanılması gerekli görülmüştür. Ülkemizdeki bilgisayar destekli eğitimin matematik dersi programına uygun materyallerin varlığının, diğer ülkelerin uygulamaları ile karşılaştırılması önerilmektedir. Bilgisayar ve diğer teknolojik araçların matematik öğretimine entegrasyonu sürecini başarı ile gerçekleştirmek için hizmet öncesi ve hizmet içi eğitimde teknoloji destekli materyal kullanma eğitimi sadece bu teknolojik araçlarla neler yapılabileceğini açıklamakla kalmamalı, bu teknolojik araçların kullanımının pedagojisi de öğretmen adayları ve öğretmenlere kazandırılması önerilmektedir.

Anahtar kelimeler : Bilgisayar destekli matematik eğitimi, Matematik yazılımlar

ABSTRACT: In this study, the abstract concepts in Mathematics Education is investigated in terms of their contribution to the education after being visualised through computer software. The subjects of the study were the 10th graders of Private Uğur College – Istanbul, from the section of Graphic Analysis Software. Results indicated that computer-aided mathematics teaching was significantly better than the traditional one, and mathematical computer software systems have been proved to be an effective teaching material for schools since they visualise and reify the abstract mathematical concepts and increase their level of comprehensibility. In this study, the global investigation of computer aided software systems and their translation into Turkish to be able to use from the primary to secondary education in Turkey were recommended as well. Additionally, it has also been recommended that the availabilities of computer aided education in Turkey and other countries should be compared. The integration of computer and other technological materials in mathematics teaching requires not only to teach what to be done with these materials in pre and inservice training programmes, but also the teacher candidates should equip themselves with the pedagogical aspects of the use of these aids.

Key words: Computer-assisted mathematics education, mathematics software

1.GİRİŞ

Pozitif bilimlerin en eskilerinden birisi olan matematik, soyut doğası gereği her zaman öğrenilmesi ve öğretilmesi zor olan alanlardan birisi olmuştur. Ülkemizde pek çok öğrenci, matematiğin zor olduğunu ve matematiği başaramayacağını düşünerek kaygılanmakta ve matematiğe karşı olumsuz tutum geliştirmektedir (Silver, 1996). Bu durum ilköğretimden başlamakta, okul yılları ilerledikçe artarak devam etmektedir. Sonuçta öğrenciler matematiğe karşı olumsuz tutum ve kendilerine karşı güvensizlik duygusu geliştirmektedir. Matematik dersini ilköğretim 1. Kademesinde eğlenceli bulan öğrencilerden bir çoğu ilköğretimden sonraki yıllarda matematik dersinden uzaklaşmakta, anlamakta zorlanmaktadır.

Bunun altında yatan en önemli unsurlardan birisi matematik konularının soyutlaşması ve anlaşılabilirliğinin zorlaşmasıdır. Bununla birlikte, matematik eğitimcileri bilgileri öğrencilerine aktarabilmek, özellikle de soyut kavramları onların akıllarında somutlaştırabilmek için diğer alanlarda olduğu kadar eğitim materyaline sahip olamamışlardır. Bu bağlamda bilgisayarlar, geleceğin matematik eğitimcileri için en vazgeçilmez eğitim materyali olma konusunda hızla ilerleme kaydetmektedirler.

80'li yıllarda başlayan ve son on yıl içerisinde oldukça gelişme gösteren "matematik yazılımları", şüphesiz ki bu ilerlemenin en önemli sebeplerinden birisidir (Çiftçi,2006). Teknolojik gelişmelere paralel olarak bilgisayar yazılımları sayesinde bilgisayar ortamında matematiksel kavramların çoğul temsillerine hızlı ve etkin bir şekilde ulaşma imkanı doğmuştur (Akkoç, 2006).

NCTM National Council of Teachers of Mathematics (NCTM) (NCTM, 1989) standartlarında da belirtildiği gibi, bir kavramın cebirsel ifadesi, grafiği ve tablosu gibi çoğul temsilleri arasında bağlar kurmak o kavramın öğrenilmesi açısından önem taşır. Çoğul temsillerin her biri kavramın farklı yönünü vurgular ve matematiksel kavrama daha geniş bir bakış açısı kazandırır.

Grafik Analiz yazılımının temel amacı diğer grafik çizen yazılımlarda olduğu gibi matematiksel kavramları bilgisayar ortamında görselleştirmek ve kavramları çoğul temsilleri ile öğrencilere sunmaktır (Akkoç, 2006).

Araştırmada "üst düzeyde bilişsel etkinlik gerektiren soyut kavramların, bilgisayar destekli matematik öğretimleriyle somutlaştırılmasının öğrenci başarısı üzerine etkileri nelerdir?" "probleminden yola çıkarak

"Grafik Analiz yazılımı kullanılarak yapılan matematik eğitiminde, geleneksel öğretimin yapıldığı uygulama öncesi öğrencilerin puanlarıyla, uygulama sonrası öğrencilerin puanları arasında anlamlı bir fark var mıdır?" alt problemine yanıt bulunmuştur.

Bu çalışmada; teknoloji destekli matematik eğitiminin, grafik analiz yazılımının matematik eğitimindeki önemi uygulamalı olarak gösterilmiştir.

1.1. Matematik Eğitiminde Karşılaşılan Güçlükler

Geleneksel matematik eğitimi anlayışında, matematiksel bilgiler küçük beceri parçacıklarına ayrılmış halde öğretmen tarafından öğrencilere sunulur. Rosenthal'in (1995) gözlemlerine göre, matematik dersleri genellikle öğrencileri pasif olmaya ve dersten soyutlayarak yalnızlığa iten geleneksel ders anlatma formatında yürütülmektedir. Fakat matematik öğretiminde kullanılan geleneksel eğitim anlayışında çok büyük sınırlılıklar vardır. Tipik matematik sınıfında öğrenciler pasif bir şekilde, tahtada ders anlatan öğretmeni dinler. Öğrenciler sınıf içinde çok az söz alır, konu hakkında açıklama ve sentez yapmazlar, kısıtlı hesapsal problemleri çözerek, bireysel çalışarak belki de olduklarından daha alt

seviyeye inerler. Kazanılan bilgi ezberlenerek öğrenilir ve derin bir anlama söz konusu değildir. Böyle olunca da öğrencilerin matematiği genellikle neden dinamik, heyecanlı, yaratıcı bir ders olarak görmediklerini anlamak mümkündür. Bu gerçekten dikkate değer bir durumdur. Başarılı olmak için potansiyel taşıyan çok sayıda öğrenci matematiğe karşı ilgisizleşmekte ve matematiği öğrenmede başarısız olmaktadır.

Benzer sorunlar ülkemizde de yaşanmaktadır. Ülkemizde matematik kavramlarını ve işlemleri öğrenmek bir angarya olarak algılanmakta; öğrenciler matematiği gerektiğinde anımsamaya yönelik kurallar, zor ya da anlamsız formüller dizisi, karışık yöntemler olarak görmekteyiz. Bunun sonucu olarak ülkemizde öğrenciler matematiği öğrenmede başarısız olmaktadır. Uluslararası Eğitim Başarılarını Değerlendirme Kurulu (IEA) tarafından yapılan bir çalışmada ülkemiz 38 ülke arasında son 8. sırada yer almaktadır. Öte yandan, matematik okullarda öğrencilerin en çok zorlandığı derslerin başında gelmekte; matematik öğretimi ve eğitimin niteliği ile ilgili kaygılar artmaktadır (Timms, 1999). Çoğu öğrenci, algoritmaları uygulayabilmesine rağmen tam olarak derste yaptığının farkında değildir. Bilgiler, kullanım alanı ve gerçek anlamını kazandığı fiziksel ve sosyal içerikten yoksun olarak öğrencilere aktarılmakta, gerçek yaşamdaki önemi ve uygulamaları, önemsiz olarak algılanmaktadır (De Corte, 1991).

1.2. Bilgisayarın Matematik Dersinde Kullanımı

Matematik öğretiminde bilişim teknolojisi derken çok özel anlamda bilgisayara dayalı bilişsel araçlar kullanılarak yapılan öğretim kastedilmektedir (Aksu, 1985). Buna da "Bilgisayar Destekli Matematik Öğretimi" (BDMÖ) denmektedir (Baki, 2002). Eylül 1987'de Amerika Ulusal Matematik Öğretmenleri Komitesi'nin yayınladığı bildiriye öğretmenlerin; matematik dersinde bilgisayarı, kavramları öğretmede, somut deneyimlerden soyut matematiksel düşünceler geliştirmede ve problem çözme işlemlerini öğretmede bir araç olarak kullanabilecekleri belirtilmiştir. Bilgisayarın matematik dersinde kullanılmaya başlanmasıyla öğrenciler, daha kısa sürede öğrenerek matematiksel kavramları anlamaya ve bunları problem çözmede nasıl kullanabilecekleri konusu üzerinde çalışmaya vakit bulabileceklerdir. Böylece bilgisayarın matematik alanında yaratıcı düşünceyi geliştirici bir araç rolü oynayacaktır. (Aktümen, 2003)

İlköğretimin birinci kademesindeki öğrenciler bilgisayarın soyutluğunu anlayabilecek zihin gelişimi düzeyinde değildirler. Ancak çocuklar, 11. yaşından sonra soyut kavramları anlamalarını sağlayacak mantıksal düşünce yeteneğine sahip olmaya başlarlar. Bilgisayar, ilköğretimin birinci kademesinde öğrenilen somut deneyimlerle, ikinci kademesindeki soyut kavramlar arasında bağlantı ve geçişi sağlamada kullanılabilir. Öğrenciler matematiği ilköğretimin birinci kademesinde bloklar ve boncuklar gibi somut objelerle öğrenirken; ikinci kademe bilgisayar ekranında göreyerek öğrenebilirler. Baki (1996), matematik dersinde bilgisayar desteğinin kullanımı ile ilgili makalesinde, bilgisayarın, hesaplamalar, maksimum-minimum problemleri, seriler ve diziler, fonksiyonların dönüşümleri, üç boyutlu uzayda fonksiyonların grafikleri, denklem çözümleri, dönüşüm geometrisi ve geometri öğretimi üzerine LOGO, EXCEL, BASIC, MATHEMATICA yazılımlarını kullanarak oluşturmuş olduğu örnekleri sunmuştur.

1.3. Grafik Analiz Yazılımı

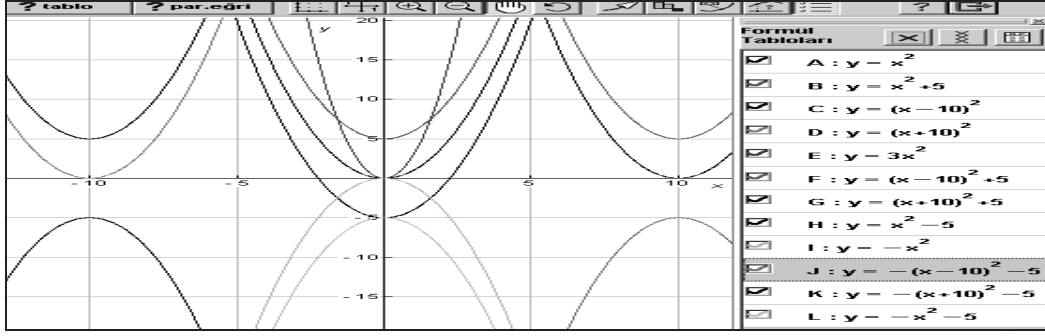
Grafik Analiz yazılımı İngiliz matematik eğitimcisi David Tall'un öğrenme ile ilgili düşüncelerine göre hazırlanan Graghic Calculus orjinal yazılımından Türkçe'ye çevrilmiş ve orjinal Türkçe sürümü oluşturulmuştur. Grafik analiz yazılımında aşağıdaki etkinlikler bulunmaktadır (Akkoc, 2006).

- Grafik çizme etkinliği: Formülü yazılan bir fonksiyonun veya tablo halinde verilen değerlerin grafiğini çizer,
- Formül bulma etkinliği: Grafiği verilen fonksiyonların formülünü tahmin etme imkanı tanır,
- Doğru etkinliği: Değişken iki noktanın belirlenmesi ve bu iki noktadan geçen doğrunun formülünü tahmin etme imkanı tanır,
- Parabol etkinliği: Değişken iki noktanın belirlenmesi ve bu iki noktadan geçen parabolün formülünü tahmin etme imkanı tanır,
- Üstel fonksiyonlar etkinliği: Formülü yazılan üstel fonksiyonun grafiğini çizer,
- Trigonometrik grafikler etkinliği: Sinüs, kosinüs ve tanjant fonksiyonlarının grafiklerini birim çember ile ilişkilendirerek çizer,
- Değişim diyagramı etkinliği: Formülü yazılan bir fonksiyon için x 'deki değişime karşılık $f(x)$ değerlerindeki değişimin oranını tablo ve grafiksel olarak ifade eder,
- Eğim: Bu etkinlik türev kavramının görselleştirilmesine imkan verir. Belirlenen bir noktaya yaklaşırken $\frac{\Delta y}{\Delta x}$ oranını tablo ve grafik olarak verir ve o noktada teğetin eğimini bulur. Ayrıca formülü verilen bir fonksiyonun grafiğini ve türev fonksiyonunun grafiğini çizer,
- Alan: Bu etkinlik integral kavramının görselleştirilmesine imkan verir. Formülü verilen bir fonksiyonun grafiğini çizer ve grafiğin altında kalan alanı farklı yöntemlerle görselleştirerek hesaplar. Ayrıca formülü yazılan bir fonksiyonun grafiğini ve integral fonksiyonunun grafiğini çizer.

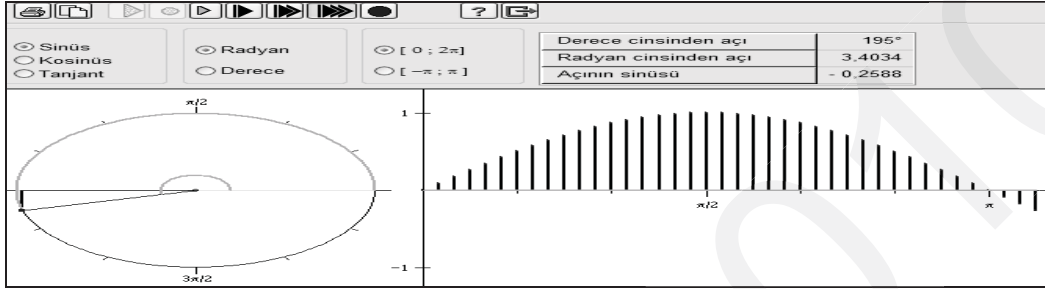
Grafik Analiz Yaklaşımı ile fonksiyon dönüşümleri, trigonometrik fonksiyonlar ve türev konularının öğretimine yönelik örnek etkinlikler verilecektir.

Kağıt-kalem ile uygulanacak bir fonksiyon dönüşümü etkinliğinde öğrencilere bir fonksiyon grafiği verilir ve çeşitli fonksiyon dönüşümlerinin sonucunda oluşacak grafikleri çizmeleri istenebilir. Bilgisayarda yapılacak etkinlikten önce kağıt-kalem ile fonksiyon dönüşümlerinin yapılması, dönüşümlerin mantığını anlamak açısından önem taşır. Fakat bir ders saati boyunca kağıt-kalem ile yapılabilecek örnek sayısı çok az olacaktır. Grafik çizen bilgisayar yazılımlarının en önemli avantajlarından birisi çeşitli temsillere hızlı ve etkin bir biçimde ulaşma imkanı tanımasıdır. Başka bir deyişle, kısa zamanda çok sayıda dönüşüm grafiği elde edilecektir. Şekil 1 ve Şekil 2'de Grafik Analiz yazılımı kullanılarak $f(x) = x^2$ fonksiyonu üzerine gerçekleştirilen $f(x)+5$, $f(x-10)$, $f(x+10)$, $3f(x)$, $f(x-10)$, $f(x+10)+5$, $f(x)-5$, $-f(x)$, $-f(x-10)-5$, $-f(x+10)-5$, $-f(x)-5$ dönüşümleri için elde edilen grafikler ile trigonometrik fonksiyon örnekleri verilmiştir (Akkoc, 2006).

Şekil 1: Fonksiyon dönüşümleri



Şekil 2: Trigonometrik fonksiyon grafikleri



2.YÖNTEM

Araştırma sırasında öncelikle literatür tarama yöntemi kullanılmıştır. Konu ile ilgili seminerlere katılmış, matematiksel yazılımlar araştırılmış ve Grafik Analiz yazılımı incelenmiştir. Grafik Analiz Yazılımının öğrenci başarısındaki etkisini ölçebilmek için 10. Sınıf öğrencilerine deney uygulanmıştır.

2.1.Çalışma Grubu

Bu araştırmanın çalışma evreni, Küçükçekmece il merkezinde bulunan ve bilgisayar laboratuvarı olan lise bölümünde öğrenim gören tüm lise 2.sınıf öğrencileridir.

Örneklem ise; il merkezinde bilgisayar laboratuvarı olan Özel Uğur Lisesi 10. sınıf öğrencileridir. Bu yönüyle araştırmada, amaçlı örneklem kullanılmıştır.

2.2.Verilerin Toplanması

Araştırma sonuçlarının analizinde kullanılacak verilerin elde edilmesinde aşağıda belirtilen işlemler yapılmıştır:

1. Araştırmanın uygulama kısmında önemli bir rol oynayacağı düşünülen bilgisayar laboratuvarı bakımından oldukça donanımlı bir okul olan Özel Uğur Lisesi çalışma alanı olarak belirlenmiştir. Araştırmada, 2008-2009 eğitim öğretim yılı 2. Dönem 10.sınıf matematik dersi müfredat programından “trigonometrik fonksiyonların grafikleri” konusu seçilmiştir.

2. Uygulama öncesi derste gördükleri teorik konuyla ilgili, araştırmacı tarafından hazırlanan, 14 soruluk çoktan seçmeli bir test öğrencilere dağıtılmıştır. Öğrencilere 20 dakika verilerek sorulan yanıtlamaları seçilmiştir. Bu test toplam 79 öğrenciye uygulanmıştır.

3. Cevap anahtarları hazırlanırken her soru için E seçeneğine BİLMİYORUM ifadesi yerleştirilerek, öğrencilerden yanıt hakkında fikirleri olmadığı durumlarda bu seçeneği işaretlemeleri söylenmiştir.

4. Ayrıca öğrencilere yapılan testin bir sınav niteliği taşımadığı ve not uygulaması yapılmayacağı, dersteki performanslarını belirleme amaçlı olduğu açıklanmıştır. Böylece öğrencilerin not korkusu ve hata yapmama eğilimi doğrultusunda seçeneklerden herhangi birini rastgele seçmek suretiyle doğru yanıtı bulmaları engellenmiş; şans faktörü ortadan kaldırılmıştır.

5. Test tamamlandıktan sonra, grafik analiz yazılımından trigonometrik fonksiyonlarla ilgili örnekler ve grafik çalışmaları öğrencilere anlatılmıştır. Ders boyunca uygulanan test sorularından farklı örnekler verilmiştir. Öğrencilerin ders boyunca yapılan testle ilgili soruları yanıtı bırakılmıştır.

6. Ders sonunda öncelikle öğrenciler bilgisayarlarını kapatmış sonra yeniden dağıtılan test sorularını çözmüşlerdir. Elde edilen test sonuçları incelenerek bu uygulamanın başarısı tartışılmıştır.

7. Uygulama sonrası öğrencilere, görüşlerini öğrenmek amacıyla anket yapılmıştır.

2.3 Verilerin Analizi

Elde edilen deney sonuçları, Bulgular bölümünde tablolarla gösterilmiş, gerekli yorumlar yapılmıştır.

3.BULGULAR

Araştırma "Trigonometrik Fonksiyonlar" konusyla ilgili 14 soruluk çoktan seçmeli bir testin Uğur Lisesi 10. Sınıf öğrencilerine uygulandıktan sonra değerlendirilmesini içermektedir. Tablo 1'de öğrencilerin uygulama öncesi ve sonrası toplam doğru yanlış ve bilmiyorum sayıları, bunların ortalama değerleri ve bu ortalamaların testteki toplam soru sayılarına oranları yer almaktadır. Tablo 1 'deki değerlerde uygulama öncesi ve sonrası belirli farklar olduğunu tespit edilebilir.

Tablo 1 Uygulanan test sonucu elde edilen değerler

| KATEGORİ | UYGULAMA ÖNCESİ | | | UYGULAMA SONRASI | | |
|------------------------|-----------------|--------|------------|------------------|--------|------------|
| | DOĞRU | YANLIŞ | BİLMİYORUM | DOĞRU | YANLIŞ | BİLMİYORUM |
| CEVAPLANAN SORU SAYISI | 378 | 358 | 370 | 651 | 357 | 98 |
| ORTALAMA CEVAP SAYISI* | 4,78 | 4,53 | 4,68 | 8,24 | 4,52 | 1,24 |
| %ORANSAL FREKANS** | 35 | 32 | 33 | 59 | 32 | 9 |

Cevaplanan Soru Sayısı/ Toplam Soru Sayısı

** (Ortalama Cevap Sayısı/ Testteki Soru Sayısı) x 100

Tablo 2'de uygulama öncesi test sorularına verilen yanıtların değerlendirilmesi sonucu bulunan yüzde oranları yer almaktadır. Doğru, yanlış ve bilmiyorum yanıtlarının yüzdelerinin birbirlerine yakın değerler olduğu görülmektedir.

Tablo 2 Uygulama öncesi doğru ,yanlış ve bilmiyorum yanıtları oranları

| | |
|------------|------|
| BİLMİYORUM | % 33 |
| DOĞRU | %35 |
| YANLIŞ | %32 |

Tablo 3'de uygulama sonrası test sorularına verilen yanıtların değerlendirilmesi sonucu bulunan yüzde oranları yer almaktadır. Tablo 1'e göre yüzde oranındaki değişimi görülmektedir.

Tablo 3 Uygulama sonrası doğru, yanlış ve bilmiyorum yanıtları oranları

| | |
|------------|-----|
| BİLMİYORUM | % 9 |
| DOĞRU | %59 |
| YANLIŞ | %32 |

Tablo 4 'de uygulama öncesi ve sonrası doğru yanıtların birbirine oranları belirtilmiştir. Tablo 4 incelendiğinde uygulama öncesi doğru yanıt seçme oranı %37 iken uygulama sonrası doğru yanıt seçme yüzdesinin %63 olduğu görülmektedir. Grafik Analiz yazılım programı destekli uygulama sonrası doğru yanıt vermedeki artış oranının %26'dır.

Tablo 4 Uygulama öncesi ve sonrası doğru yanıtların birbirine oranları

| | |
|------------------|------|
| UYGULAMA ÖNCESİ | % 37 |
| UYGULAMA SONRASI | %63 |

Tablo 5 'i incelediğimizde uygulama öncesi E şıkkı olarak düzenlenmiş olan bilmiyorum seçeneğini tercih etme oranı %79 iken, uygulama sonrası bu oran %21'e düşmüştür. Bu değişim miktarı da, öğrencilerin konuyu anlama oranlarının arttığı anlamına gelmektedir. Uygulama sonrası öğrencilerin Grafik Analiz Yazılımı ile matematik eğitimi hakkında görüşlerini öğrenmek amacıyla anket uygulanmıştır. Öğrencilerin %95'i KATILYORUM , % 2'si KATILMIYORUM, % 3'ü KARARSIZIM seçmişlerdir. Buradan da anlaşıldığı gibi Grafik Analiz Yazılımı sayesinde öğrencilerin matematik konularını daha iyi kavradıkları görülmektedir.

Tablo 5 Uygulama öncesi ve sonrası " Bilmiyorum" yanıtlarının birbirine oranı

| | |
|------------------|------|
| UYGULAMA ÖNCESİ | % 79 |
| UYGULAMA SONRASI | % 21 |

4. SONUÇ VE ÖNERİLER

Tablo ve grafikler incelendiğinde öğrencilerin uygulamalarda bilgisayar kullanmaları sonunda başarı oranlarının arttığı görülmektedir. Özellikle dikkat edilmesi gereken nokta uygulama öncesi BİLMİYORUM seçeneğinin tercih edilme oranının oldukça yüksek olmasıdır. Uygulama sonrası bu oranın %58 azalması, bilgisayar destekli matematik öğretisinin öğrencilerin konuyu anlamasında ne derece etkili olduğunu göstermektedir.

Matematiği araç olarak kullanan mühendislik bölümleri için problemlerin doğru ve hızlı çözülmesi oldukça önem taşımaktadır. Ayrıca bilindiği gibi mühendislik öğrencileri mesleki alanlarında yoğun olarak matematiksel yöntemler kullanacaklardır. Bu yöntemleri kullanmayı en kısa zamanda yapabilmeleri ileride mesleki başarılarını destekleyecek etkenlerden biri olacaktır. Matematik öğretiminde, öğrencilerin grafikler ve fonksiyonları daha kolay kavramasını, çözümleri daha hızlı gerçekleştirerek çözülebilecek örnek sayısını arttırmasını amaçladığımızda matematik derslerinin bilgisayar destekli olmasının önemi anlaşılmaktadır. Bilindiği üzere, matematik dersi özellikle soyut kavramların çokluğu nedeniyle öğrencilerin anlamakta güçlük çektiği bir alandır. Bu bağlamda, bilgisayar yazılımlarının matematik öğretiminde rollerini vurgulayan araştırmalar incelendiğinde açıkça görülmektedir ki; matematik yazılımları sistemleri özellikle soyut kavramların görsellik kazandırılarak somutlaştırılması ve anlaşılabilirliklerinin artırılmasında işlevsel bir öğretim materyalidir. Dikkat çeken önemli bir nokta da, ülkemizde bu konuda yapılan teorik ve deneysel çalışmaların yetersizliğidir. Bilgisayar destekli eğitim yazılımları küresel anlamda incelenmeli ve ilköğretim-lise programına uygun olanlar Türkçeye çevrilerek okullarımızda kullanılmaya başlanmalıdır. Matematik öğretmenlerine bilgisayar destekli eğitim ile ilgili kurs ve seminerler verilmelidir. Ülkemizdeki bilgisayar destekli eğitimin kullanımı ve programa uygun materyallerin varlığı diğer ülkelerle karşılaştırılmalıdır. Bilgisayar kullanımı matematik ve diğer branşlarda okullarda kullanımını yaygınlaştıracak tedbirler alınmalıdır. Bilgisayar destekli eğitim ile ilgili olarak yapılan araştırmalar yetkili mercilerce dikkate alınarak gereken çalışmalar yürütülmelidir.

KAYNAKLAR

Akkoç,H. (2006),”Trigonometrik Fonksiyonların grafikleri “Bilgisayar Destekli Matematik Öğretimi Grafik Analiz Yaklaşımı Öğretmen Çalışma Kitabı” Papatya yayınevi ,İstanbul ,11-45,Yazılım CD’si

Aksu, M.,(1985) "Matematik Öğretiminde Bilgisayar Kullanımı ", Eğitim ve Bilim, Cilt:9, Sayı 54.

Aktümen, M. (2002),İlköğretim 8. Sınıflarda Harfli İfadelerle İşlemlerin Öğretiminde Bilgisayar Destekli Öğretim Rolü, Yüksek Lisans Tezi, Gazi Üniversitesi, Eğitim bilimleri Enstitüsü, Ankara

Baki, A. (2002), Bilgisayar Destekli Matematik, Ceren Yayıncılık, İstanbul p.11

Çiftçi,İ. (2006),Bir öğretim materyali olarak bilgisayar destekli matematik yazılımlarının değerlendirilmesi Yüksek Lisans tezi Gazi Üniversitesi Eğitim Bilimleri Enstitüsü Matematik Eğitimi Ana bilim dalı ,Ankara.

De Corte, E.. (1991), "Improving Problem Solving Skilis in Mathematics Toward a Research-based Intervation Approach", The Schooll Field, 2, 3/4, p.41

NCTM. (1989),Curriculum and Evaltiation Standarts for School Mathematics, National Council of Teachers of Mathematics Pub, Reston A/A

Rosenthal,J:S: (1995), "Active Learning Stratejies İn Advanced Mathematics Classes", Studies in Higher Education

Silver Edward A., Cai, J., (1996), "An analysis of arithmetic problem posing by middle school", Journal for Research İn Mathematics Education, 27, Now. .p.521.

TIMMS (1999),(Third International Mathematics and Science Study), <http://TIMMS.bc.edu/TIMMS/presspop3.html>

VERİ YAPILARI VE ALGORİTMALAR DERSİ İÇİN SANAL LABORATUAR UYGULAMASI

VIRTUAL LABORATORY PRACTICE FOR DATA STRUCTURES and ALGORITHMS COURSE

Yrd.Doç.Dr. Ömer DEPERLİOĞLU¹, Öğr.Gör.Fatma TOPUZ²

¹ Uzaktan Eğitim Meslek Yüksekokulu, Afyon Kocatepe Üniversitesi, Afyonkarahisar, Türkiye

² Emirdağ Meslek Yüksekokulu, Afyon Kocatepe Üniversitesi, Afyonkarahisar, Türkiye
deperlioglu@gmail.com, emyoft@gmail.com

ÖZET

Teknolojinin önemi ve ülkemiz çapında hızla yaygınlaşması ile çoğu üniversite uzaktan eğitim programları açmaktadır. Fakat uzaktan eğitim programları, ne kadar yaygınlaşsa da tam anlamıyla yüz yüze eğitimin yerini alamamaktadır. Son zamanlarda ortaya çıkan karma öğrenme kavramı ile bu sorun da aşılmıştır. Karma öğrenme e-öğrenme ile klasik öğrenmenin birleşimi olarak kabul edilir.

Bu tez çalışmasında uzaktan eğitime materyal olarak katkı sağlayacak hem klasik öğrenmede hem de karma öğrenmede kullanılabilecek sanal laboratuvar oluşturulmuştur. Bu sanal laboratuvar ile öğrencilerin istedikleri zaman ve mekânda derslerin uygulamalarını yapabilmelerine olanak sağlanması amaçlanmıştır.

Uygulama geliştirilirken, veri yapıları ve algoritmalar dersleri temel alınmıştır. Visual Studio 2005 ortamında Asp.Net kullanılarak hazırlanan uygulamanın kodları C# ile desteklenmiştir. Bu uygulama, bilgisayar programcılığı öğrencileri tarafından kullanılmış ve bir anket ile sonuçlar değerlendirilmiştir.

Anahtar Kelimeler: Sanal Laboratuvar, e-öğrenme, C Programlama, Veri Yapıları, Algoritmalar.

ABSTRACT

Because of the importance of technology and its rapid improvements within our country, many universities open distance education programs. Although they are fully widespread, distance education programs can not replace face to face education. This problem has been solved with blended learning approach, which has appeared recently. Blended learning is determined as a combination of e-learning and classical learning.

In this study, a virtual laboratory, which will contribute to the distance learning as an education material and which can be used in both classical and blended learning, has been established. With this virtual laboratory, it is aimed that students will be enabled to perform course activities whenever and wherever they want.

While developing the application, data structures and algorithms courses are used as foundations. Application codes were developed via Asp.Net in Visual Studio 2005 and supported by C# programming language codes. This application was used by computer programming students and the results were evaluated with a questionnaire.

Keywords: Virtual Laboratory, e-Learning, C Programing, Data Structures, algorithms.

1.GİRİŞ

Teknolojik değişimler, bilgi sistemindeki hızlı gelişmeler, ömür boyu öğrenme kavramının doğmasına yol açmıştır. Bireyleri ömür boyu öğrenmeye zorlayan teknolojik değişim ve gelişmeler, aynı zamanda, bu eğitim gereksinimini sağlayacak olanakları da beraberinde getirmiş, bireylerin istedikleri yerde, istedikleri zamanda, diledikleri kadar tekrar ederek öğrenmelerine olanak tanıyan uzaktan eğitim modelini çözüm olarak öne çıkarmıştır. Uzaktan eğitimin amacı, öğrencinin sınıf ortamından kurtarılması, istediği zamanda ve istediği yerde eğitim alabilmesidir. (Taşdelen 2004).

Uzaktan eğitim kavramının eğitimde kullanımının yaygınlaşmaya başlaması ile e-öğrenme, karma öğrenme, sanal sınıf, sanal laboratuvar gibi kavramlar ve bunların kullanımı da sıkça gündeme gelmiştir.

E-öğrenme (e-learning), internet tabanlı eğitim modelleri için kullanılan genel bir kavramdır (Irmak 2008). Eğitimin bir parçası olan e-öğrenme tamamen bağımsız bir form olmasına rağmen klasik öğrenmenin bir parçası veya bir uzantısı olarak görülmelidir (Hoic-Bozic et al 2009).

Karma öğrenme modelinde klasik öğrenmede önemli yer tutan yüz yüze iletişim araçları teknoloji araçları ile değiştirilmiştir. Ders materyallerinin sunumu ve öğrenmeyi kolaylaştırmak için bilgi-işlem teknolojisi kullanımının artmasından dolayı yüz yüze sınıf oturumlarına daha az ihtiyaç duyulmaktadır (Hoic-Bozic et al 2009).

Sanal sınıf internet üzerinden iletişimi sağlayan, geleneksel sınıfın bilgisayar tarafından oluşturulmuş yapay öğrenme ortamıdır. Sanal sınıf ortamında ders materyali hızla güncelleştirilebilir, basılı materyal dağıtımı hızlı bir şekilde yapılabilir (Annagylyjov 2006).

Sanal laboratuvar, eğitimde uygulama deneyimi kazanmak için yapılması gereken deneylerde etkileşimli bir gerçek zamanlı simülasyon olanağı sağlayan bilgisayar ortamı olarak tanımlanabilir (Taşdelen 2004). Sanal laboratuvar, gerçek bir laboratuvar ortamında yapılabilecek uygulamaların internet üzerinden yapılabilmesini sağlayan bir uygulamadır.

Bu çalışmada “Veri Yapıları ve Algoritmalar” dersi için sanal laboratuvar uygulaması oluşturulmuştur. İçerik olarak bilgisayar programcılığı bölümü müfredatında bulunan ders konularının uygulamaları dikkate alınmıştır. Uygulama hem uzaktan eğitimde, hem karma eğitimde, hem de klasik eğitimde kullanılabilir. Uygulama, öğrencilerin derslerin uygulamalı kısımlarında internet üzerinden kolaylıkla ulaşabilecekleri, okulda verilen klasik eğitim sonrasında istediği bir zamanda ve istediği bir yerde internet üzerinden dersin uygulamasını yapma şansına sahip olabilecekleri, öğrenim yönetim sistemi (ÖYS) içerisine rahatlıkla konulabilecek bir sistem şeklinde düzenlenmiştir.

Çok yönlü kullanılabilir olan bu uygulamanın genel yapısı, C programlama dili ile yazılan bir programın derlenmesi, programın algoritmasının yazılması, algoritmaya göre akış diyagramının çizilmesi, oluşturulan dosyaların istenilen ortamda saklanabilmesi, dersler ile ilgili konuların verilmesi ve bu konuların örneklerinin sunulması şeklinde düzenlenmiştir. Ayrıca programa veri tabanı bağlantısı ile giriş yapılması sağlanmakta ve kullanıcının giriş çıkış zamanı ile ilgili kayıtları tutulmaktadır.

2. EĞİTİMDE WEB TABANLI UYGULAMALAR

Programlamayı ilk defa öğrenen kişiler bilgisayarın algoritmayı nasıl işlediğini kavramakta zorlanırlar. Uygulamaya programlama bilgilerini aktarmanın dışında öğrenileni üzerine eklemenin karmaşıklığını yaşarlar. (Connolly Murphy Moore 2009)

Bilgisayar uygulamaları esnasında yaşanan kaygılar performansı olumsuz olarak etkilemektedir. Son derece yüksek zorluk düzeyleri öğrencilerin öğrenimlerini tamamlayamamasına ve yetersiz akademik ilerlemelere sebep olabilmektedir. Bilgisayarların öğrenciler tarafından etkili şekilde kullanılması ve öğrencinin deneyim kazanması programlamadaki zorluk düzeyinin azalmasını sağlar. (Connolly Murphy Moore 2009)

Programlama konusunda deneyimin artırılması endişeleri ve zorlukları aşmak için gereklidir. Programlamayı öğrenmek ve deneyimi artırmak için sadece sınıf ortamında yapılan uygulamalar yeterli olmayacaktır. Öğrencilerin ders dışında da uygulama yapmaları ve deneyimlerini artırmaları programlama alanında gelişmelerini sağlayacaktır. Programlamadaki zorlukları aşmak için web tabanlı uygulama imkânı klasik eğitime bir katkı veya alternatif olarak kullanılabilir.

2.1 Web Tabanlı Eğitim (WTE)

Genel olarak, bir tanım yapılırsa, Web üzerinde uzaktan eğitimi desteklemek amacıyla hazırlanmış sayfaların oluşturduğu eyleme “Web Tabanlı Eğitim (WTE)” denir.

Uzaktan eğitimin ilk örneği mektuplaşma yoluyla ortaya çıkmıştır. Mektuplaşma yoluyla eğitim 19. yüzyılın sonlarına doğru uygulanmaya başlanmış olup geleneksel sınıflara katılamayan öğrencilere eğitim alabilme olanağı sunmuştur (Moore & Thompson 1997). 1930’lu yıllarda ilk kez radyo kullanılmıştır. Bunu 1960’lı yıllarda yeni uzaktan eğitim ortamı olarak televizyonun kullanılması izlemiştir ve bu gün internetin gücü, esnekliği ve hızı sayesinde uzaktan eğitim dersleri herhangi bir anda ve herhangi bir zamanda verilebilmektedir (Johnson 2003). Bu nedenle, WTE, uzaktan eğitimin ikinci nesli olarak anılmaktadır (Akyüz ve Samsa 2009). WTE; uzaktan eğitim, bilgisayar destekli eğitim ve internetin bir arada kullanıldığı bir sistem olarak ortaya çıkmıştır. Uzaktan eğitim WTE ile yeni bir boyut kazanmıştır. WTE ile birlikte uzaktan eğitimde etkileşim artmış, öğrenci ve öğretmenin eş zamanlı veya eş zamansız olarak fikir tartışması mümkün hale gelmiştir (İnt.Kyn.1).

WTE'nin amacına ulaşabilmesi için iyi tasarlanması gerekmektedir. İyi tasarlanmış bir WTE'nin şu özelliklere sahip olması beklenmektedir: sisteme erişim için belirli kullanıcı tanımları yapılabilmesi ve yetkiler yönetilebilmelidir; ders içeriklerinin hazırlanması sistem içerisinde yapılabilmelidir; öğrencilerin aldıkları dersler, ders yükleri, dönemlik dersleri takip edilebilmelidir; WTE esnek bir yapıya sahip olduğundan öğrenciye yönelik programlar oluşturmaya izin vermelidir; öğrencilerin kendilerine aktarılan bilgileri ne kadar alabildiklerinin ortaya konulması için sınav ve testler yapılmalıdır; öğrencilerin sistem içerisinde ne kadar zaman kaldıkları ve neler yaptıklarının sistem üzerinden takip edilmesine olanak sağlamalıdır; verilen eğitimin sonunda öğrencinin başarısının değerlendirilip belge şeklinde öğrenciye sunulmasını sağlamalıdır (Al ve Madran 2004).

Amacı istenilen yer ve zamanda en iyi şekilde öğrencinin kişisel gereksinimlerine karşılık verebilmek, en iyi öğrenmeyi sağlamak ve fırsat eşitliğini sunmak olan bir WTE yukarıdaki maddeler dikkate alınarak hazırlanmalıdır. Bu şekilde hazırlanan bir WTE ile hem eğitim hem de öğrencilerin kişisel gelişimleri olumlu yönde etkilenmektedir.

3. MATERYAL ve METOT

Yapılan literatür taraması sonucu elde edilen bilgiler ışığında şimdiye kadar geliştirilen sanal laboratuvar ve sanal sınıfların benzetim olarak hazırlandığı görülmektedir. Sanal laboratuvarlar ve sanal sınıf ortamları geliştirilirken kullanılan materyaller Java, Photoshop, Flash, Asp, Delphi, MATLAB Web Sunucu, Access veritabanı gibi programlar kullanılarak oluşturulmuştur.

Bu çalışmalarda simülasyonlar geliştirilirken: yazılımda kullanıcıyı yönlendiren yönergeler yer verilmesine; öğrencinin hedefinin açık olarak belirtilmesine; öğrenciye tekrar edebilme imkânı verilmesine; yazılımın değerlendirme esnasında öğrencinin ihtiyaç duyacağı destek birimlerine sahip olmasının sağlanmasına; öğrencinin düzeyine göre basitleştirilmesine; öğrenciye dönüt vermesine; öğrencinin elde ettiği sonuçları kendisi tarafından verilen bir isim altında saklayabilmesinin sağlanmasına dikkat edilmiştir. (Özdener ve Erdoğan 2001)

Hazırlanacak materyallerin platformdan bağımsız olmaları, sunucu ve yazılımla sorunsuz ve hızlı çalışmaları, verileri güvenli şekilde saklamaları gerekmektedir.

Bu ihtiyaçlar doğrultusunda gelişen web teknolojileri de göz önüne alınarak uygulamanın Visual Studio 2005 programı üzerinde C# desteği ile Asp.Net kodlaması yapılmıştır. Flash programı ile animasyonlar oluşturulmuş ve programın menüleri içerisine yerleştirilmiştir. Uygulama geliştirilirken kullanıcı tanımlamaları Access veri tabanında yapılmıştır. SPSS programı uygulamanın değerlendirilmesi için hazırlanmış olan anket sorularının yüzde ve frekans değerlerinin bulunması ve elde edilen bulguların değerlendirilmesi için kullanılmıştır.

4. VERİ YAPILARI VE ALGORİTMALAR DERSİ İÇİN SANAL LABORATUAR UYGULAMASI

Günümüzde meslek yüksekokullarında yürütülen "Veri Yapıları" ve "Algoritmalar ve Programlamaya Giriş" derslerinde rahatlıkla kullanılacak olan bu uygulama, Visual Studio 2005 ortamında C# desteği ile Asp.Net dili kullanılarak geliştirilmiştir. Uygulamanın genel yapısı, kullanıcı kayıt sayfası, sisteme giriş sayfası, uygulama sayfası ve çıkış sayfası olarak tasarlanmıştır. Kayıt sayfası ile veri tabanına kaydı gerçekleştiren kullanıcı, giriş sayfasında kullanıcı adı ve şifresini kullanarak sisteme giriş yapabilmektedir. Uygulama sayfasında istediği programı çalıştırabilmekte programın algoritmasını ve akış diyagramını görebilmektedir. Herhangi bir sınırlama olmadan istediği sayıda uygulama yapabilen kullanıcı isterse çalışma dosyalarını kendi ortamında saklayabilmektedir.

4.1 Uygulama Hakkında

Sisteme giriş yapabilmek için önce kullanıcının veri tabanına kayıt olması gerekmektedir. İlk sayfada KAYIT butonu ile kullanıcı kayıt sayfasına yönlendirilmekte ve gerekli bilgileri sayfaya girerek veri tabanına kayıt olmaktadır. Sisteme kayıt olan kullanıcı öğrenci no ve şifre girerek GİRİŞ butonuna bastığında sisteme başarılı bir şekilde giriş yapmaktadır. Sisteme giriş yapan her kullanıcı için ayrı bir klasör oluşturulmakta ve kullanıcının tüm çalışmaları bu klasöre kaydedilmektedir. Şekil 1'de giriş sayfası ve Şekil 2'de kayıt sayfası görülmektedir.

Şekil 1 Kullanıcı Girişi Sayfası

Şekil 2 Kullanıcı Kayıt Sayfası

Sisteme giriş yapan kullanıcı karşılama sayfası ile karşılaşmaktadır. Bu sayfada kısaca programdan bahsedilmektedir. Bu sayfadan sonra kullanıcı uygulama sayfasına geçmektedir.

Uygulama sayfasının üst kısmına menüler yerleştirilmiştir. Menüler; Algoritma ve Programlama, Veri Türleri, Operatörler, Kontrol Komutları, Fonksiyonlar, Diziler, Sıralama Algoritmaları ve Yardım'dan oluşmaktadır. Menüler, konu anlatımlarının ve konularla ilgili animasyonların yer aldığı, öğrencinin zorlandığı yerde yardım alabileceği şekilde düzenlenmiştir. Şekil 3'de menülerin genel sıralanışı görülmektedir.



Şekil 3 Menüler

Algoritma ve Programlama menüsünde; algoritma, akış diyagramı, program, programlama, programlama dili kavramları, C programlama dili ve özellikleri yer almaktadır.

Veri Türleri menüsünde; C programında kullanılan veri türleri ve değişken tanımlamaları yer almaktadır. Genel olarak değişken tanımlama, statik ve dinamik değişkenler, değişkenlere atama yapma, atama operatörlerini doğru kullanma hakkında gerekli bilgiler verilmiştir. Ayrıca program içerisinde gerektiğinde veri türünü değiştirme işleminin nasıl yapılacağı anlatılmıştır. Daha sonra sabitler, ön tanımlı işlevler ve görevlerinden bahsedilmiştir.

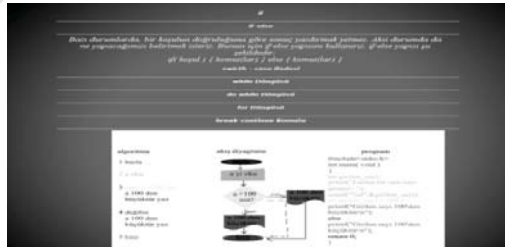
Operatörler menüsünde; aritmetik operatörler, atama operatörleri ve mantık operatörleri bulunmaktadır. Menü içerisinde bu operatörlerin anlamları ve kullanımları yer almaktadır.

Kontrol Komutları menüsünde; C programlama diline göre if, if-else, switch-case yapıları ile while, do-while ve for döngüleri yer almaktadır. Kontrol Komutları menü içeriğinde, yukarıda verilen komutların tanımlamaları ve program içerisinde temel kullanım şekilleri yer almaktadır.

Fonksiyonlar menüsünde; C programlama dilindeki fonksiyon yapısı, fonksiyonların özellikleri, program içerisinde fonksiyon tanımlaması ve fonksiyonların kullanımı yer almaktadır.

Diziler menüsünde, dizilerin genel yapısı, dizi elemanları, programda dizi elemanlarına değer atama, dizilerin nasıl yazılacağı ve nasıl okunacağı yer hakkında genel bilgiler yer almaktadır. Sıralama Algoritmaları menüsünde; yer değiştirme sıralaması, kabarcık sıralaması, seçmeli sıralama, birleşmeli sıralama algoritmaları hakkında kısa bilgiler bulunmaktadır.

Yardım menüsünde programın genel işleyişi anlatılmaktadır. Genel olarak programın nasıl çalıştığı, hangi uygulama butonu ile ne yapılabileceği ve menülerden nasıl yararlanılabileceği bu menü içerisinde yer almaktadır. Genel olarak menülerin görünümü Şekil 4'de görülmektedir.

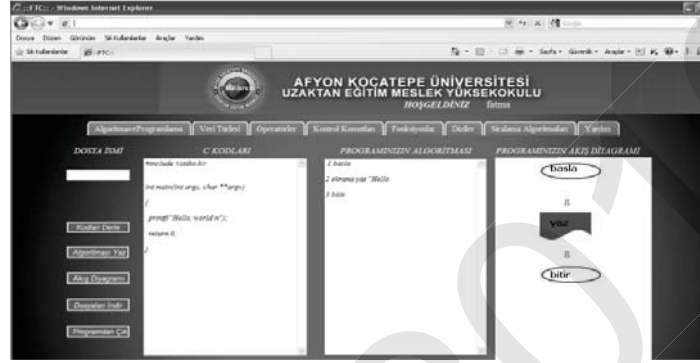


Şekil 4 Menülerin Genel Görünümü

Menüler, öğrencinin yardım alabileceği, incelemekte sıklıkla olmayacağı, örnekleri inceleyip konuyu kavrayabileceği şekilde hazırlanmıştır. Menü sayfalarında akordeon menüler tercih edilmiştir. Menü sayfasında verilen her konu için konu başlıkları belirlenmiş, bu başlıkların altına konular yerleştirilmiş, uzun ve karmaşık bir sayfa yerine istenilen konu başlığına göre açılan sayfa uygulamaya yerleştirilmiştir.

Böylece kullanıcının karmaşıklıktan kurtulması ve konu başlığına göre dikkatinin diğer konulara kaymadan çalışabilmesi sağlanmıştır. Tüm menüler konular ilgili örnekler ve Flash animasyonlarla desteklenmektedir. Örnekler için animasyonlar hazırlanmıştır. Animasyonlar hazırlanırken her menü için menü içerisinde değinilen konuya yönelik örnekler seçilmiş, her animasyonda algoritmaya, akış diyagramına ve program kodlarına yer verilmiştir.

Şekil 5’de görülen uygulama sayfası içerisinde; çalışmanın isminin yazılabileceği, C kodlarının yazılabileceği ve algoritmanın gösterildiği üç adet textbox nesnesi, akış diyagramının çizildiği bir adet image nesnesi, çalışma dosyalarının görüntülediği bir adet gridview nesnesi, hataların gösterildiği bir adet label nesnesi ve beş adet buton nesnesi bulunmaktadır.



Şekil 5 Uygulama Sayfasının Genel Görünümü ve Çalışır Hali

Uygulama sayfasında sol tarafta bulunan uygulama butonlarından kodları derle butonu ile C kodlarının yazıldığı textbox içerisindeki kodlar derleyiciye gönderilip çalıştırılmakta ve elde edilen sonuç ekrana gelmektedir. Algoritmayı yaz butonu ile textbox nesnesi içerisine yazılmış olan C kodlarına göre programın algoritması adım adım yazılmakta, akış diyagramı butonu ile arkada derlenen ve algoritması yazılan programın akış diyagramı image nesnesi içerisine çizilmektedir.

Dosyaları indir butonu ile kullanıcının çalışma dosyaları listelenmekte ve istediği dosyayı saklayabilmesi için indirmesine izin verilmektedir. Program kodları .c ve .exe olmak üzere iki format halinde kullanıcının klasörüne kaydedilmektedir. Kullanıcı isterse .exe dosyası ile yapmış olduğu uygulamanın çalışır halini görebilecek, isterse .c dosyasını istediği bir derleyicide tekrar düzenleyebilecektir. Programa ait akış diyagramı ise .jpg formatında kullanıcının kolaylıkla açıp görebileceği şekilde kaydedilmektedir. Bu formatlara ait örneklerin bulunduğu dosya indirme alanı Şekil 6’da verilmiştir.

| Dosya Adı | Uzantısı | Oluşturulma Zamanı | İndir |
|-----------|----------|--------------------|-------|
| .c | .c | 10 Şubat 10 | indir |
| .exe | .exe | 10 Şubat 10 | indir |
| .JPG | .JPG | 10 Şubat 10 | indir |

Şekil 4. 7 Dosyaların Görüntülediği Alan

Programdan Çık butonu ile kullanıcının girişte oluşturulmuş olan klasörü tüm içeriği ile fazla yer kaplamaması adına silinmekte ve kullanıcı çıkış sayfasına yönlendirilmektedir. Çıkış sayfası programdan çıkış işleminin yapıldığını kullanıcıya bildiren sayfadır. Bu sayfada kullanıcı, giriş sayfasında kullanıcı adı bölümüne girmiş olduğu isim ile birlikte çıkış işleminin gerçekleştiğini görmektedir.

4.2 Uygulamanın Özellikleri

Geliştirilen sanal laboratuarda kullanıcı sisteme giriş ve çıkış yaptığında saat ve tarih bilgileri kayıt dosyasına kullanıcı adı ile işlenmektedir. Giriş yapıldığında kendine ait bir klasör oluşturulan kullanıcının yapmış olduğu çalışmalar kendi klasöründe saklanmakta ve isterse kendi ortamına indirmesine olanak tanınmaktadır. Sistemden çıkış yapan kullanıcının oluşturulmuş olan klasörü sistemde yer kaplamaması için silinmektedir. Ayrıca kullanıcıya girişte hatalı giriş yapıldığında ve uygulama içerisinde kodlamada hata olduğunda geri dönüt verilmektedir. Menüler baştan sona dersi özetleyecek şekilde bölümlenmiş ve her menü için içeriğe göre animasyon hazırlanmıştır. Kısa ve net bir anlatım tercih edilmiştir. Uygulama eğitim materyalleri hazırlanırken dikkat edilmesi gereken durumlar göz

önüne alınarak mavi üzerine beyaz renkler tercih edilerek tasarlanmıştır. Öğrencinin dikkatinin dağılabileceği düşünülerek çok fazla renk kullanılmaktan kaçınılmıştır. Animasyonlar hazırlanırken adımların rahat görülebilmesi için farklı renkler tercih edilmiştir. Bunda da zemin renginin beyaz olması diğer renklerin daha iyi seçilmesi açısından tercih edilmiştir.

4.3 Uygulamanın Değerlendirmesi

Uygulamanın değerlendirilmesi amacıyla 26 soruluk bir anket hazırlanmıştır. Anket soruları uygulamanın verimliliği ve kullanılabilirliği ile ilgili, uzaktan eğitim ile ilgili ve uygulamanın sorunsuz çalışıp çalışmadığı ile ilgili soruları kapsayacak şekilde hazırlanmıştır.

Uygulamayı Emirdağ Meslek Yüksekokulu Bilgisayar Teknolojileri ve Programlama Programında okuyan 150 öğrenci kullanmıştır. Hazırlanan anket, uygulamayı kullanan öğrencilere uygulanmıştır. Anket verileri SPSS programına işlenmiş, frekans ve yüzde değerleri alınmış ve her soru için ayrı ayrı değerlendirme yapılmıştır.

Sayısal değerlerin yorumlanması sonucunda uygulamanın kullanılabilirliğinin, genel olarak görünümünün, menülerin yerleşiminin, kullanılabilirliğinin ve içeriğinin, animasyonların konuyu kavramada yeterliliğinin, uygulama butonlarının yaptıkları işlemlerin ve kullanımının uygun olduğu görülmüştür. Ayrıca uygulamanın, kodların yazımında, algoritmanın yazımı ve anlaşılmasında, akış diyagramının anlaşılmasında yeterli olduğu görülmüştür.

5. SONUÇ VE TARTIŞMA

Yapılan çalışmada “Veri Yapıları ve Algoritmalar” dersleri konu alınmıştır. Dersin uygulaması için öğrencilerin sınıf ortamından bağımsız olarak uygulamalarını yapabilmeleri düşünülerek bu sanal laboratuvar geliştirilmiştir. Birden fazla kullanıcının aynı anda sorunsuz erişebileceği, web üzerinde çalışabilen, kullanıcının gerek duyduğu bilgilere ulaşabileceği bir uygulama geliştirilmiştir.

Yapılan çalışma da C kodlarının derlenmesi için arkada GCC derleyici kullanılmıştır. İstenilirse kodların derlenmesi için yeni bir derleyici hazırlanabilir. Program kodlarında bir hata olduğunda kullanıcı geri dönüt ile uyarılmaktadır. Hata kodları Türkçeye çevrilerek kullanıcıya daha ayrıntılı bir geri dönüt sağlanabilir. Buna ek olarak, kodlarda hata yapılan yer textbox nesnesi içerisinde farklı bir renkle işaretlenerek kullanıcıya gösterilebilir. BTP müfredatında bulunan diğer uygulamalı dersler için de sanal laboratuvar uygulamaları geliştirilip öğrencilerin istedikleri zamanda ve istedikleri yerde derslerin uygulamalarını yapabilmeleri sağlanabilir.

Şu anda sistem sadece öğrencilerin kullanabileceği şekilde hazırlanmıştır. Öğrencilerin kayıtları metin dosyasında tutulmaktadır. Sistem bir ÖYS olarak düşünülürse öğretim elemanları için de ayrı bir giriş oluşturularak öğrencileri takip etmeleri, yaptıkları çalışmalarını görebilmeleri sağlanabilir.

6. KAYNAKLAR

- Akyüz, H.İ., Samsa, S., 2009, "The Effects Of Blended Learning Environment On The Critical Thinking Skills Of Students", *Procedia Social And Behavioral Sciences* 1 (2009) 1744-1748.
- Al, U., Madran, R.O., 2004, "Web Tabanlı Uzaktan Eğitim Sistemleri: Sahip Olması Gereken Özellikler Ve Standartlar", *Bilgi Dünyası* 2004, 5(2): 259-271.
- Annagylyjov, Y., 2006, "Geleneksel Öğretim İle Sanal Sınıf Öğretim Süreçlerinin Öğrenci Başarısına Etkisinin Karşılaştırılması", Yüksek Lisans Tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.
- Connolly, C., Murphy, E., Moore, S., 2009, "Programming Anxiety Amongst Computing Students—A Key in the Retention Debate?", *IEEE Transactions on Education*, Vol. 52, No. 1.
- Hoic-Bozic, N., Mornar, V., Boticki, I., 2009, "A Blended Learning Approach To Course Design And Implementation", *Ieee Transactions On Education*, Vol. 52, No. 1.
- Irmak, E., 2008, "E-Öğrenme Ortamları İçin Matlab Web Sunucu Kullanımı", *Gazi Üniv. Müh. Mim. Fak. Der.*, Cilt 23, No 2, 495- 506.
- Özdener, N., Erdoğan, B., 2001 "DeneySEL Verileri Değerlendirme İmkânı Tanıyan ve Dönüt Verebilen, Sanal Laboratuvarların Geliştirilmesi", *M.Ü. Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi* Yıl : 2001, Sayı 14, Sayfa : 107-120
- Taşdelen, K., 2004, "Mühendislik Eğitimi İçin İnternete Dayalı, İnteraktif, Sanal Mikrodenetleyici Laboratuvar Tasarımı", Yüksek Lisans Tezi, Süleyman Demirel Üniversitesi, Fen Bilimleri Enstitüsü, Isparta.

6.1 İnternet Kaynakları

1. [Http://Mimoza.Marmara.Edu.Tr/~Hkaptan/Wte.Htm](http://Mimoza.Marmara.Edu.Tr/~Hkaptan/Wte.Htm)

Erişim Tarihi

12.12.2009

VIDEO KONFERANS YOLUYLA GERÇEKLEŞTİRİLEN KÜLTÜRLERARASI SANAT EĞİTİMİNİN ETKİLİLİĞİ

EFFECTIVENESS OF ARTISTIC INTERACTION WITH CULTURAL COMPONENTS THROUGH VIDEO CONFERENCING

Suzan Duygu ERİŞTİ

Anadolu Üniversitesi Eğitim Fakültesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
sdbedir@anadolu.edu.tr

Abstract:

The main aim of this research is to reveal primary school students' ways of expressing their perception of interactive art education through video conferencing and cultural interaction through pictorial representations between Turkey and Canada. The sample of the research was the fifth grade primary school students in Çağdaş Primary School, Turkey and W.H. Day Public School (Simcoe County District School Board) in Canada. Twenty-two fifth grade students from Turkey and twenty-two fifth grade students from Canada assigned as the sample of the research. The data gathered from students by the help of interviews and pictorial representations. The research was applied to fifth grade students for thirty days on June in 2008. Students in Turkey were interviewed and were asked questions about their impressions of interactive art education through videoconferencing and cultural interaction through pictorial representation by videotaping.

The data of the research, which was projected based on the qualitative research method, were collected in the form of pictures and interviews on interactive art education and cultural components depicted in pictures, and the findings obtained were analyzed and interpreted based on the quantitative content analysis method. As a result of the research, it was found that the majority of the students explained their viewpoints through the effectiveness of the process. The students highlighted the importance of learning different culture, learning different art technique and recognise new friends on the process. The synchronisation regarding interactive art education through videoconferencing was another important experience which was indicated by the students.

Through the research, most of the students indicated that interactive art education through videoconferencing encourage them to learn and understand about different cultures, develop cultural awareness, attracted their attention and increased their motivation.

Özet:

Bu araştırmanın amacı, Türkiye ve Kanada'da bulunan iki ilköğretim okulunun öğrencileri arasında video konferans yoluyla uluslararası düzeyde sanatsal bağlamda bir etkileşim oluşturmak ve sanatsal etkileşim yolu ile gerçekleşen kültürel paylaşım ve etkileşimin niteliğini öğrenci görüşlerine ve öğrencilerin resimsel anlatımlarına dayalı olarak ortaya koymaktır. Araştırma, Türkiye'de Eskişehir ilinde yer alan Çağdaş ilköğretim okulunda öğrenim gören 22 beşinci sınıf öğrencisi ve Kanada'da Ontario bölgesinde yer alan W.H. Day Public School (Simcoe County District School Board)'da öğrenim gören 22 beşinci sınıf öğrencisi ile gerçekleştirilmiştir.

Toplam 30 gün süren araştırmanın uygulama süreci coğrafi nedenlerle farklı zaman dilimlerinde olan iki ülke öğrencilerinin video konferans yöntemi ile senkronize olarak bir araya getirilmeleri yoluyla gerçekleştirilmiştir. Uygulama sürecinde, öğrencilerin sanat öğretmenleri ile araştırmacı tarafından Türk ve Kanada kültürüne ait birer sanat tekniği ve birer sanatçı belirlenmiş, öğrenciler kendi kültürleri ile ilgili olarak seçilen sanat tekniğini ve sanatçıları video konferans yoluyla birbirlerine öğretmişlerdir. Nitel araştırma türünde desenlenen bu araştırmanın verileri, öğrencilerle yapılan yarı yapılandırılmış görüşmeler ve öğrencilerin konu hakkındaki resimsel anlatımları yoluyla toplanmış, elde edilen veriler içerik analizi yoluyla çözümlenip yorumlanmıştır. Araştırma sonucunda; öğrencilerin büyük bir bölümünün farklı bir kültürü, farklı bir sanat tekniğini ve bu süreçte yeni arkadaşlar tanımayı son derece önemli ve değerli buldukları, sanatsal etkileşim sürecinde video konferans yoluyla senkronizasyon sağlanmasını heyecan verici, güdüleyici farklı bir deneyim olarak yorumladıkları, teknoloji kullanımının sağladığı olanaklar konusunda yeni deneyimler edindikleri ve kültürel farklılıklar konusunda bir farkındalık geliştirdikleri bulgularına ulaşılmıştır.

Anahtar Kelimeler: Sanat Eğitimi ve Teknoloji, Video Konferans, Kültürlerarası Etkileşim, Kültürlerarası Sanat Eğitimi

Giriş

Günümüzde olanca hızıyla yaşanmakta olan küreselleşme sürecinin yarattığı sonuçlardan birisi de kültürlerarası etkileşim oluşturma amaçlı çabaların yaygınlaşması ve giderek önem kazanmasıdır (Rural Advanced Community of Learners, 2004). Çeşitli kültürleri tanımak, kültürler arasındaki farklılıklar ve benzerlikler hakkında bilgi sahibi olmak bilgi çağı insanının sahip olması gereken önemli yeterlik alanları arasında gösterilmektedir (Guiherme, 2002). Kültürlerarası farklılıkları ve kültürlerarası ilişkiyi anlayabilmenin bir yolu ise kültürlerarası etkileşim kurmaktır. Kültürlerarası etkileşim birbirinden oldukça farklı yol, yöntem ve araçlarla gerçekleştirilebilir.

Kültürel etkileşim oluşturmada önemli araçlardan birisi de sanat ve sanatsal etkinliklerdir. Sanat, birçok kültürel sistemde, kültürel kimliklerin oluşturulmasında ve farklı kültürlerin birbirleriyle ilişkilendirilmesinde etkili bir araç olarak kullanılmaktadır (McFee, 1995). Belli bir kültürel gruba ait birey, sanatsal etkinlikler yoluyla farklı kültürlerin sosyal yapılarını, inanç sistemlerini, değerlerini ve yaşam alışkanlıklarını anlamlandırmayı ve anlamayı öğrenebilir (Romanucci-Ross, 1995). Sanatsal etkinlikler; duygu ve düşüncelerin, gözlemlerin, içinde bulunulan kültürel çevrenin özelliklerinin ve bu çevrede oluşturulan anlamların yansıtıldığı ürünleri içermektedir (Hague, 2001; Malchiodi, 2003; Malchiodi,2005).

Günümüzde evrensel öğretim etkinliklerinde yaygın bir biçimde kullanılan teknoloji destekli etkileşim ortamlarından olan video konferans sistemleri öğretim amacı ile ilintili, yüz yüze öğretim ortamlarında sağlanamayan ve bir takım olanak ve ortamları öğretim sürecinde kullanmayı sağlayan eğitim teknolojilerinden biridir. Farklı ortamlarla etkileşimi, zengin bir iletişim olanağını ve farklı deneyimleri öğretim ortamlarına taşımaktadır (Motamedi, 2001). Video konferans sistemleri günümüzde uluslar arası projeler ve kültürlerarası etkileşim içeren çalışmalar oldukça yaygın bir teknoloji olarak kullanılmaktadır (Rural Advanced Community of Learners, 2004).

Araştırmanın Amacı

Bu araştırmanın amacı, Kanada ve Türkiye'de bulunan iki ilköğretim okulunun öğrencileri arasında kültüre özgü sanatsal uygulamaların video konferans yoluyla senkron olarak paylaşılması kültürel etkileşim ve kültürel farkındalık oluşturma sürecinde teknolojinin ve sanatın etkisine ilişkin algılarını ortaya koymaktır. Bu temel amaca dayalı olarak araştırmada şu sorulara yanıt aranmıştır:

1. İlköğretim öğrencilerinin sanat yolu ile kültürel etkileşime ilişkin görüşleri nedir?
2. İlköğretim öğrencilerinin teknoloji yoluyla kültürel etkileşime ilişkin görüşleri nelerdir?
3. İlköğretim öğrencileri farklı kültürlerle ve farklı kültürlerin sanatsal anlayışlarına (intercultural artistic awareness) ilişkin görüşleri nelerdir?
4. İlköğretim öğrencileri kendi kültürlerine ve farklı kültürlerin sanatsal anlayışlarına (intercultural artistic awareness) ilişkin algılarını resimsel anlatımla nasıl ifade etmektedir.

YÖNTEM

Araştırma Deseni

İlköğretim öğrencilerinin sanat ve teknoloji yoluyla kültürlerarası etkileşime ilişkin görüşleri ve resimsel ifadelerindeki algılarını ortaya koymayı amaçlayan bu çalışmada nitel araştırma yöntemi kullanılmıştır. Araştırmada görüşme verilerinin çözümlenmesi ve yorumlanmasında içerik analizi yöntemi benimsenmiştir. Araştırma kapsamında nitel araştırma yöntemlerinde kodlama türlerinden “verilerden çıkarılan kavramlara göre yapılan kodlama” türü kullanılmıştır (Yıldırım ve Şimşek, 2006). Araştırma verilerin tamamının incelenip veriler doğrultusunda temaların oluşturulması ve bu temalar ile elde edilen verilerin ilişkilendirilmesi ile veri analizi gerçekleştirilmiştir. Araştırmacıların büyük bir çoğunluğu eğitim ortamlarındaki bir takım yaklaşımları bilimsel veriler yanında sanatsal verilere dayalı olarak incelemektedir (Cole & Knowles, 2001; Barone & Eisner, 1997; Denzin & Lincoln, 2005). Bu durum, eğitimin nasıl işlediği, ne anlam içerdiği, öğrenmenin ya da öğretimin sürecindeki etkinliği ne amaçla yapıldığına ilişkin farklı bir kavramsallığı postmodern düzeyde inceleme olanağını araştırmacılara sunmaktadır (Finley, 2005). Bu bağlamda ilköğretim öğrencilerinin etkileşimli sanat etkinliğine, farklı sanat tekniklerini öğrenmeye, etkileşim yolu ile kültürel farkındalık ve paylaşımına ilişkin algılarını öğrenci görüşlerine ve resimsel anlatımlarına dayalı olarak ortaya koymayı amaçlayan çalışmada resimlerin çözümlenmesi sürecinde nitel araştırma desenlerinden art-based inquiry’den yararlanılmıştır. Art-based inquiry, bilimsel araştırmalarda sanat ve araştırmayı ilişkilendiren bir desendir (Denzin & Lincoln, 2005). Bu desende, öğrencilerin sanatsal anlatımları yoluyla çeşitli durumlara ilişkin algıları ve bakış açıları, kendi izlenimlerinden yola çıkarak ortaya konulmaya çalışılmaktadır (Eisner, 2002).

Katılımcılar

Araştırma Türkiye’de Eskişehir il merkezinde yer alan Çağdaş ilköğretim okulunda yer alan iki beşinci sınıf grubundan biriyle ve Kanada’da Ontario bölgesinde yer alan W.H. Day Public School (Simcoe County District School Board) ile gerçekleştirilmiştir. Bu çalışmada, uygulamanın yapılacağı okulların belirlenmesinde ölçüt örnekleme kullanılmıştır. Ölçüt örneklemede Türkiye’deki öğrenciler için İngilizce dil yeterliği, hem Kanada hem Türkiye’deki okullar için ise okulun teknolojik olanakları (video konferans sistemlerinin etkin olarak kullanılabilmesi) teknolojiye ve olanaklara sahip olmaları ölçüt olarak belirlenmiştir. Araştırmanın ilköğretim 5. sınıf düzeyinde yapılmasının nedeni, her iki farklı okulda yer alan öğrenciler için resimsel anlatımlarında anladıklarını ve öğrendiklerini yansıtabilme içeren gerçekçilik dönemine girmiş olmalarıdır (Artut, 2001, ss. 209-210). Araştırma Kanada’dan 22 ve Türkiye’den 22 olmak üzere toplam 44 öğrenci ile gerçekleştirilmiştir.

Uygulama Süreci

Uygulama sürecindeki kültürlerarası edinim konusunda Byram’ın (1997; Alred, Byram, & Fleming, 2003) beş maddeden oluşan yaklaşımından yararlanılmıştır. Bunlar davranışlar (attitudes: diğer kültürlerin edinimine yönelik merak, açıklık ve hazırlık geliştirmek) bilgi, (knowledge: kendi kültürleri ve diğer kültürler ile ilgili edinimlere sahip olmak ve sürdürmek), ilişki kurma ve yorumlama becerisi (skills of interpreting and relating: başka bir kültüre ait olay ve kavramları yorumlama, açıklama, ilişkilendirme) karşılıklı etkileşim ve keşfetme becerisi (skills of discovery and interaction: bir kültüre ait yeni bilgileri edinebilme ve yorumlayabilme) kültürel farkındalığı eleştirel bir bakış açısı ile değerlendirme becerisi (critical cultural awareness: farklı kültürlerin farkında olma ve eleştirel bir bakış açısı ile yorumlama ve değerlendirme) olarak sıralanmaktadır (1997; Alred, Byram, & Fleming, 2003). Kültürlerarası etkileşim sürecinde öncelikli olarak karşılıklı bilgilendirme gerçekleştirilmiş ve öğrenciler birbirleri ile ilgili fikir sahibi olmuşlardır, sonraki aşamada sanat etkinliğinin konusu belirlenmiş ve konu bağlamında, hem Kanada hem Türkiye’deki öğrencilerin kendi kültürleri ile ilgili yaptıkları resimler (Resim 1) bilgiler videolar, fotoğraflar, internet siteleri ve dosya paylaşım programları aracılığı ile paylaşılmıştır. Daha sonra video konferans etkinliği ile uygulama gerçekleştirilmiş (Resim 2) ve her iki kültürden öğretmen karşılıklı olarak seçilen sanat etkinliğini öğrencilere anlatmıştır. Son aşamada ise öğrenciler ile etkinliğe ilişkin görüşülmüş ve öğrencilerden öğrendikleri yeni konular bağlamında resim yapmaları istenmiştir.



<http://artconnection.wetpaint.com/page/artconnection+Home/links>.

Resim 1. Etkinlik web sayfası



Resim 2. Uygulama Süreci (Video Konferans ile Etkileşim Etkinliği)

Verilerin Toplanması

Video konferans sistemi ile gerçekleştirilen etkileşimli uygulama sürecine ilişkin öğrenci görüşlerini değerlendirmek için öğrencilerle 'yarı yapılandırılmış görüşme' gerçekleştirilmiştir. Araştırmanın veri toplama sürecinde öğrencilerle yapılan görüşmelere dayalı olarak elde edilen bulgular doğrultusunda beş ana tema belirlenmiştir. Bunlar 'Sanatsal etkileşim boyutu', 'Kültür boyutu', 'İletişim boyutu', 'Teknoloji kullanımı boyutu', 'Sınıf içi iletişim ve fiziksel ortam boyutu'dur. Ortaya çıkan ana temalardan biri olan 'Teknoloji kullanım boyutu' ile ilgili görüşme sürecinin sınırlılıklarından dolayı daha detaylı veriye ulaşmak amacı ile açık uçlu bir anket formu hazırlanmış ve araştırma katılımcısı öğrencilere görüşme sonrasında uygulanmıştır. Anket formundan elde edilen bulgular 'Teknoloji kullanım boyutu' ana temasının alt temalarını oluşturmuştur. İlköğretim öğrencilerden ayrıca farklı kültürlerin sanatsal anlayışlarını ve sanat ve teknoloji yoluyla gerçekleştirilen kültürlerarası etkileşime ilişkin edinimlerini resimsel ifadelerinde yansıtmaları istenmiş ve "doküman" (resim) yoluyla veriler toplanmıştır. Araştırmacı sürece aynı zamanda 'katılımcı gözlemci' olarak da katılmıştır. Sürecin değerlendirilmesi konusundaki verilerin bir kısmı bu gözlem yoluyla elde edilmiştir. Ardından öğrencilerin uygulama sürecine ve süreçte teknolojinin kullanımına ilişkin görüşleri yarı-yapılandırılmış görüşme ile alınmıştır. Uygulama sonucunda resimlerinden elde edilen veriler ise doküman incelemesi yoluyla elde edilmiştir. Görüşme yönteminden elde edilen verilerin toplanmasında video kayıt kullanılmıştır.

Verilerin Çözümlemesi ve Yorumlanması

Verilerinin çözümü aşamasında öğrencilerin kültürlerarası etkileşim oluşturmaya yönelik sanat ve teknoloji destekli uygulama sürecine ilişkin duygu ve düşüncelerini anlatmaları istenen "yarı yapılandırılmış görüşme"lerin dökümü yapılmış. Görüşme dökümlerinden elde edilen veriler, yapılan resimlerin incelenip analiz edilmesiyle yorumlanmıştır. Üçüncü aşamada ise, görüşme ve doküman incelemesinden elde edilen bulgular, frekans dağılımı olarak sunulduktan sonra, öğrencilerin görüşleri ve resimleri yorumlanmıştır. Araştırmanın güvenilirliğinin gerçekleştirilmesi amacıyla, uygulama sonrasında, görüşme kodlama anahtarları ve görüşme dökümleri 3 farklı kişi tarafından okunarak "görüş birliği" ve "görüş ayrılığı" olan konular tartışılarak gerekli düzenlemeler yapılmıştır. Araştırmanın güvenilirlik hesaplaması için Miles ve Huberman'ın (1994, s. 64) önerdiği aşağıdaki güvenilirlik formülü kullanılmıştır. Hesaplamalar sonucunda araştırmanın güvenilirliği % 96 çıkmıştır.

BULGULAR VE YORUMLAR

Araştırma sonucunda elde edilen ve 'Sanatsal etkileşim boyutu', 'Kültür boyutu', 'İletişim boyutu', 'Teknoloji kullanımı boyutu', 'Sınıf içi iletişim ve fiziksel ortam boyutu' olmak üzere beş ana temada toplanan bulgular, frekans dağılımları biçiminde tablolaştırılmıştır.

Çizelge 1. Öğrencilerin Etkileşimli Sanat Dersine İlişkin Algıları

| Öğrencilerin Görüşleri (N=22) | f |
|---|----|
| Sanatsal Etkileşim Boyutu | 22 |
| Farklı bir resim tekniğini öğrenmek | 19 |
| Minyatür sanatı tarzında resim yapmayı öğrenmek | 12 |
| Minyatür sanatı tarzında resim yapmayı öğretmek | 8 |
| Ted Harrison tarzı resim yapmayı öğrenmek | 19 |
| Sanatı ve resimleri başkaları ile paylaşmak | 16 |
| Resim teknikleri arasındaki farkları öğrenmek | 15 |
| Kültür Boyutu | 17 |
| Kültürü öğrenmek | 17 |
| Kültürü öğretmek | 11 |
| Kültürel farklılıklar | 6 |
| Kültürel paylaşım | 3 |
| İletişim boyutu | 14 |
| Farklı ülkelerle iletişim kurmak | 12 |
| Yeni arkadaşlıklar kurmak | 7 |
| Teknoloji kullanımı boyutu | 22 |
| Video konferansın nasıl yapıldığını öğrenmek | 7 |
| Video konferansın etkinlik sürecine ve derse katkısı | 12 |
| Teknoloji ile eğlenerek öğrenmek | 16 |
| Sınıf içi iletişim ve fiziksel ortam boyutu | 15 |
| Öğrencilerin sınıftaki davranış tarzı (| 8 |
| İçinde yaşadıkları ortamdaki ve sınıftaki fiziksel koşullar (sınıf düzeni, iklim farkı, dil farkı, giyim, saat farkı) | 15 |

Öğrencilerin görüşlerine dayalı olarak oluşturulan temalardan yola çıkılarak etkinliğe ilişkin etkileşimin farklı boyutlarda değerlendirildiği görülmüştür. Bu boyutlar sanatsal etkileşim, sanatsal paylaşım, sanat tekniklerini öğrenmek ve öğretmek, farklı sanatsal anlayışlara ilişkin farkındalık geliştirmek, farklı kültürleri öğrenmek, kültürü öğretmek, kültürel paylaşımında bulunmak, kültürel farklılıklara ilişkin farkındalık geliştirmek, iletişim kurmak, yeni teknolojilere ve olanaklarına ilişkin farkındalık geliştirmek ve farklı kültürleri karşılaştırmak şeklinde sıralanabilir. Öğrencilerin büyük bir çoğunluğu görüşlerinde belirtilen boyutlara ilişkin olumlu görüşler ifade etmişlerdir. Video konferans teknolojisi kullanılarak gerçekleştirilen bu etkinliğin öğrenciler üzerinde hem kültürel paylaşım hem sanatsal paylaşım hem de teknoloji kullanımına ilişkin olumlu yönde farkındalık oluşturduğu söylenebilir.

Etkileşim sürecinde hem Türk hem Kanada'lı öğrenciler etkileşim sürecini oldukça eğlenceli, farklı kültürleri tanımının heyecan verici yeni bir sanat stili ve tekniğini öğrenmenin ilgi çekici, başka bir kültürden farklı bir öğretmenden konuyu dinlemenin daha kolay anlamayı sağladığını belirtmişler ve öğrencileri öğretmenleri de belirtilen bu görüşlere katılmışlardır.

SONUÇ VE TARTIŞMA

Çok kültürlü etkileşimler gerçekleştirme sürecinde sanat eğitiminin rolü son derece önemlidir. Çünkü sanat öğrencilerin kültürel farkındalık geliştirmesini, kendi kültürel kimliklerini tanımalarını, kültürel benzerlikler ve farklılıklar anlamasını, değer vermesini ve açıklamasını sağlar. Ayrıca çok kültürlü sanat etkileşimleri öğrencilere yaratıcılık, hayal gücü ve özgün bir bakış açısı kazandırmaktadır (Chalmer, 1996).

Hem Kanada'daki öğrenciler hem de Türkiye'deki öğrenciler resimsel anlatımlarında konu yönünden serbest bırakıldıkları ve etkinlikler sürecinde teknik üzerinde durulmasına rağmen kültür teması üzerine odaklanmışlar ve birbirlerine kendi kültürlerini anlatma konusunda oldukça istekli tavırlar sergilemişlerdir. Türk öğrencilerin büyük bir çoğunluğu tarihi mekanlar ve konuları resimsel anlatımları ile ifade ederken Kanada'lı öğrencilerin büyük bir çoğunluğu bölgesel olarak öneme sahip olan yapıları, nesnelere ve canlıları, Kanada bayrağını ve günlük yaşama ait imgeleri konu olarak seçmişlerdir. Bu farklı bakış açısı öğrencilerin içinde buldukları ve yaşadıkları kültür, bölge, insan ilişkileri ve tarih ile ilişkili olarak önceliklerinin farklılığından kaynaklanıyor olabilir. Kültürün davranış üzerinde etkisine dayalı olarak aynı etnik kültüre (ya da ulusa) ait olan bireyler kendi sosyal gerçeklikleri ya da kültürel değerleriyle ilgili benzer görüşlere sahip olabilirler (Glazer & Moynihan 1975). Her kültür, bireylerin olaylara bakış açısını, görüşlerini ve davranışlarını farklı biçimde değerlendirmelerine neden olur. Kültürel değerler, bireylerin seçmek, değerlendirmek, yargılamak ve yorumlamak gibi belirli kültürlere ait ölçütler oluşturmalarını sağlar (Kluckhohn 1951; Kluckhohn & Strodtbeck, 1961). Ayrıca Kanada'nın çok kültürlü yapısı dikkate alındığında belirli kimliklerini günlük yaşamlarındaki genel kültürel imgeler doğrultusunda oluştururlar (Assmann & Czaplicka, 1995).

Kanada'daki ve Türkiye'deki öğrencilerin resimsel anlatımlarında dikkat çeken bir başka konu ise video konferans etkinliği ile gerçekleştirilen etkileşimli ders süresince kendilerine anlatılan resim tekniklerini ve sanat anlayışlarını başarılı bir biçimde ifade etmeleridir. Her iki kültürün öğrencileri de hem kendi kültürlerinden bir sanatçının tekniğini uygulamak konusunda hem de başka bir ülkeden bir sanatçının tekniğini uygulamak konusunda oldukça başarılı sonuçlar ortaya koymuşlardır. Her iki tekniğin resimsel anlatımlarda etkili bir biçimde uygulanması farklı kültürden bir öğretmenin konuyu anlatmasına yönelik oluşan ilgi, öğrencilerin oluşturdukları resimleri başka kültürden öğrencilerle paylaşacak olmaları, kendi kültürlerini en iyi şekilde ifade etme çabaları ve video konferans yolu ile oluşturulan etkileşimin öğrencilerin ilgi ve motivasyonuna yönelik etkisi ile açıklanabilir.

Araştırma bulgularında sanatsal öğretim sürecinin teknoloji desteği doğrultusundaki etkililiği hem öğrencilerin resimsel anlatımlarında kullandıkları tekniklerin niteliğine hem de görüşlerine dayalı olarak vurgulanabilir. Ayrıca öğrenciler farklı bir kültürde konuyu iyi bilen farklı bir öğretmenden dinlemenin ve görebek öğrenmenin önemi üzerinde durmaktadırlar. Kültürel paylaşım ve etkileşim boyutunda ise belirgin bir işbirliği olanağı sunan video konferans sistemi dersin etkileşim boyutuna son derece olumlu bir katkıda bulunmuştur. Arnold, Cayley ve Griffith (2002) tarafından video konferans programlarının ilköğretim sürecinde kullanılmasına ilişkin gerçekleştirilen örnek olay içeren araştırma bulguları bu bağlamda araştırmayı desteklemektedir. Arnold, Cayley ve Griffith (2002) video konferans sistemlerini eğitim sürecinde kullanmaya ilişkin birkaç olumlu etkiden bahsetmektedir. Bunlar okullar arasındaki işbirliğini artırma, dil öğretimini geliştirmek, çok daha fazla öğrenme olanağına erişebilmek, öğretim sürecindeki konuya ilişkin konu uzmanını sürece dahil edebilme, kültürlerarası etkileşimi geliştirme, okul ve toplum arasında bağlantılar kurma, mesleki gelişim konusunda öğretmenlere farklı kaynaklara erişim olanağı sunma olarak sıralanmaktadır.

Araştırmada Türk öğrencilerin büyük bir çoğunluğu Kanada'daki öğrencilerin daha rahat olduklarını, çekingen olmadıklarını, rahat soru sorduklarını, okulda serbest kıyafet giydiklerini, oturma düzenlerinin farklı olduğunu vurgulamışlardır. Öğrencilerin bu görüşleri iki farklı kültürdeki etkileşim, davranış biçimi, değerler ve deneyimlere ilişkin farklılıklara yönelik farkındalıklarını ortaya koymaktadır. Yine Kanada'daki öğrencilerin Türkiye'deki öğrencilere etkinlik sürecinde farklılıklara ilişkin sordukları sorular da bu tür bir farkındalık geliştirdiklerinin göstergesi niteliğindedir. Cifuentes & Murphy (2000)'nin video konferans sistemi ile Meksika ve Amerika Birleşik Devletlerinde yer alan iki 4. Sınıf öğrencisini bir araya getirdiği bir başka araştırmada öğrencilerin iki kültür arasındaki benzerlikleri ve farklılıkları, deneyimleri, değerleri ve davranışları arasındaki farklılıkları fark etmelerine ilişkin bulguları araştırmanın öğrencilerin sosyal etkileşim ve fiziki ortam bağlamında ortaya koydukları görüşler doğrultusundaki bulgularla benzerlik göstermektedir. Cifuentes & Murphy (2000) araştırmada sanatsal etkinlikleri kültürel paylaşım bağlamında oldukça etkili olduğuna ilişkin bulguları da araştırma bulguları ile benzerlik göstermektedir.

Araştırmada öğrencilerin sanatsal etkileşim ve paylaşımında teknolojinin önemine ilişkin görüşleri öğretim süreçlerine teknolojinin katkını vurgular niteliktedir. Teknoloji kullanımını diğer öğretim ortamlarında olduğu gibi sanatsal öğretim sürecine de farklı boyutlar, nitelikler ve açımlar kazandırmaktadır. Ayrıca hem sanat hem teknoloji yolu ile kültürel paylaşım ve etkileşim kaçınılmaz olmaktadır. Günümüzde kültürel kimliklerin yaşanması ve paylaşılması son derece önem taşımakta ve toplumsal yaşamın temelini oluşturmaktadır. Kültürel farkındalık aynı zamanda farklı kültürleri anlamayı ve algılamayı da kolaylaştırır. Bu noktada öğrencilerin özellikle sanat ve teknolojiyi kullanarak öğretim süreçlerinde oluşturdukları kültürel paylaşım son derece önem taşımaktadır.

References

- Alred, G, Byram, M & Fleming, M (Eds.) (2003). *Languages for intercultural communication and education. Intercultural experience and education*. Clevedon: Multilingual Matters.
- Arnold, T., Cayley, S., & Griffith, M. (2002). Videoconferencing in the Classroom: Communications technology across the curriculum. Coventry, U.K.: *British Educational Communications and Technology Agency* (Becta). Retrieved from the Internet on January 5, 2009 from http://schools.becta.org.uk/index.php?section=re&catcode=framework_form&rid=11902
- Artut, K. (2001). *Sanat eğitimi, kuramları ve yöntemleri*. Anı Yayıncılık, 1. Baskı, Ankara
- Assmann, J. & Czaplicka, J. (1995). Collective memory and cultural identity. *New German Critique*,. 65: 125-133
- Byram, M. (1997) *Teaching and Assessing Intercultural Communicative Competence*. Clevedon: Multilingual Matters.
- Barone, T. & Eisner, E. W. (1997) Art-based educational research. In Jaeger, R. M. (Ed.). *Complementary methods for research in education* (Second Edition). Washington, D. C. : American Educational Research Association Press, 73-116.
- Chalmers, G. (1996). *Celebrating pluralism: Art, education and cultural diversity*, Occasional Paper 5, The Getty Education Institute for the Arts, USA.
- Cifuentes, L. & Murphy, K. L. (2000). Images of Texan and Mexican cultures shared in a telecommunications partnership [online]. *Distance Education: An International Journal*; Volume 21, Issue 2; 2000; 300-322. Availability: <http://search.informit.com.au/documentSummary;dn=756988183273271;res=IELHSS>
ISSN: 0158-7919. [cited 10 Jan 09].
- Cole, A. L. & Knowles, J. G. (2001). *Lives in context: The Art of life history research*. Walnut Creek, CA: Alta Mira Press.
- Denzin & Lincoln, (2005). *The sage handbook of qualitative research*. (Third Edition). Thousand Oaks, CA: Sage Publications.
- Eisner, E. W. (2002). From episteme to phronesis to artistry in the study and improvement of teaching. *Teaching and teacher education*, 18(4), 375-385.
- Finley, (2005). Arts-based inquiry: Performing revolutionary pedagogy. In Denzin, N. K. & Lincoln, Y. S. (Eds.). (2005). *The sage handbook of qualitative research*. (Third Edition). Thousand Oaks, CA: Sage Publications, 681-694.
- Glazer, N. & Moynihan, D. P. (1975). *Introduction in ethnicit: Theory and experience*. Cambridge, Mass.: Harvard University Press.
- Guiherme, M. (2002). *Critical citizens for an intercultural world: Foreign language education as cultural politics*, LICE: Language for Intercultural Communication and Education.
- Hague, E. (2001). Nationalty and childrens' drawings – pictures 'about Scotland' by primary school children in Edinburg, Scotland and Syracuse, New York State. *Scottish geographical journal*, 117(2), 77-99.
- Kluckhohn, C. K. (1951). Values and value orientations in the theory of action. In T. Parsons and E. A. Shils (Eds.), *Toward a general theory of action*. Cambridge, MA: Harvard University Press.
- Kluckhohn, F.R. & Strodtbeck, F.L. (1961). *Variations in value orientations*. Evanston, Ill.: Row, Peterson
- Malchiodi, C.A. (2003). Art therapy and the brain. In C.A. Malchiodi (Ed.), *Handbook of art therapy* (pp. 16-24). New York: Guilford Press.
- Malchiodi, C. A. (2005). *Expressive therapies*. NY: Guilford Press.
- McFee, J. (1995). Change and the cultural dimensions of art education. In R. Neperud (Ed.), *Context, content, and community in art education: Beyond postmodernism* (pp. 171-192). New York: Teachers College Press, Columbia University.
- Miles, M. B. & Huberman, M. A. (1994). *Qualitative data analysis A sourcebook of new methods*. Newbury Park, CA: Sage.
- Motamedi, V. (2001). A critical look at the use of videoconferencing in United States distance education. *Education*, 122(2), 386-395.
- Romanucci-Ross L, De Vos GA (eds) (1995) *Ethnic identity: Creation conflict and accommodation*. London: Walnut Green.
- Rural Advanced Community of Learners (2004). RACOL: Rural Advanced Community of Learners. Retrieved December 24, 2008 from the World Wide Web at <http://www.racol.ualberta.ca>
- Facilities and Digital Video. *Computers & Education*, vol. 43, issue 1/2, pp. 165-177.
- Yıldırım, A. & Şimşek, H. (2006). *Sosyal bilimlerde nitel araştırma teknikleri*. Ankara: Seçkin Yayınları.

VIEWS OF TEACHER CANDIDATES ON RELATING BASIC PHYSICS PRINCIPLES TO ANIMALS AND ANIMAL BEHAVIORS: DIGITAL MEDIA DEMONSTRATION

Dilek ERDURAN AVCI*, Dilek KARACA**, Mehmet KARABAL*

*Mehmet Akif Ersoy University Education Faculty, Science Education Department (corresponding author: derduran@mehmetakif.edu.tr or dilek924mail.com)

**Mehmet Akif Ersoy University, Institute of Science and Technology.

Abstract

Recent developments in information technology and communication technology introduced the use of new instruments in designing of the instruction environment. The concept "media" involves all the instruments that are used to entertain, to inform, to instruct and to transfer information to individuals and communities. The purposes of this study are, presentation of the basic principles of physics in relation to animals and animal behaviors using digital media demonstration (DMD) and views of teacher candidates on the subject. For this purpose, following animals are chosen: dolphin, gecko, four-eyed fish, owl, kingfisher, shark, lobster, cat, penguin, water-walker lizard and insects. Visual and audio material, about these animals and the physics principles they use to make their living, are collected from media. Using these materials, DMDs ranging from two to eleven minutes are prepared for each selected animal. These DMDs are presented to the teacher candidates and the audience was asked open-ended questions in order to get their views. In the end of the research, following facts are observed: (i) teacher candidates have a positive view about the DMDs (ii) teacher candidates think that the connection between physics and daily life can easily be set up by using DMDs.

Keywords: Physics, animals, digital media demonstration, teacher candidates.

INTRODUCTION

Media means communication environment or communication devices. Communication is the transfer of feelings, thoughts and knowledge to other individuals via any kind of communication channel (TDK, 1998). In this context, transfer of information through media products is a natural way of communication because the mass communication devices constitute an indispensable part of our daily lives. In the study "Many Voices, One World" by UNESCO (1980) commission, the social functions of the media devices are assembled under eight main titles which are namely, providing information and news, socialization, motivation, education, contribution to development of culture, entertainment, building up discussion environment and integration. These functions can also be regarded among the principle functions of education. Thinking towards this direction, it is interesting that media and education are very overlapping concepts.

The idea of "using technological instruments and devices in education" which existed since 1960s (Birkök, 2008), became a fact in 2000s by production of new educational instruments thanks to the speeding up of technological developments. In the present day of education, old instruments like video and audiotapes, modern instruments like CDs, DVDs, computers, projectors and smartboards replace radio, television, and overhead projector. On the other hand, a blank CD, a projector with no digital material or a computer that lacks interactive education software has no importance. This fact reveals the importance of digital media products. The digital material, which is required to operate such modern instruments for education, is a product of media.

As stated in Çepni (2005), technology is a bridge between science and real life. With the advance of technology, new directions are explored in science education as in other fields. Utilization of information and communication technology in supporting and simplifying education has become a common fact recently (Pekdağ, 2005). In many research papers, the positive effect of using information and communication technologies is strongly emphasized (Morgil *et al.*, 2004; Yağcımalp, Geban & Özkan, 1995; Laroche, Wulfberg & Young, 2003; Şen, 2001). The potential of technology as a strong learning instrument for students that contribute them in learning science concept is the key fact that makes it used in science education schedules (Reid-Griffin & Carter, 2004). Carter, Westbrook and Thompkins (1999) emphasizes that a good science education is related to the organization of media and technology.

Physics, chemistry and biology are among the basic disciplines of science. The one of the United States National Science Education Standards addresses the importance of building of relations among science disciplines. Disseparation of integration and discussion of concepts according to grade levels is also strongly emphasized in the standards (NSES, 1996). Many schools and teachers arrange biology, chemistry, physics and (sometimes) geology course schedules according to these standards (Tinnesand, 1997). Uzuntiryaki and Boz (2007) states that teacher candidates think that science should be considered as a whole and should not be decomposed into physics, biology, chemistry and mathematics. In addition, the standards highlight the importance of presentation of scientific concepts in relation to daily life (NSES, 1996). Almost all of the subjects of science contents are related to daily events and their consequences (Coştu, Ünal & Ayas, 2007). Many researches are performed in literature all of which emphasize the importance of building relations between daily life and scientific concepts in education (Campbell & Lubben, 2000; Erduran-Avcı & Yağbasan, 2002; Coştu, Ünal & Ayas, 2007; Harlen, 2002). İlkörücü-Göçmençelesi and Özkan (2009) found out that the success level of the students due to the permanence of information rises parallel to the level of building relations between science and daily life. Studies also prove that many students considered physics as "difficult" (Örnek, Robinson & Haugan, 2008; Angel *et al.*, 2004) and they advise teaching physics by building relations to daily life to make physics easier (Eryılmaz & Kırmızı, 2002). Another study point out that teacher candidates do not have enough knowledge about the nature and importance of science, the advantages science grants to individuals and society (Kızılcık *et al.*, 2007). Same study also informs us that although teacher candidates have a high level of technology consciousness, they do not relate it to science.

Motivation of this study depends on the above mentioned issues: (i) the lack of students' information level about physics concepts and relating them to daily life (Enginar, Saka & Sesli, 2002; Doğan, Kıvrak & Baran, 2004; Coştu, Ünal & Ayas, 2007; Erduran-Avcı & Yağbasan, 2002), (ii) the importance of interdisciplinary relations in the field of science instruction standards (NSES, 1996), (iii) evolution of digital media products to be an important part of our lives, (iv) overlapping of education and media targets in a large proportion, (v) lack of such a study in literature. The aim of the study is presentation of the basic principles of physics in relation to animals and animal behaviors using digital media demonstration (DMD) and determining the views of teacher candidates on the subject. The concept DMD means combining audio and visual products from media and presenting them in a proper context to support education.

METHOD

This study is performed with the contribution of 180 teacher candidates from Mehmet Akif Ersoy University Faculty of Education Science Education Department (90 first class, 45 second class, 23 third class, 22 fourth class) in 2009-2010 spring semester. Researchers prepared DMDs about the basic principles of physics and their relations to animal behaviors. In order to find out the views of teacher candidates about DMDs, DMDs are presented to the teacher candidates (in groups of 30 candidates per presentation) using a projector. Teacher candidates are asked short-answered-questions before and after presentations. Three researchers inspected the answers to the questions and a content analysis is performed. Findings of the research are presented in percentage and frequency values.

Process of DMD Preparation

In order to prepare DMDs about the basic principles of physics and their relations to animal behaviors, a literature survey on the properties of animals, their behaviors and the relation of these behaviors to physics concepts is performed. Using the information obtained from articles and books about animals (Alsan, 2000; Pilge, 2006; Zahl, 1978; Ghose & Home, 2005; Lardner & bin Lakim, 2002; McMahon, 1997; Simmons et al., 2001; Attenborough, 1990; Boles & Lohmann, 2003; Attenborough, 1998; Downer, 1999; Autumn et al., 2002; Autumn et al., 2000; Tian et al., 2006; Roach, 2004; Seife, 1999; Thompson & Herman, 1975; Griffin & Kram, 2000) several animals are selected. The selection criteria are as follows: (i) the animal behaviors should be interesting, (ii) the relation between animal behavior and physics principle should be clearly defined, (iii) there should be enough information and media material about the animal. The selected animals and their behaviors related to physics are as follows:

- Dolphin (Navigation and communication skills, sound waves),
- Gecko (Ability to adhere to surfaces, contact force),
- Four-eyed fish (Ability to have simultaneous vision of environments with different refractive indices, optics),
- Owl and kingfisher (Ability to fly silent, design of super trains),
- Shark (Decreasing the water resistance),
- Lobster (Friction power, water flow),
- Water-walker lizard and insects (Movement on liquids),
- Cat (Ability to fall on four legs),
- Penguin (Transformation of kinetic energy to potential energy and vice versa)

Audio and visual media materials are gathered about the physics principles, which above animals use in order to keep their living. The materials are in several forms like films, animations, pictures, texts, music, different sounds, illustrations, graphics, photographs, magazine/newspaper clippings and videos. DMDs are made of such materials, which are composed, in a proper content using "MS Windows Movie Maker" software. Five specialists are consulted to validate and verify the content and presentation of DMDs. Two of the specialists are associates of physics education department, one is an associate of biology education department and two of them are associates of veterinary faculty. According to the advices of the specialists, nine DMDs, which are about the eleven mentioned animals, are finalized. Duration of the DMDs varied between two and eleven minutes.

FINDINGS

Findings before watching DMDs

Teacher candidates are asked three short-answer questions before watching DMDs:

1. Rank your tendency to physics, chemistry and biology, which are disciplines of natural science from most liked to least liked.
2. Do you think animals use physics principles or laws in their behaviors? If yes, please give examples.
3. In which frequency do you apply or use the physics principles or laws you learn in your courses? Please give examples.

The answers of the teacher candidates to the first question are summarized in table-1.

Table 1. The distribution of the ranking of teacher candidates' tendency to physics, chemistry and biology from most like to least liked

| Ranking | Frequency (f) | Percentage (%) |
|---------------------------|---------------|----------------|
| Physics-chemistry-biology | 33 | 18.3 |
| Physics-biology-chemistry | 31 | 17.2 |
| Chemistry-physics-biology | 10 | 5.6 |
| Chemistry-biology-physics | 24 | 13.3 |
| Biology-physics-chemistry | 42 | 23.3 |
| Biology-chemistry-physics | 33 | 18.3 |
| All equal | 7 | 3.9 |

According to table 1, percentage of teacher candidates favoring biology, physics and chemistry are 41.6%, 35.5% and 18.9% respectively. Hence, the interest of teacher candidates to natural sciences can be ranked as biology, physics and chemistry, from most favored to least favored.

Answers to the second question which is about the use of physics principles and laws in animal behaviors were 68.3% "yes", 3.3% "no" and 28.3% "no comment". Although most of the candidates thought that animals applied physical principles in their lives, 41.7% of them could give no examples, where 32.8% gave a single example and 18.9% gave two examples. Some of the examples of the teacher candidates for this question are as follows:

"ducks have web-feet and they benefit from the pressure they apply."

"migrating birds fly in a V shape This allows them get to their destination faster."

"leopard accumulates its strength in its rear foot and jumps up while climbing trees. It uses physics principles and laws to balance itself."

"bat does not see with its eyes but can navigate using vibrations."

"penguins move using mechanical energy."

"carnivorous animals (cheetah, lion, tiger, etc.) can arrange their speed according to the distance between them and their prey."

Inspection of the answers of teacher candidates to third question, which is about the use of physics principles and laws in their daily life, reveal that answers can be categorized into "always", "usually", "sometimes" and "rarely" with percentages 17.2, 28.3, 43.3 and 10.1 respectively. Although a great majority of the teacher candidates stated that they use principles and laws of physics in their daily lives, 23.9 of them could not give an example of the subject where 47.8% of them gave just a single one. Some of the examples of the teacher candidates for this question are as follows:

"we carry some materials using simple machine in construction sites."

"when we are on the bus, we transfer our weight to the opposite side when the bus turns in order not to fall"

"I use screws to assemble something to some place. I use Newton Laws while carrying something. We use simple machines in order to simplify our daily lives."

"the collisions of the balls in billiards."

"I use the lifting force of water while swimming."

"boiling of water while cooking, heating to make stuck jar caps (dilation due to heat), wearing according to sun light (reflection and absorption of sun light), friction of hands to get warmer (warming by friction)"

"I calculate the probability of scoring a goal while shooting a free kick in football"

Findings after watching DMDs

Teacher candidates are given following four questions all of which required written answers:

1. What is your general view about DMDs?

2. What sort of contribution might the presentation of the relation between physics principles and animals and animal behaviors using DMDs have to the students?
3. May DMD have an effect on relating physics to daily life or on using physics principles in daily life?
4. Would you use DMD when you become a teacher?

The answers of the teacher candidates to the first question after watching DMD are summarized in table-2.

Table 2. General view of teacher candidates about DMD

| Expressions | Frequency (f) | Percentage (%) |
|--|---------------|----------------|
| No Comment | 1 | 0.6 |
| I liked it, I found it interesting, I enjoyed it | 161 | 89.4 |
| I liked it but I got bored | 17 | 9.4 |
| I did not like it, it was boring | 1 | 0.6 |
| Total | 180 | 100.0 |

An inspection of table 2 reveals that a great majority of the teacher candidates liked DMD and found it interesting. 9.4% of them liked it but found it boring. Therefore, it can be stated that most of the teacher candidates have positive views about DMD. The answers of the teacher candidates to the second question after watching DMD are presented in table-3.

Table 3. Teacher candidates' opinions about the possible contribution of presenting the relation between physics principles and animals/animal behaviors using DMD to the students

| Expressions | Frequency (f) | Percentage (%) |
|---|---------------|----------------|
| Makes knowledge permanent, helps learning, improves success | 159 | 88.3 |
| Affects student attitude towards physics course positively | 29 | 16.1 |
| Makes the course entertaining, improves curiosity and attention | 131 | 72.8 |

According to table 3, 88.3% of teacher candidates stated that presentation of the relation between physics principles and animal behaviors via DMD would improve student success by granting them permanent knowledge. 72.8% of the teacher candidates think that using DMD presentation would affect student attitude towards physics course positively and 16.1% of them think it would make the physics course more entertaining by encouraging curiosity and attention. The answers of the teacher candidates to the third question after watching DMD are presented in table-4.

Table 4. Opinions of teacher candidates about the possible effects of using DMD on building relations between physics and daily life.

| Expressions | Frequency (f) | Percentage (%) |
|-------------------------------|---------------|----------------|
| Yes, it would be effective | 177 | 98.3 |
| No, it would not be effective | 1 | .6 |
| I have no idea | 2 | 1.1 |

Table 4 makes it clear that almost all teacher candidates think that using DMD would have a positive effect on building relations between physics and daily life. 98.9% the teacher candidates replied the last question, which is about using DMD in the future as teachers as "Yes".

DISCUSSION

This research indicates that the interest and tendency of the contributing science teacher candidates about natural sciences ranks as field of biology, field of physics and field of chemistry in a decreasing order. Most of the teacher candidates think that animals reflect physics laws and principles in their behaviors. But it is interesting that they experience trouble to exemplify the subject since 75% of them could find no examples or just a single one. Although most of the teacher candidates state that they use physics laws and principles in their daily lives, approximately 24% of them could not find any examples and 47.8% of them could find a single one. Therefore it can be stated that they experience trouble in setting up relations between physics laws and principles and daily life.

Alvarez *et al.* (2004) remarks the positive effect of presenting films in lessons for the new generation which is familiar to visual media. For the films, audio material has the same importance with the visual material in the context of transferring information. Using music along cinema films in education grants basic lifelong abilities like problem solving and critical thinking (White & McCormack, 2006). In most cases, impact reach to its highest level when audio and visual components are used in an artistic way (Birkök, 2008). A research on this subject pointed out that students had understood the theoretical content far much better by video material and the learning process had become more effective, meaningful and entertaining (Kerber, Clemens & Medina, 2004). As highlighted in the studies above, instruments of digital media like films, videos or animations have a great positive effect in learning process but preparing such material for the purpose of education has a big cost. At this very point, collecting existing audio and visual material from media and presenting them in an educational context, namely digital media demonstrations, comes forth as an alternative which can overcome the above disadvantage.

The purpose of this study was finding out the views of teacher candidates on presentation of the basic principles of physics in relation to animals and animal behaviors using DMD. Our study revealed that teacher candidates have a positive view about DMD and find it promising and useful. The comments of teacher candidates about the possible future contribution of DMD are as follows:

- It makes the course more entertaining and encourages interest and curiosity,
- It may help the permanence of the information and improve the level of success,
- It may improve the attitude of the students towards the course,
- It is effective in relating basic physics principles to daily life.

Science and technology are inseparable parts of our daily lives in 21st century. At present day, on which technological product use and consumption is at highest level, it is impossible to isolate education environment from this acceleration. As mentioned by Viviane Reding, European Union Information Society and Media commissioner, 'Interacting with the media now means a lot more than writing to a newspaper... However, people who cannot use new media like social networks or digital TV will find it hard to interact with and take part in the world around them'. In this context, utilization of DMDs in lessons by teachers and other educational staff is considered to help students learn and entertain using technology and connect the gathered information to daily life.

REFERENCES

- Alsın, S. (2000). Fizik, Teknoloji ve Olimpiyatlar. *Bilim ve Teknik* (TÜBİTAK Yayınları), 395.
- Alvarez, L. J., Miller, P., Levy, J., & Svejnova, S. (2004). Journeys to the self: Using movie directors in the classroom. *Journal of Management Education*, 28(3), 335.
- Angell, C., Guttersrud, Ø., Henriksen, E.K. & Isnes, A. (2004). Physics: Frightful, but fun, Pupils' and teachers' views of physics and physics teaching. *Science Education*, 88(5), 683-706.
- Attenborough, D. (1990). *The Trials of Life: A Natural History of Animal Behaviour*. William Collins S. Co.Ltd.
- Attenborough, D. (1998). *The Life of Birds*. New Jersey: Princeton University Press Princeton.
- Autumn, K., Liang, Y. A., Hsieh, S. T., Zesch, W., Chan W.P., Kenny, T.W., Fearing, R. & Full, R. J. (2000). Adhesive force of a single gecko foot-hair. *Nature*, 405:681-684.
- Autumn, K., Sitti, M., Peattie, A., Hansen, W., Sponberg, S., Liang, Y.A., Kenny, T., Fearing, R., Israelachvili, J., & Full, R.J. (2002). Evidence for van der Waals adhesion in gecko setae. *Proceedings of the National Academy of Sciences of the U.S.A.*, 99, 12252-12256.
- Birkök, M. C. (2008). Bir toplumsallaştırma aracı olarak eğitimde alternatif medya kullanımı. *Sinema filmleri Uluslararası İnsan Bilimleri Dergisi*, 5, 2.
- Boles, L.C., & Lohmann, K.J. (2003). True Navigation and Magnetic Maps in Spiny Lobsters. *Nature*, 421, 60-63.
- Campbell, B., & Lubben, F. (2000). Learning science through contexts: Helping pupils make sense of everyday situations. *International Journal of Science Education*, 22(3), 239-252.
- Carter, G., Westbrook, S. L., & Thompkins, C., D. (1999). Examining science tools as mediators of student' learning about circuits. *Journal of Research in Science Teaching*, 36(1), 89-105.
- Coştu, B., Ünal, S., & Ayas, A. (2007). Günlük yaşamdaki olayların fen bilimleri öğretiminde kullanılması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 8(1), 197-207.
- Çepni, S. (2005). Fen ve Teknoloji Öğretimi (Kuramdan Uygulamaya). Ankara: Pegem Akademi Yayıncılık.
- Doğan, S., Kıvrak, E., & Baran, Ş. (2004). Lise öğrencilerinin biyoloji derslerinde edindikleri bilgileri günlük hayatla ilişkilendirme düzeyleri. *Erzincan Eğitim Fakültesi Dergisi*, 6(1).
- Downer, J. (1999). *Supernature, The Unseen Powers Of Animals*. BBC Books.
- Erduran Avcı, D., & Yağbasan, R. (2002). Lise 2. sınıf öğrencilerinin manyetizma kavramlarını günlük hayata uygulama becerilerinin tespiti. *Süleyman Demirel Üniversitesi Burdur Eğitim Fakültesi Dergisi*, 8, 189-197.
- Enginar, I., Saka, A., & Sesli, E. (2002). Lise 2 öğrencilerinin biyoloji derslerinde kazandıkları bilgileri güncel olaylarla ilişkilendirebilme düzeyleri. *V. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi*, Ankara.
- Eryılmaz, A., & Kırmızı, S. M. (2002). Öğrenci ve öğretmenlerin lise 2 fizik konularını nasıl daha zevkli öğrenebilecekleri hakkındaki görüşleri. *V. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi*, Ankara.
- Ghose, P., & Home, D. (2005). *Gündelik Bilmece* (Çev: Özbal, Ö.). Ankara: Tübitak Popüler Bilim Kitapları.
- Griffin, T.M. & Kram, R. (2000). Penguin waddling is not wasteful. *Nature*, 408, 929.
- Harlen, W. (2002). Links to Everyday Life: The roots of scientific literacy. *Primary Science Review*, 71, 8-10.
- İlkörücü-Göçmençelebi, Ş., & Özkan, M. (2009). İlköğretim altıncı sınıf öğrencilerinin fen bilgisi biyoloji konularını günlük yaşamla ilişkilendirme düzeylerinin başarıya etkisi. *Kastamonu Eğitim Dergisi*, 17 (2), 525-530.
- Kerber, C.S., Clemens, D., & Medina, W. (2004). Seeing is believing: Learning about mental illness as portrayed in movie clips. *Journal of Nursing Education*, 43(10), 479.
- Kızılcık, H.Ş., Temiz, B.K., Tan, M., & İngeç, Ş. K. (2007). A study of verbal section teacher candidates' attitude towards science, science education and technology. *Education and Science*, 32 (146), 80-88.
- Lardner, B., & bin Lakim, M. (2002). Tree-hole frogs exploit resonance effects. *Nature*, 420-475. <http://www.nature.com/nature/journal/v420/n6915/full/420475a.html>
- Laroche, L. H., Wulfsberg, G., & Young, B. (2003). Discovery videos: A safe, tested, time-efficient way to incorporate discovery-laboratory experiments into the classroom. *Journal of Chemical Education*, 80(8), 962-966.
- McMahon, G. (1997). Running on water. *Scientific American Magazine*. http://www.sciamedigital.com/index.cfm?fa=Products.ViewIssuePreview&ARTICLEID_CHAR=C996250D-8FB9-4F78-8EAF-234CC27449F
- Morgil, I., Arda, S., Seçken, N., Yavuz, S., & Oskay, Ö. Ö. (2004). The influence of computer-assisted education on environmental knowledge and environmental awareness. *Chemistry Education : Research and Practise*, 5(2), 99-110.
- NSES (1996). *National Science Education Standards*. Washington DC: National Academy Press. http://www.nap.edu/openbook.php?record_id=4962&page=R1
- Örnek, F., Robinson, W. R., & Haugan, M.P. (2008). What makes physics difficult?. *International Journal of Environmental & Science Education*, 3(1), 30-34.
- Pekdağ, B. (2005). Fen eğitiminde bilgi ve iletişim teknolojileri. *BAÜ Fen Bil. Enst. Dergisi*, 7(2), 86-94.
- Pilge, S. (2006). Doğanın akrobatları: Su cambazları. *Atlas Dergisi*, 163. <http://www.kesfetmekicinbak.com/atlasdan/doga/02813/>
- Reid-Griffin, A., & Carter, G. (2004). Technology as a tool: Applying an Instruction Model to teach middle school students to use technology as a mediator of learning. *Journal of science education and technology*, 13(4), 495-504.
- Roach, J. (2004). Owls Silent Flight May Inspire Quiet Aircraft Tech. *National Geographic News*, December 17. http://news.nationalgeographic.com/news/2004/12/1217_041217_owl_feathers.html
- Seife, C. (1999). *Deathly Hush*. *New Scientist*, March 6. <http://www.newscientist.com/article/mg16121761.100-deathly-hush.html>
- Simmons, J. A., Eastman, K., & M., Horowitz, S. S. (2001). Versatility of biosonar in the big brown bat, *Eptesicus fuscus*. *Acoustics Research Letters Online*, 2(1), 43-48.
- Şen, A. İ. (2001). Fizik öğretiminde bilgisayar destekli yeni yaklaşımlar. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 21(3), 61-71.
- Tian, Y., Pesika, N., Zeng, H. B., Rosenberg, K., Zhao, B. X., McGuiggan, P., Autumn, K., Israelachvili, J. (2006). Adhesion and friction in gecko toe attachment and detachment. *Proceedings of the National Academy of Sciences of the United States of America*, 103, 19320-19325.
- Tinnesand, M. (1997). *Chemistry in The National Science Education Standarts, The Unifying Concepts*. Washington DC: American Chemical Society Education Division.
- Thompson, R. & Herman, L. (1975). Underwater frequency discrimination in the bottlenose dolphin and the human. *Journal of the Acoustical Society of America*, 57,943-948.
- Türk Dil Kurumu (1998). *Türkçe Sözlük*. Ankara: Türk Dil Kurumu Basımevi.
- UNESCO (1980). *Many Voices One World, Mac Bride, United Nations Educational, Scientific and Cultural Organization, Kogan Page, London/Unipub, New York/Unesco, Paris*. <http://unesdoc.unesco.org/images/0004/000400/040066eb.pdf>
- Uzunıtyakı, B., & Boz, Y. (2007). Turkish Pre-Service Teachers' Beliefs About The Importance of Teaching Chemistry. *Australian Journal of Teacher Education*, 32 (4).
- Yalçınalp, S., Geban, Ö., & Özkan, İ. (1995). Effectiveness of using computer-assisted supplementary instruction for teaching the mole concept. *Journal of Research in Science Teaching*, 32 (10), 1083-1095.
- White, C., & McCormack, S. (2006). The Message in the Music: Popular Culture and Teaching in Social Studies. *The Social Studies*, 97(3), 122-127.
- Zahl, Paul A. (1978). The four-eyed fish sees all. *National Geographic Magazine*, 4, July.

VİKİ UYGULAMALARININ KULLANIMI HAKKINDA ÖĞRENCİ GÖRÜŞLERİ

STUDENT VIEWS ABOUT THE USE APPS WIKI

Nesrin SAÇ
Sakarya Üniversitesi, Türkiye
neso_sau_2005@hotmail.com

Özet:

Bilim ve teknolojinin hızla ilerlediği günümüzde internet en önemli teknolojilerden biri haline gelmiştir. Bu teknoloji hayatımızın her alanında olduğu gibi eğitim öğretim sürecinde de etkin olarak kullanılmaktadır.

Bireylerin web teknolojileri kullanımındaki becerilerini ilerletecek şekilde gelişme gösteren Web 2.0 uygulamaları ile kullanıcı beklentileri, bilgiye ulaşım ve bilginin şekillenmesi ayrı bir boyut kazanmıştır. Web 2.0, kullanıcıların bir web sitesi ya da bir web uygulaması içindeki olumlu katılımının gerçekleştirildiği bir teknolojidir. Yani kontrolün en az olduğu, sanal deneyimin ön plana çıktığı bir teknolojidir.

Web 2.0 araçları arasında; web günlükleri(weblog), vikiler, podcastler ve anlık mesajlaşma hizmetleri sayılabilir. Web 2.0 araçları sahip oldukları özelliklerinden dolayı sosyal yazılımlar olarak adlandırılır. Bu araçlar kullanıldıkları ortamlarda iletişim, işbirliği ve etkileşim süreçlerini destekleyerek sosyal bağlamı da olumlu yönde etkilemektedirler

Wiki uygulamaları açık ansiklopediler olarak tanımlanmakta ve kullanıcıların bir sözcük hakkında tanımlama yapabilmesine, bu tanımlara yenilerini ekleyebilmesine, yanlış ya da eksik olduğunu düşündüğü tanımları değiştirebilmesine ve silebilmesine olanak sağlar. Wiki uygulamaları, bahsedilen esnek yapısından dolayı eğitim ortamlarına kolaylıkla entegre edilebilir ve eğitim ortamlarında bulunan öğrenciler wiki uygulamalarında görüşlerini ve terimlere ilişkin buldukları bilgileri paylaşabilirler. Bu çalışma BÖTE öğrencilerinin wiki uygulamaları hakkındaki görüşlerini belirlemek amacıyla gerçekleştirilecek ve araştırma kapsamında örnekleme dahil edilen öğrenciler Sakarya üniversitesi eğitim fakültesi BÖTE 4. Sınıfta öğrenim gören ve Proje geliştirme ve yönetimi dersini alan öğrencilerden seçilmiştir.

Anahtar Kelimeler: Web 2.0, Wiki uygulamaları

Abstract

In today's rapidly advancing science and technology, the Internet has become one of the most important technologies. As this technology in all areas of our lives in the process of education is also used effectively.

Individuals will advance their skills in using web technology that shows the development of Web 2.0 applications and user expectations, access to information and knowledge formation has a different dimension. Web 2.0 users to a website or a web application is a technology carried out in positive participation. So at least that of the control, the virtual experience is a technology that's come to the fore.

Between Web 2.0 tools, web logs (weblog), wikis, podcasts and instant messaging services can be counted. Web 2.0 tools have the features because they are referred to as social software. These tools are used in media communication, collaboration and supportive interaction processes have a positive impact on the social context

Wiki open encyclopedias applications and users is defined as a word, there may be a description, there may add to this definition, he thinks is wrong or incomplete, change the definition set across and delete. Wikis are fully editable web site. Wiki applications, referred to the educational environment due to the flexible structure can be easily integrated in the learning environment and students' opinions and wiki applications can share information they have found related to the term. BÖTE this study students' opinions of the wiki applications, and research will be conducted to determine the scope of the sample included students of Sakarya University faculty of education BÖTE 4 Studying in the classroom and the field of project development and management course, students are selected.

Key words: Web 2.0, Wiki applications

GİRİŞ

Bugün sürekli değişen ve gelişen yeni bir dünya ile karşı karşıyayız. Yeni dünyanın özellikle de genç kuşaklardan beklentisi, her an değişen koşullar karşısında donanım kazanmaya ve her alanda kendilerini geliştirmeye hazır olmaları ve bunun sorumluluğunu üstlenmeleridir. İçinde bulunduğumuz bilgi çağında bilgiyle birlikte "İnternet" kavramı ön plana çıkmaktadır. Çünkü internet bilgiye erişim hızımızı ve miktarını artırmakta ve yeni bilgiler elde etmede büyük destek sağlamaktadır (Horzum, 2009). İnternet günümüzde en fazla kullandığımız teknoloji olmuştur. Öyle ki 2009 yılı verilerine göre dünya nüfusunun %23.8'i, Avrupa'nın %48.9'u ve Türkiye'nin %35'i internet kullanılmaktadır. Dünya çapında internet kullanıcı sayısı 1.596.270.108, Avrupa birliğindeki ise 393.373.398 kişidir. Türkiye'deki internet kullanıcı sayısı 26.500.000 kişidir ve 2000-2008 yılları arasında kullanıcı sayısındaki gelişme %1225'dir (İWS, 2009). Verilerden anlaşıldığı üzere internetin kullanımı ve kullanıcı sayısı her geçen gün artmakta ve artmaya da devam edecek nitelikte görülmektedir.

İnternette son belki de en önemli gelişme 1989 yılında Tim Berners-Lee tarafından www'nin bulunmasıdır. www, eğitim amaçlı bilgisayar kullanımında çok önemli bir dönüm noktası olmuştur. www, İnternetin yaygınlaşmasında ve hızının artmasında en büyük paya sahip olan teknolojilerden birisidir. Günümüzde halen İnternet deyince pek çok insanın aklına ilk olarak web gelmektedir (Aşkar ve Akçapınar, 2009)

Son yıllarda web teknolojilerinde yaşanan gelişmeler, bilgiye erişim ve bilgiyi sunma hızımızı tahminlerin çok ötesine taşıdı. Bir zamanlar sadece belli kitle ve kurumlar tarafından bilgi sunulan bir ortam olan web, artık kullanıcıları tarafından şekillendirilen bir platform olma yönünde emin adımlarla ilerliyor. Web sayfalarının pek çoğunda, okuduğunuz bir metne, bir habere yorumlarınızı ekleyebiliyor, konu ile ilgili kişisel düşüncelerinizi ya da deneyimlerinizi paylaşabiliyorsunuz. Ortaklaşa içerik geliştirme sistemlerini kullanarak farklı kişiler tarafından kapsami genişletilebilecek, içeriği zenginleştirilebilecek siteler hazırlayabiliyorsunuz.

Problem cümlesi: BÖTE öğrencilerinin wiki ortamıyla etkileşimleri ve wiki uygulamalarına ilişkin görüşlerini nelerdir?

Önemi: Web teknolojisindeki bu gelişmelerin yanı sıra, eğitim alanında son yıllarda popülaritesi artan oluşturmaçılık akımının doğasıyla İnternet'in kendine özgü çekici, esnek ve kullanıcı merkezli yapısının büyük anlamda örtüştüğü görülmektedir. Tek kaynaktan aktarılan bilginin birlikte (çok kaynaklı) oluşturulan bilgiye geçiş sürecinde öğrenmenin nasıl gerçekleştiği, birbirimizi daha iyi nasıl anlayabiliriz sorusuyla ve düşünme örüntülerini göstermesiyle yeni tanımlamaları gerekli kılmaktadır (Altun, 2008). Bu durum, alandaki araştırmacıları bu konuları araştırmaya yöneltmiştir. Bu nedenle İnternet ve www'nin eğitimde kullanılmasıyla ilgili pek çok çalışma yapılmıştır. Teknoloji ne kadar gelişirse gelişsin biz eğitimcilerin en önemli konularından bir tanesi de gelişen bu teknolojilerin eğitim ortamlarına nasıl entegre edileceği olmuştur. Bu çalışmada da gelişen teknolojinin ürünü, web 2.0 araçlarından biri olan vikilerin eğitimde kullanımına ilişkin öğrenci görüşlerine yer verilmiştir.

Web 2.0:

Web 2.0 kavramı ilk olarak O'Reilly Medya'da Tim O'Reilly tarafından 2004'te kullanılmıştır (O'Reilly, 2005). O'Reilly'nin Web2.0 kavramı; katımlı bir ortam ve yapı oluşturmaya imkan sağlayan bir dizi yeni uygulama ve hizmeti içermektedir. Web 2.0, sosyal ağ siteleri, web tabanlı özgür ansiklopediler, iletişim araçları gibi çevrimiçi araçlar sağlayan; sosyal ağlar ve öğrenme toplulukları ile paylaşım olanak sağlayan ikinci kuşak İnternet tabanlı web servislerini tanımlamak için kullanılmaktadır. Web 2.0'nın ne olduğuna ilişkin olarak yapılan tartışmaların sonunda; web 2.0'nın, yeni nesil web'in bir başka deyişle kullanıcı eğilimleri doğrultusunda ortaya çıkan gereksinimlerin karşılanmasına yönelik olarak geliştirilen yeni teknolojilerin ve tasarım karakteristiklerinin tamamına atıfta bulunan bir takma isim (lakap) olduğu söylenebilir. (Aşkar ve Akçapınar, 2009)

Web2.0 şemsiye bir kavramdır ve içinde birçok uygulamayı gerçekleştirmeyi sağlayan araçlar bulundurmaktadır. Çünkü Web2.0 fikrini oluşturan fikirler tek bir araçla hayata geçirilemeyecek kadar karmaşık ve çoktur. Bu araçların genel ismi sosyal araçlar veya Web2.0 araçları olarak ele alınmaktadır. Anderson (2007) Web2.0 araçlarının bireysel ürün ve kullanıcının ürettiği içerik, kalabalığın gücünü ve birlikteliğini kullanma, açık kaynak kodluluk, katılım yapısı vb. gibi düşünceler çerçevesinde oluşturulduğunu ifade etmektedir (Horzum, 2009). Web2.0 araçları sosyal yazılımlar olarak adlandırılır ve web okurluğundan web okuryazarlığına dönüşümü beraberinde getirir. İnternet, bilginin hazırlanıp iletildiği ve hazır bilginin tüketildiği bir ortam olmaktan çıkıp, içeriğin katılımcılarla birlikte üretildiği, paylaşıldığı, birleştirildiği ve transfer edildiği bir platforma dönüşür.

Bir uygulamayı "Web 1.0" yaparken, diğerini "Web 2.0" yapan tanımlama nedir? Web2.0 ile 1.0'ı birbirinden ayıran birçok özellik bulunmaktadır. Web 1.0'ın temel odak noktası teknik bilgiye sahip kişiler tarafından siteye yerleştirilen bilgilerdir. Bu bilgiler dünyadaki herkese açıktır. Geliştirilen web sayfaları statiktir. Bu sayfaların çoğunda renk bulunmaktadır ancak çok az hareket bulunmaktadır. Web2.0'da ise bilgiler genel kullanıcılar tarafından gönderilmektedir. Bu bilgilerden sonra sayfalara geri bildirim, bağlantı içeren öğeler ve kullanıcılar tarafından açıklama yazılması gibi özellikler bulunmaktadır (Caladine, 2008). Bu sayede web kullanıcıları teknik bilgiye ihtiyaç duymadan web sayfası geliştirebilen kişiler haline gelmektedir. Bunun yanında kullanıcılar web okuru olmaktan çıkarak web okuryazarı haline gelmektedir. Web okuryazarı olan kişiler işbirlikli çalışmalar ile çevrimiçi ansiklopediler, günlükler veya topluluklar oluşturabilmektedir. Bu topluluklar birbirlerini bilgilendirebilmekte, bilgi paylaşmakta, geri bildirim sağlamakta ve birlikte üretebilmektedir.

Viki:

Viki ismi Hawaii dilinde "hızlı" anlamına gelen *wiki* kelimesinden türetilmiştir. İlk basit viki sitesi olan *WikiWikiWeb*'i Ward Cunningham oluşturmuştur. Vikiler, üzerinde düzenlemeler yapılmasına olanak sağlayan, bir sözlüğü, ansiklopediyi ya da veritabanını andıran web siteleri gibi düşünülebilir. İlk geliştiricisi Ward Cunningham tarafından 2001 yılında "işleyen en basit çevrimiçi veritabanı" olarak adlandırılan viki, kullanıcıların bir sözcük hakkında tanımlama yapabilmesine, bu sözcüklere yenilerini ekleyebilmesine, yanlış ya da eksik olduğunu düşündüğü yerleri değiştirebilmesine ve silebilmesine olanak sağlayan işlevlere sahiptir. Bu süreci de birçok kullanıcı birlikte oluşturabilir. Sunucu üzerinde de, her kullanıcının yazdıkları otomatik olarak birbirlerine bağlanabilir. Böylece, her sayfa birçok bağlantıyla farklı sayfaya açılabilir (Altun, 2005).

Viki'ler bir grup tarafından iş birliği içerisinde ortaya çıkan bilgi bankaları olma özelliği taşıyorlar. Vikilerin sahip olduğu işbirliği içinde üretim, okurluktan okuryazarlığa geçişte önemli araçlar olmasını sağlamıştır. En bilinen örneği dünya çapında ansiklopedi olarak görülen ve her ülkenin diline çevrilmiş olarak kullanılan Wikipedia'dır. Wikipedia katılımcıların metinleri eklemesi, çıkarması ve düzenlemesi sonucu oluşan bir ansiklopedidir. Böyle bir yapı kullanıcıların birlikte işbirliği içerisinde yazmaları ve üretmelerine örnek olarak gösterilebilir.

Vikinin kullanımı ile bilgi bir kişiden diğerine transfer olmaz. Bunun yerine her kişinin bir topluluğun parçası olarak bilgi paylaşımı ve yapılandırma öğrenme olduğu gibi birinin diğerinden etkilenmesi ve bilgiyi yapılandırması söz konusudur. Viki ortamındaki öğrenmeler hem öğrencinin hem de öğreticinin birlikte öğrenmesini sağlaması açısından farklılaşmaktadır. Vikiler eğitsel amaçlı olarak projelerde, beyin fırtınası amacıyla, dil öğretiminde ve yaratıcı yazma amaçlı kullanım açısından oldukça etkilidir (Altun, 2008).

Vikiler açık kaynak kodlu ansiklopedilerdir. Açık kaynak ortamı, açık geliştirici gruplar tarafından geliştirilen ve isteyen herkesin kullanabileceği bir bilgi türüdür. Açık kaynak üretim kavramı, bir açık kaynak işletim sistemi olan GNU/Linux'un yaratılması ile yazılım mühendisleri arasında ortaya çıkmıştır. MediaWiki, açık kaynak bir ansiklopediyi destekleyen açık kaynak bir yazılımdır. Tipik olarak, açık kaynak koleksiyonları, yedeklenmiş kaynaklar muhafaza eder; bu sayede bir geliştiricinin yanlışlıkla koda ya da içeriğe zarar vermesi halinde, eski ve kararlı bir sürüme kolaylıkla geri dönülebilir. Ayrıca aynı yedekleme sistemi, açık kaynak projesini kötü amaçlı tahriplere karşı korur (Wikipedia).

Altun (2005), eğitimde viki uygulamalarının kullanımının getirilerini beş grupta değerlendirmektedir. Bunlar;

1. Öğrenci çalışma dosyaları
2. Mesleki Gelişim
3. Ders ve sınıf içi iletişim ortamı
4. Topluluk ilişkileri ve sanal topluluklar oluşturma
5. Bilgi yönetimi.

Bu amaçlardan birisini ya da tümünü kapsayacak şekilde, viki ortamları grup çalışmalarında grup üyeleri arasındaki bilgi paylaşımını destekleyeceği gibi (Boulos, Maramba& Wheeler, 2006), aynı zamanda işbirlikli bir öğrenme ortamı olarak, grup içerisinde bireylerin birbirlerinden de bir şeyler öğrenerek bilgi oluşturabilecekleri tartışma ortamlarına da olanak sağlar.

Amaç:

Bu çalışmanın temel amacı, BÖTE öğrencilerinin viki ortamıyla etkileşimleri ve viki uygulamalarına ilişkin görüşlerini almak amaçlanmıştır. Bu çalışmada, "Öğretmen adaylarının viki uygulamalarına ilişkin görüşleri nelerdir?" sorusuna cevap aranmıştır.

YÖNTEM:

Araştırma Modeli: Çalışmanın amacını gerçekleştirmek için tarama modeli kullanılmıştır. Evren hakkında genel bir yargıya varmak için evrenden alınacak bir grupla çalışmak çok daha kolay olacaktır. Bunun yanında neden-sonuç ilişkisini aramayıp sadece olan durumu betimlemek istediğimiz için bu yöntem uygundur (Karasar, s.79-82, 2004).

Evren Ve Örneklem: Çalışma evreni olarak, araştırmacıların ulaşılabilirliği göz önünde bulundurularak 2009 – 2010 akademik yılı Sakarya Üniversitesi Eğitim Fakültesi BÖTE bölümü VI. Sınıf öğrencileri alınmıştır. Bu araştırma kapsamında 52 öğrenci üzerinde çalışılmıştır.

Veri Toplama Aracı: Bu araştırma kapsamında 52 öğrenciye hazırlanmış olan 30 soruluk anket uygulanmıştır. Bu anketteki soruların 22'li beşli likert ölçeği ile ölçeklendirilmiştir. Anket sonuçları ise SPSS programı aracılığıyla işlenmiştir.

Verilerin analizi: Araştırma kapsamında toplanan verilerin analizinde SPSS 17.0 programı kullanılmıştır. Betimsel istatistiklerden frekans, yüzde hesaplamaları yapılmıştır.

Uygulama: Bu çalışmada, Sakarya Üniversitesi Bilgisayar ve Öğretim Teknolojileri eğitimi bölümünde, öğretmen adayları ile VII. Yarıyılı yürütülen Proje Geliştirme ve Yönetimi dersinde güncel internet uygulamalarından birisi olan viki uygulaması yapılmıştır. Viki ortamı olarak açık kaynak erişim kodlu bir yazılım olan MediaWiki bölüm sunucularından birisi üzerine yüklenmiştir. MediaWiki gerek kullanıcı memnuniyeti gerekse de kullanım sonrası teknik destek açısından mevcut vikiler arasında en popüler uygulamalardan birisi olması

dolayısı ile seçilmiştir. Çalışma kapsamında katılımcılara viki üzerinde kendi gruplarını ve projelerini yansıtabilecekleri bir ortam hazırlanarak, bu ortamda ekleme-düzenleme yapabilmeleri için gerekli olan kodlama konusunda 2 ders saati bilgilendirme çalışması yapılmıştır. Bu çalışmada, gezinim tasarımı ve viki kullanımının temel kodlama becerileri ile gerekli yardım dokümanlarına nasıl erişilebileceği konusunda eğitim verilmiştir. Bunların sonucunda da "kpsswiki" sitesi öğrenci katılımıyla yapılandırılmıştır.

BULGULAR VE YORUM

Araştırma sürecinde 52 anket incelenmiştir. İncelenen anketler SPSS programında değerlendirilmiş ve yüzde ve frekans değerlerine göre bulgular yorumlanmıştır.

Tablo 1. Viki uygulamalarının kullanımı hakkında öğrenci görüşleri anketine verdikleri cevapların dağılımı

| | Hİç katılmıyorum | Katılmıyorum | Kararsızım | Katılıyorum | Tamamen katılıyorum | Toplam |
|---|------------------|--------------|------------|-------------|---------------------|--------|
| KPSSWiki sitesinde sunulacak bilgi işbirliğiyle oluşturulmalıdır | N 1 | 2 | 1 | 24 | 24 | 52 |
| | % 1,92 | 3,85 | 1,92 | 46,15 | 46,15 | 100 |
| Site oluşturulmadan bir plan yapılması gerekmektedir | N 2 | 1 | 21 | 28 | 52 | 52 |
| | % 3,85 | 1,92 | 40,38 | 53,85 | 100 | 100 |
| Wikilerde sadece bilgi alma değil bilginin oluşturulması sürecine katkıda bulunmak da önemlidir | N 1 | 1 | 26 | 24 | 52 | 52 |
| | % 1,92 | 1,92 | 50,00 | 46,15 | 100 | 100 |
| Kullanıcıların yapabileceği her hatayı düşünerek bu hataları en aza indirmek için uğraşırım | N 7 | 6 | 30 | 9 | 52 | 52 |
| | % 13,46 | 11,54 | 57,69 | 17,31 | 100 | 100 |
| Wiki kullanımı e-okuryazarlık kapsamında değerlendirilir | N 1 | 11 | 32 | 8 | 52 | 52 |
| | % 1,92 | 21,15 | 61,54 | 15,38 | 100 | 100 |
| Bağlantılar aranan konulara hızlı erişim sağlaması açısından önemlidir | N 2 | 2 | 25 | 25 | 52 | 52 |
| | % 3,85 | 3,85 | 48,08 | 48,08 | 100 | 100 |
| Bağlantı oluşturmak düzenli bir görüntü sergilemesi açısından önemlidir | N 2 | 2 | 26 | 22 | 52 | 52 |
| | % 3,85 | 3,85 | 50,00 | 42,31 | 100 | 100 |
| KPSSWiki sitesi olmasaydı bilgiyi nasıl örgütleyeceğimi öğrenememiş olurum | N 8 | 23 | 14 | 5 | 2 | 52 |
| | % 15,38 | 44,23 | 26,92 | 9,62 | 3,85 | 100 |
| KPSSWiki sitesi olmasaydı wiki kullanımının nasıl olacağını öğrenememiş olurum | N 7 | 10 | 6 | 20 | 9 | 52 |
| | % 13,46 | 19,23 | 11,54 | 38,46 | 17,31 | 100 |
| Kullanıcının katkıda bulunabilmesi için bazı bağlantıları boş bırakırım | N 4 | 11 | 10 | 20 | 7 | 52 |
| | % 7,69 | 21,15 | 19,23 | 38,46 | 13,46 | 100 |
| Proje sürecinin başında iskelet bir yapı oluşturulması olmanın zorluğunu yaşıyorum | N 1 | 13 | 9 | 18 | 11 | 52 |
| | % 1,92 | 25,00 | 17,31 | 34,62 | 21,15 | 100 |
| KPSSWiki sitesinin kullanımı teknik açıdan zordur | N 4 | 29 | 10 | 7 | 2 | 52 |
| | % 7,69 | 55,77 | 19,23 | 13,46 | 3,85 | 100 |
| KPSSWiki sitesinin kullanımı bilgiyi örgütleme açısından zordur | N 3 | 27 | 11 | 11 | | 52 |
| | % 5,77 | 51,92 | 21,15 | 21,15 | | 100 |
| KPSSWiki sitesinin kullanımı işbirliğini gerektirmesi açısından zordur | N 4 | 25 | 6 | 13 | 3 | 51 |
| | % 7,69 | 48,08 | 11,54 | 25,00 | 5,77 | 98,08 |
| KPSSWiki sitesinde yazdıklarımın değiştirilmesi beni rahatsız ediyor | N 5 | 26 | 7 | 10 | 4 | 52 |
| | % 9,62 | 50,00 | 13,46 | 19,23 | 7,69 | 100 |
| Site içerisinde sanal ortamda arkadaşlarımla iletişimde bulunuyorum | N 13 | 24 | 6 | 9 | | 52 |
| | % 25,00 | 46,15 | 11,54 | 17,31 | | 100 |
| KPSSWiki sitesini kullanmak sosyalligimi artırıyor | N 9 | 30 | 8 | 5 | | 52 |
| | % 17,31 | 57,69 | 15,38 | 9,62 | | 100 |
| KPSSWiki sitesinde kendimi gerçek hayatta olduğundan daha kolay ifade ediyorum | N 14 | 31 | 4 | 3 | | 52 |
| | % 26,92 | 59,62 | 7,69 | 5,77 | | 100 |
| KPSSWiki sitesini kullanmam kendi kendime yeni bilgiler öğrenmemi sağlıyor | N 1 | 2 | 4 | 43 | 2 | 52 |
| | % 1,92 | 3,85 | 7,69 | 82,69 | 3,85 | 100 |
| KPSSWiki sitesini kullanmam arkadaşlarımdan yeni bilgiler öğrenmemi sağlıyor | N 1 | 8 | 8 | 33 | 2 | 52 |
| | % 1,92 | 15,38 | 15,38 | 63,46 | 3,85 | 100 |
| KPSSWiki sitesinin kullanarak arkadaşlarımdan eksik/yanlış yazılarını/tanımlarını düzeltirim | N 2 | 6 | 5 | 29 | 10 | 52 |
| | % 3,85 | 11,54 | 9,62 | 55,77 | 19,23 | 100 |
| KPSSWiki sitesini KPSS'e hazırlanırken kullanıyorum | N 11 | 9 | 10 | 22 | | 52 |
| | % 21,15 | 17,31 | 19,23 | 42,31 | | 100 |

Tablo 1'de öğrencilerin viki kullanımına yönelik görüşlerini belirlemek amaçlı olarak yöneltilen ifadeler ve öğrencilerin dağılımı görülmektedir. Tablo 1 incelendiğinde öğrencilerin viki kullanımı, yapılandırılması ve işbirliği konularında genellikle olumlu görüş belirttikleri görülecektir. Öğrencilerin yanıtlarına göre; çoğu sunulacak bilginin işbirliği ile oluşturulması gerektiğine, site oluşturulmadan önce bir plan ve iskelet yapı oluşturulması gerektiğine, sadece bilgi alma değil bilginin oluşturulması sürecine katkıda bulunmanın önemli olduğuna, viki kullanımının e-okuryazarlık kavramı altında değerlendirilmesi gerektiğine, kpsswiki sitesinin viki kullanımını öğrenmelerinde etkili olduğuna, kpsswiki sitesinin kullanımının teknik açıdan ve bilgiyi örgütleme açısından zor olmadığına, kpsswiki sitesinin kullanımının kendi kendilerine yeni bilgiler öğrenmesini sağladığına, kpsswiki sitesinde arkadaşlarının eksik/yanlışlarını düzelttiklerine, kpsswiki sitesinin kullanımının arkadaşlarından yeni bilgiler öğrenmesini sağladığına ve kpsswiki sitesini kpss sınavına hazırlanırken kullandıklarına ulaşmaktayız.

Diğer yandan tekrar Tablo 1 incelendiğinde öğrencilerin çoğunun kpsswiki sitesinin sosyalliklerini artırdığı, sanal ortamda arkadaşlarıyla iletişim kurdukları, kendilerini gerçek hayatta olduğundan daha kolay ifade ettikleri ve kpsswiki sitesi olmasaydı bilgiyi nasıl örgütleyeceklerini öğrenemeyecekleri şeklindeki ifadelere katılmadıkları görülmüştür.

SONUÇLAR

Çalışma sonuçlarımıza göre, öğrenciler kpsswiki sitesinin kullanımı konusunda olumlu düşüncelere sahip olmaktadır. Fakat henüz vikilerin sosyallige olan katkısının yaygınlaşmadığı görülmektedir. Öğrenciler kpsswiki sitesini bilgiyi yapılandırma, düzenleme ve bilgiye ulaşma konularında yeterli bulmakta fakat bir sosyallik algısı aşladığına, sanal alemde sosyal bir ortam yarattığına inanmamaktadırlar.

ÖNERİLER

Dünya nüfusunun %23.8'i, Avrupa'nın %48.9'u ve Türkiye'nin %35'i internet kullanmaktadır. Buradan hareket edecek olursak internetin eğitim öğretim amaçlı olarak kullanımının yaygınlaştırılması gerektiğini söyleyebiliriz.

Araştırma sonuçlarını incelediğimizde vikilerin sosyal yazılımlar olduğunu söylememize rağmen öğrencilerimizde henüz bu algının oluşmadığı görülmektedir. Öğrenciler wiki ortamlarının işbirliğine elverişli olduğunu ve birbirlerinin öğrenmesine katkıda bulduklarını kabul etmelerine rağmen sosyalliklerine bir etkide bulunmadığını ve arkadaşlarıyla iletişim içine girmediklerini belirtmişlerdir. Buradan hareketle kültürümüze henüz vikilerin ve web 2.0 teknolojilerinin tam anlamıyla yerleşmediğini söyleyebiliriz. Bunu gerçekleştirmek amacıyla daha çok işbirliği ve iletişim gerektiren uygulamaların eğitim öğretim sürecinde kullanılması ve buna yönelik çalışmaların sonuçlarının değerlendirilmesi gerekmektedir. Bu konuda yapılacak çalışmaların daha fazla kişi üzerinde yapılması gerektiği kanaatindeyim.

KAYNAKÇA

- 1.Abram S. (2005). Web 2.0 – Library 2.0, Librarian 2.0. *Information Outlook* ;9(12):44–5.
- 2.Akçapınar, G. ve Aşkar, P. (2009). Araştırma Grupları İçin Ortak Çalışma Alanı Olarak Wiki Kullanımı. *9th International Educational Technology Conference (IETC2009)*, Ankara, Turkey.
- 3.Altun, A. (2005). Eğitimde internet uygulamaları. Anı Yayıncılık: Ankara
- 4.Altun, A. (2008). Yapılandırmacı Öğretim Sürecinde Wiki Kullanımı. *8th International Educational Technology Conference (IETC2009)*, Turkey.
- 5.Anderson, P. (2007). What is Web2.0? Ideas, technologies and implications for education. *JISC, Technology & Standards Watch*, Feb. 2007.
- 6.Berners-Lee, T. (1999). Wikipedia. Retrieved 20 March, 2008 from http://en.wikipedia.org/wiki/Semantic_web#Purpose
- 7.Boulos, M.N.K., Maramba, I., & Wheeler, S. (2006). Wikis, blogs and podcasts: A new generation of Webbasedtools for virtual collaborative clinical practice and education, *BMC Medical Education*, 6(41).
- 8.Caladine, R. (2008). *Enhancing E-Learning with Media-Rich Content and Interactions*. *Information Science Publishing*, New York.
- 9.Horzum, B. (2009). Yayınlanmamış ders notu.
- 10.IWS (2009). Internet World Stats: Usage and Population Statistics. <http://www.internetworldstats.com/> adresinden 12.09.2009 tarihinde ulaşılmıştır.
- 11.O'Reilly, T. (2005). What is Web2.0? Design Patterns and business models for the next generation of software. <http://www.oreillynet.com/pub/a/oreilly/tim/news/what-is-web-2.0.htm> adresinden 12.09.2009 tarihinde erişilmiştir.

VIRTUAL IDENTITIES and VIRTUAL COMMUNITIES: CONSTRUCTION OF SELF WITHIN CYBER SOCIETIES: THE IMVU CASE

Başak SARIGÖLLÜ

The New Media have diffused culture by the means of technology, ideology and economy. Such integrations evoked diverse epistemological and ontological debates in terms of new definition, the role of the subject, audience positioning and the dichotomy of essential life versus simulation in cyberly constructed environments.

Such novel definitions deconstructed and reconstructed essential self centered subject within manifold, complex relations of technology versus earthly life in virtual communities as virtual identities. This ground breaking reconstruction gave birth to a new understanding of power within audience and media approaches.

Referring to the post structuralist heritage of cultural studies where subject is no longer positioned as the fully wise Cartesian individual hence it is the interpreter of the language system and defined only within and through the language. By departing from such discourse I call upon the language of digital media; the operating language. The subject of the new media is the interpreter of a system constructed by ones and zeros where the whole digital structures can be defined as ins and outs through oppositions. Jacques Derrida calls the unite of diachronic and synchronic differences as “difference”. Through such differences it is possible to determine the freedom of the new “subject”. As a matter of fact, the subject is structured by the system of difference within the operating systems so has never been promised to hold on to an ultimate freedom.

On the other hand many new media studies point out to the freedom of the subject , celebrating the liberties of the digital world by arguing the new structures of digital media and the decentered, flowing (surfing) position of the subject from receiver to proceiver (producer receiver). The rejuvenation of new media by offering multi tasked positions, mobile identities and various flows of information should never be underestimated. Activity and interactivity of the users is a very promising project by valuing similar deeds with Cultural Studies as glorifying the census and descensus within various cultures, offering chances to subcultures, the repressed and revolutionary acts through interactive negotiations. Hence, it should not be forgotten that the era of media and power disseminates within the media is always a hegemonic one enclosed by Louis Althusser's ideological apparatuses. The term has been co named for the new media studies as the “technological apparatuses” to highlight the ideological functions of the technological innovations diffused with the promise of liberty in daily life.

After all, the most liberating and fascinating project of digital media has been its proposition of the subject: the means of constructing a virtual identity; a self within the cyber community. This exciting experience assures and continues freedom of expression and deed without any repressive regulations or moralities. Within the promising, multi-sided, ever changing nature of the virtual communities the digital media offers, even to the meanest and most hopeless of lives, the harshest of lived inequalities an open play of the imagination. All bodily boundaries seem to be deconstructed while all cultural, ethnic, gendered diversions are diversely practicable through virtual bodies of self constituted avatars. Virtual selves can be considered as experiences that promise endless selves, endless possibilities of representation through not just a play of game but an opportunity of creating ones own body, own name, own gender, own social position within many subcultures. Virtual communities also provide its inhabitants reversibility through both bodily and cultural choices open to repeated changes according to the will of the virtual self. On the other hand, V.C also bears the possibilities of reconstructing social inequalities like sexism, racism and consumption of subcultures depending on the structures and patterns freely depicted by the operating language. So in order to reveal the essence of virtual identities, possibilities and multi-sided selves, such communities are needed to be studied. The question is; are virtual identities a promising, liberating practice of mind from the body and social constructions which also enables the real identity to experience empathy and increases its capacity to intervene and respect to other selves due to its practice of virtual identities? Or does these virtual communities, through their virtual spaces and identities offer and lead its inhabitants to a reconstruction of various concepts of undemocratic representations which leads to violation of equalities, social epistemic violence? To grasp the understanding of all these virtually constructed meaning, what is crucial is that to squeeze the multi layered denotations hidden within the magical word of identity.

First of all the meanings of identity have been shaped through the grand determinators of the current orders of network society. The Network society as a term to signify the current system of society has been conceptualized by Manuel Castells. The term refers to the constructed conceptual environment through active agents where the first converter of base structure is economy and its transformation of capitalism to new definitions of capital order; the welfare capitalism, the technological revolution and diffusion of mass communication within the personal and public space where the personal and public converges through each person becoming a unique mediator by individual mediums and through such fragmented changes the active redefinition of times, spaces and identities within a culture of tangible and imagined networks. Time and space through the flows of new orders of capitalism and technological innovations are nothing but stable, quantifiable and prominent. On the contrary, the time and spaces of the network society is fragmented, floating and as bits and pieces segmented all over the virtual and geographical arena of exterritorial localities, decentralized nationalities and global societies; the networks. Within such a segmented system the meanings of identity defers.

Identity, throughout the history of civilization has been a problematic concept. It is used for everything and nothing by attributions of fixed qualities and inescapable belonging. Especially through out the modernity, identity politics has been a grand narrative of purity and impurity, while in post modernity has been the celebration of difference and war against power relations sprung from essentialist discourses. (2006:40) hence identity bears both a subjective and collective meaning. As Hall proposes an anti essentialist definition: ‘Identity provides a way of understanding the interplay between our subjective experience of the world and the cultural and historical settings in which this fragile subjectivity is formed’ (1997:301). Identity is a productive term if not seeking purity, segmentation and total discrimination. Especially within the globalization theories, identity means the negotiations in heterization. As a concept, identity does not need to be fixed nor holistic on the contrary within network systems identity shares Jacques Lacan’s term “point de capiton”: the partial points of fixation in meaning.

Through partial negotiation identity offers belonging; a sense of belonging that can be as real as it is imagined. Like all of the social constructions of society identity is also socially constructed in return of a sense of safety within the crucial order of harsh capitalist policies, failed modernization projects and nation state utopia as Castells depicts, identity within demanding network societies promises a hope of belonging, a substitute for a lack, a partial plenitude with the unknown other within the flows of space and time. Identity as a collective shared meaning ensures the other to be with the self and is being proposed as a cure of modernist loneliness of the subject.

Hence, such a cure comes with the side effects. Identity for centuries has been the subject of crucial power practices, exclusions and served for the construction of the “self” and “the other”. As Foucault defines identities are shaped through struggles of power as if they are not freely and individually defined projects of self awareness; rather they are social and discursive constructs developing around the negotiation and appropriation of hegemonic discourses of identity. (Foucault, 1974) The key points in the determination of identity as Foucault states are the social mechanisms of inclusion, recognition, exclusion and the construction of commonality and difference. Identity is not a mere subjective meaning where it is never totally the result of the interplay between socially constructed institutions, practices and groups. Identity includes political as much as the subjective feedback. Power, hegemony and exclusion are equally components of identity as individuality, sociality and belonging. (Georgiou, 2006) Daily life as it seems, or has been projected under post modern discourses and within network societies is not a collective celebration of liberating activities, discussions and self representations. Hence, the freedom of expression is still very much under control of normative discourses and has the potential of marginalization. It is significant to refer to the power definition of Gramsci and Foucault while defining the concept of diffused power that regulate and state the possibilities of those constructed identities apart from ideological forces. The famous Italian Neo Marxist Antonio Gramsci highlighted the term hegemony with the brilliant concept of non violent consent gained by dominant ideology through apparatuses diffused within each layer of society so that power is in habited and regulated through the organs of state and rooted within the heart of individual and collective identities. (Gramsci,1971)Foucault on the other hand, by his diffused power definition see the continuity of domination possible through legitimization of undifferentiated identity, discursive and disciplinary practices, surveillance where he also depicted the strong possibility of “counter power” and resistance which would fit better to the power definition of network societies.

Identity of resistance is constituted by or within the actors that are devalued or exposed to unfair exclusion that develop resistance on the basis of survival by strong oppositions to the dominant forces of society. Castells, quoting from Scheff states that “resistant identities arise out of a sense of alienation and resentment against unfair exclusion, whether political, economic or social” (2004:9). Religious fundamentalism and queer culture are examples for the “exclusion of the excluded” where defensive identity is constructed against dominant institutions to reverse the value of judgment but may highlight the “otherness” , “differentiation” and “boundaries” that I would here agree the main disposition of Castells that globalization through various definitions of resistance would unplug the concerns of homogenization in global network societies but rather be the reason of fragmentation and diversification:

Identity is not only reinvented... it is at least partially given for different people in different ways and intensities. Bodies are marked as different and often negatively different to the dominant cultural system, thus producing a dissonance or gap between one’s practices and affects (2006:43).

Gerd Baumann’s definition of dominant discourses of community and demotic discourses of community depicts an ongoing activity between the meanings, representations of groups within the mainstream. Dominant groups celebrate the holistic forms of belonging where the demotic ones are emerging from the interaction and experience that constitutes diversity and hybridism (2003:254). As Baumann states within everyday life there is an ongoing, ever changing negotiation within these discourses which at the end serves the restructuring of the identities themselves. The newly exposed structure of identities is not only the products of floating interplay within the social and individual dynamics but also the context of those dynamics in micro sense takes place.

There are still vast amount of doubts about the reality of the virtual essence where Castells explains reality as has always been virtual as perceived through not actual definitions but signs; the virtual definers. Thus, the physical world is as symbolic as the virtual. There can not be any spoken reality of uncoded symbolic patterns apart from virtuality. Reality is virtual and virtuality is realistically constructed while all realities are virtual (through decoding perceived signs). Castells, differentiate the earlier virtual setting (the physical world) and the real virtuality through the definition of; a system which reality itself (that is people’s material/symbolic existence) is entirely captured, fully immersed in a virtual image setting, in the world of make believe, in which appearances are not just on the screen through which experience is communicated, but they become experience” (2004:404)These experiences of textual, visual, audiovisual, sound realities are so diversely converged, integrated and synthesized that represents all kinds of realities of times and in some cases spaces which is termed as Aleph; whole human experience of past, present and future in a unique point of universe.

VIRTUAL SELF and the VIRTUAL BODY

According to the post structuralist, feminist though the identity is the result of socialization. It is not mere socialization but a result of collective meaning construction through hegemonic naturalization and legitimizing discursive practices. Thus the real “self” is a result of systematic social construction (Butler, 2006). Virtual self on the other hand is a one important aspect of the technological turn within network societies. They are the historically constituted socio-cultural proactivities within and outside the mediated communication and the language practices, social interactions and ideologies of technology that emerge from new information and communication technologies(2003:367). Through such practices these experience blurr the boundaries between the online and the offline. The self of these Virtual reality is equally constructed as the “earthly” selves where emerges the question of “is it fear to say that it is more constructed than the one within the socially

determined world?" The answer would be yes. The virtual selves, like any of the mediated realities are double constructed and double mediated. Through that mediation the body is no more a part of the self but self is embodied within the representation of images. Here within the definition of virtual selves, sprang the distinction of body and mind, nature and culture, real and virtual. The hierarchical dualities of discursive power practices symbolically represent the language of the computer reality constructed upon the zeros and ones, the crucial dichotomies. Thus within the language of dualities body has been positioned as the zero and the mind as the one, reminding the old Cartesian trick of forgetting about the body, the virtual selves are in fact constituted through the assumption of disembodied selves where virtual reality is hidden in the ability of the imagination of conscious. (Bolter and Grusin, 2000) In fact, the mere control of conscious is not the possibility. The social construction of self throughout the civilization has diffused to the social values and codes so inevitably that the disembodiment of body is not a possibility in a sudden strike.

Virtual communities by referring to Castels's definition, bring people together online around shared values and interests while such online interactions may continue or converge with material life activities.

John Perry Barlow defined the online, virtual communication with a perfect statement; "I want to be able to completely interact with the consciousness that is trying to communicate with me". (2004:326). The word; "consciousness" well defines the emancipation of disembodiment project and celebrates a new form of socialization, through pure consciousness which is not referring to ration nor body but rather a pure state of self, spirit, energy. Hence, what is crucial is that the misrepresentation of body does not quite testify for the lack of representation of body. Body as a social construction as a referent, as a representation of the representation is still there and in fact at the core of virtual identities and realities. For Simon Penny "VC reinforces Cartesian duality by replacing the body with a body image, a creation of mind. As it is a clear continuation of the rationalist dream of disembodied mind: a part of the long Western tradition of the denial of the body" (1994:243). Thus through continues representation of "disembodied" body, VC technologically naturalize the repression, subordination and hierarchy of mind over the body.

Virtual reality through its double socialization, doubles discursive practices, shapes, regulates and changes the notion of the self by the fragmentation of body. In fact, the visitor of the virtual community through a virtual body (knowing that the body she is in is not her constant part) enjoys the bodily explosion, endless experiences and has the opportunity to test what feels right and what is not. The virtual reality through the system of representation still can only define its self in terms of visual spaces and visible bodies. Even though the earthly body is abundant, the virtual self is in need of virtual bodies, extensions to explore and desperately reconstructs virtual spaces; meanings to be explored by translating the experiences of virtual reality to virtual self as to keep the definition of totality within the individual and keep the constant distinction of self (identity) from the virtual others in order to still say "I", "we" and "them" in virtual places and communities.

The denial of body and celebration of ration is an invalid discourse for virtual identities. Hence, body is an important medium of self in the virtual world which serves as an extension between the earthly self, the virtual self and the virtual world. On the other hand, identity, difference, sub cultures and power relations are carefully constructed as the core of the self determinations of the virtual subjects. Virtual selves are constructed within these digital spaces and bodies through the dispositions of earthly "socializations" where the earthly selves carry their long before constructed identities to the virtual spaces either repressively or legitimizing. The repressive virtual identities are the products of selves that have been exposed to "exclusion", "repression", "subordination" and "mis representation" within the transformations of harsh economic, cultural, gendered and racial policies of the 20th century and seek meaning and recognition through exclusion, isolation of the earthly communities through technological apparatuses within virtual realities, spaces, and communities. This struggle is the effort of one's belonging, communication, sharing with the others. Where most importantly bears recognition and representation of self and needs of the individual. On the contrary, the legitimizing identities are constructed within virtual communities to repeatedly pronounce, disseminate, and normalize the "unconventional", "infeasible and unapproachable". These identities celebrate their own sub cultural, community values, like homosexuality, ethnic roots and unconventional interests (vampires, Satanism, group sex) that has been desired by the "earthly selves" but strongly forbidden or named as unfavorable within the earthly communities.

METHODOLOGY

IMVU is a virtual community membered by forty million registered players and twenty-five million yearly in come. This virtual community is available online without any registration fee or monthly payment. The only obligatory task of the community is to construct a body "virtuality". The subject; in order to become a part of this community chooses an avatar: a virtual body where the choice of gender, color, appearance and name depends on the self. The system immediately offers a certain credit for the virtual identity to be a part of the tremendous community almost equal to the population of middle populated country and representations of all the possible earthly spaces, institutions and activities through virtually constructed digital spaces. IMVU, offers all the trends of the post modern, neo capitalist culture with spas, night clubs, central parks, horse riding clubs, beauty saloons, plastic surgeons, residences, luxurious cars, kinder gardens, wedding planers, hospitals and even much more than what is missing as a practice in earthly communities but are valid as discourses of popular culture; the vampire cults, elves, in between, werewolves... The most significant aspects of the virtual community are that it allows fragmentation and celebrates every kind of sub culture activity and representation. "Feel your dark side" is written on the upper screen next to the image of a young woman with full of piercing, tattoos and dark lather clothes. The "emo" culture defined as the "wild, nihilistic" response of the repressed post modern youth and is depicted as an opportunity to the self search through being a part of the "emo" community within IMVU, gather, share and constitute meaning while experiencing "the dark side" without any threatfull side affect.

On the other hand the virtual selves are free to experience any kind of "bodily" gratification through their virtual bodies. They are welcomed to have sexual intercourse, chat, nag, talk, hold, kiss, swim, eat, sleep while most at the most extreme they always have the ability of changing the body. The discourse of changing the body is the main representation of

the intersection where the virtual and earthly comes along. Owing to the discourses of earthly communities the body is the representation of the self within IMVU. The body is something to work on, something to be perfect but mostly with reference to the “beauty” myths of “earthly” reality. Through credits that have been loaded with real money by the players, the body can be bought. The lips can be fuller, the breast can be bigger, and the eye lashes can be longer. Any kind of change in body is possible through the earthly rules of “capital exchange”. As have been depicted above in virtual communities body is not void but it is remediated (double mediated). The question is not the validity of body but the simulation of body and the discourses it bears. It is not the body which shapes the understanding of self but the remediation of body that totally reconstructs the meaning of body. Thus, as many say, the virtual project is not an emancipatory project of disembodiment but a double, solidified dependency on the body and the image of the body.

Secondly, the dependency that the IMVU as a virtual community is what constructs its multi layered structure. All the activities, promises of liberation through sub cultures, different colored bodies, piece and freedom promising practices are there to be bought and sold. The virtual subject constitutes its identity through the possible freedom of capital within the virtual, through harsh body discourses and consumption culture. It looks as if the virtual reality is the actual simulation, the mirror of the real virtualities; the consumption culture of the last century. Through these virtual community within the constructed rooms of digital spaces (either by players or the coders) the post modern consumption culture is being promoted with bits and pieces through virtual fantasies that diffuse through the identities and constitute the core of meaning structures of these virtual identities. Upon the intersection of such formations and transformations of earthly subjective dispositions the self is being created within these communities.

Through the experiences and interpretations of the virtual community, it has been observed that by the capital as an instrument and post modern practices as discourses of consumption on love, sexuality, body, sub cultures IMVU bears its own possibilities of inequalities and creating its own excludeds. The class system is inevitably deployed within the members of the community defining the line between the “earthly” rich and poor with the same logic of ability to buy. Amber Duke says that: “I am out of here. I am so bad, I am addicted.” What Amber is addicted is not the game but the total struggle of becoming a self, having a status within the virtual community. Amber depicts that she has been a part of IMVU for eight months but she and her parents think that she needs serious help and to stay away from the virtual community. Amber dedicates at least five hours a day to IMVU and she admits that at last it has been really tiresome and challenging to find coupons and credits to construct her self and participate to the activities she desire. Guest 121, another virtual self in IMVU depicted that he does not pay for credits but the women he has relations with either sexual or not, gift him credits and virtual commodities.

“I do not buy credits. I have an average income. I am a collage graduate but my family was farmer, I can not spend my money on a play”. (Guesst_121)

Guesst_121’s further interview depicted his virtual identity constructed upon the discourses of repression and exclusion. He states that he has been the son of a farmer parents. Before going to collage he defined him self as unconscious. “I was just a boy. I could not look at women. I could not talk to them. I don’t know why but I knew I shouldn’t. In collage, the city boys had girl friends. They hanged out, had relations. I did not. I did not talk to women. I was from the village. I was different. I wanted to know women but also I knew I shouldn’t.” Later on he reveals that he met a woman and got married. Guest_121 defines the woman as a beast, a snake that deceived him. He states “I questioned. I questioned why I was different than the others, why I could not be like the boys from the city, the other village boys did not question because they were not in between. They were not conscious; they did not see what others lived”. His definitions depicts the exclusion, dissonance within him self, in his believes and attitudes and the world he is a part of. As a working class, boy from village he went to collage in the capital city of Turkey; Ankara. He has faced with the exclusion and got stuck within the modernity and traditional discourses which at heart constituted his belief system. Guest_121 depicts that he has an unhappy marriage and a very small daughter. He has been a part of the virtual community for the last six months but at least ten hours a day. During the interview he has linked his reason of being in IMVU and his personal dichotomy and exclusion by himself. Thus as an excluding the earthly world for his exclusion Guest_121 explores relations with women in IMVU. He says that “I am able to be everyone, and with everyone. I like making people happy. Here by talking I feel I am making the others happy because I see who they want me to be.” Through such a fragmented self construction he believes that he has been truly loved by women “An American girl, she is 18 has send me a gift in IMVU, it is worth 50 dollars. Why? Because she really likes me. Or else why would she do that?” The virtual self constructed by Guest_121 is a true example for the repressive virtual identity. As a cure for the repression, he substitutes his lack with virtual reality and neglecting the earthly dissonances.

Mert_92, a part of the virtual community for two months constructs his virtual identity on both repression and legitimization where he is a homosexual at the age of 18 and in his earthly life is based on a socially constructed lie. Mert is incapable of telling his family and friends his choice of sexuality rather he tries so hard to been seen sexually heterogeneous (“normal”). He says that “if I go to Istanbul, then I will be free. There is a very high population there and no body will recognize me. But in Tokat, my father will be so sad. Here no body knows me, I don’t tell them who I am and there are many gays in here. They come to chat rooms and we have sex.” Mert_92, states that he feels guilty after being a part of the virtual reality of IMVU but he finds no other way. Mert, as a satisfaction of his repression constructs his virtual self and bears the potential of becoming a legitimizing identity but he is afraid as the social constructions of the earthly life haunts the virtual. The earthly self, when conscious at all times reminds the superego what it has been hiding from; the earthly order. Mert defines IMVU as a “cyber heaven”. He states “I can be in see, in sand, with people or alone. I can go places that normally I can not go. It is a heaven for me. For lots of people. People get married, have children, and be friends here. My best friend is a Swedish woman she is thirty five but she understands me. It is not any different than the real World and it is safe. People can not deceive you, can not judge you. You can disappear...”

Joanne, on the other hand, is a 15 year old over weighted girl living in Seattle, and has even tried to take drugs to have the body she desires. Her story with IMVU depends on the so called freedom of body construction through credits. “I’ve first see the ads of IMVU, a beautiful girl was on it. I wondered and signed in.” Joanne since last year has constantly paid for credits, explored coupons and changed the body of her image of her virtual self. She is now with a thin body, big breasts, blue

eyes, blond hair and full lips and wears very provocative clothes at the age of fifteen. Hence, Joanne admits she has been tired; “I am always on IMVU, I don’t want to live this any more. It is cool, I am hot, and everybody is hot. But I don’t know, it is not real”.

Through the discrimination Joanne, discriminated the earthly world and her earthly body. She has turned into her virtual self, like Mert who is also excluded to his self by the main stream body discourses and socially constructed codes. These people view their practices emancipatory but they in heart know the virtual communities are run by the earthly discourses like beauty myth and consumer culture. Virtual communities and virtual selves constituted within these communities offer a partial liberation, a relief and satisfaction as the demands of the virtual is not so apart of the old school.

Ozgur, is another player shared his memory on how reality and construction are so tangible in virtual communities. “I was new in IMVU. I did not know how to change my body and I did not have the credits. We were chatting with a girl and were alone in my apartment. She suddenly said “your feet are weird”. I was shocked. Normally, you do not say that to a person. My feet were very big and it looked funny but I did not mind. She told me to change them with credits because they looked freaky”. It is clear that the virtual codes and discourses are the representation of the earthly discursive practices that diffused so saturatedly to the selves of these people that constructs the communities hence through virtual practices it leaves no other space and fixes the discourses for both the virtual and the earthly.

DISCUSSION

The study of in depth interviews on ten individuals from different age groups, nations, body image and dispositions has shown that the online virtual community ; IMVU plays a role on the social construction of the existing social norms and grand discourses. This online, interactive game reflects the construction and re-establishment of the earthly social inequalities; gender, ethnicity, subcultures and through cyber credits that refer to the exchange value (the money in earthly societies) in a way constitutes the class system (haves and have nots). The critical point in this study is the contradiction within body discourses of virtual community games in which the practice encompasses the offer to its users the experiences of body-free, class-free, racism-free experiences while the taste of the game is sucked through binary oppositions, myths and stereotypes by young adults. On a more complex level, in many layers, IMVU offers critical discussions by constructing the virtual selves and emphatic positions by setting free of the bodily boundaries while out of the discursive promotions, and substructures of the virtual community game celebrates the Postmodern inequalities of lifestyle by the ideologies of consumption, sexism, highlights on subcultures and differences in races installed within the structure of the game and shaped through the free will of the liberated players by their virtual practices which also reconstitutes the structure and rules of the virtual community. This study states that the effects of the virtual community game on the active audience are bounded and strongly linked with the major discourses of earthly codes and cultural definitions. The social practice is an interactive and cumulative one. The audience by no means can be positioned or named as the passive, incompetent. On the contrary, in an actual sense of participation the audience crates the community exactly as if in worldly societies. Hence according to the interviews it can be depicted that self construction project starts with a defense mechanism against the Worldly order, body and boundaries of collective, unequal meaning spread all over the earthly order. Through the images, structures and animations of a copy cat of the actual worldly reality the virtual communities are not the emancipatory cure of the repressed identities or a space and practice of project identities. On the contrary, through the remediation of earthly discourses, the virtual realities turn out to be the discursive practices of dominant ideologies where in stead of liberating the world of meaning of the audience became the extensions of the domination via the technological apparatuses of the network society. The virtual self and communion is not the safe search for the rational salvation of the Cartesian “disembodiment”, however, it is the remediation of body, ideology and inequality within the digitally constructed utopias of the 21st century.

REFERENCES:

- Butler, J.(2006). *Gender trouble : feminism and the subversion of identity*. New York :Routledge.
- Boltler J, Grusin R.(2000). *Remediation Understanding the New Media*. USA.:MIT Press.
- Castells, M. (1996, second edition, 2000). *The Rise of the Network Society, The Information Age: Economy, Society and Culture Vol. I*. Cambridge, MA; Oxford, UK: Blackwell..
- Castells, M. (1997, second edition, 2004). *The Power of Identity, The Information Age: Economy, Society and Culture Vol. II*. Cambridge, MA; Oxford, UK: Blackwell.
- Everett A., Caldwell J. 2003. *Theories and Practices of Digitextuality*. London:Routledge .
- Flew, T. 2008. *New Media an Introduction*. Oxford University Press:Australia.
- Foucault, M. (1993). *Space, Power and Knowledge*. in *During, Simon. The Cultural Studies Reader*. London :Routledge., ISBN 0- 415- 13754 – 3.
- Georgiou, M. (2006).*Diaspora, Identity and the Media: Diasporic Transnationalism and Mediated Spatialities*. Cresskill, NJ: Hampton Press.
- Gramsci, A. (2001). *The Concept of Ideology, Cultural Themes: Ideological Material* . in *Durham Kellner, Meenakshi Gigi* . *Media and Cultural Studies Key Words* .UK: Blackwell Publishing Ltd , ISBN -13: 978- 1- 4051- 3258-9.
- Gramsci, A.(1971).*Selections from Prison Notebooks*. London:Lawrance and Wishart,
- Hall, S. (1996). *Critical Dialogues in Cultural Studies*. New York: Routledge.

WALKING HAND IN HAND WITH YOUR STUDENTS IN LEARNING ROAD (TEACHING STYLES AND LEARNING STYLES CONGRUENCY REVISITED)

Zahra Naimie^a, Rana Ahmed Abuzaid^b, Saedah Siraj^c, Reihaneh shagholi^d

Phd student, University of Malaya, faculty of Education, 50603 Kuala Lumpur, Malaysia

Phd student, University of Malaya, Faculty of Computer Science and Information Technology

Dean, faculty of Education, University of Malaya, 50603 Kuala Lumpur, Malaysia

Phd student, University of Malaya, Faculty of Education, 50603 Kuala Lumpur, Malaysia

Abstract

Have you ever faced the situation that the students are bored in your class? They are demotivated, blurred, confused and look tired. If so, you better look for the solution. Have you ever try to use new teaching styles in your class. Learners learn in different ways such as hearing, seeing, taking note, imagining and visualizing among many others. The purpose of this study is to identify how accommodating the teacher behaves toward congruency and in congruency in the classroom. The major approach in this study was qualitative. The data were collected through observation and interviews. The participants were 4 lecturers and 310 students in an English major program in Iran. The findings from this study imply that it is crucial for teachers to have knowledge about learner preferences in their classes to consider in their teaching design. The students show a positive response and higher achievement when their learning preferences and needs are accommodated by their lecturers.

INTRODUCTION

The current study was designed to explore the impact of the match and mismatch on learners achievement on learners achievement. The samples participated in this study consist of 310 English Major Students (EMSs) and four lecturers teaching in faculty of foreign languages faculty. Instruments used in this study were Index of Learning Styles (2006), scheduled interview and observation were the instruments used in order to collect data. This research aimed to investigate the impact of teaching and learning styles preferences and their match and mismatch impact on learners' achievements.

Finding of the studies done in realm of the language learning indicated that a) students do learn differently from one another; b) learner's performance in different subject is related to their learning styles c) when students are taught with their preferred techniques or styles in learning their achievement is increased (DeBello, 1985; Dunn, DellaValle, Dunn, Geisert, Sinatra, & Zenhausern, 1986; Dunn, Dunn, Primavera, Sinatra, & Virostko, 1987; Dunn, Krinsky, Murray and Quinn, 1985; Dunn, Cavanaugh, and Zenhausern, 1982; Giannitti, 1988; Hill, 1987; White, 1981; Hodges, 1985; Jarsonbeck, 1984; Kroon, 1985; Lemmon, 1985; Lynch, 1981; MacMurren, 1985; Martini, 1986; Miles, 1987; Murrain, 1983; Pizzo, 1981; Shea, 1983; and Spires, 1983).

Finding of the studies in realm of the English language learning indicated that in order to be effective ESL/EFL teachers, one should have knowledge about their learners' learning needs, individual differences in learning, the required teaching methods, learners' preferences as well as the necessary teaching materials required to meet learners' needs in the educational setting. More specifically, recently, emphasis has also been paid to teaching and learning styles. Most of the research on teaching and learning styles has been cross-sectional in nature; many deal with the learning styles of students in higher institutions of learning. Frequently the studies focus on how demographical variables such as gender, age, university major, and personality influence learning styles (Severiens, 1997; Brew, 2002; Nielsen, 2005). There are three main reasons why the learning style concept must be studied in depth. Firstly, based on many studies, it is clear that learners have their own preferences regarding learning, and, in some cases, certain types of psychological characteristics are associated in certain "types" of individual (Smith, 2002; Stevenson & Dunn, 2001; Tennant, 1997). Secondly, there is evidence showing that the attempt to provide different learning styles may help learners achieve better results (Bull & Ma, 2001; Cassidy & Eachus, 2000; Rayneri, Gerber & Wiley 2006; Shaughnessy, 1998). Finally, teachers should know how to develop a classroom methodology that is based on students' learning styles preferences. There have also been studies, on the matching and mismatching of teaching and learning styles (Hyman & Rosoff, 1984; Beck, 2001; Zhenhui, 2001.).

Research on learning styles in particularly on L2 learning is still very much limited (Peacock, 2001). In particular, research on learning and teaching styles and specifically the match or otherwise between them is still very much under-researched in ESL and EFL. The findings of some studies propose that mismatches often occur and have bad effects on students' learning and attitudes (Reid, 1987; Cortazzi, 1990; Oxford, Hollaway and Horton-Murillo, 1992; Felder, 1995; Stebbins, 1995; Ehrman, 1996; Littlewood, Liu and Yu, 1996; Jones, 1997). The findings of past studies (for example, Felder, 1988; Goodwin, 1995; McDonald, 1996) explained that a learner's achievement in any class is determined by factors such as native ability, and the level of congruence between learners' learning styles and teachers' teaching styles. Many researches (Bull & Ma, 2001; Cassidy & Eachus, 2000; Rayneri et al., 2006; Shaughnessy, 1998) have been done to investigate the relationship between learning style and academic achievement. Matching and mismatching between teaching and learning styles exist in any academic setting, at least to a certain extent. Some studies have also found that congruence (matching) between teaching and learning styles have a positive impact on achievement and satisfaction (Ester, 1994; Felder, 1988; Goodwin, 1995; McDonald, 1996). A mismatch is said to occur when students' preferred methods of processing information are not aligned with the teachers' preferred styles of teaching. According to Felder (1988), this can cause learners to perform low because the students may become bored and demotivated. Felder and Spurlin (2005, p. 2) stated:

"When mismatches exist between learning styles of most students in a class and the teaching style of the professor, the students may become bored and inattentive, do poorly on tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other curricula or drop out of school." (p. 2)

Universities in Iran are also places in which English is taught in a range of independent fields of study, such as English language and literature, teaching English as a second /foreign language and English translation. The students in these fields are referred to as English Major Students (EMSs). A majority of EMSs in Iran have a certain degree of capability in the use of the English language but there are some students who have low proficiency. Every EMS goes through two years of training that covers general English, which is about the four main skills of reading, listening, writing and speaking. In the next two years, the students focus on their specialized course of study. Some of the learners have problems in grasping the contents and concepts of the course given in English and this seems to be one of the problems that EFL students face in Iranian universities. One possible reason for this is the inability or weaknesses of the students in English language basics. As such, the students may not do well academically. However, even if the students pass their courses, it is not an indication that they have attained an acceptable level of proficiency in English. According to Farhady, Jafarpur and Brijandi (1994), after passing their core courses and graduating, Iranian EFL

graduates are found to be still wanting in English language use and its components. The teaching of English is growing so fast in Iran that there is a need to understand the mechanics involved in the teaching and learning of English in Iran. Currently there is a lack of research in this direction; in particular, there is a dearth of research with regard to teaching and learning styles of EFL learners and almost none on the match or mismatch of teaching and learning styles and their impact on achievement.

OBJECTIVES AND RESEARCH QUESTIONS

The objective of this study was to explore the impact of teaching and learning style preferences and their match or mismatch on learners' achievement in Azad University, Iran. The study is based on the belief that appropriate teaching styles that are aligned with students' learning preferences can improve students' achievement. Previous studies on teaching styles have been reviewed in order to explain the link which may exist between the two variables. This study attempted to answer the following questions:

- 1- What are the teaching styles preferences of EMSs lecturers and learning style preferences of EMSs learners in a university classroom setting in Iran?
- 2- Does the match or mismatch of teaching and learning styles impact on the achievement of EMSs learners in a university classroom setting in Iran?

METHODOLOGY

The research method used for this study is the mixed method approach to look at the impact of the congruence and incongruence between the teaching styles and learning styles in classroom setting and the level of its impact on learner's achievements. The data in current research was collected using survey, interview and observation. In the first round of research the researcher used the survey to obtain the variety of the students' learning styles and their teachers' teaching styles. In the second round, the researcher used interview and observation to provide the necessary information for the related research questions and also to strengthen the results obtained in the first round of data collection. The survey instrument used was the Learning Styles Index (LSI) developed by Felder and Soloman (2006). Apart from the survey questionnaire, observations and interviews were also used to collect data. To ensure the plausibility of the interview, the interview responses were checked back and identified to the participants. The final score of that particular subject which the class was observed and interviewed was considered as the scale for the student's achievements level. The sample consisted of 310 EFL learners and 4 teachers from one of the universities in Iran. In this research, the focus is on Iranian students who are considered EFL learners. The Iranian education system requires students to learn and consider English as one of the foreign languages. The learners were selected randomly from the various courses conducted in English. Four lecturers from the courses were also involved in the study. The lecturers were selected based on their willingness to participate in the study.

RESULTS

Students Learning Style Preferences and Comparison in Achievement Scores between Matched Teaching-Learning Styles with Mismatched Teaching-Learning Styles across All Four Dimensions of the Learning Style Pairs (LSP) in the Learning Styles Index (LSI) There are four dimensions in the LSI which are (a) Active/Reflective (LSP1) (b) Sensing /Intuition (LSP2) (c) Visual/Verbal (LSP3) and (d) Global/Sequential (LSP4). The results of the study showed that the dominant learning styles of EMS students in Azad University for the LSPs respectively are Active, Sensing, Visual and Global. In order to determine the impact of match and mismatch of teaching and learning styles on students' achievement, learners were categorized into five groups. The recoded variable was called Match. For learners, whose learning styles matched their teachers' teaching styles across all four LSPs, Match = 4, indicating that their learning styles had a perfect match with their teacher's teaching styles across all the four LSPs. Similarly, if a learner matched his or her teachers' learning style in three of the four LSPs, the learner was categorized into Match group 3, indicating that the learner matched his or her teacher's teaching style in three of the four LSPs. If there was complete mismatch between learners's learning style and his or her teacher's teaching style across all four LSPs, the learner was categorized into Match group 0. Based on the categorization above, there were five groups under the variable Match. A one-way analysis of variance (ANOVA) was performed to determine if there were significant differences between the groups in the achievement scores. Table 1 shows the results of the Tukey HSD post-hoc multiple comparisons.

Table1: Tukey post-hoc comparisons on achievement scores for the Match Groups

| Dependent Variable | (I) GROUP | (J) GROUP | Mean Difference (MD) (I-J) | p |
|--------------------|---------------|---------------|----------------------------|-------|
| Achievement Scores | Match Group 0 | Match Group 1 | -0.53 | 0.96 |
| | | Match Group 2 | -1.31 | 0.30 |
| | | Match Group 3 | -3.32 | 0.00* |
| | | Match Group 4 | -4.10 | 0.00* |
| Match Group 1 | Match Group 2 | Match Group 3 | -0.78 | 0.66 |
| | | Match Group 4 | -2.79 | 0.00* |
| | | Match Group 3 | -3.57 | 0.00* |
| Match Group 2 | Match Group 3 | Match Group 4 | -2.01 | 0.00* |
| | | Match Group 4 | -2.79 | 0.00* |
| Match Group 3 | Match Group 4 | -0.78 | 0.23 | |

*significant at $p < 0.05$

The mean achievement scores for Match Groups 0, 1, 2, 3 and 4 reported as 13.47, 14.00, 14.78, 16.79 and 17.57 respectively. The results of the one-way analysis of variance reports a significant difference in the means, $F(4,305)=22.22$, $MSE=6.32$, $p=0.00$. Post-hoc multiple comparisons using the Tukey HSD tests showed significant differences between Match Group 0 with Match Groups 3 and 4, MD (Mean Difference)=-3.32, $p=0.00$ and $MD= -4.10$, $p=0.00$ respectively. Significant differences were also recorded for Match Groups 1 and 2 with both Match Groups 3 and 4. However, no significant differences in achievement were found amongst Match Groups 0, 1 and 2 or between Match Groups 3 and 4. The results indicate that Match Groups 3 and 4 outperformed the other Match Groups in achievement scores but their performance did not differ from each other. In short, the results imply that generally if teaching styles are matched to learning styles, achievement of students will be significantly better perhaps up to a point. The results in this study are consistent with those in past studies (for example, Ester, 1994; Felder, 1988; Goodwin, 1995;

Mcdonald, 1996) where it was found that when teaching and learning styles are matched for individual LSPs, performance would be much better than if they were not. The results of this study revealed that connecting learning styles and teaching styles in EFL classes in Azad University plays an important role in student's achievements.

RECOMMENDATION AND IMPLICATION

Based on the findings of this study, the following recommendation can be withdrawn

1. If better learning style inventory test and better data collection instruments can be developed, the research performed in this study should be replicated to determine if the lack of significance seen in this study was a true representation of the current relationship between learning styles and teaching styles and its impact on student achievement, or if the lack of significance seen was the results of errors in the design or procedures of the study.
2. If the future researches find a positive correlation between the teaching styles and learning styles and student achievement in class, it will only answer half of the question. The other half is the issue of teacher acceptance and willingness toward this. Further research should be pursued to determine whether the level of benefit derived from matching the learning styles and teaching styles and its impact on student achievement within a university classroom setting compensates for the increased burden on the teachers.
3. It is not the intention of this study to argue that Iranian EFL lecturers should strive for completely one to one lecture style or individualized instruction which sounds impractical due to the classroom size they teach. However, it does suggest that educators at all levels can and should adapt their teaching to better meet the learning style preferences of the majority of their students.
4. Friedman and Alley (1984) recommend that students can identify and utilize their preferred learning styles and take advantage of those preferences under their teacher guidance. Grasha (1972) suggests that when the teacher is sharing the versatility of learning styles by picturing those styles in their teaching styles, it may assist the learners in fulfilling their tertiary education demands. Furthermore, considering the fact that one of the crucial goals of instruction is to assist the learners in identifying and evaluating their learning styles, the idea of conducting action research besides considering the students' learning styles as one of the teaching program major components sounds practical and beneficial. This will give teachers the chance to see the benefit of using the different teaching styles in their class and its impact on student learning.

Many studies have discussed learning styles and teaching styles and a growing body of literature addresses and evaluates learning styles. Based on the results of this study, the first implication of this study is the possibility of academic success growth by addressing the learner's needs in the teaching plan. The second implication is the importance of the congruence between the learning styles and teaching styles in the classroom in facilitating the student's educational growth.

REFERENCES

- Beck, C. R. (2001). Matching teaching strategies to learning style preferences. *Teacher Educator*, 37(10), 1-15.
- Brew, C. R. (2002). Kolb's learning style instrument: Sensitive to gender. *Educational and Psychological Measurement*, 62(2), 373-90. Bull, S., & Ma, X. (2001). Raising learner awareness of language learning strategies in situations of limited resources. *Interactive Learning Environments*, 9(2), 171-200.
- Cassidy, S., & Eachus, P. (2000). Learning style, academic belief systems, self-report student proficiency and academic achievement in higher education. *Journal of Educational Psychology*, 20(3), 307-322. Retrieved from <http://www.howtolearn.com/personal.html>
- Cortazzi, M. (1990). Cultural and educational expectations in the language classroom. In B. Harrison (Ed.), *Culture and the language classroom* (pp. 54-65). London: Modern English Publications/British Council.
- DeBello, T. (1985). A critical analysis of the achievement and attitude effects of administrative assignments to social studies writing instruction based on identified eight grade students' learning style preferences for learning alone, with peers, or with teachers. *Dissertation Abstracts International*, 47, 68A.
- Dunn, R., Cavanaugh, D., Eberle, B., & Zenhausern, R. (1982). Hemispheric preference: The newest element of learning style. *The American Biology Teacher*, 44(5), May, 291-294.
- Dunn, R., Della Valle, J., Dunn, K., Geisert, G., Sinatra, R., & Zenhausern, R. (1986). The effects of matching and mismatching students' mobility preferences on recognition and memory tasks. *Journal of Educational Research*, 79(5), 267-272.
- Dunn, R., Dunn, K., Primavera, L., Sinatra, R., & Virostko, J. (1987). A timely solution: A review of research on the effects of chronobiology on children's achievement and behavior. *The Clearing House*, 61(1), 5-8.
- Dunn, R., Krinsky, J., Murray, J., & Quinn, P. (1985). Light up their lives: A review of research on the effects of lighting on children's achievement. *The Reading Teacher*, 38(9), 863-869.
- Ehrman, M. E. (1996). *Understanding second language learning difficulties: Looking beneath the surface*. Thousand Oaks, CA: Sage.
- Ester, D. P. (1994). CAL, lecture, and student learning style: The differential effects of instructional method. *Journal of Research on Computing in Education*, 27(2), 129-140.
- Farhady, H., Jafarpur, A., & Birjandi, P. (1994). *Language skills testing: From theory to practice*. Teheran: SAMT Publications.
- Felder, R., & Soloman, B. (2006). *Index of learning styles (ILS)*. <http://www2.ncsu.edu/unity/lockers/users/f/felder/public/ILSpace.html>
- Felder, R. M. (1988). How students learn: Adapting teaching styles to learning styles. In *Proceedings, Frontiers in Education Conference, ASEE/IEEE*, 489. Santa Barbara, CA.
- Felder, R. M. (1995). Learning and teaching styles in foreign and second language education. *Foreign Language Annals*, 28(1), 21-31. Retrieved from <http://www.ncsu.edu/felder-public/Papers/FLAnnals.pdf>
- Felder, R. M., & Spurlin, J. E. (2005). Applications, reliability and validity of the Index of Learning Styles. *International Journal of Engineering Education*, 21(1), 103-112.
- Friedman, P., & Alley, R. (1984). Learning/teaching styles: Applying the principles. *Theory into Practice*, 23, 77-81.
- Giannitti, M. C. (1988). An experimental investigation of the relationships among the learning style sociological preferences of middle-school students (grades six, seven, and eight) their attitudes and achievement in social studies, and selected instructional strategies. *Doctoral dissertation, St. John's University*.
- Goodwin, D. D. (1995). Effects of matching student and instructor learning style preferences on academic achievement in English. Unpublished doctoral dissertation, University of Arkansas, United States of America. *Dissertation Abstracts International*, 57(03), 997A.
- Grasha, A. F. (1972). Observations on relating teaching goals to student response styles and classroom methods. *American Psychologist*, 27, 144-147.
- Hill, G. D. (1987). An experimental investigation into the interaction between modality preference and instructional mode in the learning of spelling words by upper-elementary learning disabled students. (Doctoral dissertation, North Texas State University). *Dissertation Abstracts International*, 48, 2536A.
- Hodges, H. (1985). An analysis of the relationships among preferences for a formal/informal design, one element of seventh- and eighth-grade students in remedial mathematics classes in a New York City junior high school. (Doctoral dissertation, St. John's University). *Dissertation Abstracts International*, 45, 2791A.
- Hyman, R., & Rosoff, B. (1984). Matching learning and teaching styles: The jug and what's in it. *Theory into Practice*, 23, 35-43.
- Jarsonbeck, S. (1984). The effects of a right-brain and mathematics curriculum on low achieving, fourth-grade students. (Doctoral dissertation, University of South Florida). *Dissertation Abstracts International*, 45, 2791A.
- Jones, N. B. (1997). Applying learning styles research to improve writing instruction. Paper presented at RELC Seminar on Learners and Language Learning, Singapore.

- Kroon, D. (1985). An experimental investigation of the effects on academic achievement and the resultant administrative implications of instruction congruent and incongruent with secondary, industrial arts students' learning style perceptual preference. (Doctoral dissertation, St. John's University). *Dissertation Abstracts International*, 46, 3247A.
- Lemmon, P. (1985). A school where learning styles makes a difference. *Principal*, 64, (4), 26-29.
- Littlewood, W., Liu, N. F., & Yu, C. (1996). Hong Kong tertiary students' attitudes and proficiency in spoken English. *RELC Journal*, 27(1), 70-88.
- Lynch, P. K. (1981). An analysis of the relationships among academic achievement, attendance, and the learning style time references of eleventh- and twelfth-grade students identified as initial or chronic truants in a suburban New York school district. Doctoral dissertation, St. John's University. *Dissertation Abstracts International*, 42, 1880A.
- MacMurren, H. (1985). A comparative study of the effects of matching and mismatching sixth-grade students with their learning style preferences for the physical element of intake and their subsequent reading speed and accuracy scores and attitudes. (Doctoral dissertation, St. John's University). *Dissertation Abstracts International*, 46, 3247A.
- Martini, M. (1986). An analysis of the relationships between and among computer-assisted instruction, learning style perceptual preferences, attitudes, and the science achievement of seventh-grade students in a suburban, New York school district. (Doctoral dissertation, St. John's University). *Dissertation Abstracts International*, 47, 877A.
- McDonald, M. (1996). The impact of multimedia instruction upon student attitude and achievement and relationship with learning styles. Unpublished doctoral thesis, University of Nebraska-Lincoln, United States of America. *Dissertation Abstracts International*, 57(08), 3466.
- Miles, B. (1987). An investigation of the relationships among the learning style sociological preferences of fifth- and sixth-grade students' selected interactive classroom patterns and achievements in career awareness and career decision-making concepts. Doctoral dissertation, St. John's University. *Dissertation Abstracts International*, 48, 2527A.
- Murray, P. G. (1983). Administrative determinations concerning facilities utilization and instructional grouping: An analysis of the relationships between selected thermal environments and preferences for temperature, an element of learning style, as they affect word recognition scores of secondary students. Doctoral dissertation, St. John's University. *Dissertation Abstracts International*, 44, 1749A.
- Nielsen, T. (2005). Learning styles of Danish university students – do they differ according to subject of study at the start of the first academic year – Is there a subject specific socialization effect of one year of higher education? Development of and research by means of The Danish Learning Styles Inventory (D-LSI) based on Sternberg's theory of mental self-government. PhD thesis, The Danish University of Education, Copenhagen.
- Oxford, R., Hollaway, M. E., & Horton-Murillo, D. (1992). Language learning styles: Research and practical considerations for teaching in the multicultural tertiary ESL/EFL classroom. *System*, 20(4), 439-456.
- Peacock, M. (2001). Match or mismatch? Learning styles and teaching styles in EFL. *International Journal of Applied Linguistics*, 11. ERIC Document Reproduction Service No. EJ628089.
- Pizzo, J. (1981). An investigation of the relationships between selected acoustic environments and sound, an element of learning style, as they affect sixth-grade students' reading achievement and attitudes. Doctoral dissertation, St. John's University. *Dissertation Abstracts International*, 42, 475A.
- Rayneri, L. J., Gerber, B. L., & Wiley, L. P. (2006). The relationship between classroom environment and the learning style preferences of gifted middle school students and the impact on levels of performance. *Gifted Child Quarterly*, 50(2), 104-118.
- Reid, J. M. (1987). The learning style preferences of ESL students. *TESOL Quarterly*, 21(1), 87-111.
- Severiens, S. (1997). Gender and learning. Learning styles, ways of knowing, and patterns of reasoning. Unpublished doctoral dissertation, Universiteit van Amsterdam, Amsterdam
- Shaughnessy, M. F. (1998). An interview with Rita Dunn about learning styles. *Clearing House*, 71(3), 141, 145.
- Shea, T. C. (1983). An investigation of the relationship among preferences for the learning style element of design, selected instructional environments, and reading achievement with ninth-grade students to improve administrative determinations concerning effective educational facilities. Doctoral dissertation, St. John's University. *Dissertation Abstracts International*, 44, 2004A.
- Smith, M. K. (2002). Howard Gardner and multiple intelligences. *The encyclopedia of informal education*. Retrieved from <http://www.infed.org/thinkers/gardner.htm>
- Spires, R. D. (1983). The effect of teacher inservice about learning styles on students' mathematics and reading achievement. Doctoral dissertation, Bowling Green State University. *Dissertation Abstracts International*, 44, 1325A.
- Stebbins, C. (1995). Culture-specific perceptual-learning style preferences of postsecondary students of English as a second language. In J. Reid (Ed.), *Learning styles in the ESL/EFL classroom* (pp. 108-117). Boston: Heinle & Heinle.
- Stevenson, J., & Dunn, R. (2001). Knowledge management and learning styles: Prescriptions for future teachers. *College Student Journal*, 35(4), 483-490.
- Tennant, M. (1997). *Psychology and adult learning*. London: Routledge.
- White, R. (1981). An investigation of the relationship between selected instructional methods and selected elements of emotional learning style upon student achievement in seventh-grade social studies. Doctoral dissertation, St. John's University. *Dissertation Abstracts International*, 42, 995A.
- Zhenhui, R. (2001). Matching teaching styles with learning styles in East Asian contexts. *The Internet TESL Journal*, 7(7). Retrieved from <http://iteslj.org/Techniques/Zhenhui-Teaching>

WEB AIDED TEACHING OF CIRCUIT ANALYSIS LABORATORY COURSES

Murat KÖKLÜ, Uğur TAŞKIRAN, Yavuz ÜNAL
 Selçuk University, Faculty of Technical Education, 42031 - TÜRKİYE
 mkoklu@selcuk.edu.tr, utaskiran@selcuk.edu.tr, yunal@selcuk.edu.tr

Abstract

Laboratory applications are needed for students to learn thoroughly and comprehend the subject taught in the computer and electronics classes. Students will make practice and see the accuracy of what they have learned in the classroom, thus will be helping the solid learning. Circuit Analysis course one of the common lectures taught by the departments of electrical and electronics education and engineering, computer science, engineering and education. Circuit Analysis courses generally consists of theoretical and practical parts. As theoretical parts are realized in the classroom environment, practical lectures are implemented in the laboratory environment. For the theoretical parts of the courses, there are plenty of documentations in the Internet or libraries, on the other hand, mentioned opportunities cannot be easily found in the Internet or absent. Considering the need, a web site aimed to help students for the practical part in an laboratory environment, to repeat what is learned outside the laboratory environment and to support the course through the instruction period is prepared and published. To decrease the mistakes made by the students, to teach the course thoroughly, almost all possible web technologies are used for preparations of the web pages. The content of the web site includes the object of the course, application apparatus, measurement devices, circuit elements, laboratory rules, laboratory groups, evaluation and 10 experimental applications.

Keywords: Circuit Analysis Laboratory, Web Aided Education.

1. INTRODUCTION

As the computer usage increases, internet technologies are developed accordingly. Today, the Internet are used almost all aspects of daily life. The advantages of the Internet usage are recognized in course of time and it is understood that the Internet easing the learning process and has brought great advantages over classical educational system. The students who are out of the class groups also use the Internet teaching material in their learning process making the class programs and academic year more flexible.

In the cases which are very common in Turkey like crowded classes, insufficient laboratory environment or teaching staff, web aided teaching methods will be alternative or contributive to classical methods. For this purpose a web site which is contributive to laboratory environment or providing an application for students to repeat the experiments out of the laboratory environment is designed about real laboratory application.

2. WEB AIDED TEACHING METHOD

Societies are in rapid and great changes thanks to information and technology age. New approaches and ideas are developed parallel to the changes in the society. The main purpose here is high quality design and production of the materials and teaching sources consulted or obtained for teaching. This is one of the important functions of the web (İpek, 2001).

Web aided education applications can be carried out in different ways. One of the methods here is aimed to support the classical education system known as face-to-face education. Activities, homework, researches are applied to learners by using the abilities of the web. The other method, an applied system requires running the classical face-to-face system parallel to the web resources. Learners realize many activities including the accessing the lecture content and many others over the web, meeting in a class environment in pre-defined periods (Çalışkan, 2004).

In web aided classes, the teacher plays the role of an interface between the students and class. The basic role of the teacher is to supervise the basic needs and abilities of the students and to guide them about the decisions which made by students to be appropriate. In computer based classes, many different materials are presented to students by using the Internet web sites. Here the classical "teaching" role of the teacher lose its importance and the role like guidance to students to chose the most appropriate material for themselves among the many suggested learning material, encouraging the students for solving the complex problems by themselves and if possible to guess the problems that may arise and to take measures before the problems appear becomes more important (Odabaşı, Çoklar ve diğerleri, 2005).

To realize the web aided education a computer or computers connected to the Internet, and web pages or sites related to the previously prepared or chosen subject after an evaluation by a teacher is sufficient (Uzunboylu, 2002).

The content of the web based learning should be arranged according to strategies (sorting the content) helping the students to reach their goal or success. While presenting the contents, web based learning programs requires more undertaking about the usage, readability, openness and shape of the subject related pictures (icons, buttons, pictures and images etc.) and multimedia components (sound, video, illustrations etc.) (Kabakçı, Karakaya, 2003).

For the students who could not attend the classes or for the students who cannot learn the class in the classroom environment individual learning opportunities are presented, thus web aided learning environments bring new approaches to teaching-learning processes and provides the teaching-learning environment with new opportunities (Simsek, 2004).

3. CIRCUIT ANALYSIS COURSES

Circuit Analysis courses is one of the universal class given by the departments of electronics and computer. The course consists of two part namely theoretical and practical sections. Theoretical parts generally given in classroom environment, while the practical parts given in the laboratory environment. Circuit Analysis theoretical course consists of following subjects;

Introduction to Circuit Analysis

- General circuit elements,
- Load,
- Current,
- Voltage,
- Ohm's Law,
- Kirchoff's Laws,

- Ideal and practical sources,

Direct Current (DC), Direct current circuit analysis by using;

- Mesh currents method
- Node voltages method
- Linearity and superposition theorem,
- Thevenin and Norton theorems,
- Maximum power transfer methods,

Alternating Current (AC)

- Basic subjects of alternating current,
- Fazor representation of sinusoidal functions,
- Fazor relations for R,L,C elements,

Alternating current circuit analysis by using

- Mesh currents method
- Node voltages method
- Source transformation,
- Superposition,
- Thevenin and Norton theorems,
- Instantaneous and average power concepts,
- Effective values of periodic functions,
- Average power, complex power, power factor and power factor improvement, (<http://tef.selcuk.edu.tr/depo/dersicerik/dersicerikbilgisayarno.htm>).

4. WEB AIDED EDUCATION APPLICATION

To aid to students or to consult for the laboratory practice of circuit analysis courses taught in electronics and computer related departments, a web aided education site is prepared. To access the web site type <http://www.muratkoklu.com/devrelab.php> into the address part of the internet web browser to access the prepared web site. The web site is only allowed to the students who are taking the course and given a username and password to access to the web site. If anybody other than students wants to use the web site he should contact the web administrator to access to the web site. The content of the web site is given in the Table 1. And screen shot of the web site can be seen in the Figure 1.

Table 1. Web page content

| |
|-----------------------|
| Course Syllabus |
| Course Objects |
| Application Materials |
| Measurement Devices |
| Circuit Elements |
| Laboratory Rules |
| Laboratory Groups |
| Evaluation |
| Experiments |
| Experiment 1 |
| Experiment 2 |
| Experiment 3 |
| Experiment 4 |
| Experiment 5 |
| Experiment 6 |
| Experiment 7 |
| Experiment 8 |
| Experiment 9 |
| Experiment 10 |

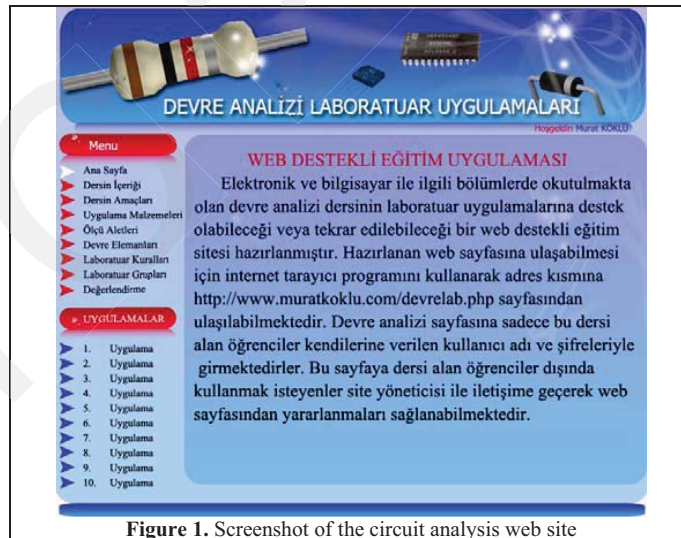


Figure 1. Screenshot of the circuit analysis web site

4.1 Course Syllabus

The subject of the circuit analysis course that will be covered during the semester is stated here. The earlier determined course content is important detail for the students who wants learn the content of the course and subjects on which they may do pre-studies and learn the general background before the actual class hour. Screenshot of the related web page in the web aided education web site can be seen in the Figure 2.

4.2 Course Objects

In this part of the web page, general purpose of the circuit analysis course is defined. For the courses, their objects are not thoroughly defined; the aimed target of the course most probably cannot be achieved. Consequently a through definition of the course is placed in the web site. Screenshot of the related web page about the course objects can be in the Figure 3.

4.3 Application Materials

The material and supplies which necessary for the experimental procedures which should be required to be carried by the student during the experiments are listed in the page. The completeness of the materials is important for uninterrupted and appropriate experimental process. This web page is given in the section of application material web page.



Figure 2. Screenshot of the course syllabus page.



Figure 3. Screenshot of the objects of the course page

4.4 Measurement Devices

Information about the measurement devices used in the laboratories of the circuit analysis is given in this part of the web site. The careful use of the measurement devices is really important during the experimental procedures. In the case of broken or failed measurement device, the experimental procedures will be interrupted and cost of the education to the institutions will increase. To avoid such situations devices should be used according to their user manuals. The detailed user manuals of the devices are explained in the form of a word document or a pdf document. The video narrations about the usage of the measurement devices are also placed to the web site. Screenshot of the related web page of the web site about the measurement devices can be seen in Figure 4.



Figure 4. Screenshot of the measurement devices page



Figure 5. Screen shot of the circuit elements page

4.5 Circuit elements

Frequently used circuit elements are determined in the circuit analysis and basic electronics laboratories and web pages are prepared to familiarize the circuit elements decided previously. In the laboratory, misused or misplaced circuit elements in a circuit cause hitches in the application procedure, or resulting incorrect outcomes. Consequently, word and pdf documents are prepared to give information about basic properties and handling of the circuit elements. Moreover, animations about operations of the all circuit elements are placed in the web page. Screenshot of the web page related to the circuit elements in the web site is shown in the Figure 5.

4.6 Laboratory rules

Like many other practice, there are some should be followed in the circuit analysis and basic electronics laboratories. In this web page, laboratory rules which should be followed during the experimental procedures are given. These rules are important to get maximum efficient learning, uninterrupted laboratory processes and safe experimental environment.

4.7 Laboratory groups

For more comfortable laboratory atmosphere and maximum student placements, students are generally divided into groups. The page is about notices in which laboratory hours and with which group a student should be attending. Screenshot of the web page related to laboratory groups and hours of the web site is shown in the Figure 6.

4.8 Evaluation

In this web page, there are evaluation results of the experimental procedures performed by the students who are attending to circuit analysis laboratory course are given and how the laboratory success will affect the overall class grades are explained. Screenshot of the web page related to laboratory work evaluation of the web site is shown in the Figure 7

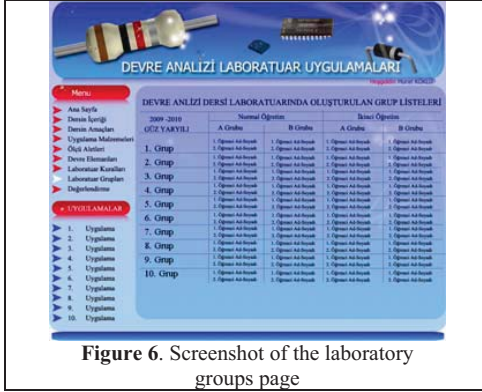


Figure 6. Screenshot of the laboratory groups page

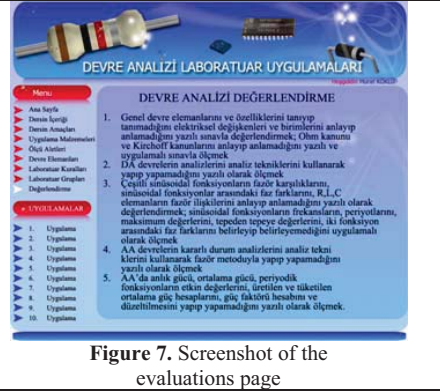


Figure 7. Screenshot of the evaluations page

4.9 Experiments: Experiments are the most important part of the web site. In this section, experiments that will be performed during laboratory hours are given. 10 experiments are determined for the class of circuit analysis laboratory. Every experiment is a practical application of a subject taught in the theoretical part of the course. The applications are also one-to-one match of the classical teaching method's experimental application.

All practice experiments also consist of 6 basic information parts; these are,

Introduction: Very short information given about the experiment before the application.

Object: The object of the experiment.

Introductory Information: The theoretical information that should be studied before the experiment.

Tools and Materials: Tools and materials that are to be used only in this experiment.

Results and Conclusions: This is the section in which quantitative information recorded during and at the end of the experiment.

The section also contains the conclusions of the results obtained from the experiment.

Theoretical Solution: This section comprises the expected results after the experiment completed and theoretical calculations of the experiment circuit.

For every experiment related animations are prepared. Prepared animations are tried to be exact copy of the traditional experimental environment. As an example, experiment number 4 is chosen to be presented here.

Sample experiment application: Experiment 4 in the web aided education site is presented as an example here. The experiment about the calculations of the theoretical subject of Node Voltages Method and its application to practice. It is the animated application of the subject which should be taught to the students and experimental procedure realized in the traditional laboratory experiment. Moreover, the word and pdf documents which have traditional commentary to do the experiment are also included in the animation page. When the experiment number 4's web page is opened and the animation clicked, the procedure that should be done by the student comes to the screen. Animation works step by step by using a next button, resulting better understanding and comprehension.

When the animation is run step by step,

- Circuit setup is done,
- Node point are determined,
- The node voltages are measured and recorded in to the tables,
- The current flowing through the resistor R_4 is measured,
- The result of current passing through resistor R_4 and theoretical results are compared,
- The current flowing through the voltage source is measured,
- The result of current passing through the voltage source and theoretical results are compared,

The animation screenshots of experiment number 4 (node voltages method) of the web aided education web site can be seen in the Figure 8 (a) and (b).

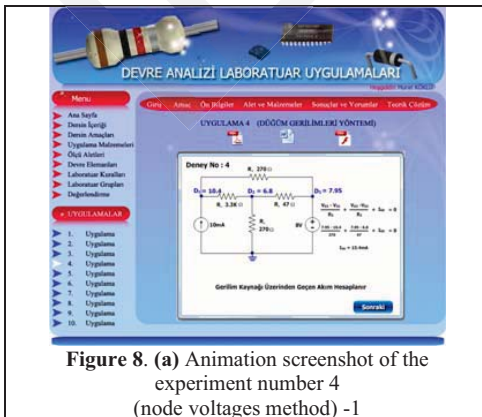


Figure 8. (a) Animation screenshot of the experiment number 4 (node voltages method) -1

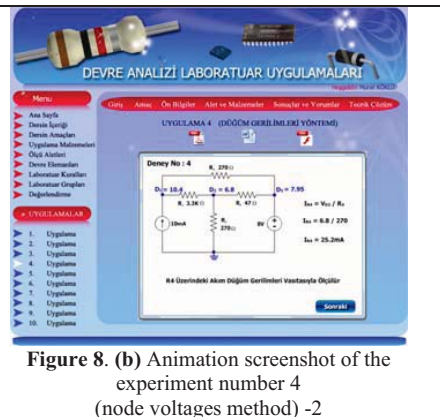


Figure 8. (b) Animation screenshot of the experiment number 4 (node voltages method) -2

5. RESULTS AND CONCLUSION

In this study, a web aided education web site is designed and published to teach the circuit analysis laboratory course in an easy and entertaining way. All possibilities of web aided education technology are used to minimize the students' mistakes and to learn the subjects of circuit analysis course in a laboratory environment. Hardest parts of our project are the designing of the animated parts of the web site.

Increase in the number of such applications will also increase the frequency of the Internet and computer usage. Additionally, the study will also encourage the teachers and instructors to use methods supported by technology along with the classical teaching methods.

6. REFERENCES

Çalışkan, H. (2004). "Web-destekli eğitimde işbirliğinin geliştirilmesi", 4th International Educational Technology Conference, 24-26 November, pages:1091-1095.

<http://tef.selcuk.edu.tr/depo/dersicerik/dersicerikbilgisayarno.htm>, Access Date: 5 February 2010.

İpek, İ. (2001). "Bilgisayarla öğretim tasarımı, geliştirme ve yöntemler", Tıp Teknik Kitapçılık, Ankara.

Kabakçı, I., Karakaya, Z., (2003). "Web'de öğrenme, ölçme ve değerlendirme", Türkiye Bilişim Derneği Yayınları: 19, Ankara.

Odabaşı, F.,Çoklar, A.N.,Kıyıcı, M. ve Akdoğan, E.P.(2005). "İlköğretim Birinci Kademedeki Web Üzerinden Ders İslenebilirliği", The Turkish Online Journal of Educational Technology-TOJET, ISSN:1303-6521 Volume 4, Issue 4, Article 21.

Şimşek, A. (2004). "Web destekli eğitimde öğrenme etkinliklerinin tasarımı", 4th International Educational Technology Conference, , 24-26 November, pages:1059-1065.

Uzunboylu, H. (2002). "Web destekli İngilizce öğretiminin öğrenci başarısı üzerindeki etkisi", Ankara University, Institute of Education Sciences, PhD Thesis, Ankara.

WEB AIDED TRAINING OF MEASUREMENT DEVICES AND CIRCUIT ELEMENTS USED IN ELECTRONICS LABORATORIES

Murat KÖKLÜ, Uğur TAŞKIRAN, Yavuz ÜNAL,
Selçuk University, Faculty Of Technical Education , 42031 KONYA-TURKEY
mkoklu@selcuk.edu.tr, utaskiran@selcuk.edu.tr, yunal@selcuk.edu.tr

Abstract

In the laboratories of the electronics courses, numerous costly experiment sets, test equipments and measurement devices are used. Since responsibility is given to students in high extend, responsible and careful operation of the laboratory equipment are expected from students. In the case of failure and breakdown of the laboratory equipment, the training will be interrupted and it is cost to educational intuitions will be excessive. To avoid such unwanted and costly situations of laboratory equipment breakdowns, the sets should be operated accordingly to their operation manual. Consequently visual materials are needed for appropriate use of the test equipment of the experiment sets. Meticulous transfer of the materials about the operation of the experiment equipment to the students is indispensable. The object of this study is to prepare videos, brochures, animations and course material about the equipment used in an electronics laboratory. 90% of the learning process includes both visual and practical training. Permanent learning will be realized because students will observe the usage of the equipment by watching the animations and apply their observations to practice in the laboratory. This will help students to easily apply the theoretical knowledge given in the theoretical part of the course to the laboratory experiments making whole procedure intensifying the learning process. Interest of the students to laboratory work will increase as the experiments are carried out according to their object.

Keywords: Laboratory Equipment, Measurement Devices, Web Aided Education

1. INTRODUCTION

The change in social life parallel to the advancement of science and technology increases need for quality products and services along with quality education. In the direction of the mentioned needs, learning should be more efficient, and everybody should have the chance of getting quality education. For a long time, the course applications aiming training are supported by use of various tools, consequently the quality of the education is aimed to increase. Widespread education is as important as superiority of the education. Today very rapid change resulting from globalization and decrease in importance of geographical and cultural boundaries makes classical methods less successful. Consequently, classical educational methods are used less and less. Instead of persons who possess the information of given classical training, persons who have the ability of access to knowledge and gather the information quickly and efficiently become the leaders. This is the point new technologies may create difference. Any kind of subject can easily be taught and trained easily and efficiently by the computer programs. Computers motivate the students and the best is that students consider computers very attractive learning tool. When compared to classical education environment, more entertaining learning environment waits for students.

2. WEB AIDED EDUCATION

Most general definition of the web aided education (WAE) is that bringing whole or part of the education process to the students by using web technologies. Web aided teaching (WAT) is that bringing the knowledge to the students by means of computers, modems and telephone lines. Many similar definitions are also used for WAT. For example, online education, the Internet education, virtual classes, e-learning can be added as different definitions. Each can be counted as the part of the WAE [1].

Owing to WAE, technology and information literacy is increasing among both students and teachers. Interest to academic research increases as the research opportunities of both academicians and students increases. Sofres pointed out that WAE increases learning levels by 25 to 45% in a research carried out in 2001 covering the USA and Canada. Similarly, it is determined that good designed learning environment yields 25% increase in recalling and 40 to 60% decrease in learning duration [2].

The most important educational advantage of WAT increase the strength of the educational environment by combining the multimedia such as text, graphics, sound, video and animation. In the web atmosphere, learning environment is richer. WAE are powered by multimedia elements like text, graphics, sound, video and animation. These multimedia tools help students to find best material for their personal needs. WAT also provides students to follow the training content according to their needs and leaning levels. Moreover, it also presents the opportunity for students to access to class notes and study the subjects anytime and anywhere by using a computer connected to the Internet. Addition to this, it also provides a personal learning environment for each student according to their learning speed [3].

The multimedia tools presented by the WAT provide the most appropriate sources to be found and researched by the students according to their personal needs. Being a student controlled system is the other important educational advantage of the WAT [4].

The usage of multimedia technologies in education provides easy and entertaining learning for students and creation of the 3-D virtual environments provides rapid and efficient learning. The advantages of the 3-D environments over 2-D animations and videos are travelling around in the virtual environment as somebody wishes, looking at 3-D object from any point of view, doing things which may be impossible in the real life [5].

3. WEB AIDED TEACHING DEVELOPMENT SOFTWARE

3.1 Hypertext Markup Language (Html)

Hypertext Markup Language (Html) is a system consisting of code pieces called as tags which determine how to link Html documents to each other and to place text and pictures inside the document. The codes written in Html language are uploaded to the servers of the service providers and this html document is interpreted by the web browser of the visitor and web page shows up the monitor of the computer. While text formatting, lists, links, picture usage, tables, frames and forums can be programmed, interactive and mobile pages, pages which process and evaluate the forms cannot be programmed [6].

3.2 Personal Home Page (Php)

Php is a script language and Php can be coded by using an editor and then can be saved by using a file extension either .php or .php3 depending on used version. Only the web server having a Php interpreter program can interpret the written scripts.

When a web page written by using Php is connected, following basic procedures are realized.

- Php file is called by a client by using a browser.
- Web server recognizes from the file extension that it was a Php file and sends it to Php interpreter.
- Php interpreter runs the scripts inside the related file and sends back the results to the web server.
- The result which is sent to web server is transmitted to the client as an Html file [7].

3.3 JavaScript

Inspired by C language, JavaScript is written by Netscape. The need for the development of JavaScript is arisen from the necessity of use of web page features which cannot be obtained by standard Html language. The features like interactivity with visitors are either non-existent or very limited in Html. The purpose to develop the JavaScript is to meet the need of aforementioned features. JavaScript is an object oriented language. It can be run efficiently when it is properly embedded into Html documents. Content of the web pages designed by JavaScript is not static. Because the running script of the document is not coming to students' computer from the server, instead it is downloaded directly to the browsing computer, the objects (buttons, pictures and windows etc.) on the page can respond directly to the user actions. To realize the desired function, program codes should be written. To write the necessary instructions Notepad program is enough for the Windows systems and Simple Text program for the Macintosh system [8].

JavaScript can be used in mathematical units by interactively by the students by means of entering data. It also can be used to control the answers, names, points and passwords of the students. JavaScript has the necessary features to design the web pages interactively to use in WAE [9].

3.4 Macromedia Flash (MF)

Macromedia Flash (MF) is software which can easily be used by the educators with a little effort to design the web based lectures. The software's ability to give freedom to nonprofessional programmers and educators makes it preferable to design web pages and use frequently. Classic web page's rapid dynamic content changes and updates are possible with MF [10].

To design a good web page, prepare effective presentations and animations one should know at least Html or JavaScript languages addition to a photo editor program. All experience on these programs and software may even not be enough to create required designs. To design a web page by using Html or JavaScript, tens of lines of code should be programmed. MF software has ability to provide all conveniences to free designers from mentioned burdens. Moreover, after finishing the animation designed by using MF, the Html codes of the animation can be generated by the program and designed animations and web pages can easily be uploaded and viewed as internet web pages [11].

As MF provides animations, simulations, audio and video presentations necessary for educational web sites, it also can be used to design web pages. Consequently by using only one platform necessary designs, developments and updates can easily be made [9].

3.5 Macromedia Dreamweaver (MD)

Like programming languages, editor programs for Html design are developed having visual programming features and ready to use objects. Macromedia Dreamweaver (MD) is one of the finest among them. By using MD program, large, complex and interactive web pages can be prepared. MD is a professional web design packet for web designers. In the company of MD while designing web pages both visual layout of the web page and background Html codes of the web pages can be edited simultaneously. To provide changes in the web page, a rapid Html editor is added to the suite. Another feature for rapid web development is Html styles. By using the styles many operations like definition of font type, font style, background color or pictures, blocking and layout operations, framing can be defined at the same time and be applied to entire web page. MD will also let you follow the Html codes by using line numbers. In accordance with given numbering, Html codes in the page can be tracked. Moreover Html source code belonging to the object chosen in the layout screen can be also spotted in the source codes. With this feature codes belonging to the object are marked. Every page created is designed individually independent of other pages. Linking the pages creates the web site. MD controls not only the creation and management of individual pages but also creation and management of the entire web site. It manages all the pages of the site and determines critical links defined in the web pages. Addition to this, any file which is not used is deleted to decrease the file size of the web site. File list of the site is automatically updated as the files are added or deleted [12].

4 WEB AIDED EDUCATION APPLICATION

Various circuit elements, experiment sets, experiment equipment, measurement devices are present in a laboratory of electronics courses. Misuse of laboratory equipment and measurement devices results break down of the equipments or equipments which do not act as expected. In this situation education process will be interrupted and costs of education will increase. To overcome the problem of unwanted situations, equipment should be used according to their user manuals. Consequently visual materials are needed for appropriate use of the laboratory equipment. Materials transfer to students should be well enough for students to understand how to use the equipment. The object of this study is to prepare videos, brochures, animations and class materials about the operation of equipment and devices used in an electronics laboratory. So, a web aided application page is prepared. In this web site, there are information, video streams and animations about measurement devices and circuit elements used in an electronics laboratory. Application is prepared by using Macromedia Flash, Macromedia Dreamweaver, JavaScript and Php programming languages. Home page of the prepared web aided site appears in the screen as seen in the Figure.1



Figure 1. Homepage screen of the web aided application

Laboratory equipments are divided into two categories in the web aided page as circuit elements and devices.

4.1 Devices (Measurement Devices and Other Equipment)

Frequently used equipment and measurement devices in the laboratory are determined and web site is prepared accordingly. Chosen equipments are listed in the following directory.

- Ammeter
- Voltmeter
- Wattmeter
- Analog Multimeter
- Digital Multimeter
- Soldering Iron
- Power Supply
- Current Source
- Cos meter
- Signal Generator
- Frequency Counter
- Analog Oscilloscope
- Digital Oscilloscope
- Logic Analyzer

As an example for the equipments presented in the web aided application digital multimeters and oscilloscope will be introduce here.

Digital Multimeter: Digital Multimeters are the most encountered and used device of an electronics laboratory. Multimeters are electronic devices which can measure current (Ampere), voltage (Volt), resistance (Ohm) and short circuits. It is so called multimeter, because measurements of many electrical values can be realized with single equipment. Multimeters are used frequently in electrical and electronics industry and sector. By using a commutator switch desired measurement value is chosen and measurement is realized. Digital multimeter are produced by many different companies as many different models, but their usage is about 90% same. Web aided education page of digital multimeter can be seen in the Figure 2.



Figure 2. Web page about the subject of introducing digital multimeter

Analog Oscilloscope: One of the most used equipment in an electronics laboratory is oscilloscopes. Oscilloscope is an electrical measurement and observation equipment. Changes of the voltage and current values can be displayed as time dependent graphics. From the graphics on the screen, signal's pulse and space durations, amplitude, frequency and period can be determined. It mainly designed to determine the outputs and characteristics of the circuits having square wave and sinusoidal input. Web aided education page of oscilloscope can be seen in the Figure 3.



Figure 3. Web page about the subject of introducing analog oscilloscope

Microsoft Word and pdf documents are prepared about measurement devices, basic features, measurement capacities, technical characteristics and important points to pay attention. Prepared documents are uploaded to the website. When desired, documents can be saved into student's own computer or printed out. Moreover by means of a movie uploaded to the web site, technical properties of the

equipment and functions of the device can be viewed. Movie content also includes instructions about the application related to the equipment.

4.2 Circuit Elements

Frequently used laboratory circuit elements are determined and web site is designed according to determined circuit elements. Determined circuit elements are listed below.

- Resistor
- Potentiometer
- Coil, Inductor
- Capacitor
- Diode
- Transistor
- TRIAC
- Thermistor
- Thyristor (SCR)
- Thermocouple
- LED
- Switch
- Bread Board
- Crocodile
- Cables

As an example for the circuit elements presented in the web aided application transistor and thermocouple will be introduce here.

Transistor: Transistor is a circuit element whose resistance between two electrodes can be changed by applying a voltage to a third electrode. It is generally used as signal amplifiers in electronic circuits. Another widespread usage is a switching element. Transistors used almost all electronics applications. Consequently, although today they cost almost nothing, they are considered one of the most valuable pieces of the electronic technology. Web aided education page of transistor can be seen in the Figure 4.



Figure 4. Web page about the subject of introducing transistor

Thermocouple: Thermocouple consisting of contact of two different metals is used for temperature measurement. Thermocouples can sense the temperature and produces a voltage difference between its electrodes. Produced voltage differences generally measured by a multimeter voltage section or a particularly temperature calibrated section of the device. Consequently measurement can be seen either in mili volts or in centigrade degrees. Web aided education page of thermocouple can be seen in the Figure 5.



Figure 5. Web page about the subject of introducing thermocouple

Microsoft Word and pdf documents are prepared about circuit elements, their properties, characteristics and important points to pay attention. Prepared documents are uploaded to the website. When desired, documents can be saved into student's own computer or printed out. Moreover by means of a movie uploaded to the web site, technical properties of the circuit elements and their proprieties and characteristics can be viewed. Movie content also includes instructions about the application related to the circuit element.

5. RESULTS AND CONCLUSION

A web site aiming to teach devices and circuit elements used in an electronics laboratory easily and in an entertaining way is designed and published. Students are provided with videos and animations of equipment and measurement devices in an electronics laboratory and animations and videos are used to introduce the equipment and devices to the students. Because, the greater responsibility in the laboratory belongs to the students, minimization of running cost resulting from misuse and breakdowns is aimed. The equipment failure and misuse decreases accordingly. As a result;

- There will be no interruption to training process.
- Maintenance and repair cost will decrease, hence decreasing overall educational cost to institution.
- Both school and government budget will be affected positively.

Since the students learn the equipment, circuit elements and devices before the lab class hours, their interest to practical laboratory and applied sessions will increase.

REFERENCES

- Bay, F. ; Tüzün, H., (2002). “Yüksek eğitim kurumlarında ders içeriğinin web tabanlı olarak aktarılması-I”, Politeknik Dergisi, Cilt 5, Sayı 1, 13-22.
- Çağiltay, K.; Graham, C.; Lim, B.R; Craner, J. ve Duffy, T.(2001). “The seven principles of good practice: a practical approach to evaluating online courses”, Hacettepe Üniversitesi Eğitim Fak. Dergisi, 20. 40–50.
- Erdoğan, Y. (2005). “Web tabanlı yüksek öğretimin öğrencilerin akademik başarıları ve tutumları doğrultusunda değerlendirilmesi”, unpublished PhD thesis, Marmara University Institute of Education Sciences, İSTANBUL.
- Hannum, W. (2001). Web-based training: Advantages and limitation. Web-Based Training. Editör: Badrul H. Khan New Jersey: Educational Technology Publication.
- [Http://egitek.meb.gov.tr/dersdesmer/DersDestek/dersdestekmerkezi/BilgKitap/pdf/BOLUM9_webtasarim.pdf](http://egitek.meb.gov.tr/dersdesmer/DersDestek/dersdestekmerkezi/BilgKitap/pdf/BOLUM9_webtasarim.pdf), Access Date: Şubat 2009.
- [Http://websitem.gazi.edu.tr/ozkaraca/DosyaIndir?DosyaNo=18d3054e3b8e9e5992751aa0f78c005f](http://websitem.gazi.edu.tr/ozkaraca/DosyaIndir?DosyaNo=18d3054e3b8e9e5992751aa0f78c005f), Access Date: Şubat 2009.
- [Http://www.php.net/manual/tr/introduction.php](http://www.php.net/manual/tr/introduction.php), Access Date: Şubat 2009.
- Karagülle, İ. ; Pala, Z., (2001). “Macromedia 5 actionsript”, Türkmen Bookstore, İstanbul.
- Khan, B. H. (1997). Web based instruction. Education Technology Publication. Englewood Cliffs, NJ.
- Özkaya, İ.; Kolsuz, H. ve İslar, V. (1997). Dans: İnternete dayalı asenkron öğrenme. 3. Türkiye’de internet Konferansı, , ODTU, Ankara.
- Saraç, M., (2001). “Flash 5 ve actionsript”, Seçkin Bookstore, Ankara.
- Yıldırım, U.B., (2006). “Web tabanlı etkileşimli animasyon ve simülasyon içerikli elektronik dersi tasarımı”, Marmara University, Graduate School of Natural and Applied Science, Master thesis, İstanbul.

WEB BASED CONTROL SIMULATIONS ENVIRONMENT (WBCSE) FOR CONTROL EDUCATION WITH MATLAB

Muhammet ÜNAL^a, Kenan SAVAŞ^a, Vedat TOPUZ^b, Hasan ERDAL^a

^aMarmara University, Technical Education Faculty, Istanbul, Turkey

^bMarmara University, Vocational High School of Technical Sciences, Istanbul, Turkey
 munal@marmara.edu.tr, kenan.savas@marmara.edu.tr, vtopuz@marmara.edu.tr, herdal@marmara.edu.tr

Abstract

In this study, Web Based Control Simulations Environment (WBCSE) has been developed in pressure process laboratory for digital control course at the Marmara University Technical Education Faculty. Realized system is designed with MATLAB / Simulink environment using model based approach. In WBCSE, system open or closed loop behaviors could be observed with On/Off or PID controllers for the different reference inputs such as constant, step or trajectory tracking. To use WBCSE is no need for remote users to install any 3rd party software like MATLAB on their machines. Two different case studies are performed to show the advantages of realized system. Student performances were measured with class projects, midterm and final exam. We concluded that student performance is improved nearly 25 % when using WBCSE. This study is thought to contribute to the improvement and development of vocational and technical educational services, especially e-learning environments in control education.

Keywords: MATLAB Web Server, Virtual Experiment, Web Based Control Education, Automatic Control, Pressure process.

1. Introduction

The literature tends to use the following words interchangeably: online education and web-based education; computer assisted learning, web assisted learning and web mediated learning; virtual learning environments, online courses, and web-based courses. Web-based education means the extreme form of online education that uses streaming videos and the more advanced functionalities available in educational software and where there is no actual face-to-face contact between the teacher and the student. There has been continuing debate over the advantages of Web-based Education (WBE) as compared with a possible reduction in the quality and effectiveness of instruction (Pucel & Stertz, 2004). There are some important functionalities in web-based education: a-) Real time announcements, b-) Posting of text, html, spreadsheets, videos, powerpoint, audio files, c-) real time grade book, d-) external links, e-) discussion board and chat rooms, f-) automated quizzes, and g-) emails to individuals and list serves. Benefits of Web-based education are also clear: classroom independence and platform independence. Web courseware installed and supported in one place can be used by thousands of learners all over the world that are equipped with any kind of Internet-connected computer. Recent directions in simulation include developing web-based simulators, which are ideally suited to support virtual environments, interactive simulations, and multiuser interaction. In some instances, they can be cost effective since the simulation can be run on a remote location, while visualizing the results on a low cost local machine (Dessouky, Verma, Bailey, & Rickel, 2001).

Internet-based learning as well as a virtual laboratory, and a distance-learning lab in the learning environment can be used for the construction of a laboratory. A virtual laboratory in which a computer simulates the process permits continuous access, where users with each other to wait, or at the same time only one user such as the use of any restriction that is not (Valera, Diez, Valles, & Albertos, 2005).

Using the internet as well as the educational process innovation to realize educational opportunities provides remote control applications.

Computer aided design and computer-based control application and other educational concepts related to the control science takes place among the objectives of the control system introduction. A person to control the design of industrial applications, modeling, design, simulation, testing and implementing their own courses, such as requiring many steps are required to repeat. Control applications for greater efficiency in today's competitive business demands quickly as possible with the need to control the design and implementation, we have encountered (Uran & Jezernik, 2008). In the study, it was aimed to make a WEB based control application, which has low cost and simple graphics user interface.

2. Web-Based Simulations and the Necessity of MATLAB

Today a majority of all students have computers and internet access. This situation is taken into account in particular the control area with some very good analysis processes often the preferred software package MATLAB to use the cost to be considered are important, and students and among universities MATLAB activities for sharing and license status is concerned (Uran & Jezernik, 2008).

The online simulations can be done with MATLAB Web Server (MWS) application (MathWorks, 2003). They are required in many technical lessons and in particular virtual lab environments. Moreover, they are also useful for mathematics laboratories (Pester, 2010). The input of simulation may be numerical or alphanumeric values on the other hand outputs may be numerical, alphanumeric or graphical values. However, there are some disadvantages of using this tool. For example, users can only change input values, namely, not programmatically. Another disadvantage is that a high-performance CPU and considering the extent of the capacity of RAM to shorten the simulation time is required. In addition, developing and registration applications using the MWS toolbox require extra time and effort.

3. The Design of Web Based Control Simulations Environment (WBCSE)

WBCSE targeted with theoretical knowledge is to support the simulation process. Designing WBCSE in the integration of related courses, so students do the learning and living environment to participate in the activities and the simulation is intended at the same time to interpret the results of analysis done by each student.

WBCSE offers remote users an interface that has the simulation all over the world. WBCSE is designed to run web-based. In addition, the designing purpose of WBCSE is to strive over the software costs and licensing issues. Having MATLAB software package will bring an extra cost of each employee in the computer training institute, as well as considering the cost for each student will be extremely high costs. WBCSE is ready and easy to use with remote users via the web interface with their own computers without having to install any extra software to analyze and observe the results. They only need browser software like Opera, Internet Explorer etc.

MATLAB allows you to make numerical calculations and modeling of physical systems using Simulink providing an integrated designing interface is a software tool (Uran & Jezernik, 2008). Especially in the field of control theory and control science, MATLAB and Simulink is used widely in courses related to modeling and control processes in the various universities. Because control practices related to the field of applications is becoming popular using MATLAB environment

To realize a design of an infrastructure-aided design framework cooperated with MATLAB, we have concentrated this issue specially. In the study, the design procedures are web-based documents, source codes and MATLAB Simulink models. WBCSE model files are designed using MATLAB / Simulink environment (Uran & Jezernik, 2008). System works in Apache Web Server which MATLAB / Simulink application is running. In the study, the model used to process of RT 532 is developed by using MATLAB / Simulink environment, and simulations of MATLAB applications is integrated to the Web MWS system which is a ready-to-use online platform giving developers a

facility of running MATLAB / Simulink applications over the web (Savaş, 2009). Internet users can easily develop applications that use these media opportunities. Using Web MWS System, it is possible to develop web-based applications easily using MATLAB in Figure 1.

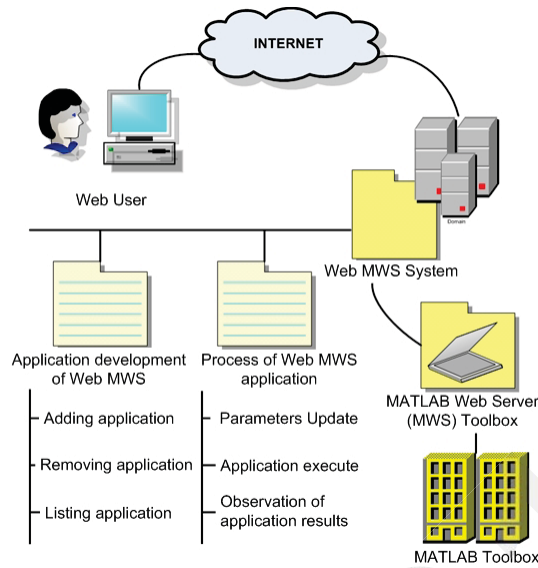


Figure 1. Using Web MWS System design process (Savaş & Erdal, 2010)

The system development uses the PHP-based web document through a server computer that is installed having MATLAB on itself to provide web users running MATLAB applications, so supporting the system with a dynamic web page framework is included in it (Savaş & Erdal, 2010). All over the world, in this system the applications can be accessed via the Internet at any time. The Web MWS System constitutes another advantage facilitating remote users with their own computers not needing to install any software package. Web users can add any application to this system; you can list the existing applications or view the source code of applications.

3.1. The Architecture of the Web MWS System

The advantage of MATLAB is that users create their own algorithms and use them as part of a library of MATLAB. It is easy to make programming with MATLAB. Therefore, with Web MWS System it is targeted users using MATLAB so that they can easily developed MATLAB applications via the web (Savaş, 2009). On this system, MATLAB software has an integrated toolbox of MATLAB Web Server (MathWorks, 2003). It is shown how to integrate the application of MATLAB to the Web MWS System in Figure 2.

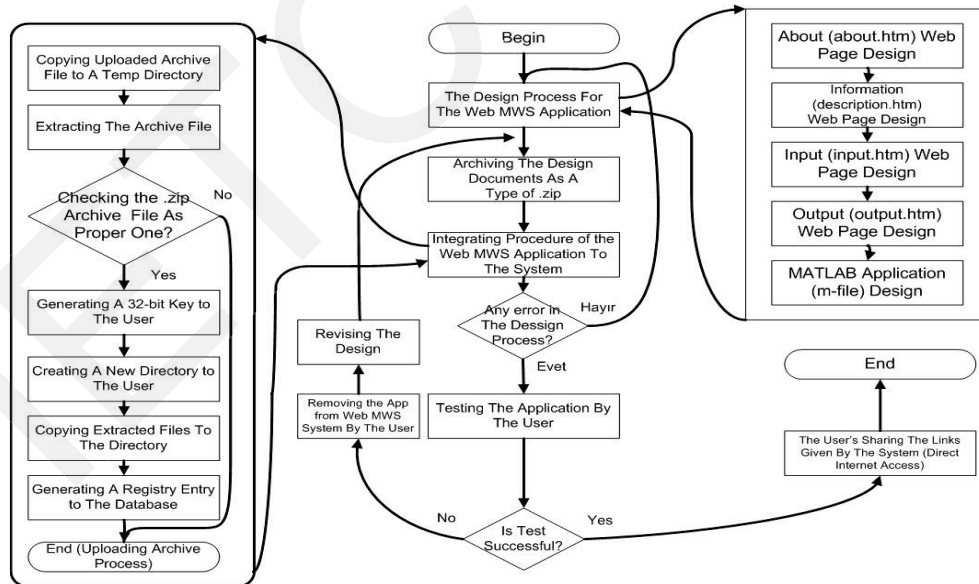


Figure 2. Followed steps on designing an application using Web MWS System (Savaş & Erdal, 2010)

Web MWS System uses the MATLAB Web Server (MWS) toolbox developed by Mathworks. MWS is a web front interface between the client and the server connection established to execute the MATLAB so that the client is able to start a MATLAB application via the internet (MathWorks, 2003). Using this way, it should be possible to design simulations using MATLAB applications running on a server (Dawei, Dikshit, & Weizhao, 2004). In this structure, the output of simulations becomes HTML documents shown by Web browser software.

4. The Description of RT 532 Process Control and Modeling

The main aim of realized system is to experimentally teach the control of process control system in our university. To achieve this goal, the pressure process control system via computer which is given in Figure 3 are build. The purpose of our implemented system is to stabilize the pressure of the tank at the desired pressure level adjusting the input air flow despite the varying exhaust output. The tank input and output

flows are controlled by pneumatic and manual valve respectively. The MATLAB based PID (proportional-derivative and integral) and ON/OFF digital controller are used to control the pressure in the tank.

The software architecture of designed system briefly explained as below; MATLAB with Simulink environment and ANN (Artificial Neural Network) toolbox is used to perform modeling, and control phases of designed system. MATLAB alone provides a platform for numeric calculation, analysis, and visualization. Simulink is an interactive environment for modeling and PC-based simulation with easy-to-use block diagrams.

Artificial neural networks (ANN)s have been applied to a large number of problems because of their non-linear system modeling capacity. Given a sample vector, ANNs are able to map the relationship between input and output; they "learn" this relationship, and store it into their parameters. As these two characteristics suggest, they should prove to be particularly useful when there is a little prior knowledge about the system. Most of the ANN applications use simple multi layer perceptron (MLP) network training with back-propagation algorithm. A simple way to introduce dynamics into MLP network consists of using an input vector composed of past values of the system inputs and outputs. Therefore, we choose NARX type ANN-30 network for modeling of dynamical behavior of realized pressure process system. To show the ANN model and real system behavior are consistent and quite similar (Ünal, Erdal, & Topuz, 2010).



Figure 3. Realized pressure process system

5. WBCSE and Simulation Interface

Using WBCSE, web users can observe simulation results via RT 532 model. Here, WBCSE providing not a physical system, an environment for simulation-based facilitate the remote users accessing the system at the same time and have the opportunity to be accessible and able to run simulations simultaneously (Ünal & Savaş, 2010). The main page of user interface of WBCSE is shown in Figure 4. Using this page, the users of WBCSE can access information of the developer. In addition, from this part of the WBCSE, it can be obtained data related to the process of RT 532 and reached the manual info about using and the structure of WBCSE. Similarly, remote users can select which type of simulation is realized in the same interface.

Figure 4. WBCSE user web interface

The interface of WBCSE allows to the users in order to support the lessons in the field of control theory performing different kinds of simulations related to open or closed loop control.

Besides, by using closed loop process control, web users can observe the results regarding the process of RT 532 with two different controllers, i.e. On/Off or PID control (Ünal et al., 2010). Moreover, in WBCSE, the closed loop control is also possible. In this study, as closed-loop control types, On/Off and PID control operations are used (Ünal, 2008)

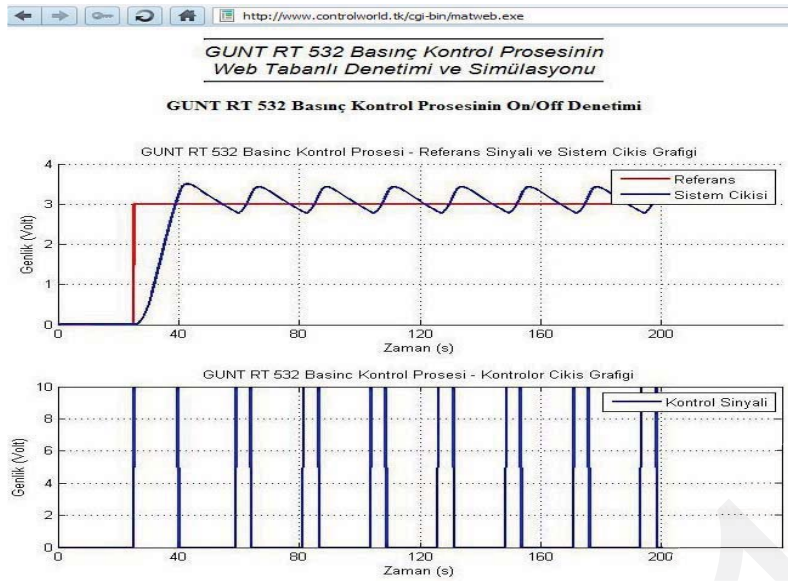


Figure 3. The On/Off simulation of RT 532 process

. It can be seen how RT 532 process gives output is in controlled with On/Off operation in Figure 5. The Figure 6 shows that when the simulation is performed in the type of PID controlling, remote users observe how the RT 532 process has an output behavior graphically.

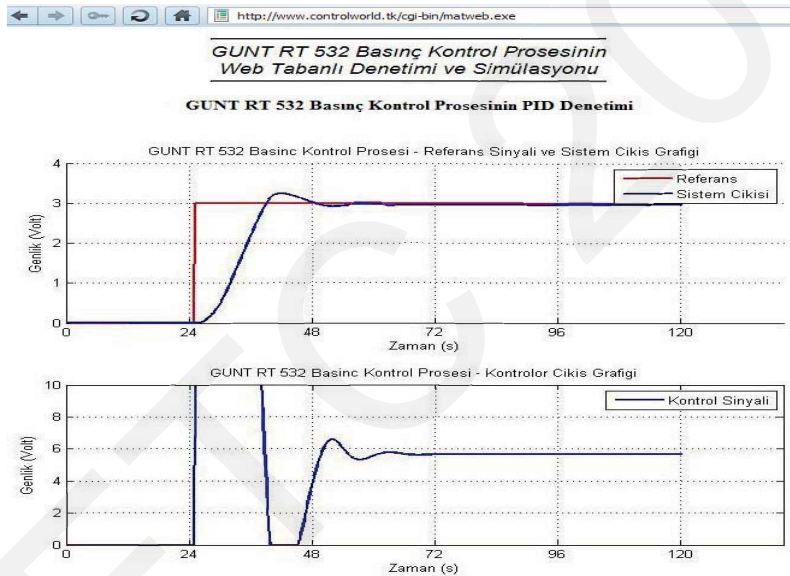


Figure 6 The On/Off simulation of RT 532 process

6. Educational Evaluation of WBCSE

To evaluate educational performance of WBCSE's utility, we realized 14-week course including different two groups comprising of fifteen MSc students coming computer and control technology classes. In this course, control and modelling applications studied theoretically for first group and using WBCSE for second group, respectively. End of the courses, students that studied with WBCSE learned different control methods including ON/OFF and PID easily than the other group according to the performance evaluations and exam results. This assumption verified with three quizzes and homework as given in table1.

Table 1. Students' success performance

| Students | 1.Exam (Mean) | 2.Exam (Mean) | 3.Exam (Mean) | Homework (Mean) | Final (Mean) |
|-----------------------|---------------|---------------|---------------|-----------------|--------------|
| Studied with WBCSE | 81 | 86 | 91 | 90 | 87 |
| Studied theoretically | 66 | 72 | 70 | 80 | 72 |

7. Conclusion

In this paper, WBCSE tool is designed for students so that it is easy to use and fast with the subjects in the course of control theory and able to sync with lessons as a result of the application related to WBCSE providing a visual simulation environment. Model-based application developed for WBCSE is designed using MATLAB / Simulink environment. In the work, WBCSE is presented as a complementary source of supporting control course in the way of more quickly applicable and needing less effort for students, regardless of directly using MATLAB environment, producing any model and knowing MATLAB programming. Therefore, using WBCSE to establish a link between the control theory and the practice of control applications might be allowed for the students.

Using MATLAB Web Server, to develop applications are required in a technical sense, but this takes long time. In addition to doing this, more efforts are required to the programming procedure. However, MWS applications also offers many advantages, the most important one is would be only needed a web browser to access MATLAB through internet. Web MWS System is used in this study to eliminate or reduce these problems so that web users without licensing issues might be able to develop MATLAB applications. Moreover, users transport their MATLAB-based projects to the WWW without extra resources and additional web server services establish by themselves with the view of preventing the waste of time via the easy to use interface.

References

- Dawei, W., Dikshit, A., & Weizhao, Z. (2004). *Medical imaging curriculum development: an interactive simulation system for different modalities*. Paper presented at the Engineering in Medicine and Biology Society, 2004. IEMBS '04. 26th Annual International Conference of the IEEE.
- Dessouky, M., Verma, S., Bailey, D., & Rickel, J. (2001). A methodology for developing a web-based factory simulator for manufacturing education. *IIE Transactions*, 33(3), 167-180.
- MathWorks. (2003). MATLAB Web Server User's Guide. from <http://www.mathworks.com/access/helpdesk/help/toolbox/webserver/webserver.html>
- Pester, A., Ismailov, R. (2010). Interactive Applications in Teaching with the MATLAB Web Server. Retrieved 03 April, 2010, from http://sim01.cti.ac.at/doc/Using_matlab_Webserver.pdf
- Pucel, D. J., & Stertz, T. F. (2004). *Effectiveness of and Student Satisfaction with Web-based compared to traditional Instruction*. Paper presented at the Computers and Advanced Technology in Education.
- Savaş, K. (2009). Web MWS System User's Manual. Retrieved 23 March, 2009, from http://www.controlworld.tk/web_mws/
- Savaş, K., & Erdal, H. (2010). *Web Automatic Control Simulation Environment System (ACSES) Designed As A Virtual Tool For Control Education*. Paper presented at the World Conference on Educational Sciences Bahçeşehir Üniversitesi, İstanbul.
- Uran, S., & Jezernik, K. (2008). Virtual Laboratory for Creative Control Design Experiments. *Education, IEEE Transactions on*, 51(1), 69-75.
- Ünal, M. (2008). *Optimization Of PID Controller Using Ant Colony / Genetic Algorithms and Control Of The Gunt RT 532 Pressure Process*. Master Thesis, Marmara University, İstanbul, Turkey.
- Ünal, M., Erdal, H., & Topuz, V. (2010). Trajectory Tracking Performance Comparison Between Genetic Algorithm and Ant Colony Optimization for PID Controller Tuning on Pressure Process. *Computer Applications in Engineering Education*, DOI 10.1002/cae.20420.
- Ünal, M., & Savaş, K. (2010). The Web MWS Application of gunt_rt532_control. Retrieved 06.04, 2010, from http://www.controlworld.tk/web_mws_files/fc2da5bf65bc8d7c8c65e411060171a3/gunt_rt532_control_input.html
- Valera, A., Diez, J. L., Valles, M., & Albertos, P. (2005). Virtual and remote control laboratory development. *Control Systems Magazine, IEEE*, 25(1), 35-39.

WEB DESTEKLİ ÖĞRETİMİN KAYNAŞTIRMA EĞİTİMİNDEKİ İLKÖĞRETİM 7. SINIF ÖĞRENCİLERİNİN PERFORMANS VE MEMNUNİYET DÜZEYLERİ ÜZERİNDEKİ ETKİSİ

THE EFFECTS OF WEB-ASSISTED INSTRUCTION ON 7TH GRADE MAINSTREAMING STUDENTS' PERFORMANCE AND SATISFACTION

Sezer Köse Biber*

Eralp Altun**

* İstanbul Üniversitesi, Fen Bilimleri Enstitüsü, Enformatik Bölümü, Doktora Öğrencisi. sezer.kose@gmail.com

** Doç. Dr., Ege Üniversitesi, Eğitim Fakültesi, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü. eralp.altun@ege.edu.tr

Özet

Bu çalışmada, web destekli öğretimin, kaynaştırma eğitimi kapsamındaki öğrencilerin fen bilgisi dersindeki performans ve memnuniyet düzeyleri üzerindeki etkisini ortaya koymak ve web destekli öğretimin kaynaştırma eğitiminde özel eğitim desteği olarak uygulanabilirliğine dair anlamlı sonuçlara ulaşmak amaçlanmıştır.

Araştırmanın çalışma grubunu, İzmir'in Konak İlçesi'ne bağlı bir ilköğretim okulunda kaynaştırma eğitimi alan 22 tane 7. sınıf öğrencisi oluşturmaktadır. Araştırmada yarı deneysel öntest-sontest kontrol gruplu deney deseni kullanılmıştır. Deney grubunda bulunan öğrencilere 10 haftalık uygulama süresince özel eğitim desteği olarak web destekli öğretimin etkinlikleri uygulanmış, kontrol grubu öğrencilerine ise bu sürede geleneksel öğretim yöntemlerinden soru-cevap ve düz anlatım yöntemleri uygulanarak öğretim gerçekleştirilmiştir.

Araştırma sonucunda, özel gereksinimli öğrencilere web destekli öğretim ortamları ile sağlanan özel eğitim desteğinin, öğrencilerin performans düzeylerini geleneksel öğretim yöntemlerine göre anlamlı düzeyde artırdığı görülmektedir. Ayrıca uygulama süresince öğrencilerin fen bilgisi dersini bilgisayarla çalışmaktan zevk aldıkları, uygulama çalışmalarına sürekli katılmaya özen gösterdikleri, böyle bir çalışmaya tekrar katılmaya istekli davrandıkları ve memnuniyetlerinin yüksek olduğu gözlemlenmiştir.

Anahtar Sözcükler: Özel eğitim, kaynaştırma eğitimi, web destekli öğretim, performans düzeyi, Memnuniyet düzeyi, Fen bilgisi.

ABSTRACT

This research aimed at determining the effects of web-assisted instruction on the performance and satisfaction levels of the mainstreaming students in the natural sciences course and to obtain significant outcomes concerning the feasibility of web-assisted instruction as an aid of instruction for the mainstreaming students.

The participants of the research consisted of 22 mainstreaming students in the 7th grade in a primary school in Konak, a town in the metropolitan province of İzmir. For this research, the pre- and post-test quasi-experimental research design with a control group was used. The experimental group was given web-assisted instruction as an aid for 10 weeks while the control group was treated with traditional methods through question-and-answer and lecturing techniques.

The research has discerned that the instructional aid provided for the students with special needs through web-assisted instruction significantly increased their performance levels in comparison with traditional methods. In addition, it has been observed that the students were pleased with studying with computers in the natural sciences course, that they tried to attend the practices regularly, that they were eager to participate in such activities again, and that their satisfaction levels were high.

Key words: Special education, mainstreaming education, web-assisted instruction, performance level, satisfaction level, natural sciences.

GİRİŞ

Son zamanlarda özel eğitime verilen önemle birlikte, normal gelişim gösteren çocuklarla özel eğitim gerektiren çocukların kaynaştırılması (mainstreaming) konusu ağırlık kazanmaya başlamıştır. Daha önceleri özürüli bireylerin toplumdan soyutlanarak izole edilmiş ortamlarda bulundurulması, orada eğitim alması ve yaşaması düşüncesi savunulurken, daha sonraları bu düşünce şekli terk edilerek yerini özürülülerin de toplumdaki diğer bireylerle yaşamayı öğrenmesi ve toplumsallaşması düşüncesi almaya başlamıştır (Metin, 1992). Bu noktada, eğitimin doğumdan ölüme kadar devam etmesi gereken bir süreç olduğu ve bu süreçte tüm bireylerin yetenekleri ölçüsünde eğitim olanaklarından yararlanma hakkına sahip oldukları kabul edildiğinde; bireylere sunulacak eğitim hizmetlerinin yer, zaman, yaş, amaç, yöntem ve benzeri yönlerden esnek olması gerekmektedir ve günümüzde uzaktan eğitimin bu esnekliği sağlayabilecek uygulamalardan biri olduğu düşünülmektedir (Yurdakul, 2005). Genel eğitim sınıfında bulunan özel gereksinimli öğrencilerin eğitimlerinde, özel eğitim desteğinin uzaktan eğitimin bir şekli olan web destekli uzaktan öğretim ortamlarında verilmesiyle, bu öğrencilere kapasite ve öğrenme hızlarına, algı sistemi ve öğrenme özelliklerine uygun yöntem, teknik araç ve gereçler sunulabilecek, böylece öğrenmeleri pekiştirilerek zayıf yönleri daha kısa sürede yeterli hale getirilebilecektir. Bu bağlamda kaynaştırma eğitiminin engelli çocuğu normal hale getirmek değil, onun ilgi ve yeteneklerini en iyi şekilde kullanmasını sağlamak ve toplum içinde yaşamasını kolaylaştırmak olduğu göz önünde bulundurulduğunda, bu öğrencilere teknoloji destekli bir eğitim verilmesinin gerekliliği açıkça görülebilmektedir.

Bu araştırma ile web destekli öğretim uygulamasının, kaynaştırma eğitimi kapsamındaki öğrencilerin, fen bilgisi dersindeki performans ve memnuniyet düzeyleri üzerindeki etkisini ortaya koymak, bu sayede web destekli öğretimin kaynaştırma öğrencilerinin eğitiminde özel eğitim desteği olarak uygulanabilirliğine dair anlamlı sonuçlara ulaşmak amaçlanmıştır. Bu araştırmadan elde edilen sonuçların, bu alanda çalışacak diğer araştırmacılara ve yapılacak çalışmalara yardımcı olabileceğine inanılmaktadır.

Problem Tümcesi ve Alt Problemler

Araştırmanın problem tümcesi "Web destekli öğretimin ilköğretim 7. sınıf kaynaştırma eğitimindeki öğrencilere özel eğitim desteği olarak uygulanmasının, öğrencilerin performans ve memnuniyet düzeyleri üzerindeki etkileri nelerdir?" şeklindedir. Bu doğrultuda alt problemler aşağıdaki şekilde belirlenmiştir:

1. Araştırmaya katılan deney ve kontrol gruplarının Performans Düzeyi Belirleme Formu ön test ve son test bulgularına göre, fen dersine yönelik performansları açısından grup içinde ve gruplar arasında anlamlı bir fark var mıdır?
2. Araştırmaya katılan deney grubundaki öğrencilerinin yapılan web destekli özel eğitim desteği uygulamasına yönelik memnuniyetleri nasıldır?

YÖNTEM

Araştırmada yarı deneysel öntest-sontest kontrol gruplu deney deseni kullanılmıştır. Araştırmanın çalışma grubunu 2007-2008 eğitim-öğretim yılında İzmir'in Konak ilçesinde bulunan bir ilköğretim okulunda öğrenim gören ve kaynaştırma eğitimi alan 22 tane 7. sınıf öğrencisi oluşturmaktadır. Bu öğrencilere uygulanan "Performans Düzeyi Belirleme Formu"ndan elde edilen sonuçlara göre aralarında fark olmayacak şekilde basit rastgele örneklem yöntemiyle eşit sayıda iki grup oluşturulmuş; rastgele bir grup "deney grubu", diğer grup "kontrol grubu" olarak adlandırılmıştır.

Veri Toplama Araçları

Araştırmada veri toplama araçları olarak Performans Düzeyi Belirleme Formu ve Öğrenci Memnuniyeti Anketi kullanılmıştır.

• **Performans Düzeyi Belirleme Formu:** Araştırma süresince öğrencilerin sergilemeleri gereken davranışları ne kadar gösterebildiklerini ve öğrencilerin güçlü ve zayıf yanları ile gereksinimlerini belirleyerek öğretim planlarıyla ilgili uygun kararlar alabilmek amacıyla Rehberlik ve Araştırma Merkezi tarafından önerilen Fen Bilgisi Dersi Performans Düzeyi Belirleme Formunun kullanılmasına 9 uzmanın görüşüne başvurulmuş karar verilmiştir. Bu formdan sayısal veriler elde edebilmek amacıyla, okul fen ve teknoloji öğretmenleri tarafından doldurulacak olan formda bulunan kazanımlardan öğrencilerin sergileyebildikleri her bir davranış için "1", sergileyemedikleri için ise "0" puan verilmesine karar verilmiştir. Bu doğrultuda formdan alınan toplam puan o öğrencinin performans düzeyini yansıtmaktadır.

• **Öğrenci Memnuniyeti Anketi:** Araştırmada öğrencilerin yapılan çalışma ile ilgili olumlu ve olumsuz düşüncelerini belirleyebilmek amacıyla araştırmacı tarafından bir öğrenci memnuniyet anketi hazırlanmıştır. Formun her bir maddesi öğrencilerin uygulama süresince yapılan çalışmaya yönelik zihinlerinde oluşabilecek olumlu ya da olumsuz düşünceleri içeren ifadelerden oluşmaktadır. Maddeler oluşturulurken form kaynaştırma öğrencilerinden oluşan bir gruba uygulanacağı için bu öğrencilerin uygulama ile ilgili düşüncelerini ifade etmekte güçlük çekebilecekleri düşünülerek her bir maddeye öğrencileri yönlendirebilecek uygun seçenekler eklenmiştir. Bu seçeneklerin yanında öğrencilerin kendi düşüncelerini de yazabilecekleri son bir seçenek de ilave edilmiştir. Bu şekilde hazırlanan forma yönelik 7 uzmandan görüşler alınmış ve bu doğrultuda 7 maddelik bir anket formu oluşturulmuştur.

Verilerin Toplanması ve Analizi

Performans Düzeyi Belirleme Formu okul fen ve teknoloji öğretmeni tarafından öğrencilerin ders içerisinde sergiledikleri performans, öğretmenin kendi gözlem raporları ve fen ve teknoloji öğretmenin her öğrenci ile ayrı ayrı yaptığı bireysel görüşmeler doğrultusunda her bir öğrenci için araştırmacının başında ve sonunda doldurulmuştur. Bu amaçla her öğrenci tek tek fen laboratuvarına alınarak bulunan tüm davranışları sergileyebilecekleri sorular fen ve teknoloji öğretmeni tarafından kontrol ve deney grubu öğrencilerine sorulmuştur. Tüm veri toplama araçları uygulanırken herhangi bir süre kısıtlaması yapılmamıştır. Ayrıca veri toplama araçlarının uygulanması aşamasında bütün maddeler ve öğrencilerin sordukları tüm sorular araştırmacı tarafından, öğrencilerin daha iyi anlayabilmelerini sağlamak amacıyla somut örneklerle açıklanmıştır.

Araştırmada "Performans Belirleme Formu"ndan elde edilen puanlar değerlendirilirken; deney ve kontrol gruplarının birbirleri ile karşılaştırılmalarında Mann Whitney-U Testi, her bir grubun kendi içinde öntest-sontest puanlarının karşılaştırılmasında ise Wilcoxon İşaretli Sıralar Testi kullanılmıştır. Her iki testte de anlamlılık düzeyi 0.05 olarak alınmıştır. Araştırmada "Öğrenci Memnuniyeti Anketi"nin her bir seçeneğine yönelik elde edilen verilerin değerlendirilmesi ise yüzdeler ve frekanslar yardımıyla yapılmıştır.

BULGULAR VE YORUM

1. Araştırmanın 1. alt problemine yönelik elde edilen istatistiksel bulgular aşağıda Çizelge-1,2,3 ve 4'de gösterilmektedir.

Çizelge 1. Deney ve kontrol grubu öğrencilerinin performans düzeyi belirleme formu öntest sonuçlarına göre performans düzeyi puanlarını gösteren Mann Whitney U-Testi sonuçları

| Grup | n | Sıra Ortalaması | Sıra Toplamı | U | P |
|---------|----|-----------------|--------------|-------|------|
| Kontrol | 11 | 11,14 | 122,50 | 56,50 | .792 |
| Deney | 11 | 11,86 | 130,50 | | |

Çizelge 1 incelendiğinde; uygulama öncesinde deney ve kontrol grubu öğrencilerinin performans düzeyi puanları arasında istatistiksel olarak anlamlı bir fark bulunmadığı görülmektedir (U=56,50, p>.05).

Çizelge 2. Kontrol grubu öğrencilerinin performans düzeyi belirleme formu öntest ve sontest sonuçlarına göre performans düzeyi puanlarını gösteren Wilcoxon İşaretli Sıralar Testi sonuçları

| Sontest-Öntest | n | Sıra Ortalaması | Sıra Toplamı | z | p |
|----------------|----|-----------------|--------------|-------|--------|
| Negatif Sıra | 0 | .00 | .00 | 2,94* | .003** |
| Pozitif Sıra | 11 | 6,00 | 66,00 | | |
| Eşit | 0 | - | - | | |

* Negatif sıralar temeline dayalı

** (p<.01)

Çizelge 2 incelendiğinde, kontrol grubundaki öğrencilerin uygulama öncesi ve sonrasında performans düzeyi belirleme formundan aldıkları puanlar arasında sontest lehine anlamlı bir farklılık olduğu görülmektedir (z=2,94, p<.05). Bu durum, geleneksel öğretim yöntemleriyle verilen özel eğitim desteğinin, kaynaştırma öğrencilerinin performans düzeylerini arttırmada etkili olduğunu göstermektedir.

Çizelge 3. Deney grubu öğrencilerinin performans düzeyi belirleme formu öntest ve sontest sonuçlarına göre performans düzeyi puanlarını gösteren Wilcoxon İşaretli Sıralar Testi sonuçları

| Sontest-Öntest | n | Sıra Ortalaması | Sıra Toplamı | z | P |
|----------------|----|-----------------|--------------|-------|---------|
| Negatif Sıra | 0 | .00 | .00 | 2,94* | 0,003** |
| Pozitif Sıra | 11 | 6,00 | 66,00 | | |
| Eşit | 0 | - | - | | |

* Negatif sıralar temeline dayalı

** (p<.01)

Çizelge 3 incelendiğinde; deney grubu öğrencilerinin Performans Düzeyi Belirleme Formu öntest ve sontest sonuçlarına göre, puanlarının ortalamalarının son test lehine istatistiksel olarak anlamlı bir farklılık gösterdiği görülmektedir (z=2,94, p<.05). Bu durum, kaynaştırma eğitimindeki öğrencilere web destekli özel eğitim desteği uygulanmasının öğrencilerin performans düzeylerini anlamlı düzeyde artırdığını ortaya koymaktadır.

Çizelge 4. Deney ve kontrol grubu öğrencilerinin performans düzeyi belirleme formu sontest sonuçlarına göre performans düzeyi puanlarını gösteren Mann Whitney U-Testi sonuçları

| Grup | n | Sıra Ortalaması | Sıra Toplamı | U | p |
|---------|----|-----------------|--------------|------|-------|
| Kontrol | 11 | 6,00 | 66,00 | .000 | .000* |
| Deney | 11 | 17,00 | 187,00 | | |

*(p<.01)

Çizelge 4 incelendiğinde; 10 haftalık bir deneysel çalışma sonucunda, web destekli özel eğitim desteği alan özel gereksinimli çocuklar ile yalnızca geleneksel öğretim yöntemlerine dayalı destek eğitimi alan çocukların performans düzeyleri arasında anlamlı bir fark olduğu bulunmuştur (U=.000, p<.05). Sıra ortalamaları dikkate alındığında, deney grubundaki öğrencilerin, kontrol grubundaki öğrencilere göre performans düzeylerinin daha yüksek olduğu açıkça görülmektedir.

Sonuç olarak Çizelge 1, 2, 3 ve 4 genel olarak incelendiğinde, özel gereksinimli öğrencilere web destekli öğretim ile sağlanan özel eğitim desteğinin, geleneksel öğretim yöntemlerine uygun olarak sağlanan özel eğitim desteğine göre, bu öğrencilerin performans düzeylerini arttırmada daha etkili olduğu açıkça görülmektedir.

2. Araştırmanın 2. alt problemine yönelik elde edilen istatistiksel bulgular aşağıda Çizelge-5, 6, 7, 8, 9, 10 ve 11'de gösterilmektedir.

Çizelge 5 incelendiğinde, bilgisayar ortamında öğrenme ortamları, öğrencilere geleneksel sınıflardan daha sessiz bir ortam sunmasının, öğrencilerin fen bilgisi dersini bilgisayar ortamında öğrenmeyi tercih etmelerinde, en önemli etken olarak öne çıktığı görülmektedir. Bunun dışında öğrencilerin öğretmen ve akran faktörlerinin etkilerinden bağımsız olarak öğrenmeyi tercih etmeleri de diğer önemli etkenlerdir.

Çizelge 5. Deney grubu öğrencilerinin öğrenci memnuniyet anketinin 1. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
|---|-------------------------------|------|
| Dersimi daha sessiz bir ortamda öğrenebiliyorum. | 11 | %100 |
| Yanımda bir öğretmen bulunmadığından heyecanlanmıyorum. | 8 | %73 |
| Arkadaşların sorulara verdiği yanıtları görmediklerinden kendimi daha rahat hissediyorum. | 7 | %64 |

Araştırmada öğrencilerin memnuniyetlerinin ya da hoşnutsuzluklarının kendi dillerinden aktarılmasının araştırmanın güvenilirliğini daha da arttıracak düşüncesiyle, "Öğrenci Memnuniyet Anketi"nde her bir maddede, öğrencilere sunulan seçenekler dışında, öğrencilerin o madde ile ilgili kendi düşüncelerini yazabilecekleri ayrı bir alan bırakılmıştır. Bu doğrultuda öğrencilerin anketin 1. maddesine yönelik yorumları genel olarak incelendiğinde, fen bilgisi dersini bilgisayar ortamında öğrenmeyi istemelerinde; öğrencilerin bağımsız olarak bilgisayar ve bilgisayar teknolojilerini kullanarak iş yapabilmelerinin kendilerinde yarattığı hazzın, öğrendiklerini bilgisayar ortamında saklayabilmelerinin yarattığı güvenin, yaptıkları çalışmaların arkadaşları tarafından görülüp eleştirilme riskinin olmamasının ve sanal öğretmenlerini tanımayan olmalarından dolayı yanlış yapmaktan korkmalarının etkisinin olduğu görülmektedir.

Çizelge 6. Deneysel grubu öğrencilerinin öğrenci memnuniyet anketinin 2. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| 2) Fen bilgisi dersini bilgisayar ortamında öğrenmeyi istemem. Çünkü: | | |
|---|-------------------------------|-----|
| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
| Öğretmenim ve arkadaşlarımla bir arada olmak isterim. | 2 | %18 |
| Kendimi sınıfta daha rahat hissediyorum. | 1 | %9 |
| Sınıfta arkadaşlarımdan çok şey öğrenebiliyorum. | 0 | %0 |

Çizelge 6 incelendiğinde, öğrencilerin fen bilgisi dersini geleneksel sınıf ortamında öğrenmeyi tercih etmelerinde öğrencilerin öğretmen ve arkadaşlarından ayrı kalmalarının öncelikli olarak etkili olduğu görülmektedir. Bu konuda öğrencilerden bir tanesi kendisinin o çok alıştığı sınıf ortamında rahat hissettiğini belirtmiştir.

Öğrencilere fen bilgisi dersini bilgisayar ortamında öğrenmeyi isteyip istemedikleri sorulduğunda, öğrencilerin büyük çoğunluğu bilgisayar ortamında dersin daha eğlenceli ve geleneksel sınıf ortamına göre daha sessiz olduğunu, bu sayede daha çok bilgiye ulaşılabildiklerini ve düşüncelerini rahatlıkla dile getirebildiklerini vurgulayarak, ders bilgisayar ortamında öğrenmeyi tercih ettiklerini belirtmişlerdir. Buna karşın bir öğrenci, laboratuvar ortamında dersi işlerken, arkadaşlarından ayrı kalmaktan üzüntü duyduğunu dile getirmiştir.

Çizelge 7. Deneysel grubu öğrencilerinin öğrenci memnuniyet anketinin 3. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| 3) Fen bilgisi dersini bilgisayarla öğrenmek çok hoşuma gitti. Çünkü: | | |
|--|-------------------------------|-----|
| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
| Dersimi kendi başıma öğrenebildim. | 10 | %91 |
| Anlayana kadar etkinlikleri tekrar edebildim. | 10 | %91 |
| Konuları etkinlikler ve animasyonlar yardımıyla daha iyi anlayabildim. | 10 | %91 |
| Daha önce yapılan etkinlikleri istediğim zaman tekrar edebildim. | 9 | %82 |

Çizelge 7 incelendiğinde, öğrenciler fen bilgisi dersini bilgisayarla öğrenmekten hoşlandıklarını belirterek, bunun nedenlerini, laboratuvar ortamında bağımsız olarak iş yapabilmeleri, konuları geleneksel sınıf ortamından farklı olarak bilgisayarlar, etkinlik ve animasyonlarla daha iyi anlayabilmeleri, öğrendiklerini istedikleri kadar ve istedikleri zaman tekrar edebilmeleri olarak sıralamışlardır.

Bu madde ile ilgili olarak öğrencilerin yazdıkları yorumlar incelendiğinde öğrenciler yine fen bilgisi dersini bilgisayarla öğrenmekten genel olarak hoşlandıklarını belirtmişlerdir. Bu konuda kendilerine sunulan seçeneklerden farklı olarak, internet sayesinde daha çok bilgiye ulaşabilmelerini, oyun ve resimlerle fen bilgisi dersinin daha eğlenceli hale gelmesini, kendi kendilerine öğrenebilmelerini ve yine laboratuvar ortamının sınıf ortamına göre daha sessiz olmasını, bilgisayarla öğrenmekten hoşlanma nedenleri olarak sıralamışlardır.

Çizelge 8. Deneysel grubu öğrencilerinin öğrenci memnuniyet anketinin 4. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| 4) Fen bilgisi dersini bilgisayarla öğrenmekten hoşlanmadım. Çünkü: | | |
|---|-------------------------------|----|
| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
| Ders öğretmeni anlatırken daha iyi anlıyorum. | 0 | %0 |
| Bilgisayar kullanmayı sevmiyorum. | 0 | %0 |
| Bilgisayar kullanırken çok zorlandığımdan dersi anlayamıyorum. | 0 | %0 |

Çizelge 8 incelendiğinde, öğrencilerin hepsinin, geleneksel öğretim yöntemlerinden farklı olarak fen bilgisi dersini bilgisayarla öğrenmekten hoşlandıkları açıkça görülmektedir.

Öğrencilerin anketin 4. maddesine yönelik kendi görüşleri incelendiğinde, tüm öğrencilerin bir önceki maddedeki düşüncelerini savundukları görülmektedir. Öğrencilerin büyük çoğunluğu geleneksel yöntemlere göre bilgisayarla işlenen ders daha eğlenceli bulmakta, böylece uygulamalı olarak işlenen bu dersin daha kalıcı ve anlamalarına yardımcı olduğunu belirtmektedirler. Yalnızca öğrencilerden bir tanesi, laboratuvar ortamındaki arkadaşlarının bazılarının hoşlanmadığını, onun dışında her şeyden memnun olduğunu belirtmiştir.

Çizelge 9. Deneysel grubu öğrencilerinin öğrenci memnuniyet anketinin 5. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| 5) Kursta sanal bir öğretmenin bulunması beni memnun etti. Çünkü: | | |
|---|-------------------------------|------|
| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
| Düşüncelerimi çekinmeden söyleyebildim. | 11 | %100 |
| Soruların bilemem korkusu yaşamadım. | 10 | %91 |
| Öğretmeni tanımadığımdan kendimi daha rahat hissettim. | 3 | %27 |

Çizelge 9 incelendiğinde, öğrencilerin %100'ü, web destekli özel eğitim desteğinin "sanal" bir öğretmen aracılığıyla sağlanması nedeniyle düşüncelerini rahatlıkla söyleyebildiklerini belirtmişlerdir. Araştırma süresince öğrenciler, öğretmenlerinin kimliğinden habersiz olduklarından, yanlış yapma korkusu taşımadan duygu ve düşüncelerini rahatlıkla belirtmiş ve düşüncelerini savunabilmişlerdir. Bu durum özel gereksinimli öğrenciler için "öğretmen" faktörünün önemini açıkça ortaya koymaktadır.

Öğrenciler anketin 5. maddesine yönelik yorumlarında yine yukarıdaki açıklamaları destekler nitelikte görüşler belirtmişler, sanal öğretmenin varlığında memnun olduklarını açıkça ifade etmişlerdir. Yalnızca bir öğrenci sanal öğretmeni görememekten üzüntü duyduğunu ifade etmiştir.

Çizelge 10. Deneysel grubu öğrencilerinin öğrenci memnuniyet anketinin 6. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| 6) Kursta sanal bir öğretmenin bulunması beni memnun etmedi. Çünkü: | | |
|--|-------------------------------|-----|
| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
| Sorulara doğru yanıt verdiğimde öğretmenin gözlerime bakarak bana "Aferin" demesini isterim. | 3 | %27 |
| Mesaj ile sorduğum sorulara öğretmenin yanıt vermesini beklerken çok sıkıldım. | 1 | %9 |
| Öğretmeni yanımda olmadığından kendimi yalnız hissettim. | 0 | %0 |
| Bilemediklerimi öğretmene mesaj atarak sormak bana zor geldi. | 0 | %0 |

Çizelge 10 incelendiğinde, öğrencilerin %27'si, kurs ortamında "sanal bir öğretmen" bulunmasından ziyade, gerçek, tavır ve ifadeleri ile doğru yaptığında kendisini ödüllendiren bir öğretmeni tercih ettiklerini bildirmişlerdir. Uzaktan eğitim en önemli eksikliği olarak görülen bu durumun, sevgi ve ilgiye gereksinimi olan ilköğretim öğrencileri tarafından dile getirilmesi şaşırtıcı değildir. Bunun dışında öğrencilerden bir tanesi, sanal öğretmenine web ortamında sorduğu sorulara öğretmenin yanıt vermesini beklerken çok sıkıldığını dile getirmiştir. Bu durum, öğrencilerin asenkron öğrenme ortamında ilk kez bulunmalarından dolayı, geleneksel sınıf ortamından farklı olarak, öğretmenlerinin yanıt vermesinin biraz daha zaman alabileceğini bilmemelerinden kaynaklanıyor olabilir.

Kursta sanal bir öğretmenin bulunması ile ilgili öğrenci yorumları incelendiğinde, genel olarak öğrenciler sanal öğretmenlerinden memnun olduklarını, sanal öğretmenlerinin kendilerine karşı sabırlı davrandığını ve kurs süresince kendilerine yardımcı olduğunu belirtmişlerdir.

Çizelge 11. Deneysel grubu öğrencilerinin öğrenci memnuniyet anketinin 7. maddesine yönelik görüşlerinin yüzde ve frekans değerleri

| 7) Fen bilgisi dersini bilgisayarla öğrenmek bana çok zor geldi. Çünkü: | | |
|---|-------------------------------|-----|
| Seçenekler | Katılan Öğrenci Sayısı (n=11) | % |
| Bilgisayarı kullanmakta zorlandım. | 2 | %18 |
| Sanal öğretmenime özel mesaj gönderirken zorlandım. | 1 | %9 |
| Yaptığım ödevi sanal öğretmenime gönderirken zorlandım. | 1 | %9 |
| Animasyonları çalıştırmakta zorlandım. | 0 | %0 |
| Etkinlikleri yapmaktan zorlandım. | 0 | %0 |

Çizelge 11 incelendiğinde, genel olarak öğrencilerin web destekli öğrenme ortamında öğrenme etkinliklerini gerçekleştirirken zorlanmadıkları görülmektedir. Yalnız öğrencilerden biri, öğretmenine özel mesaj gönderirken, bir diğeri ise ödevlerini web ortamından öğretmenine gönderirken zorlandığını belirtmiştir. Bu durum, bilgisayar ve bilgisayar teknolojilerine alışık olmayan bu öğrenciler için 10 saatlik bir ön eğitimin yeterli olmadığı şeklinde açıklanabilir.

7. madde ile ilgili olarak öğrencilerin büyük bir çoğunluğu, web destekli öğrenme ortamında öğrenmekten zevk aldıklarını ve bilgisayarla çalışırken zorlanmadıklarını söylemişlerdir. Bu öğrencilerden bir tanesi öğretmenin kendisine yardım etmesinden dolayı zorlanmadığını belirtirken, bir diğeri, bilgisayarla çalışmanın kendisine kolay gelmesinin, bilgisayar kursuna gitmiş olmasından kaynaklandığını belirtmiştir. Yine öğrencilerden bir tanesi ileride de böyle bir çalışmaya katılmak istediğini vurgulamıştır.

SONUÇ, TARTIŞMA VE ÖNERİLER

Bu araştırmada, web destekli öğretim yönteminin kaynaştırma eğitimindeki öğrencilere özel eğitim desteği olarak uygulanmasının, öğrencilerin performans ve memnuniyet düzeyleri üzerindeki etkisi incelenmiştir. Elde edilen bulgular incelendiğinde varılan sonuçlar şunlardır:

1. Web destekli öğretim yöntemi ile sağlanan özel eğitim desteği öğrencilerin performans düzeylerini arttırmıştır.

Bu sonuç, bilgisayar ve bilgisayar teknolojilerinin öğrencilerin performans düzeylerini arttırdığı sonucuna ulaşan birçok araştırma (Horton et al., 1989; Kos, 1996; Demirli, 2002; Dorr, 2006; Lo, 2006) ile benzerlik göstermektedir. Öğrencinin performans düzeyi, ayrıntılı değerlendirme sonuçlarına dayalı olarak hazırlanan, öğrencinin yapabildikleri ve yapamadıklarını tanımlayan özet ifadeler (Paça, 2005) anlamına geldiğinden, kullanılan öğretim yönteminin ne olduğu fark etmeksizin destek eğitim hizmetleri sağlandığında öğrencilerin performans düzeylerinde bir artış olması kaçınılmazdır. Bu nedenle araştırmada aynı şekilde, geleneksel öğretim yöntem ve teknikleri ile sağlanan özel eğitim desteğinin de özel gereksinimli öğrencilerin performans düzeylerinde artış sağlaması beklenen bir sonuçtur. Burada dikkat edilmesi gereken nokta, web destekli öğretim yöntemi ile sağlanan özel eğitim desteğinin geleneksel yöntemlere göre istatistiksel olarak anlamlı olacak şekilde öğrenci performanslarını daha fazla arttırdığıdır. Bu sonuç, web destekli öğretim yöntemi ile öğrencilerin grup baskısından kurtulmaları sayesinde, öğrencilerin performanslarını açıkça sergileyebilmeleri ve duygularını daha rahat ifade edebilmeleri ile açıklanabileceği gibi, web destekli öğretim ortamında öğrencilerin derse aktif olarak katılmaları, bunun sonucunda anlamlı öğrenmeyi gerçekleştirebilmeleri ve kendi öğrenme özelliklerine ve hızlarına uygun olarak öğrenmeleri ile de açıklanabilir.

2. Araştırmaya katılan deney grubundaki öğrencilerin yapılan web destekli özel eğitim desteği uygulamasına yönelik memnuniyetleri yüksektir.

Araştırmadan elde edilen sonuçlar genel olarak incelendiğinde, özel gereksinimli öğrencilere web destekli öğretim yöntemi ile sağlanan özel eğitim desteği, bu öğrencilerin performans düzeylerini arttırmış, memnuniyet düzeylerini de olumlu yönde etkilemiştir. Ayrıca uygulama süresince yapılan gözlemlerde öğrencilerin fen bilgisi dersini bilgisayarla çalışmaktan zevk aldıkları, uygulama çalışmalarına sürekli katılmaya özen gösterdikleri, sanal öğretmen tarafından herhangi bir talep olmamasına rağmen anlatılan konularla ilgili kendilerince birtakım notlar aldıkları görülmüştür. Çalışmaya katılan ve kaynaştırma eğitimi alan deney grubu öğrencileri, yapılan uygulamalar süresince, geleneksel sınıf ortamının kendilerine sunduğu pasiflikten sıyrılarak, öğrenmelerinin sorumluluğunu almış, başarmanın tadına vararak kendilerini değerli hissetmişlerdir. Bu doğrultuda, web destekli özel eğitim desteği sağlanan bu öğrencilerin, araştırma süresince yapılan uygulama çalışmalarına yönelik memnuniyetlerinin yüksek olması beklenen bir sonuçtur.

Her insanın ayrı bir değer olarak kabul edildiği çağdaş eğitim anlayışı ile günümüzde, bireyler arası farklılıkları göz önünde bulundurarak, eğitimi bireylerin gereksinimlerine uygun hale getirmek amaçlandığından, kaynaştırma eğitiminde farklı öğretim yöntem ve tekniklerinin kullanılması gerekmektedir. Değişen ve gelişen teknolojinin eğitime uyarlanması ile öğrenmenin bireyselleştirilebileceği, bireylerin kendi hız ve öğrenme özelliklerine uygun olarak eğitim-öğretim faaliyetlerini gerçekleştirebilecekleri gerçeği göz önünde bulundurulduğunda, özel eğitim alanında da eğitim teknolojilerinden yararlanmanın gerekliliği bu araştırma sonucunda da açıkça görülmektedir. Ancak ülkemizdeki kaynaştırma uygulamaları incelendiğinde, kaynaştırma eğitiminin özel gereksinimli öğrencileri normal sınıf ortamına alarak akranları ile aynı öğrenme ortamını paylaşmalarını sağlamanın ötesine gidemediği görülmektedir. Bu öğrencilerin eğitimlerinde farklı öğretim yöntem ve tekniklerinin kullanılmamasında öğretmenlerin bu konuda yeterli eğitimi almayarak uzmanlaşmamış olmalarının en önemli sebeplerden biri olduğu açıktır. Bu doğrultuda, eğitim yöneticilerinden bu ve benzeri araştırma sonuçlarını göz önünde bulundurarak, özellikle kaynaştırma eğitimindeki yetersizlikleri ortadan kaldıracak etkili uygulamalar yapmaları beklenmektedir. Buna göre bu araştırma doğrultusunda araştırmacılara ve eğitim yönlendiricilere yapılabilecek öneriler aşağıda sıralanmaktadır:

- Web destekli öğretimin ilköğretimde sağlıklı bir biçimde uygulanabilmesi için, bu eğitimi gerçekleştirecek öğretmenlerin bilgisayar ve internet kullanımı, web ortamında kullanılacak eğitimsel materyalleri hazırlama ve hazırladıkları bu materyalleri web destekli eğitimin avantajlarından en üst düzeyde yararlanacak şekilde web ortamına aktarabilmeleri konularında gerekli yeterlilikte olmaları gerekmektedir. Bunun için bu öğretmenlere gerekli hizmet içi eğitim desteği sağlanmalıdır.
- Eğitim sistemi içerisindeki her bireyin değerli olduğu ilkesinden yola çıkarak kaynaştırma eğitimi ile ilgili uygulamalara eğitimin ayrılmaz bir parçası olarak bakılmalı, kaynaştırma eğitimi alan öğrencilerin tüm gereksinimleri karşılanmalıdır.
- Okullarda özel gereksinimli öğrencilerin eğitimi için gerekli tüm çalışmaların yönetici, veli, öğretmen, uzman birlikteliğiyle planlı ve bilinçli bir şekilde yürütülmesini sağlayacak bir ekip oluşturulmalı, sorumluluğun tamamı sınıf öğretmenine bırakılmamalıdır.
- Kaynaştırma eğitiminde web ortamında sağlanacak özel eğitim desteğinin öğretim tasarımı uzmanı, konu alanı uzmanı, web tasarımcısı, grafiker, animasyon tasarımcısı, seslendirme uzmanı gibi bir çok uzmandan oluşan bir ekip ile gerçekleştirilmesinin daha etkili olacağı düşünülmektedir.
- Web destekli öğrenme ortamlarının yaygınlaşmasında bireylerin sahip olduğu bilgisayar okur-yazarlık düzeyi ve bilişim kültürlerinin etkisi göz önünde bulundurularak eğitimin daha alt devrelerinde öğrencilerin bu öğrenme ortamlarına erişmeleri sağlanmalıdır.
- Bu araştırmada kaynaştırma öğrencilerine yönelik web destekli özel eğitim desteği uygulaması Fen Bilgisi dersi kapsamında gerçekleştirilmiştir ve olumlu sonuçlara ulaşılmıştır. Benzeri uygulamaların farklı derslerde de etkililiğinin araştırılması önerilmektedir.
- Özel gereksinimli öğrencilerin genel olarak dikkatleri dağınıktır ve derse karşı ilgileri kısa sürelidir. Bu nedenle bu öğrencilerin öğrenmesinde kullanılacak web destekli öğretim ortamında öğrencilerin tüm hareketleri incelenmeli, hangi sayfaları ne kadar ziyaret ettikleri kayıt altına alınarak öğrenciler sürekli gözetim altında tutulmalıdır.
- Web destekli eğitim ortamında öğrencilerin akranlarından ve öğretmenlerinden ayrı kalmalarının özel gereksinimli öğrencilerde hoşnutsuzluk yaratabileceği düşünülerek, bu öğrencilere eşzamanlı sohbet (chat), sesli ve görüntülü iletişim gibi olanaklar sunulup, sınıf ortamı hissi yaratılmalıdır.

KAYNAKLAR

- Büyüköztürk, Ş., 2001, Deneysel Desenler, Pegema Yayıncılık, Ankara, 96s.
- Demirli, C., 2002, Web Tabanlı Öğretim Uygulamalarına İlişkin Öğrenci Görüşleri, Anadolu Üniversitesi Açıköğretim Fakültesi Açık ve Uzaktan Eğitim Sempozyumu, 14s., http://aof20.anadolu.edu.tr/bildiriler/Cihad_Demirli.doc, (Son Erişim: 04.11.2008).
- Dorr, D. L., 2006, Enhanced Learning Performance in The Middle School Classroom Through Increased Student Motivation, by the Use Of Educational Software and Question-Based Gaming Technology, Doktora Tezi, University of North Texas, United States, 115p., Dissertations & Theses: Full Text database, Publication No. AAT 3254181, (Son Erişim: 11.11.2008).
- Horton, S. V., Lovitt, T. C., Givens, A. and Nelson, R., 1989, Teaching social studies to high school students with academic handicaps in a mainstreamed setting: effects of a computerized study guide, *Journal of Learning Disabilities*, 22(2):102-107.
- Karasar, N., 2002, Bilimsel Araştırma Yöntemi, Nobel Yayın Dağıtım, Ankara, 292s.
- Kos, I., 1996, Teaching Clinically Oriented Embyrology With Computer Simulations, Doktora Tezi, New York University, United States, 128p., Dissertations & Theses: Full Text database, Publication No. AAT 9710925, (Son Erişim: 23.12.2008).
- Lo, C. F., 2006, The Effects Of A Multimedia ESP Instructional Module On Student Learning Performance and Perceived Self-Efficacy, Doktora Tezi, Idaho State University, 257p., United States , Dissertations & Theses: Full Text database, Publication No. AAT 3208653, (Son Erişim: 23.12.2008).
- Metin, N., 1992, Okul öncesi dönemde özürlü çocuklar için kaynaştırma programları, *Özel Eğitim Dergisi*, 1(2):34-36.
- Yurdakul, B., 2005, Uzaktan eğitim, 259-276, Eğitimde Yeni Yönelimler, Ö. Demirel, (Der.), Pegem Yayıncılık, Ankara, 278s.

WEB MACERASI ÖĞRETİM YÖNTEMİNİN GAGNE’NİN ÖĞRETİM DURUMLARI MODELİNE UYGUNLUĞU*

THE SUITABILITY OF WEBQUEST TO GAGNE’S NINE EVENTS OF INSTRUCTION

Ahmet Akçay, Ağrı İbrahim Çeçen Üniversitesi Eğitim Fakültesi Türkçe Eğitimi Bölümü, turkolog_25@hotmail.com

Özet

Yapılandırmacılık anlayışı ile birlikte eğitimin merkezine öğrenci alınmakta ve bu doğrultuda yeni yöntem ve teknikler geliştirilmektedir. Bu yöntemlerden biri de 1995 yılında Bernie Dodge tarafından ortaya koyulan İnternet tabanlı bir öğretim yöntemi olan web macerası (webquest)dir. Öğrencilerin üst düzey düşünme becerilerine hitap eden web maceraları, öğrencilerin İnternet’i bir kaynak olarak kullanmalarına imkân tanımaktadır.

Bu çalışmada, web maceraları Gagne (1985) tarafından geliştirilen “Öğretim Durumları Modeli” ile karşılaştırılmış ve bu modele uygunluğu ortaya konmaya çalışılmıştır.

Anahtar Kelimeler: Web macerası, Gagne, İnternet

Abstract

Together with an understanding of Constructivism to the center of education and students in this direction are being developed new methods and techniques. One of the these methods put forth in 1995 by Bernie Dodge is an Internet based teaching methods that webquest. Appeal to higher-order thinking skills of students with webquests, as a resource for students to use the Internet gives the possibility.

In this study, webquests compared Gagne (1985) developed by the "Nine Events of Instruction" and the suitability of that events have been trying to put forward.

Keywords: Webquest, Gagne, Internet

GİRİŞ

İnternet tabanlı öğretim yöntemi olan Webquest (Web Macerası) 1995 yılında San Diego State Üniversitesinden Bernie Dodge tarafından ortaya konmuştur. Daha sonra aynı üniversitede görev yapan Tom March’ın katkılarıyla geliştirilen Webquest İngilizce Web (ağ) ve quest (sorgulama) kelimelerinden türetilmiştir. Web Maceralarının ne olduğuna yönelik pek çok tanımlama yapılmıştır. Temelde birbirine benzeyen bu tanımlar, bazı açılardan da değişiklik göstermektedir. Web Maceralarını ortaya koyan kişi olan Dodge (1995), Web Macerasını, “İnternet tabanlı öğrenme görevleri organize eden bir yaklaşım” ve (1997) “öğrencilerin birbirleriyle etkileşim halinde çalıştıkları ve kullanacakları bilginin bir kısmını veya tamamını İnternet’ten edindikleri, bir öğrencinin zamanını en iyi şekilde kullanımı için tasarlanmış olan araştırma odaklı veya araştırmaya dayalı aktivite” olarak tanımlamıştır. Tom March (2000) ise Web Macerasını " gerçek dünya bağlamında fikirleri test eden ve birlikte çalışmayı motive etme yolunu tercih eden, karmaşık bir konu üzerinde anlam inşa etmede öğrencilere izin veren bir yapı” ve (2003), “İnternet’te gerekli kaynaklara bağlantı sağlayan; yeni öğrenilmiş bilgileri daha ayrıntılı bir öğrenmeye dönüştüren; kişisel uzmanlık gelişimi, araştırma ve sorgulama faaliyetlerinde öğrencileri motive eden güvenilir bir öğrenme yapısı” olarak tarif etmektedir

Üst düzey düşünme becerilerini harekete geçirmek üzere tasarlanan Web Maceraları ile ilgili literatür tarandığında genel olarak Web Maceralarının 6 adımdan oluştuğu veya oluşması gerektiği üzerinde durulmaktadır (Dodge 1995/1997; Yoder, 1999; Ouyang ve Hayden, 2006; Young ve Wilson, 2002; MacGregor ve Lou, 2005; Kahl ve Berg, 2006; Sandars, 2005; Kelly, 2000; Zheng ve diğerleri, 2005; Strickland, 2005; Fiedler, 2002; Jones, 2004). Web Maceralarında yer alan adımlar şu şekilde sıralanmaktadır:

- Giriş (introduction)
- İşlem /görev (task)
- Süreç (process)
- Bilgi kaynakları (resources)
- Değerlendirme (evaluation)
- Sonuç (conclusion)

Giriş: Web Maceralarının ilk adımı olan bu bölümün amacı, Web Macerası hakkında genel bir bilgi vermek, konuya genel bir giriş yapmak, Web Macerasını tamamlayacak olanlar için gerekli ön bilgiyi sağlamak, Web Macerasını tamamlayacak olanları araştırma ve soruşturma yapmaya hazırlamak ve konuya ilgilerini çekerek onların motivasyonunu sağlamaktır.

İşlem/Görev: Bu adımda konuyla ilgili neler yapılacağı hakkında bilgi verilir ve öğrenenlere verilecek olan görevler ve roller tanımlanır. Bu adımda öğrenenlere Web Macerası süreci içerisinde gerçekleştirecekleri görevler verilir.

Süreç: Bu adımda öğrenenlerin Web Macerası süresince hangi araçları, hangi yöntemleri ne kadar sürede kullanacakları, görevler yerine getirilirken hangi aşamalardan geçileceği, öğrenenlere verilen rollerin neleri kapsadığı ve bu rollere uygun olarak nasıl çalışmalarını gerektiği detaylı bir şekilde anlatılır.

Bilgi kaynakları: Bu adım öğrencilerin araştırmalarında kullanacakları ve Web Macerasını hazırlayanlar tarafından belirlenen İnternet bağlantılarından (link) oluşmaktadır.

Değerlendirme: Öğrencilerin Web Macerası sonucunda raporlar, multimedya sunumlar, dramatik gösteriler gibi ortaya koydukları ürünlerin nasıl değerlendirileceği bu bölümde açıklanır.

Sonuç: Bu bölümde öğrencilerin Web Macerasını tamamlayarak ulaştıkları müfredat hedefleri belirtilir. Öğrenciler, ne öğrendikleri ve ne başardıklarına ilişkin özet bilgiyi bu bölümde bulabilirler (Dodge, 1997).

Gagne’nin Öğretim Durumları Modeli

Öğrenme ürünlerini analiz ederek öğretim durumları modelini geliştiren Robert Gagne (1985), öğrenmenin sadece dış etkenlerin etkisi ile oluşmadığını, öğrenmede aynı zamanda iç faktörlerin de etkili olduğunu savunur. Gagne (1985), iç etkenler olarak öğrenenlerin daha önce sahip oldukları bilgileri, bilişsel stratejileri, zihinsel becerileri ve duyuşsal özellikleri (ilgi, tutum, değer) gösterir. Öğrenmenin birikimli bir süreç olduğunu dile getiren Gagne (1985)’ye göre yeni bilgiler daha önceden elde edilmiş bilgiler üzerine inşa edilmekte ve yeni

* Bu çalışma, Atatürk Üniversitesi Sosyal Bilimler Enstitüsü’nde Abdullah ŞAHİN danışmanlığında yapılan yüksek lisans tezinden yararlanılarak hazırlanmıştır.

öğrenmeler hiyerarşik bir düzen içinde gerçekleşmektedir. Gagne (1985), öğrenmede öğretmenden ziyade öğrencinin yaptıklarının önemli olduğunu, bu nedenle eğitim-öğretim ortamlarında etkin ve aktif katılımın mutlaka yer alması gerektiğini dile getirir.

Gagne (1985), sözel bilgilerin herhangi bir uyarıcıyı açıklamaya veya ifade etmeye yarayan bilgiler olduğunu dile getirmiştir. Bu açıdan Bloom (1956)'un taksonomisinde yer alan "Bilgi" basamağı ile benzerlik gösteren "sözel bilgiler", hiyerarşik bir yapı oluşturmazlar. Yani her yeni öğrenmede elde edilen bir bilgi, başka bir öğrenmeden elde edilen bilgiye bağlı değildir ve elde edilen bilgiler birbirinden bağımsız olabilir. Gagne (1985) beş çeşit zihinsel beceri (ayırt etme, somut kavramlar, tanımlanmış kavramlar, kurallar ve çoklu kural uygulama) olduğundan bahsetmekte ve zihinsel becerilerin öğrenenlerin bir bilgiyi elde etme veya bir şeyi yapabilmeleri için bilişsel işlemleri kullanmaları gerektiğini dile getirmektedir. Bilişsel stratejileri ise duyu, algı, hayal, imge, kodlama, hatırlama, düşünme, transfer ve problem çözme gibi unsurlar oluşturmaktadır. Tutumlar, bireylerin herhangi bir şey veya durum üzerinde bireysel tercihlerinde etkin olan kazanılmış içsel durumlardır. Motor beceriler ise, belirli fiziksel hareketlerin belirli bir sıra, düzen ve uyum içerisinde doğru ve otomatik bir şekilde yapılması sonucunda ortaya çıkan davranışlardır.

Öğrenmenin zihinsel durumlarını açıklayan kitabı "Öğretim Durumları"nı ilk olarak 1965'de yayımlayan Robert Gagne, 9 adımlık öğrenme durumu sürecinden bahsetmektedir. Bu adımlar (Reiser ve Dempsey, 2007) şu şekilde sıralanmaktadır:

1. Dikkati sağlama
2. Öğrencilere hedefleri bildirme
3. Ön bilgileri hatırlatma
4. Uyarıcıların sunulması
5. Öğrenmeye rehberlik etmeyi sağlama
6. Davranışı ortaya çıkarma
7. Dönüt sağlama
8. Performansı değerlendirme
9. Kalıcılığı ve transferi sağlama

Gagne'nin Öğretim Durumları Modeli Ve Web Macerası

Gagne'nin öğretim durumları modelinde yer alan bütün adımlar Web Maceralarını oluşturan bölümler içinde yer almaktadır. Dolayısıyla iyi hazırlanmış bir Web Macerasının öğrencilerin öğrenmelerinde etkin rol oynayacağı söylenebilir. Sanders (2005), bir Web Macerasının yapısının Gagne'nin öğretim teorisini yakından izlediğini dile getirmekte ve Web Macerası yöntemi ile Öğretim Durumları Modeli'nin ortak özelliği olarak her ikisinin de planlı bir adım izleme modeli kullanmalarını göstermektedir. Tablo 2'de Gagne'nin Öğretim Durumları Modeli ve Web Macerası adımları karşılaştırılmıştır.

*Tablo 2. Gagne'nin Öğretim Durumları Modeli Adımları İle Web Macerası Bölümleri

| Öğretim Durumu Modeli Adımları | İlgili Web Macerası Adımı |
|------------------------------------|---------------------------|
| Dikkati sağlama | Giriş |
| Öğrencilere hedefleri bildirme | İşlem |
| Ön bilgileri hatırlatma | Giriş ve işlem |
| Uyarıcıların sunulması | İşlem |
| Öğrenmeye rehberlik etmeyi sağlama | Süreç |
| Davranışı ortaya çıkarma | Süreç |
| Dönüt sağlama | Süreç |
| Performansı değerlendirme | Değerlendirme |
| Kalıcılığı ve transferi sağlama | Sonuç |

Gagne'nin Öğretim Durumları Modeli'nde ilk adım "dikkati sağlama" dır. Bu adımda dersin hedeflerine ulaşabilmek ve öğretimin belirlenen hedefler çerçevesinde gerçekleştirmek için öğrencinin dikkati öğretilecek konu, bilgi veya materyale çekilmelidir. Web Maceralarının ilk adımı olan "giriş"te de öğrencilerin gerçekleştirecekleri maceraya, bu macera süresince öğrenecekleri bilgi veya konulara dikkatleri çekilir. Böylelikle öğrenciler Web Maceralarına hazırlanmış olur.

Öğretim Durumları Modeli'nin ikinci adımı olan "öğrencilere hedefleri bildirme" de öğretime başlamadan önce öğrencinin ne öğreneceği bildirilir. Böylece öğrencinin derse hazırlanması sağlanır. Web Maceralarının ikinci adımı "işlem" de öğrenciler gerçekleştirecekleri macera ile neler öğreneceklerinden haberdar olur. Bu haberdar olma öğrencilerin ilgilerini artırırken merak duygularının uyanmasına da yardımcı olur. Bu da öğrencilerin Web Maceralarına güdülenmelerini sağlar.

Öğretim durumlarının üçüncü adımı "ön bilgileri hatırlatma" dır. Bu adımda öğrencilere yeni bir bilgi öğrenmeden önce öğrenecekleri yeni bilgi ile ilgili ön bilgileri hatırlatılır. Web Maceralarında bu adımı "giriş" ve "işlem" basamakları karşılar. Bu adımlarda öğrencilerin öğrenecekleri yeni bilgi ile ilgili ön bilgilerine yer verilir, öğrenmelerin daha anlamlı ve kalıcı olması sağlanır.

Öğretim durumları modelinde dördüncü adım "uyarıcıların sunulması" adımıdır. Bu adımda öğrencilere eğitim-öğretim ortamında öğretilmek istenen bilgi veya davranışlarla ilgili uyarıcılar sunulur. Web Maceralarının "işlem" basamağında ise öğrencilere öğrenecekleri bilgi veya davranışlara ilişkin uyarıcılar İnternet ortamında sunulur.

Öğretim durumlarının beşinci adımı olan "öğrenmeye rehberlik etmeyi sağlama" adımıdır. Bu adımda öğrencilere rehberlik edilir. Öğrencilerin bilgiyi kazanmaları için neyi nereden çalışacağı, bu bilgiyi kazanma sürecinde nelere dikkat etmesi gerektiği, yine bu öğrenme sürecinde karşılaştıkları sorunlarla nasıl baş edebilecekleri konusunda öğrenciyi destek olunur. Web Maceralarında öğrenmeye rehberlik edilen adım "süreç" adımıdır. Bu adımda öğrencilere bilgiyi kazanmaları için çeşitli görevler verilir. Bu görevleri gerçekleştirirken adım adım neler yapacakları ve nelerle karşılaşacakları konusunda öğrencilere rehberlik edilir. Ayrıca öğrencilere görevlerini başarıyla tamamlayabilmeleri için hangi kaynakları (doküman, site vs.) kullanacakları da bildirilir.

Öğretim Durumları Modeli'nde altıncı adım "davranışı ortaya çıkarma" dır. Bu adımda öğrenciyi kazandırılmak istenen davranışın öğrenciler tarafından ne derece kazandığı tespit edilmeye çalışılır. Web Maceralarında öğrencilere kazandırılmak istenen bilgi, beceri veya davranışların tespiti için "süreç" bölümünde öğrenciler verilen görevleri yerine getirdikten sonra öğrencilerin bir ürün ortaya koymaları istenir. Bu ürünler, sözlü veya yazılı olabilir. Öğrencinin ortaya koyduğu bu ürün vasıtasıyla Web Macerasında verilmek istenen davranış ne kadar kazandığı tespit edilir. Bu yüzden bütün Web Maceralarında öğrencilerin görevlerini tamamlarken veya tamamladıktan sonra bir ürün ortaya koymaları istenmelidir.

Öğretim Durumları Modeli'nin yedinci adımı "dönüt sağlama" dır. Bu adımda öğrenciyi kazandığı davranışın doğruluğu hakkında bilgi verilir. Web Maceralarında geribildirim "süreç" bölümünde yer alır. Öğrencilerin ortaya koydukları ürünler Web Macerasını yöneten eğitmen tarafından incelenir ve öğrencilere geribildirimde bulunulur. Öğrencilerin yeni öğrendikleri davranışları doğru yapmaları bu

* Fiedler, R. L. (2002). WebQuests: A Critical Examination In Light of Selected Learning Theories.

davranışları pekiştirir. Bununla birlikte yanlış yapmaları hâlinde geribildirimde bulunularak aynı hataları tekrar etmemeleri ve hatalarını düzeltmeleri sağlanır.

Öğretim Durumları Modeli'nde sekizinci adım "performansı değerlendirme" dir. Bu adımda eğitim-öğretim faaliyetlerinin sonucunda öğrencilere kazandırılmak istenen davranışların öğrenciler tarafından ne derece kazanıldığı tespit edilmeye çalışılır. Web Maceralarında performans değerlendirmesi için "değerlendirme" bölümü yer alır. Bu bölümde çeşitli rubrikler kullanılarak öğrencilerin performansları değerlendirilir. Web Maceraları eğitimcilerin öğrencileri bu rubrikler aracılığıyla değerlendirmelerini sağlamakla birlikte öğrencilerin de kendi kendilerini değerlendirmelerine imkân tanır. Öğretim Durumları Modeli'nde son adım "kalıcılığı ve transferi sağlama" dir. Bu adımda öğrencilerin öğrendiklerinin kalıcı olması ve öğrendiklerini yeni durumlarda uygulayabilmesi sağlanır. Web Maceralarının son bölümü olan "sonuç" bölümünde de öğrencilerin Web Macerası aracılığıyla neler öğrendiği, öğrendikleri yeni bilgilerle neler yapabilecekleri ve nerelerde kullanabilecekleri bildirilir.

SONUÇ

Gagne (1985)'ye göre yeni bilgiler daha önceden elde edilmiş bilgiler üzerine inşa edilmekte ve yeni öğrenmeler hiyerarşik bir düzen içinde gerçekleşmektedir. Web maceraları ile öğrenciler, 6 adımdan oluşan ve iyi yapılandırılmış bir öğrenme çevresiyle karşılaşmakta ve bu adımları tek tek gerçekleştirerek etkin bir öğrenme gerçekleştirme imkânına kavuşmaktadırlar.

Web maceralarında yer alan 6 adımın Gagne'nin "Öğretim Durumları Modeli" ile karşılaştırıldığı bu çalışmada, web macerasında yer alan adımların Öğretim Durumları Modeli'nde yer alan adımlara uygun olduğu, bununla birlikte iyi hazırlanmış bir web maceralarının eğitimde etkin olarak kullanılabilir bir öğrenme yöntemi olduğu sonucuna varılmıştır.

KAYNAKLAR

- Bloom, B.S., (1956). Taxonomy of educational objectives: The classification of educational goals, *Handbook I, cognitive domain*, New York, Longman.
- Dodge, B. (1995). Some thoughts about WebQuests. http://webquest.sdsu.edu/about_webquests.html. Erişim tarihi: 13.03.2009
- Dodge, B. (1997). Homepage. Some Thoughts about WebQuest. http://webquest.sdsu.edu/about_webquests.html Erişim tarihi: 21.04.2009
- Fiedler, R. L. (2002). Webquest: A Critical Examination in Light of Selected Learning Theories. *University of Central Florida: EDF 7232 Analysis of Theories in Instruction*.
- Gagné, Robert M. (1985). *The conditions of learning and theory of instruction*. 4th edition. New York: Holt, Rinehart, and Winston.
- Jones R. G.(2004). Emerging Technologies, Language in Action: From Webquests to Virtual Realities, *Language Learning & Technology*, Cilt:8, Sayı: 3, s. 9-14
- Kahl J. D. W., Berg C. A. (2006). Acid Thunder: Acid Rain and Ancient Mesoamerica, *The Social Studies, Heldref Publications*, s. 134-136.
- Kelly, R. (2000). Working with WebQuests. *Teaching Exceptional Children*, Cilt:32, Sayı:6, s. 4-13.
- MacGregor, S. K. ve Lou, Y. (2005). Web-Based Learning : How Task Scaffolding and Web Site Design Support Knowledge Acquisition. *Journal of Research on Technology in Education*. 37(2), 161-175
- March, T. (2000). Are We There Yet. A Parable on the Educational Effectiveness of Technology. http://tommmarch.com/writings/are_we_there_yet.php. Erişim tarihi: 22.02.2009.
- March, T. (2003). The learning power of webquests, *Educational Leadership*, s.42-47.
- Ouyang Y., Hayden K.(2006). Work in Progress: Teach Girls Mathematics and Technology from Humanities Classes, 36th ASEE/IEEE Frontiers in Education Conference, San Diego, CA
- Reiser, R.A. & Dempsey, J.V. (2007). Trends and issues in instructional design and technology (2nd Edition). Upper Saddle River, New Jersey: Merrill Practice Hall.
- Sanders, J. (2005). Using WebQuests to Enhance Work Based Learning. *Work Based Learning in Primary Care*. Cilt:3, Sayı: 3, s. 210-217.
- Strickland, J. (2005). Using webquests to teach content: Comparing instructional strategies. *Contemporary Issues in Technology and Teacher Education*, Cilt:5,Sayı:2, 138-148.
- Yoder, M.B., (1999). The Student WebQuest: a productive and thought- provoking use of the Internet. *Learning and Learning with Technology*, Cilt:26, sayı: 7, s. 6-9.
- Young, D. L., Wilson, B. G., (2002). Webquests for reflection and conceptual change: Variations on a popular model for guided inquiry, ERIC. Erişim tarihi: 15.04.2009.
- Zheng, R., Stucky, S., Mcalack, M., Menchana, M., Stoddart S. (2005). WebQuest Learning as Perceived by Higher-Education Learners, *TechTrends*, Cilt: 49, Sayı: 4, s. 41-49.

WEB SAYFASINA AJAX TEKNİĞİNİN UYGULAMASI

APPLYING OF AJAX TECHNIQUES TO WEB PAGES

Enes ÇELİK, Ali BULDU
Marmara Üniversitesi, Fen Bilimleri Enstitüsü
celikns@gmail.com alibuldu@marmara.edu.tr

Özet

Tüm dünyada internetin hızlı gelişimi ve yaygınlaşması, başlangıçta statik web sayfaları şeklinde hazırlanan web sitelerinin artık ihtiyaçları karşılayamaz hale gelmesine dolayısıyla dinamik ve etkileşimli web sayfaların gelişmesine yol açmıştır. Bilişim teknolojilerinin ve web tabanlı eğitim sistemlerinin hızla gelişimi özellikle kamu ve özel sektörde eğitim alanında verilen bilginin aktarımı açısından daha da önem kazanmıştır. Web tabanlı eğitim artık günümüzde kaçınılmaz eğitim programlarından biri haline gelmiştir. İnsanların eğitim sürecine istedikleri yerde ve zamanda katılmaları, hem öğrenen hem de öğretici açısından bir avantaj olarak değerlendirilebilir. Web programcılığı alanındaki AJAX tekniği için hazırlanan web tabanlı eğitim materyali, AJAX tekniğinin öğretimini farklı bir yaklaşım olarak ele almaktadır. AJAX'ın temel bilgi ve kullanım durumlarıyla ilgili web sayfasında derslere yer verilmesi, AJAX tekniği ile hazırlanan uygulamalar ile desteklenmesi ve site tasarımının AJAX tekniği kullanılarak yapılması. Bu bildiride AJAX'ın öğretimi, web tabanlı eğitim ortamı için hazırlanmış interaktif bir web sayfası uygulaması tanıtılmıştır.

Anahtar Kelimeler: AJAX, Web Tabanlı Eğitim, İnteraktif Web Sayfaları

Abstract

The Internet's rapid development and its spreading all over the world, initially prepared in the form of static web pages and this can no longer meets the needs and thus led to the development of interactive and dynamic web pages. Information technology and web-based training systems and their rapid development especially in the field of education in public and private sectors has gained more importance in terms of transferring of knowledge. Web-based educational training program has become one of the inevitable educational program of today. The educational process of people when and where they want to join can be considered as an advantage both for learners and instructors. Web programming techniques that prepared for the field of AJAX web-based training materials, teaching the AJAX technique can be treated as a different approach. Basic information about the status and the using of AJAX on the web page where lessons are given, supporting of applications which are prepared with AJAX and site design which is done using AJAX techniques. In this paper, teaching of AJAX an interactive web page application which is prepared for web based education platform have been introduced.

Keywords: AJAX, Web Based Education, Interactive Web Pages

1. GİRİŞ

Bourne, Mayadas ve Campbell'e (2000) göre bilgisayar ağlarındaki hızlı gelişmeler, kişisel bilgisayarların işlem hızlarındaki artışlar ve manyetik bilgi saklama teknolojisindeki ilerlemeler, eğitimcileri uzaktan eğitim alanında öğrencilere ulaşmak için; yeni, etkileşimli ve etkin bir araç olarak interneti kullanmaya yöneltmiştir.

Bir ülkenin bilgi toplumu olabilmesi için bilgi teknolojilerini araştıran, geliştiren, üreten ve kullanan bir yapıya sahip olması gerekir. Türkiye'nin bilgi toplumuna dönüştürülmesinde en başta yapılması gerekenler arasında eğitim alanında alınacak tedbirler gelmektedir. Yaşar'a (1997) göre internet, bilgi ve servislerin belirli protokollerle birbirlerine ulaşmalarını sağlayan, bilgisayarların dünya çapında oluşturduğu bir ağıdır.

WEB tabanlı eğitim (Web Based Education), eğitimin zaman ve mekândan bağımsız olarak kullanıldığı; bilgisayarların araştırma ve iletişim amacıyla, öğretim ve sunum aracı olarak kullanıldığı eğitim modeli olarak tanımlanabilir. Ayrıca bu eğitim modeli öğrenci ve öğretmenin aynı anda karşılıklı etkileşimli olmalarını gerektirmemektedir. Bu özelliği ile eğitimin her aşamasında kullanılmaktadır.

Web tabanlı eğitim ile ilgili yapılan çalışmalarda çeşitli yaratıcı uygulamalar sunulmaktadır. Patil ve Pudlowski'e (2003) göre web tabanlı eğitimin tasarımı ve geliştirilmesi konusunda önemli bilgiler içermektedir. Ayers, Bruchez, Fawcett, Vernet ve Vlist'e (2007) göre bu çalışmada web 2.0 ve web 3.0 kavramlarının öğrenme ortamlarına entegre edilme süreçlerine ilişkin konular irdelenmiştir. Web 2.0 bir bakıma, web'de insan etkileşimi olarak nitelendirilebilir. Diyaloglar, bireyler arası ağlar, tasarım, çoklu ortam, bireyselleşme ve benzeri kavramlar hep bu bağlamda ele alınabilir. Şendağ'a (2008) göre önümüzdeki yıllarda web 3.0 ve web 4.0 ile ilgili gelişmeler yeni nesil e-öğrenme ortamlarının etkisi altına alacaktır. Gelecek nesil web uygulamaları, sanal oyunlar ve ortamlar, IP TV, internet güvenliği, mobil teknolojiler, interaktif yapay zeka uygulamalarında AJAX teknolojisiyle şekillendirilmesi etkili olacaktır.

AJAX(Asenkron JavaScript ve XML) web etkileşimine yapılan yeni bir yaklaşımdır. Bu yaklaşım kullanıcıya olası en iyi karşılık veren deneyimi vermek için işe sunucuya doğru ve sunucudan gelen küçük bir miktar bilgi akışını sağlar. Paola ve Fedon'a (2006) göre AJAX sayfayı kaldırmadan sunucudan bilgi almak amacıyla JavaScript tarafından başlatılan eşzamansız HTTP isteklerinin kullanımını kapsayan bir terimdir. Herhangi bir yeniden yüklenmesi gerektirmeyen dinamik bir kullanıcı uygulaması gerçekleştirir. AJAX teknolojilerini kullanmak, web üzerinde nelerin mümkün olduğunu gösteren bir ilerlemedir.

Web uygulamalarında AJAX teknolojilerini kullanmak, Bilgisayar erişilebilirliği konusunda araçlar geliştiren tasarımcılar için birçok sorunu beraberinde getirmektedir. AJAX'la yapılmış çözümlerin büyük bir kısmı grafik tabanlı tarayıcılara hitap ettiğinden dolayı, geliştiriciler başka platform ve tarayıcı kullanıcılarının da gereksinimlerini karşılamak zorundadır. Web tasarımcıları, web tarayıcısının bütün sayfayı derlemesine gerek kalmaksızın veri işlemeye olanak tanıdığı durumlarda bazen web sayfasının sadece belli kısımları için AJAX'ı kullanabilir. AJAX kullanamayanlar ise bütün bir sayfayı yenilemeye ve yüklemeye devam ederler; geliştiriciler ise AJAX'ı destekleyen tarayıcılarla daha teknik olanaklar sunsa da bütün erişilebilirlik konuları dâhil olmak üzere AJAX içermeyen ortamlardaki kullanıcıların yeteneklerini kısıtlamamalıdır.

Bu çalışma web tabanlı eğitim materyali için AJAX tekniğinin temellerini oluşturan zengin internet uygulamaları, XMLHttpRequest nesnesi, AJAX avantajları ve dezavantajları, kullanım alanları, AJAX kütüphanelerini, basit bir AJAX uygulamasını, AJAX tekniği kullanan örnek sitelerin tanıtılması ve açıklanması, rakamsal sonuçlar, metinler, grafik ve şekiller, AJAX kodları ve linkler gibi bir yazılım yapısını sunmaktadır. Sitedeki login bölümü, ürün fotoğrafı, ajanda, sağ tık menüsü, CSS değiştirme, form kontrol, il-ilçe seçimi, menü üzerine gelme ile ilgili çerçevenin açılması gibi AJAX uygulamalarını interaktif olarak idrak edilebilir. Tamamen kullanıcı ile etkileşimli olarak hazırlanmış uzaktan eğitim materyalinin gerçekleştirilmesi hedeflenmektedir.

2. XMLHTTPREQUEST NESNESİ

Geleneksel JavaScript kodlarında, eğer sunucudaki bir veritabanından ya da dosyadan bilgi almak istendiğinde ya da sunucuya kullanıcı isteğine cevap vermek gerektiğinde bir HTML(Hyper Text Markup Language) formu oluşturup sunucuya bilgi alışverişi yapılmalıdır. Kullanıcı veriyi göndermek/alınmak için formdaki "Gönder" vb. bir düğmeyi tıklar, sunucunun yanıtı bekler ve sonuçları yeni

yüklenen sayfada görür. Kullanıcının her veri girişinde sunucunun yeni bir sayfa oluşturmasını beklemesi nedeniyle geleneksel internet uygulamaları daha yavaş çalışabilmekte ve daha az kullanıcı dostu olmaktadır.

Crane, Pascarello ve James'e (2005) göre AJAX ile, Javascript kodunuz XMLHttpRequest nesnesini kullanarak doğrudan sunucuya iletişime geçer. HTTP(Hyper Text Transfer Protocol) istemi kullanarak bir web sayfası, sayfayı yenilemeye gerek olmaksızın sunucuya istemde bulunup yanıt alabilir. Kullanıcı aynı sayfada kalacaktır ve arka planda gerçekleşen veri iletişimini fark etmeyecektir. Bir web geliştiricisi XMLHttpRequest nesnesini kullanarak bir web sayfasını sunucudan yükledikten sonra yeni bilgilerle güncelleyebilmektedir.

3. AJAX VE ÇALIŞMA MANTIĞI

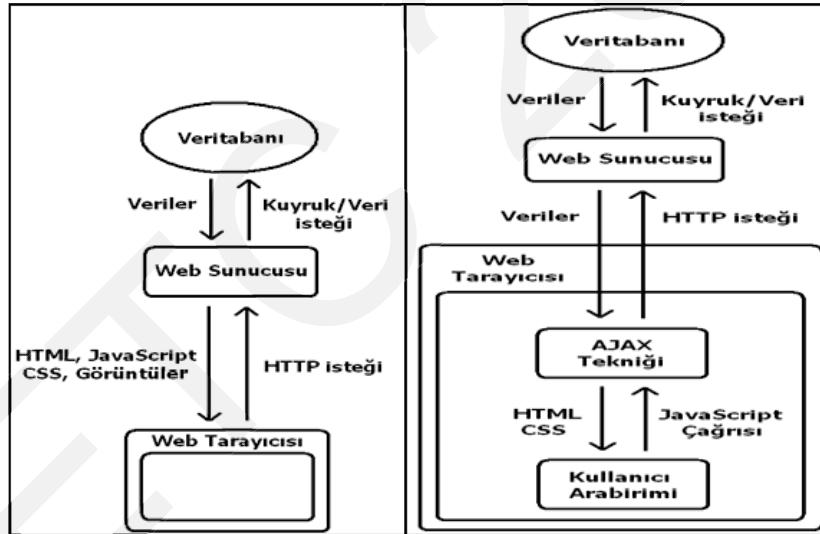
AJAX, sayfayı yeniden yüklemeye gerek kalmaksızın, sayfada görünür değişiklikler yapmaktır. XMLHttpRequest kullanılarak birden fazla bağımsız işlem yapılabilir. AJAX (Asenkron JavaScript + XML); tarayıcının içinde çalışan, sunucuya bağlanıp çeşitli metodlarla bilgi alış verişini yapabilen, sonuçların kullanıcıya ulaşana kadar durumunun takibini yapan ve en sonunda elde edilen bilgileri kullanmayı sağlayan yeni bir yaklaşımdır. Özveri'e (2007) göre web uygulamalarında yeni bir dönem başlatan bu yaklaşım bir programlama dili değil daha ziyade birçok dilin (başta javascript) bir arada kullanılabilirliği bir yöntem şeklinde tanımlanabilir.

Asenkron JavaScript ve XML sözcüklerinin kısaltması olan AJAX, etkileşimli (interaktif) web uygulamaları yaratmak için kullanılan bir web programlama tekniğidir. Temel amacı arka planda sunucuya ufak miktarda veri değişimini sayesinde sayfayı daha hızlı güncellenebilen web sayfaları yapmak, dolayısıyla kullanıcının istediği her anda bütün web sayfasını güncellemek derdinden kurtulmaktır. Bu da web sayfasının etkileşimini, hızını ve kullanılabilirliğini artırmak demektir.

Özer ve Varol'a (2007) göre AJAX tekniği aşağıdaki teknolojileri kullanır:

- Bilgiyi biçimlendirmek ve görüntüsünü değiştirmek için HTML, XHTML, ASP, PHP ve CSS sayfa dizaynında kullanılır.
- Görüntülenecek bilgiyi dinamik olarak göstermek ve onunla etkileşimli çalışmak için özellikle JavaScript ve JScript gibi ECMAScript olan kullanıcı tarafındaki bir scripting dili yardımıyla erişilebilen DOM.
- Bazı AJAX frameworklerde ve bazı durumlarda web sunucusuyla bilgi alışverişi için XMLHttpRequest yerine IFrame de kullanılır; diğer uygulamalarda ise dinamik olarak eklenen JavaScript bölümleri de kullanılabilir.
- Kullanıcıyla sunucu arasındaki bilgi alışverişlerinde genelde XML formatı, XMLHttpRequest protokolü ile asenkron veri erişim komutları kullanılır.
- XSLT ile herhangi bir platforma bağlı kalmaksızın kod çalışmasını sağlar.

AJAX kullanımında tarayıcıyla (browser) web sunucu (server) arasındaki veri alışverişi dramatik oranda azalır ve aynı zamanda da web sunucunun (server) işlem gücü bu tür işlemler için kullanılmamış olur. AJAX'ın bu özelliği çok sık karşılaştığımız bir soruna çözüm olmaktadır. AJAX sayesinde kullanılan web uygulamalarında sunucuya (server) form gönderme ve cevap bekleme kısmı tamamen ortadan kaldırılmıştır. Klasik web uygulamalarındaki kullanıcı ile uygulama arasındaki etkileşimi hatırlarsak: Kullanıcı web tarayıcısı aracılığıyla bir istekte bulunur, web uygulaması bu isteğe bir cevap (HTML) oluşturur. Bu esnada Şekil1.'de görüldüğü gibi kullanıcı sayfanın yüklenmesini bekler.



Şekil 1. Geleneksel Web Uygulaması Modeli

Şekil 2. AJAX Web Uygulaması Modeli

AJAX'da ise kullanıcı isteklerine daha kısa zamanda (neredeyse anında) cevap verilir. Garrett'a (2005) göre sunucu (server) tabanlı web uygulamalarında sunucu (server) kullanıcı tarafından gönderilen isteklere her kullanıcı bir istek gönderdiğinde cevap vermek zorunda olduğundan, yazılımın cevap verme hızı, web sunucunun (server) hızıyla doğru orantılıydı. Web sunucunun (server) hızlı cevap veremediği zamanlarda da kullanıcının web uygulamalarından aldığı verim büyük oranlarda düşebiliyordu. İşte bu noktada giderilmesi gereken bir sorun vardı ve getirilen çözüm Şekil 2.'de görüldüğü gib AJAX tekniğidir.

4. PROJE VE AJAX UYGULAMALARI

Doğru kullanıldığı zaman sunucu (server) tabanlı teknolojilerden çok daha hızlı kullanıcının isteklerine cevap verebilen daha interaktif çözümler, bu yeni yaklaşım sayesinde üretilebilmektedir. Bunun yanında klasik web uygulamalarının sade kullanıcı ara yüzü yerine daha canlı ve yetenekli ara yüzlerin oluşturulmasını mümkün kılar. Bu özellikleri ile AJAX web uygulamalarında en çok şikâyet konusu olan yavaşlık ve ara yüzün çirkin ya da masaüstü uygulamaları ile karşılaştırılacak olursa "kullanışsız" olması sorununa iyi bir çözüm olarak durmaktadır.

Yöndem'e (2007) göre, projenin hazırlanmasında Tablo 1.'deki bilgilerden yararlanarak klasik AJAX yönteminin diğer yazılım geliştirme programlarına göre daha avantajlı olması tercih sebebi olmuştur.

| | ASP.NET AJAX EXTENSION | GELENEKSEL AJAX |
|--|------------------------|-----------------|
| Sayfa açılışında toplam yüklenen veri miktarı | 138 KB | 5 KB |
| Yeni kayıt eklendiğinde AJAX ile yapılan toplam veri miktarı | 4 KB | 0,2 KB |
| Kaydın bilgisi değiştirildiğinde oluşan toplam veri transferi | 7 KB | 0,2 KB |
| Kaydın "yapıldı" "yapılmadı" durumu değiştirildiğinde oluşan toplam veri transferi | 7KB | 0,002 KB |

Tablo 1. Geleneksel AJAX'ın Diğer ASP.NET ile Karşılaştırılması

4.1. Login Bölümü

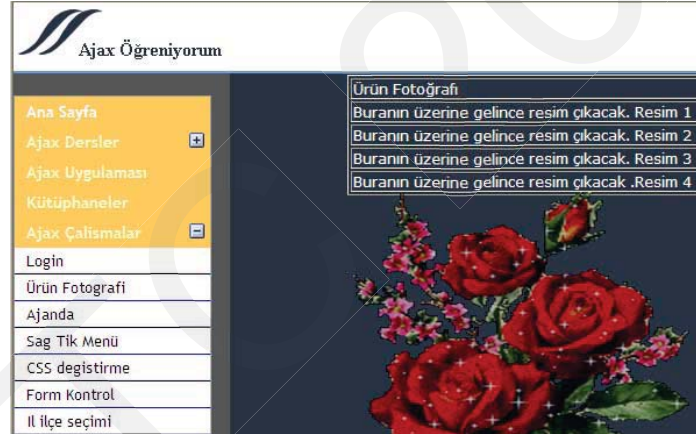
Giriş butonuna tıklayınca JavaScript fonksiyonu çağrılıyor, XMLHttpRequest nesnesi oluşturuluyor ve çağrılıyor. Veri tabanında kayıtlı kontrol ediliyor eğer kayıt varsa ilgili sayfa açık olan sayfamızın içine aktif olarak getiriliyor. Burada ilgili sayfayı tekrar yüklemeye gerek yoktur. Kullanıcı böylelikle ilgili sayfaya girmekte veya bilgi almakta bekletilmemiş olur.



Şekil 3. Login Sayfası

4.2. Ürün Fotoğrafi

Metnin üzerine gelince onMouseOver olayında sadece tablonun ilgili hücreindeki resim gösterilecektir. İlgili metin üzerine gelince JavaScript fonksiyonu çağrılıyor XMLHttpRequest nesnesi oluşturuluyor ve çağrılıyor. İlgili dosyasındaki formata göre ilgili resim sayfası ana sayfamıza aktif olarak getiriliyor. Sayfa yenilediğinde, sunucumuzun bant genişliğini harcar. Ne kadar az sayfa yenilemesi olursa, sunucu hattı o kadar rahat olur.



Şekil 4. Ürün Fotoğrafi Sayfası

4.3. Sağ Tık Menü

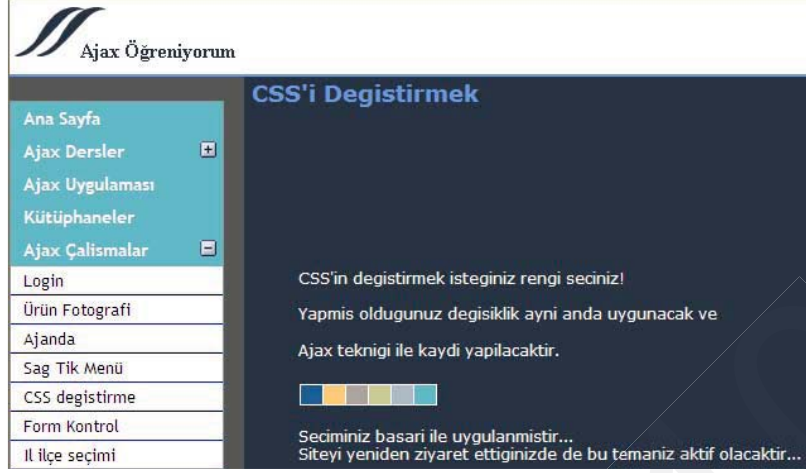
Metnin üzerine gelince onMouseOver olayında sağ tuş kontrolü ile sadece tablonun ilgili hücreinde aktif olacaktır. İlgili metin üzerine gelince JavaScript fonksiyonu çağrılıyor XMLHttpRequest nesnesi oluşturuluyor ve çağrılıyor. İlgili dosyasındaki linklere göre adresler ana sayfamıza aktif olarak getiriliyor. Böylelikle sayfalarımızda güvenlik için sağ tıklamayı kontrol edebiliriz.



Şekil 5. Sağ Tık Menü

4.4. CSS Değişirme

Web tasarımcısına ihtiyaç olmaksızın kullanıcı kendi istediği renk sitilini tıklayarak, menü bölümüne CSS uygulamak için JavaScript fonksiyonu çağırılıyor XMLHttpRequest nesnesi oluşturuluyor ve çağırılıyor. İlgili dosyada CSS bilgisi veri tabanına kaydedilir. Yani Sayfayı her açtığımızda seçilen CSS veri tabanından okunarak etkin olacaktır.



Şekil 6. CSS Değişirme

5. SONUÇLAR

Tasarım açısından web programcılığı alanında bilgiye sahip olmayan kullanıcı kendisine sunulan hizmetler, servisler, platformlar ve seçenekler ile zengin, etkileşimli, dinamik bir web sayfası, çoğunlukla AJAX tekniği ile hazırlanmasıyla kullanıcıya kendi sayfasını tasarlaması işini kolaylıkla yapabilmektedir. Kullanıcıların üye oldukları site içinde kendilerine özgü bir yönetim paneli ile gerek sayfaların tasarımı veya dizaynını kendisi yapabilir hale gelmekte ve profil sayfası, bilgilerin tutulduğu sanal ağlar, alışveriş sepetleri, ürün karşılaştırmaları, kullanıcılar tarafından yazılan yazıların ve çekilen fotoğrafların kişisel sayfalar aracılığıyla paylaşılması ve diğer insanların da bu yazılar ve fotoğraflar hakkındaki yorumlarının alınması vb. etkileşim özelliklerinin üzerine her gün yeni teknolojilerin çıktığı web döneminin içindeyiz. Bu web sitesinin kullanıcı-bilgisayar etkileşiminin en verimli ve etkili bir şekilde gerçekleşmesiyle kullanılabilir sitelerin nasıl hazırlanması, hangi aşamaların dikkate alınması gerektiği ve tasarımdaki rahatlık konusunda web sitesi tasarımcılarına ışık tutmayı hedeflemiştir.

KAYNAKLAR

- Arun S. Patil ve Zenon J. Pudlowski. (2003). *Instructional Design Strategies For Interactive Web-Based Tutorials Procedures in Engineering Education*, World Transactions on Engineering and Technology Education, Vol:2, No:1.
- Ayers D. Bruchez E. Fawcett J. Vernet A. Vlist E.V.D. (2007). *Web 2.0 Teknolojileri*. İstanbul: Alfa Yayınları.
- Bourne J.R. Mayadas A.F. Campbell J.O. (2000). *Asynchronous Learning Networks: An Information Technology Based Infrastructure For Engineering Education* pp:67~71.
- Crane D. Pascarello E. James D. (2005). *Ajax in Action*, Manning, pp:56~61.
- Garrett J. J. (2005). *Adaptive Path. AJAX: A New Approach to Web Applications*. (erişim: 1 Nisan 2010) <http://www.adaptivepath.com/publications/essays/archives/000385.php>
- Özer Z. Varol A. (2007). *Web'de Genç Teknik Ajax: Ulusal Teknik Eğitim, Mühendislik ve Eğitim Bilimleri Genç Araştırmacılar Sempozyumu*.
- Özveri G. (2007). *Herkes İçin Ajax*. 1.Baskı, İstanbul: Alfa Yayıncılık.
- Paola S.D. Fedon G. (2006) *Subverting Ajax 23rd Chaos Communication Conference*.
- Şendağ S. (2008). *International Educational Technology Conference*: ss:1000.
- Yaşar T. (1997). *Türkiye'de Bilgi Hizmetleri ve İnternet: Temel Sorunlar ve Politika Geliştirme* ss:45~47.
- Yöndem D. (2007). *Asp .Net Ajax*. 1.Baskı, İstanbul: Pusula Yayıncılık.

WEB TABANLI İNTERAKTİF METOTLARLA CİSİMLERİN DAYANIMI EĞİTİMİNE FARKLI BİR YAKLAŞIM

A DIFFERENT APPROACH TO MECHANICS OF MATERIALS EDUCATION WITH WEB BASED INTERACTIVE METHODS

Dursun DEMİR
demir_dursun@hotmail.com

Abdullah KURT
akurt@gazi.edu.tr

Özet

Bu çalışmada, üniversitelerde makina bölümlerinde lisans düzeyinde okutulan Cisimlerin Dayanımı dersinin temel düzeydeki öğretimi için bir web tabanlı uzaktan eğitim platformu geliştirilmiştir. Ders içeriğindeki konuların daha iyi anlatılması için birçok şekil, çizim ve resimden yararlanılmıştır. Konuların anlatımı sırasında ders konularının kolaylıkla anlaşılması ve kavranması amacıyla ilgili şekil veya çizimlere çeşitli animasyonlar verilmiştir. Konu anlatımlarının sonunda değişik örnek ve alıştırmalarla konuların pekiştirilmesi amaçlanmış ve öğrencilerin kendilerini test etmeleri hedeflenerek çeşitli sorular yöneltilmiştir. Ayrıca bu soruların cevaplarını girebilecekleri içerikler hazırlanmıştır. İki boyutlu çizimler ve şekiller Adobe Illustrator programında hazırlanmış, üç boyutlu çizimler ve animasyonlar için 3ds Max ve Swift 3D Max yardımcı programı kullanılmıştır. Ders içeriğine uygun olarak çeşitli animasyonlarla desteklenen konular, internet tabanlı uzaktan eğitim platformu için hazırlanan Flash tabanlı bir internet sitesi içerisine ilave edilmiş ve giriş sayfası (ana sayfa) yardımıyla ilgili konulara gerekli erişimler verilmiştir. Bu çalışma sayesinde, eğitimde üç boyut teknolojisi kullanılarak dersin öğrenimi daha zevkli hale getirilmiş olup konuların anlaşılması kolaylaştırılmış ve öğrenmenin daha kalıcı olması hedeflenmiştir. Böylece, zamandan ve mekândan bağımsız olarak daha kısa sürede, daha fazla kişiye, kaliteli bir eğitimin verilmesi amaçlanmıştır.

Anahtar sözcükler: Web Tabanlı Uzaktan Eğitim, İnternet Destekli Eğitim, İnteraktif Eğitim, E-Öğrenme, Cisimlerin Dayanımı, 3D

Abstract

In this study, for basic-level education of “Mechanics of Materials” that has been studied in universities at the undergraduate level of mechanical engineering, web-based distance education course for teaching platform has been developed. Many drawings, picture and shape has been used in order to be able to explain the course content. During the courses variety of shapes or drawings has been given in order to make the topics easy to understand. At the end of the related issues different examples of exercises are given to students. So they are aimed to test their own goals. Two-dimensional drawings and figures prepared in Adobe Illustrator program, three-dimensional and animations for 3ds Max and Swift 3D Max utility is used. According to course content, topics that supported by several animation issues have been prepared for Flash-based website and with the help of main page necessary Access are given to related topics. By using these studies, three dimension technology learning is made more enjoyable and easier. Thus, regardless of time and space in a shorter time, more people are aimed to provide a quality education.

Keywords: Web-Based Distance Education, Internet Based Training, Interactive Training, E-Learning, Mechanics of Materials, 3D

1. GİRİŞ

Yaşamın vazgeçilmez bir parçası durumuna gelen teknoloji, hayatın tüm alanlarında daha verimli ve etkili olma amacıyla kullanılmaktadır. Her alanda büyük kolaylıklar sağlayan teknoloji; üretim, toplumsal, siyasal ve ekonomik gibi birçok alanda kullanılarak insanlığın hizmetinde önemli yer almıştır. Teknolojinin ve bilimin gelişmesi, bilgiye ulaşmayı kolaylaştırmış ve gelişen teknoloji sayesinde eğitim alanında da büyük yenilikler ortaya çıkmıştır. Günümüzde, ders programlarından eğitim-öğretim yöntem ve tekniklerine, laboratuvar ve atelye sistemlerinden uygulama ve sınav sistemlerine kadar her türlü eğitim alanında teknolojik gelişmeler görülmektedir.

Geleneksel metotlarla uygulanan eğitimde, başta zaman ve mekan sıkıntısı olmak üzere bazı zorluklar mevcuttur. Gelişen teknoloji ve internet kullanımındaki hızlı artış, öğretmenin öğretim ortamını farklı tasarımlar yaparak sunmak istemesi, ders içeriğinin öğrencilere kolay ve anlaşılır verilmek istenmesi; eğitimde klasik yöntemlerin yerini e-öğrenme, uzaktan eğitim, web tabanlı eğitim, internet tabanlı eğitim gibi yeni yöntem ve teknikler yer almıştır. Bu nedenle eğitimde, teknolojik yöntemler bilimsel araştırmalar içerisine girmiştir. Eğitimin öğrenciye en faydalı şekilde verilebilmesi için, farklı eğitim teknolojileri uygulanmaktadır ve web tabanlı uzaktan eğitim (e-eğitim) de bunlardan biridir (Alkan, 1998).

Koble ve Bunker, teknolojik gelişmelerle birlikte mektupla öğretimden, eğitimde yeni teknolojilerin kullanımına doğru bir kayma olduğundan bahsetmektedirler (Koble ve Bunker, 1997).

Web tabanlı eğitimde, öğrenci ve eğitimcinin farklı mekânlardan bir iletişim yolu ile evlerinden, işyerlerinden veya farklı bir ülkeden eğitime katılır (Carswell, 2002). Web tabanlı eğitim, bilgisayar aracılığıyla bir ağ üzerinden klasik eğitimden farklı bir anlayışla ortaya çıkan bir eğitimidir. Web tabanlı eğitim doğru uygulandığı zaman klasik eğitimde sorun olan zaman sınırlaması, kalabalık sınıf ortamları, fiziki yetersizlik gibi konularda yüz yüze eğitim kadar başarılı sonuçlar verir. Schutte, sosyal istatistik dersindeki öğrenciler üzerinde yaptığı araştırma neticesinde; web destekli öğretimin, yüz yüze öğretimin daha yüksek bir başarı sağladığını belirtmektedir (Schutte, 1997). Web tabanlı eğitimde insanlık bir yere gitmeden, zamandan tasarruf ederek veya diğer nedenlerden dolayı (aile, iş, sağlık gibi) buldukları ortamda eğitim imkânı alırlar. Öğrencilerin öğrenme aşamasındaki uyumsuzluğunu ortadan kaldıran bu sistem, bilgisayarlarla daha kısa sürede, hızlı ve sistemli bir şekilde öğrenimin gerçekleşmesini sağlar. Ayrıca sayısız konu tekrarları ile konuların daha kalıcı olması açısından önemlidir. Her öğrencinin öğrenme sürecinin farklı olmasından dolayı zaman sınırlaması olmadığı için bu sistemin diğer bir avantajıdır. Özellikle simülasyonlarla anlatılması gereken derslerin öğretiminde ekonomik ve pratiklik açısından önemlidir. Web tabanlı eğitim, engelli insanların eğitime katılmaları, topluma kazandırılmaları açısından da oldukça önemlidir.

Web tabanlı eğitim platformu hazırlanırken iyi bir planlama yapılması gerekir (YÖK, 2009). Eğitimi verecek konunun anlaşılması için uygun eğitim öğretim metotları iyi tespit edilmelidir. Öğrenci gereksinimleri göz önüne alınarak sistemin buna uygun yapılandırılması gerekmektedir.

Bilişim teknolojilerinin 1995–2000 yılları arasındaki sınırsız büyümesi, internet protokolleri ve PC’lerde multimedya devrimi yaşanmasına neden olmuştur. Yaşanan bu gelişmeler, eğitim uygulamalarında interaktif oluşumlar meydana getirirken, eğitim için hem yeni ihtiyaçlar doğurmuş hem de yeni olanaklar sunmuştur (Gürol, 1991).

Literatürde web tabanlı eğitimi konu alan çeşitli çalışmalar (Atıcı, 2000; Koçer, 2001; Rivera ve ark., 2002; Karabatak, 2002; Tolun, 2003; Çavuş, 2006; Sebetci, 2008) olmasına karşın; çalışma konusuyla doğrudan ilgili ulusal düzeydeki bir çalışmaya rastlanılmamıştır. Philpot’un “MecMovies” çalışması ise uluslararası alanda yapılan ve bir ekip çalışması sonucunda ortaya çıkmış vektörel bir çalışma olması yönünden sadece içerik açısından bu çalışma ile benzerlik göstermektedir (Philpot, 2009).

Bu çalışma, üniversitelerde lisans düzeyinde okutulan Cisimlerin Dayanımı ders içeriğine uygun olarak dersin özellikle de multimedya araçları yoluyla internet ve bilgisayar destekli eğitim teknolojisi kullanılarak öğretilmesini konu almaktadır. Ders içeriğinin kolay anlaşılması ve öğrenmenin daha kalıcı bir biçimde gerçekleşmesi amacıyla, konuların anlatımı sırasında çeşitli animasyonlardan yararlanılmıştır.

Örneğin cisimler üzerinde oluşan kuvvetler, momentler ve neticesinde de gerilmeler ve deformasyonlar gibi konular animasyonlarla gösterildiği için konuların kolayca anlaşılması ve öğrenmenin kalıcı olması sağlanmıştır. İlgili bölüm sonlarında çeşitli çözümlü örnekler yapılarak, anlatılan konunun pekiştirilmesi amaçlanmıştır. Ayrıca öğrencilerin konuyu anlayıp anlamadıklarını kontrol etmeleri veya kendilerini test etmeleri için çeşitli sorular yöneltilmiş ve bu soruların cevaplarını, metin kutularına girebileceği bir ortam oluşturulmuştur.

2. MATERYAL VE METOT

2.1. Kullanılan Yazılımlar

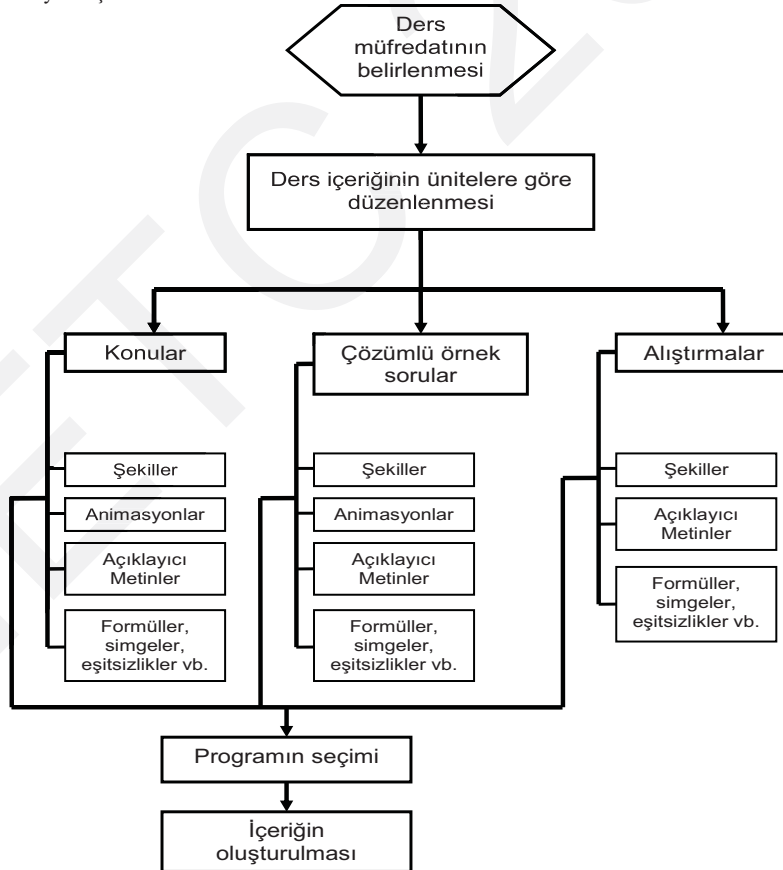
İçinde yaşanılan uzayın 3D (üç boyutlu) olması, web tabanlı ve uzaktan eğitim çalışmalarında da sanal ortamı daha gerçekçi sunabilmek için 3D kullanımını mecbur kılmaktadır (Demir 2010). Çoğunlukla, geleneksel web çalışmaları 2D (iki boyutlu) olarak yapılmasına rağmen bu çalışmada 3D animasyonlar ve şekiller kullanarak görsellik ön plana çıkartılmıştır. Ders içeriğinin kolay anlaşılması ve öğrenmenin daha kalıcı olması açısından, konuların anlatımı sırasında çeşitli animasyonlardan yararlanılmıştır. Çalışmada, 3D teknolojisi kullanılarak dersin öğrenimi kolaylaştırılmış ve öğrenmenin daha kalıcı olması sağlanmıştır.

Bu çalışmada, ders içeriğinin anlaşılması açısından animasyonlar ön planda olduğu için özellikle Adobe Flash programı kullanılmış, 2D şekiller için Adobe Illustrator programı tercih edilmiş olup Flash programı içerisine vektörel olarak alınabilmektedir. 3D görüntüler ve animasyonlar için 3ds Max programı seçilmiştir. Ancak 3ds Max programı modelleme ve animasyon programı olduğu için web sayfaları hazırlanırken kullanılmamaktadır. 3ds Max programında hazırlanan içeriklerin Flash programına aktarılması ve Flash programı içerisinde kontrol edilebilmesi için ara bir program olan Swift 3D Max programı kullanılmıştır. Böylece 3ds Max programında hazırlanan 3D şekiller ve animasyonlar, Flash programı içerisine vektörel yapıda alınmış olup Flash programı ile adaptasyonu sağlanmıştır. Swift 3D Max programı ile animasyonlar render çıktısı swf uzantılı kaydedilmiş ve Flash ortamında düzenlenebilmektedir. Adobe Illustrator ve 3ds Max programında oluşturulan çizimleri ve animasyonları kontrol etmek ve etkileşime geçirmek için Adobe Flash programı kullanılmıştır. Çalışmanın ana hattını oluşturan bu program sayesinde metinler, formüller, simgeler ve şekillerin birbirleri ile etkileşim içerisine girmesi sağlanmıştır. Ayrıca çalışma içerisindeki veri girişlerini ve öğrenci ile etkileşimi sağlayan bu programdır.

Aynı yöntemle konu sonuna açıklamalı örnekler ve alıştırmalar eklenmiştir. Açıklamalı örnekler; konu sınıf ortamında öğretim elemanı-öğrenci etkileşimi dikkate alınarak anlatılmıyormuş gibi animasyonlarla ve gerekli açıklamalarla açıklanmış, alıştırmalar ise bir metin kutusuna veri girilmek suretiyle kontrol sağlanmıştır.

2.2. İçeriklerin Düzenlenmesi

Çalışmada üniversitelerin lisans düzeyinde makina bölümlerinde okutulan Cisimlerin Dayanımı dersi müfredat programı dikkate alınmıştır. Ders müfredatının temel düzey ve uygulama ağırlıklı olması hedeflenmiştir. Ders müfredatına uygun olarak ders içeriği ve özellikle de konu anlatımı, örnek problem tipleri ve alıştırmalar için çeşitli kaynak araştırmaları yapılmıştır. Yapılan araştırmalar neticesinde özellikle de örnek problem tipleri ve alıştırmalar için MecMovies (Philpot, 2009), Hibbeler (2005), Beer ve Johnston (2002) kaynaklarından yararlanılmıştır. Ders içeriklerinin düzenlenmesinde; toplam 11 ünitenin her biri ayrı ayrı ele alınmıştır. Her bir ünite, Şekil 1'de gösterildiği gibi farklı işlem gruplarına ayrılmıştır.



Şekil 1. İşlem basamakları

İşlem gruplarına ayırmada temel etken, kullanılan programlarının yeterlilikleri ile ilgilidir. Şekil 1'de gösterildiği gibi ders içeriği; konular, çözümlü örnek sorular ve alıştırmalar şeklinde üç ana grup altında toplanmış olup; açıklamalı metinler, simgeler ve formüller; Adobe Flash programında, 2D şekiller; Adobe Illustrator programında, 3D şekiller ve animasyonlar ise 3ds Max programında hazırlanmıştır.

3D şekiller çalışmada önemli bir paya sahiptir. Bu şekillere uygulanacak olan animasyonlar konuların öğrenilmesini ve kalıcı olmasını sağlamıştır. Gerçek dünyanın 3D olması ve algılanmanın üç boyutta daha kolay olması, çalışmada 3ds Max programının seçilmesini zorunlu kılmıştır. Öncelikle 3D şekiller çizilmiş ve bu şekillere hareketlilik verilerek animasyonlar yapılmıştır.

3ds Max programı, hem 3D modelleme ve tasarım hem de animasyon programı olduğu için çalışmada büyük bir paya sahiptir. Öncelikle yapılacak olan 3D çizime göre uygun modelleme tekniği belirlenmiştir. Bu modelleme teknikleri tamamen birbirinden farklıdır. Basit 3D çizimler için genellikle standart nesnelere ve bu nesnelere uygulanan değiştiriciler (modifiers) seçilir. Biraz daha karmaşık 3D çizimler için poly modelleme tekniği kullanılır. Oldukça esnek bir modelleme tekniği sunan bu yöntem, çalışmada tercih edilmiştir. Ancak daha karmaşık ve tümleşik 3D çizimlerde ise loft modelleme tekniğine ihtiyaç duyulmuştur. Modelleme tekniklerinin seçimindeki en büyük etken, dosya boyutunun fazla olmasıdır. İnternet ortamında gösterilecek olan her bir sayfanın dosya boyutu önemlidir. Dolayısıyla 3D çizimler animasyon içerikli olacağı için bu problem her zaman göz önünde bulundurulmuştur.

Modellemede nesnelere segment (parça) sayıları oldukça minimum düzeyde tutulmaya dikkat edilmiştir. Nesneyi oluşturan yüzey sayıları arttıkça dosya boyutu da artacağı için, segment sayıları ideal bir değerde tutulması gerekmektedir. Ancak segment sayıları azaldıkça görüntü kalitesi düşeceği için bu iki hususun dengeli olması gerekir. Seçilen herhangi bir nesne için segment sayısı 3 için dosya boyutu 236 kb iken, segment sayısı 12 için dosya boyutunun 808 kb olduğu görülmüştür. Bu yüzden çalışmada kullanılan 3D şekiller modellenirken, ideal bir segment sayısı ve estetik bir görünüm tercih edilmiştir.

3ds Max programında modelleme işi bittikten sonra aynı program kullanılarak animasyonlar yapılmıştır. Bu programda her türlü hareketliliğin verilmesi bir avantajdır. Uzun süren animasyonlar ter bir parça olarak değil, birden fazla animasyon şeklinde hazırlanmış ve böylece dosya boyutlarının gereğinden fazla olmasının önüne geçilmiştir. Dolayısıyla Adobe Flash programının bu görüntüleri web ortamında yüklerken geçen zaman kaybı asgari seviyeye indirilmiştir.

3ds Max programında tüm modelleme ve animasyon işlemleri tamamlandıktan sonra 3ds Max programının render motoru Swift 3d Max olarak seçilmiş ve böylece yapılan animasyon Adobe Flash programına vektörel olarak aktarılmış olup dosya boyutunun minimum düzeyde tutulması ve görüntü kalitesinin mükemmel olması sağlanmıştır.

Yukarıda açıklanan yöntemler neticesinde; gerek Adobe Illustrator programında hazırlanan 2D çizimler, gerekse 3ds Max programında hazırlanan ve animasyonu yapılan 3D çizimler Adobe Flash programına aktarılıp içeriğin etkileşime girmesi sağlanmıştır. İlk önce Flash programında yapılacak arayüz ve içerikler için uygun renk seçimi çalışması yapılmıştır. Renk seçimleri diğer programlarda da göz önüne alınmış olup çalışmanın tamamında içerik bütünlüğünü sağlanmıştır. Bu renk seçiminde dikkat edilen en önemli husus (Bülbül, 1999); gözü fazla yormayacak, canlı ve seçilirliği ön planda, algılanmanın kolay ve kalıcı olmasına yardım eden renkler tercih edilmiştir. Ayrıca uygun bir yazı fontu ve okunabilirliği iyi olan yazı karakteri belirlenmiştir. Özellikle vurgulanmak istenen bilgiler ve açıklamalar, arka plan dolgusu yapılarak sağlanmıştır. Flash programında bir taraftan şekillerin animasyonu yapılırken diğer taraftan animasyonlara açıklamalar eklenmiştir. Düz bir metnin kolayca yazıldığı bu programda formüller ve simgeler oldukça zaman alıcı olmuştur. Her formül ve simge tek tek oluşturularak yoğun bir çalışma ortaya konulmuştur. Konular içerisinde etkileşim amacıyla her sayfaya kontrol butonları yerleştirilmiş ve bu butonlara kontrol mekanizması verilmiştir. Bu şekilde her bir konu tek tek ele alınmış ve ayrı bir dosya olarak kaydedilmiştir.

3. PROGRAMIN ÇALIŞMASI

Geliştirilen eğitim modelinin algoritmik yapısı şu şekilde özetlenebilir: 1) Anasayfa bölümüne erişilmesi, 2) Kullanım kılavuzu ve veri girişlerinin öğrenilmesi, 3) İlgili üniteye ve alt konulara erişimin sağlanması ve konu içeriklerinin öğrenilmesi, 4) Öğrenilen konu ile ilgili çözümlü örnek soruların incelenmesi ve soru tiplerinin anlaşılması, 5) Alıştırmaların çözümü yapılarak, ilgili metin kutuları yardımıyla cevapların girilmesi, 6) Girilen cevapların kontrol edilmesi.

11 ünitenin tamamı yukarıda anlatılan yöntemlerle hazırlandıktan sonra; ünite ve konular arasında etkileşim sağlamak amacıyla Şekil 2’de gösterilen menü arayüzünden yararlanılmıştır. Bu arayüzde ünite ve alt konulara bağlantı verilmiş olup, açılır menü sayesinde ilgili ünitenin alt konuları görülebilmektedir. Böylece diğer üniteler kapalı olduğu için dikkat dağılmasının önüne geçilmiştir.

“Anasayfa” linki yardımıyla çalışmanın hazırlanmasında yararlanılan referanslar, çalışmanın her sayfasında gezinme için kullanılan standart kontrol butonlarının açıklamaları (Şekil 3) ve alıştırmaların cevaplarının girilmesinde dikkat edilecek hususları içeren “Kullanım Kılavuzu” yer almaktadır.



Şekil 2. Geliştirilen eğitim modelinin anasayfa görünümü

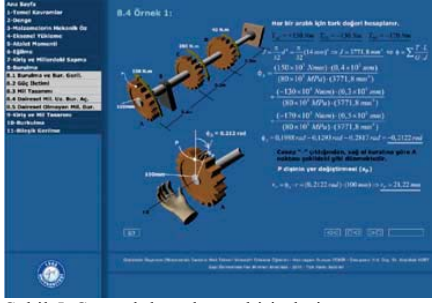


Şekil 3. Kullanım kılavuzu sayfası

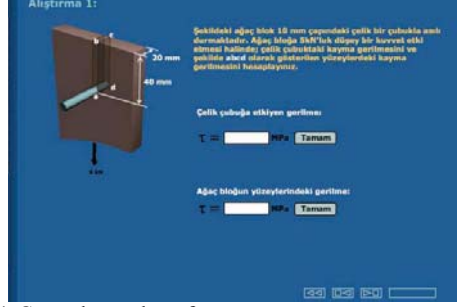
Şekil 4’te ise konu ile ilgili çözümlü bir örneğin ele alınışı gösterilmiştir. Çözümlü örnek sorularda; konu ile ilgili soru tipleri ve bu soruların çözüm yöntemleri verilmiştir. Çözümlü örnek sorular, konu açıklamalarında olduğu gibi çözüm yöntemleri de açıklayıcı bilgiler yardımıyla aşama aşama verilmiştir. Kullanıcı, soruyu iyice anladıktan sonra devam et butonuna tıklayarak çözüm yöntemlerine geçmektedir. Çözüm metodlarında, ilgili kısımlara animasyonlar verilerek ve önemli olduğu düşünülen bilgiler vurgulanarak; dikkat çekicilik sağlanmış ve anlatım zenginleştirilmiştir.

3.1. Veri Girişleri

İlgili konunun devamında yapılan örnek çözümlü sorular, konu anlatımı gibi açıklayıcı olarak sunulmuştur. Alıştırmalarda ise öğrencilerin kendilerini test edebilmeleri için metin kutuları oluşturulmuş olup, bu metin kutularına veri girişi yapılmak suretiyle kontrol mekanizması sağlanmıştır. Burada dikkat edilmesi gereken nokta; cevapların girildiği metin kutularında birimlerin Flash programında algılanamaması sorunuyla karşılaşmıştır. Bu sorunu çözmek için metin kutucuklarına sadece rakamsal değerlerin yazılması istenilmiştir. Birim ise programda hazır olarak yazılmıştır. Şekil 5’te sayısal değerlerin ve birimlerin yazılması gösterilmiştir.



Şekil 5. Sayısal değerler ve birimlerin yazılmasının gösterilmesi



Şekil 4. Çözümlü örnek sayfası

Alıştırmalar için farklı değerler girilerek doğru çalışıp çalışmadığı kontrol edilmiştir. Özellikle ondalık sayılarda hata verdiği görülmüş olup, metin kutusunun formatı sayı formatına dönüştürülerek sorun çözülmüştür. Veri girişleri yapılırken ondalık değerlerin virgül ile değil nokta ile girilmesi gerekmektedir. Ders içeriğindeki alıştırmaların cevapları, sayısal ifadeler olduğu için veri girişi yapılırken yuvarlama veya yüzdelik hata paylarının kullanımı gerekli kılmıştır. Bu yüzden veri girişlerinde hata paylarına yönelik çalışmalar yapılmış ve \pm % 3'lük hata payı verilmiştir. Metin kutularına alt ve üst değer sınırlaması verilerek, bu değerler arasındaki veri girişlerinin doğru kabul edilmesi sağlanmıştır. Ayrıca hata payındaki \pm % 3'lük hata değerleri arasındaki kesirli ifadeler girilirken ondalıklı sayı sınırlaması da kaldırılmış ve veri girişlerinde esneklik oluşturulmuştur. Bu sayede; \pm % 3'lük hata payı içerisinde girilen herhangi bir değer doğru kabul edildiği için ondalık sayılarda noktadan sonra kaç basamak alınacağı, başka bir deyişle sorunu da çözülmüştür.

4. SONUÇ ve DEĞERLENDİRME

Bu çalışma; üniversitelerde makina bölümlerinde lisans dersi olarak verilen, temel düzey ve uygulama ağırlıklı olması hedeflenen Cisimlerin Dayanımı dersinin özellikle de multimedya araçları yoluyla ders içeriğine uygun olarak, bilgisayar destekli eğitim teknolojisi ve internet kullanılarak öğretilmesini konu almaktadır. Gerçekleştirilen çalışma neticesinde aşağıdaki sonuçlara erişilmiştir:

- Cisimlerin Dayanımı dersi ile ilgili ve WTE olarak hazırlanan ulusal alanda Türkçe tek çalışmadır.
- İçeriklerin hazırlanmasında vektörel yapı kullanıldığı için görüntü kalitesi mükemmel olup, animasyon akışı sorunsuz bir şekilde çalışmaktadır.
- Konulardaki eşitlikler ve önemli hususlar vurgulanarak öğrencinin ilgisinin çekilmesi sağlanmıştır. Ayrıca, sayısız konu tekrar etme imkânı ile konuların akılda daha kalıcı olması sağlanmıştır.
- Kullanışlı bir arayüz sayesinde, çalışma içerisinde kolayca gezinti yapılabilmektedir.
- Konu anlatımı tamamlandıktan sonra, ilgili bölüm sonlarında çeşitli çözümlü örnekler yapılarak anlatılan konular pekiştirilmiştir. Öğrenilen konularla ilgili olarak farklı soru çeşitleri üzerinde durulmuş ve bu soruların çözüm yöntemleri anlatılmıştır.
- Kullanıcıların kendilerini test edebilmesi için alıştırmalara yer verilmiş olup bu alıştırmaların cevaplarının girildiği metin kutuları yerleştirilmiştir. Kullanıcı, metin kutularına veri girişi yaparak sonucu kontrol edebilmektedir. Bu sayede kullanıcıların, öğrenme düzeylerini kontrol etmeleri hedeflenmiştir. Öğrenci cevabı doğru yanıtlarsa sonraki konuya, yanlış cevaplarla sırasıyla önce ilgili konunun anlatımına daha sonra da çözümlü örnek sorulara bakacaktır.
- Çalışmanın internet haricinde cd ortamından da izlenebilmesi için herhangi bir programa ihtiyaç duyulmamaktadır. Ayrıca herhangi bir tarayıcı ile çalışabilecek şekilde de gerekli entegrasyon yapılmıştır.
- Bu çalışma, gerek sınıf ortamında öğretim elemanına yardımcı bir kaynak olarak gerek öğrencinin kendi kendine çalışmasını sağlayan, kapsamlı bir çalışma olmuştur. Kullanıcıların temel bilgisayar bilgisi dışında herhangi bir ön bilgiye gerek kalmadan rahatlıkla kullanılabileceği bir arayüz oluşturulmuştur.

KAYNAKLAR

- Alkan, C. (1998). *Eğitim Teknolojisi ve Uzaktan Eğitimin Kavramsal Boyutları*. Ankara: Ünal Ofset Matbaaları.
- Atıcı, B. (2000). *Bilgisayar destekli asenkron işbirlikli öğrenme yönteminin sınıf yönetimi dersinde öğrenci başarısına etkisi*. Yüksek lisans tezi. Fırat Üniversitesi Sosyal Bilimler Enstitüsü, Elazığ.
- Beer, F.P., Johnston, E.R., DeWolf, J.T. (2002). *Mechanics of Materials*. McGraw-Hill, New York, 1-788.
- Bülbül, H.İ. (1999). Öğretim Amaçlı Bilgisayar Yazılımlarında Ekran Tasarımı. *Milli Eğitim Dergisi*, 141, 1-7.
- Carswell, A.D. ve Venkatesh, V. (2002). *Learner Outcomes In An Asynchronous Distance Education Environment*. International Journal of Human-Computer Studies, 56(5), 475-494.
- Çavuş, M. (2006). *Dişli Çarkların Web Tabanlı Eğitimi*, Yüksek lisans tezi. Gazi Üniversitesi Fen Bilimleri Enstitüsü, Ankara.
- Demir, D., (2010), *Web Tabanlı İnteraktif Cisimlerin Dayanımı Eğitimi*. Yüksek lisans tezi. Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Ankara.
- Gürol, M. (1991). Teknik İnsan Gücünün Yetiştirilmesinde Yüksek Öğretim. *Fırat Üniversitesi Dergisi, Sosyal Bilimler Enstitüsü*, 24.
- Hibbeler, R.C. (2005). *Mechanics of Materials*. Pearson Prentice Hall, Upper Saddle River, N.J., 1-873.
- Karabatak, M. (2002). *Web'e Dayalı Uzaktan Eğitimde Otomasyon*. Yüksek lisans tezi. Fırat Üniversitesi Fen Bilimleri Enstitüsü, Elazığ.
- Koble, M. A., Bunker, E. L. (1997). Trends in research and practice: An examination of The American Journal of Distance Education. *American Journal of Distance Education*, 11(2). 19-38.
- Koçer, H.E. (2001). *Web Tabanlı Uzaktan Eğitim*. Yüksek lisans tezi. Selçuk Üniversitesi Fen Bilimleri Enstitüsü, Konya.
- Philpot, T., (2009). Missouri Üni., <http://web.mst.edu/~mecomovie/index.html>.
- Rivera, J., McAlister, K., Rice, M. A. (2002). Comparison of student outcomes & satisfaction between traditional & web based course offerings. *Online Journal of Distance Learning Administration*. 5(3). 151-179.
- Schutte, J. G. (1997). *Virtual Teaching in Higher Education*. The new intellectual superhighway or just another traffic jam. California State University, Northridge, 1-5.
- Sebetci, Ö. (2008). *Birden Fazla Kazaya Karışmış/Kural İhlali Yapmış Sürücülerin Web Tabanlı Uzaktan Eğitim İle Yeniden Eğitilmesi*. Doktora tezi. Gazi Üniversitesi Fen Bilimleri Enstitüsü, Ankara.
- Tolun, S. (2003). *Web Tabanlı Uzaktan Öğretim Ve Bir Üniversite Uygulaması*. Yüksek lisans tezi. İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.
- YÖK, (2009). (Yükseköğretim Kurulu). Üniversitelerarası İletişim Ve Bilgi Teknolojilerine Dayalı Uzaktan Yükseköğretim Yönetmeliği http://www.yok.gov.tr/content/view/480/lang_tr_TR/.

WEB TABANLI ÖĞRENMEDE ÖĞRENCİ MEMNUNİYETİNİN KATILIM KARARINA ETKİSİ*

Yrd. Doç. Dr. Gonca Kızılkaya Cumaoglu
T. C. İstanbul Aydın Üniversitesi
Bilgisayar ve Öğretim Teknolojileri Eğitimi
Bölümü
goncakizilkaya@aydin.edu.tr

Prof. Dr. Petek Aşkar
Hacettepe Üniversitesi
Bilgisayar ve Öğretim Teknolojileri
Eğitimi Bölümü
paskar@hacettepe.edu.tr

Özet

Bu araştırmanın amacı, web tabanlı öğrenme ortamlarında öğrenci memnuniyetinin öğrencilerin ortama katılım kararları üzerindeki etkisini incelemektir. Araştırmada kullanılan Web tabanlı öğrenme ortamı, bir öğrenme etkinlik yönetim sistemi olan LAMS (Learning Activity Management System) üzerinde geliştirilmiştir. Öğrenme ortamının içeriği matematik dersinin oran-orantı konusunun öğretimine yönelik tasarlanmıştır. 5 hafta süren uygulamaya 2008 – 2009 öğretim yılında 7. sınıf okuyan 113 öğrenci katılmıştır. Uygulama sonunda öğrencilere, araştırmacılar tarafından geliştirilen 14 maddeden oluşan web tabanlı öğrenme ortamı memnuniyet ölçeği uygulanmıştır. Ölçek, kullanılabilirlik, öğretim tasarımı ve gerçekleştirme boyutlarını içermektedir. Ölçeğin güvenirlik analizinde Cronbach alfa değerleri, kullanılabilirlik için 0.62, öğretim tasarımı ve gerçekleştirme için 0.79 olarak hesaplanmıştır. Öğrencilerin web tabanlı ortama tekrar katılma kararları evet ve hayır olmak üzere iki kategoride incelenmiştir. Veriler, binary lojistik regresyon yöntemiyle analiz edilmiştir. Elde edilen bulgulara göre öğrenci memnuniyetinin 3 boyutundan biri olan gerçekleştirme, öğrencilerin ortama tekrar katılım kararlarında etkili olurken, kullanılabilirlik ve öğretim tasarımı boyutları modele girememiştir. Gerçekleştirme boyutunun anahtar öğeleri olarak rehberlik, dönüt (teknik ve eğitimsel), etkileşim ve örtük bilginin aktarılması ele alınabilir (Aşkar, Dönmez, Kızılkaya, Çevik, Gültekin, 2005). Araştırmada ayrıca öğrencilerin web tabanlı ortama yönelik görüşleri de değerlendirilmiştir.

Anahtar kelimeler: öğrenci memnuniyeti, web tabanlı öğrenme, katılım

Abstract

The purpose of this study is to examine the effect of student satisfaction in web based learning environment on participation decision. The web based learning environment used in the study was developed on a learning activity management system (LAMS). The content of the learning environment was designed for learning the ratio-proportion subject in mathematics. 113 students learning in the 7th class during 2008-2009 school year participated to the application, which continued 5 weeks. At the end of the application, a web based learning environment satisfaction scale including 14 items, which was developed by the researchers, was applied to the students. Cronbach alpha values in the reliability analyze of the scale were calculated as 0.62 for usability, and 0.79 for instructional design and implementation. The decisions of the students to participate again in the web based environment were reviewed in two categories, which were yes and no. The data were analyzed by the binary logistic regression method. According to the obtained findings, implementation, which was one of the 3 dimensions of the student satisfaction, was effective in the decisions of the students to participate again in the environment, while the dimensions of usability and instructional design did not enter to the model. Guidance, feedback (technical, educational), interaction and tacit knowledge are the key issues during the implementation of online courses (Aşkar, Dönmez, Kızılkaya, Çevik, Gültekin, 2005). In addition, the opinions of the students concerning the web based environment were evaluated.

Keywords: student satisfaction, web based learning, participation

GİRİŞ

Öğrenmenin elektronik ortamlara genişlemesi ve web tabanlı öğrenme ortamlarının yaygın olarak kullanılmaya başlanması bir yandan fırsat eşitliği sağlarken, diğer taraftan uygulamaların verimliliğine yönelik sorunları da birlikte getirmiştir. Bu sorunların başında öğrenci katılımının sağlanması gelmektedir (Carr, 2000; Garrison, Anderson, 2003; Chiu, Hsu, Sun, Lin, Sun, 2005; Levy, 2007; Hrstinski, 2008). Alanyazında, çevrimiçi öğrenme ortamlarına katılım tercihi, bireyin altyapısı, akademik entegrasyonu, teknolojik çevre (Jusung, 2005), bilgisayar kullanma becerisi, bilgisayar kaygısı (Chiu, Wang, 2008), motivasyon ve öğrenme amaçları (Paechter, Maiera, Macher, 2010) gibi birçok değişkenle açıklanmaya çalışılmıştır. Bunların dışında öğrencinin web tabanlı öğrenmeyi tercih etmesini etkileyecek en önemli faktörlerden birinin de öğrenci memnuniyeti olabileceği tartışma konusu olarak karşımıza çıkmaktadır. Nitekim Levy, (2007) öğrencilerin dersi bırakıp bırakmamaya karar vermelerinde en önemli etkenin memnuniyet olduğunu tartışmış ve bırakanların memnuniyetlerinin bırakmayanlara göre anlamlı biçimde düşük olduğunu belirlemiştir. Aynı şekilde Chyung, Winiecki, Fenner (1998), yayınladıkları çalışmada çevrimiçi ortamda uzaktan eğitim ile verilen yüksek lisans programında ders bırakmaların çok yüksek olduğu belirlemişlerdir. Bunun nedenini analiz ettiklerinde ise en önemli değişkenin memnuniyet olduğunu ortaya koymuşlardır. Araştırma sonuçlarına göre dersi bırakan öğrencilerin %42'si öğrenme ortamından memnun olmadığını dile getirmiştir. Görülüyor ki öğrenci katılımını sağlamanın yolu çevrimiçi öğrenme ortamı memnuniyetinden geçmektedir.

Öğrenci memnuniyetinin, birçok değişkeni içeren çok boyutlu bir kavram olduğu söylenebilir. Memnuniyetin hangi boyutlardan oluştuğu alanda geniş bir araştırma konusu olarak ele alınmıştır. Öğrenci memnuniyeti, kullanılan teknoloji, konu alanı, tasarım, etkileşim, öğrenci arayüzü, içerik, öğrenme topluluğu, önceki deneyimler, kişiselleştirme gibi boyutlarla tartışılmaktadır (Sun, Tsai, Finger, Chen, Yeh, 2008; Shih, Muñoz, Sánchez 2006; Wang, 2003). Çalışma kapsamında ise memnuniyet, kullanılabilirlik, öğretim tasarımı ve gerçekleştirme olarak üç boyutta ele alınmıştır. Kullanılabilirlik boyutu, kullanıcının arayüzü ne denli kolay kullanabildiğini değerlendiren bir nitelik özelliğidir. Kullanılabilirliğin içinde yönlendirme, işlevsellik, sunum ve ortam tasarımı öğeleri bulunmaktadır. Öğretim tasarımı, öğretim sürecini planlama, geliştirme, değerlendirme ve yönetme sürecidir. Öğretim tasarımı özellikle çevrimiçi ortamlar söz konusu olduğunda bireysel farklılıkları göz önüne alarak bilginin çoklu sunumunu ve etkileşimi gerektirir. Gerçekleştirme boyutunun ise anahtar öğeleri olarak rehberlik, dönüt (teknik ve eğitimsel), etkileşim ve örtük bilginin aktarılması ele alınabilir (Aşkar, Dönmez, Kızılkaya, Çevik, Gültekin, 2005).

Memnuniyetin bu üç boyutu kapsamında araştırma, aşağıdaki sorulara cevap aramayı amaçlamaktadır;

- 1) Öğrencilerin web tabanlı öğrenme memnuniyet ölçeği puanları öğrenme ortamına katılım kararlarını etkilemekte midir?
- 2) Web tabanlı öğrenme ortamına tekrar katılmayı düşünen ve düşünmeyen öğrencilerin ortam hakkındaki görüşleri nelerdir?

* Bu çalışma Türkiye Bilimsel ve Teknolojik Araştırma Kurumu (TÜBİTAK) tarafından desteklenmiştir. Proje kodu: 1002, No:108K185.

YÖNTEM

Araştırma, web tabanlı öğrenme ortamındaki memnuniyetin, öğrencilerin bu ortama tekrar katılma kararlarını etkileyen bir faktör olup olmadığını belirlemeyi amaçlamıştır. Bu nedenle çalışmada bağımlı değişken kabul edilen katılım kararının, bağımsız değişken olarak ele alınan memnuniyetin ne derecede öngörebildiğini belirlemek için verilere binary lojistik regresyon analizi uygulanmıştır.

Katılımcılar

Araştırmaya, 2008–2009 öğretim yılında Ankara ilinde bir ilköğretim okulunda 7. sınıf okuyan 145 öğrenci katılmıştır. Araştırmaya, 5 hafta süren uygulama sürecinin her aşamasına eksiksiz katılan ve ölçeği eksiksiz dolduran öğrenciler dâhil edilmiştir. Bu şartı sağlamayan 40 öğrenci araştırma dışı bırakılmıştır. Sonuç olarak veri analizi 105 (50 kız, 55 erkek) öğrenci üzerinden yapılmıştır.

Web Tabanlı Öğrenme Ortamı Memnuniyet Ölçeği

Web tabanlı öğrenme ortamına yönelik öğrenci memnuniyeti ölçeği araştırmacılar tarafından geliştirilmiştir. Aşkar ve diğerleri (2005), çevrimiçi öğrenme ortamlarında öğrenci memnuniyetinin boyutlarını kullanılabirlik, öğretim tasarımı ve gerçekleştirme olarak değerlendirmişlerdir. Ölçek geliştirilirken de bu boyutlar esas alınmıştır. 14 maddeden oluşan ölçeğin 6 maddesi kullanılabirlik, 4 maddesi öğretim tasarımı ve 4 maddesi de gerçekleştirme boyutuna yönelik hazırlanmıştır. Her boyutun güvenilirlik kanıtı için Cronbach alfa değerleri sırasıyla 0.62, 0.79, 0.79 olarak hesaplanmıştır.

Öğrenciler her maddeyi 10 üzerinden puanlamışlardır. Örneğin; gerçekleştirme boyutuna yönelik “LAMS ortamında oran-orantı konusunu öğrenirken ortama aktif olarak katıldığımı düşünüyorum.” maddesine katılma derecesini, öğrenci, 1 ile 10 arasında bir puan vererek değerlendirmiştir. Her boyutun toplam puanı kapsadığı maddelerden elde edilen puan toplanarak hesaplanmıştır. Sonuç olarak kullanılabilirlik 60, öğretim tasarımı 40 ve gerçekleştirme boyutu 40 puan üzerinden değerlendirilmiştir.

Web tabanlı öğrenme ortamı

Web tabanlı öğrenme ortamı bir öğrenme etkinlik yönetim sistemi olan LAMS (Learning Activity Management System) üzerinde geliştirilmiştir. Bu sistem, çevrimiçi ve işbirlikli öğrenme etkinliklerinin tasarlanması ve yönetilmesi için Avustralya’da Macquarie Üniversitesi tarafından geliştirilen paylaşıma açık bir öğrenme etkinlik yönetim sistemidir. Sunucu üzerinde çalışan sisteme kullanıcılar farklı rollerde (öğrenci, öğretmen, yönetici vb.) girebilmektedirler. Öğretmen olarak sisteme giriş yapan kullanıcı temel olarak üç işlevi olan modülleri kullanabilmektedir. Kendi profilini düzenleyebilmekte, yazarlık modülü ile ders oluşturabilmekte ve grup oluşturma ve izleme modülü ile sanal sınıf oluşturup, yönetebilmektedir.

Araştırma kapsamında LAMS sistemi üzerinde 7. sınıf matematik dersi öğretim programında bulunan oran-orantı konusuna yönelik bir öğretim tasarımı oluşturulmuştur. Bu tasarım Flash programı yardımıyla sistem üzerine belirli bir akış doğrultusunda yüklenmiştir. Öğrencilerin kullandıkları web tabanlı öğrenme ortamı ara yüzü Şekil 1 ve Şekil 2’de gösterilmiştir. Öğrenci kullanıcı adı ve şifresiyle sisteme girdikten sonra karşısına kayıtlı olduğu dersler gelmekte ve dersi seçip giriş yaptığında öğretmenin belirlediği akış doğrultusunda derse katılmaktadır. Öğrenci istediği an sistemden çıkıp tekrar girdiğinde derse kaldığı yerden devam edebilmektedir. Ortamda, konu anlatımı, örnek problem çözümleri, öğrenciye yöneltilen problemler ve dönütler bulunmaktadır. Bunun yanı sıra öğrenci kendi profilini kişiselleştirebilmektedir. Web tabanlı öğrenme ortamında sunulan içerik daha önce de bahsedildiği gibi matematik dersinin oran orantı konusuna yönelik olarak hazırlanmıştır. İçerik 3 bölümden oluşmaktadır. Öğrencileri öncelikle animasyonlar ve kavramsal tanımlamalar yapılarak tasarlanan konu anlatımı bölümünde Oran ve orantı konusunun anlatımı, Örnek problem çözümleri ve öğrencilere yöneltilen problemlerden oluşmaktadır



Şekil 1: Web tabanlı öğrenme ortamı ara yüzü (örnek problem çözümü sayfası)

Süreç

Araştırmanın uygulama aşaması toplam olarak 5 hafta sürmüştür. Uygulama, ilköğretim 7. sınıfların ders programlarında bulunan ve haftada 1 ders saati (45 dakika) olarak verilen Bilgisayar derslerinde yürütülmüştür. Uygulama öncesi ortamın kullanımına ve amacına yönelik 1 saatlik alıştırma eğitimi verilmiştir. Her öğrenci bir bilgisayar kullanacak biçimde laboratuvar ortamına yerleştirilmiştir. İnternet bağlantısı bulunan bilgisayarlardan öğrenme ortamının bulunduğu siteye erişmişlerdir. Öğrencilere, daha önce kendileri adına oluşturulan kullanıcı adı ve şifreler verilmiş ve sisteme giriş yapmalarını sağlanmıştır. Öğrenciler, 5 hafta boyunca bilgisayar dersleri kapsamında ortama yüklenen ve 45 dakika süren dersleri takip etmişlerdir. 5. hafta uygulama bitiminde öğrencilere web tabanlı öğrenme ortamı memnuniyet ölçeği uygulanmıştır. Bu ölçek yine web üzerinden sunulmuş ve ölçeği nasıl dolduracakları konusunda gerekli açıklamalar yapılmıştır. Ayrıca ölçeğe ek olarak öğrencilerden ortama yönelik olumlu ve olumsuz görüşlerini almak amacıyla hazırlanan sorular sorulmuştur. Bu soruların temel amacı öğrencilerin ölçek yardımı ile belirlenmeye çalışılan memnuniyet derecesini kendi ifadeleri ile tanımlamaları sağlamak ve ortamı tekrar kullanma kararı veren öğrencilerle kullanmak istemeyen öğrencilerin memnuniyetin hangi boyutunda ayrıştığını belirleyebilmektir. Ortama ilişkin olumlu görüşleri belirlemek için “Ortamda hoşuna giden şeyler nelerdi?” sorusu, olumsuz görüşlerini belirlemek için “Ortamı kullanırken hoşuna gitmeyen öğeler nelerdi?” sorusu yöneltilmiştir. Buna ek olarak öğrenme ortamında olmasını istediği veya değiştirmek istediği öğeleri belirleyebilmek için “Elinde olsaydı bu ortamda neyi değiştirmek isterdin?” sorusu yöneltilmiştir. Bu sorulara verilen cevaplar içerik analizi yöntemi ile analiz edilmiştir.

BULGULAR

Çalışma sonucu elde edilen verilerin çözümlenmesinde binary lojistik regresyon yöntemi kullanılmıştır. Araştırmaya katılan 105 öğrenciden (50 kız, 55 erkek) 70’i web tabanlı ortama tekrar katılmak istediğini belirtirken 35’i ise katılmak istemediğini söylemiştir. Buna göre veriler analiz edildiğinde, web tabanlı öğrenme ortamı memnuniyet ölçeğinin gerçekleştirme boyutu denkleme girmiştir.

$$\beta = 0.154, SE = 0.039, Wald's \chi^2 = 15.684, p = 0.000$$

$$Z = (-4.470) + 0.154 * Gerçekleştirme, Nagelkerke R^2 = 0,242$$

Denkleme girmeyen boyutlar ise kullanılabilirlik ($p=0.507$) ve öğretim tasarımı ($p=0.994$) olmuştur.

Öğrenci görüşlerini incelemek için ölçek sonunda öğrencilere yöneltilen 3 soruya verilen cevaplar değerlendirilmeye alınmıştır. 81 öğrencinin cevabı analiz edilmiştir. Bu öğrencilerden 54 tanesi ortama tekrar katılmak istediğini söylerken 27 tanesi hayır cevabını vermiştir. Cevaplar, öğrenci memnuniyeti ölçeğinin ele aldığı boyutlara göre sınıflandırılmıştır. Örneğin “LAMS daha hızlı yüklenmeli, sayfayı açmak için bekliyoruz” cevabı kullanılabilirlik ile ilgili olumsuz bir görüş olarak nitelendirilirken “Problemler ve ders içeriği çok güzeldi” cevabı öğretim tasarımı boyutuna olumlu bir görüş olarak yerleştirilmiştir. Öğrencilerin verdiği cevaplardan “Profilimi kendi isteğime göre ayarlayabiliyorum” niteliğindeki cevaplar ise gerçekleştirme boyutunda değerlendirilmiştir. Öğrenci görüşlerinin bir kısmında sınıflandırılmış biçimi Tablo 1’de gösterilmiştir.

Tablo 1: Web tabanlı öğrenme ortamına ilişkin öğrenci görüşlerinin memnuniyet boyutlarına ve katılım kararlarına göre yüzdeler dağılımı

| | Olumlu Görüş (%) | | Olumsuz Görüş (%) | | Değişiklik Önerisi (%) | |
|--------------------------|---------------------------------|------------------------------------|---------------------------------|------------------------------------|---------------------------------|------------------------------------|
| | Tekrar katılmayı düşünen (n=54) | Tekrar katılmayı düşünmeyen (n=27) | Tekrar katılmayı düşünen (n=54) | Tekrar katılmayı düşünmeyen (n=27) | Tekrar katılmayı düşünen (n=54) | Tekrar katılmayı düşünmeyen (n=27) |
| Kullanılabilirlik | % 22 | % 19 | % 4 | % 22 | % 11 | % 19 |
| Öğretim Tasarımı | % 80 | % 70 | % 26 | % 15 | % 39 | % 44 |
| Gerçekleştirme | % 33 | % 29 | % 0 | % 20 | % 13 | % 30 |

SONUÇ VE TARTIŞMA

Bu araştırmada, web tabanlı öğrenme ortamındaki memnuniyetin, öğrenme ortamlarına tekrar katılım kararı üzerindeki etkisi ve öğrencilerin ortama yönelik görüşlerinin memnuniyet boyutları kapsamında nasıl farklılaştığı incelenmiştir.

Araştırmanın ilk bulgusu memnuniyetin gerçekleştirme boyutunun öğrencilerin ortama tekrar katılım kararları üzerinde anlamlı bir etkisi olduğu yönündedir. Nitekim benzer çalışmalarda da memnuniyetin, öğrencilerin web tabanlı olarak verilen dersleri tamamlama istekleri üzerinde anlamlı bir etkisi olduğu bulunmuştur (Chyung, Winiecki, Fenner, 1998; Lim, 2001; Chiu, Sun, Sun, Ju, 2007; Levy, 2007; Chiu, Wang, 2008).

Bu bulgunun ışığında, özellikle web tabanlı öğrenme uygulamalarının gerçekleştirme aşamasında, öğrencilere hem teknik hem eğitsel anlamda dönüt verilmesinin ve öğrencilerin birbirleriyle etkileşebileceği sosyal ortamların yaratılmasının, öğrencilerin katılımını sağlamadaki önemi ortaya çıkmaktadır. Nitekim öğrenci görüşleri incelendiğinde dönüt ve etkileşim konusuna özellikle dikkat çektikleri söylenebilir. Örneğin, etkileşim düzeyi ile ilgili olarak “sesli yapabiliriz hem kulaklıkla dinleyebiliriz”, “diğer arkadaşlarla konuşabilseydik” gibi öneriler getirilirken, dönüt konusunda “işlemler doğru yapıldığında ödül vs... olsa”, “işlemler sonucunda çözümlerimiz değerlendirilirse iyi olurdu” şeklinde öneriler yapılmıştır.

Kullanılabilirlik boyutunun, istatistiksel olarak anlamlı olmamasının nedeni olarak, uygulama laboratuvarında İnternet erişiminin yavaş olması ve dolayısıyla bu sıkıntının tüm öğrenciler için ortak faktör oluşu gösterilebilir. Öğretim tasarımı boyutunun anlamlı çıkmaması konusunda ise öğrenci görüşlerinin özetlendiği tablo ile tutarlılık olduğu gözlenmiştir. Tabloda, hem katılmayı düşünen hem de düşünmeyen öğrencilerin öğretim tasarımı boyutuna ilişkin olumlu görüş bildirdiği görülmektedir. Olumsuz görüş ve değişiklik önerisi konularında da öğrencilerin görüş yüzdeleri arasında büyük oranda bir farklılık oluşmadığı dikkati çekmektedir.

Öğrenci görüşlerinin memnuniyet boyutları çerçevesinde incelendiği tabloda en dikkat çekici farkın gerçekleştirme boyutunda olduğu görülmektedir. Ortama tekrar katılmayı düşünen öğrencilerden hiçbiri gerçekleştirme boyutuna ilişkin olumsuz görüş bildirmeyenken, bu oran katılmak istemeyen öğrencilerde % 20’ye çıkmıştır. Bu sonuç, memnuniyetin katılım kararı üzerine etkisine ilişkin bulguyu desteklemesi bakımından da önemlidir. Gerçekleştirme boyutu ile ilgili değişiklik önerisinde bulunma konusunda ise tekrar katılmak isteyen ve istemeyen öğrenciler arasında %30’a %13’lük bir fark oluştuğu görülmektedir. Katılmak istemeyen öğrenciler daha yüksek oranda değişiklik önermişlerdir.

Değişiklik önerisi kapsamında araştırmanın beklenmeyen bir sonucu, oyun ve görsel öğeler konusunda gerçekleşmiştir. 81 öğrencinin 21’i yani % 26’sı ortamın oyun ve daha fazla görsel öğe içermesi konusunda önerilerde bulunmuşlardır. Oyun ve görsel öğeler konusu, öğretim tasarımı boyutunda bir görüş olarak değerlendirilmiştir. Katılmak isteyen ve istemeyen öğrenciler, ortamın eğitici oyunlar ve görsel öğeler içerme konusunda hemfikir olmuşlardır. Bu durum gelecek araştırmalar için bir öneri niteliğinde ele alınabilir.

Sonuç olarak web tabanlı öğrenmede katılımı etkileyen faktörlerin başında öğrenci memnuniyetinin geldiği söylenebilir. Dolayısıyla web tabanlı öğrenme ortamlarında öğrenci memnuniyetini artırmaya yönelik tasarımların uygulanması ve gerçekleştirme aşamasında dönüt ve etkileşimin sağlanması önerilebilir.

KAYNAKÇA

- Askar, P., Dönmez, O., Kızılkaya, G., Çevik, V. & Gültekin, K (2005) The dimensions of student satisfaction on on-line learning programs. *Encyclopedia of Distance Learning Vol 4*. (editors: Howard, C et. al) Idea-Group Reference: USA. p:585-590.
- Chiu, C-M., Hsu, M-H., Sun, S-Y., Lin, T-C., Sun, P-C. (2005). Usability, quality, value and e-learning continuance decisions. *Computers & Education*, 45, 399-416.
- Chiu, C-M., Wang, E. T. G. (2008). Understanding Web-based learning continuance intention: The role of subjective task value. *Information & Management*, 45, 194-201.
- Chiu, C-M., Sun, S-Y., Sun, P-C., Ju, T. L. (2007). An empirical analysis of the antecedents of web-based learning continuance. *Computers & Education*, 49, 1224-1245.
- Mackey, T. P., Ho, J. (2008). Exploring the relationships between Web usability and students’ perceived learning in Web-based multimedia (WBMM) tutorials. *Computers & Education*, 50, 386-409.
- Levy, Y (2007). Comparing dropouts and persistence in e-learning courses. *Computers & Education*, 48, 185-204.
- Lim, C. K. (2001). Computer self-efficacy, academic self-concept, and other predictors of satisfaction and future participation of adult distance learners. *American Journal of Distance Education*, 15(2), 41-51.
- Shih, P. C., Muñoz, D., Sánchez, F. (2006). The effect of previous experience with information and communication Technologies on performance in a Web-based learning program. *Computers in Human Behavior*, 22, 962-970.
- Chyung, Winiecki, Fenner, (1998). A Case Study: Increase Enrollment by Reducing Dropout Rates in Adult Distance Education. *Proceedings of the 14th Annual Conference on Distance Teaching and Learning*, 97-102.
- Sun, P-C., Tsai, R-J., Finger, G., Chen, Y-Y., Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50, 1183-1202.
- Carr, S. (2000). As distance education comes of age, the challenge is keeping the students. *The Chronicle of Higher Education*, 46(23), A39-A41.
- Garrison, D. R., & Anderson, T. (2003). *E-learning in the 21st century: A framework for research and practice*. London: RoutledgeFalmer.
- Hrastinski, S. (2008). What is online learner participation? A literature review. *Computers & Education*, 51, 1755-1765.
- Paechter, M., Maiera, B., Macher, D. (2010). Students’ expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Computers & Education*, 54, 222-229.
- Wang, Y-S. (2003). Assessment of learner satisfaction with asynchronous electronic learning systems. *Information & Management*, 41, 75-86.
- Jusung, J (2005). Understanding e-dropout. *International Journal on E-Learning*. 5 nisan 2010 tarihinde <http://www.thefreelibrary.com/Understanding+e-dropout-a0133756608> adresinden alınmıştır.

WEB TABANLI PROBLEME DAYALI ÖĞRENMENİN ÖĞRENCİLERİN YARATICI DÜŞÜNME BECERİLERİNE ETKİSİ

Arş.Gör. Mustafa Serkan GÜNBATAR*

Yüzüncü Yıl Üniversitesi, Eğitim Fakültesi Bilgisayar ve Öğretim Teknolojileri Öğretmenliği Bölümü e-mail:mustafaserkan@yyu.edu.tr
Van / Türkiye

Yrd.Doç.Dr. Hayati ÇAVUŞ

Yüzüncü Yıl Üniversitesi, Eğitim Fakültesi Bilgisayar ve Öğretim Teknolojileri Öğretmenliği Bölümü e-mail:hcavus@yyu.edu.tr Van /
Türkiye

Özet

Bu çalışmanın amacı, web üzerinden gerçekleştirilen Probleme Dayalı Öğrenme süreci sonunda öğrencilerin yaratıcı düşünme becerilerindeki değişimi incelemektir. Araştırmada öntest-sontest kontrol gruplu desen kullanılmıştır. Çalışmanın örneklemini, 2007-2008 öğretim yılı bahar yarıyılında, Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Sınıf Öğretmenliği programında kayıtlı 60 birinci sınıf öğrencisinden oluşmaktadır. Deneysel işlem öncesi uygulanan Yaratıcı Düşünme Beceri ölçeği ile çalışmaya katılan öğrencilerden 1B sınıfı tümüyle deney, 1A sınıfı ise kontrol grubu olarak belirlenmiştir. Deney grubu öğrencilerine 7 hafta boyunca Web Tabanlı Probleme Dayalı Öğrenme yaklaşımı ile, kontrol grubuna ise Probleme Dayalı Öğrenme yaklaşımı ile ders işlenmiştir. Deneysel işlem sonrasında Yaratıcı Düşünme Beceri ölçeği tekrar uygulanarak gerekli istatistiksel çözümler yapılmıştır.

Anahtar Kelimeler: Probleme Dayalı Öğrenme, Web Tabanlı Eğitim, Yaratıcı Düşünme Becerisi.

Abstract

Aim of this study is to evaluate the effect of web mediated problem-based learning approach's creative thinking level's changes. In the research, pretest-posttest control group design was used. The sample consist of 60 students, educating in 2007-2008 education year spring semester and enrolled at the department of Student teacher of faculty of Education, Yüzüncü Yıl University. Before experimental process, with Creative Thinking Scale's results, class 1B completely determined as experiment group and class 1A completely determined as control group. During 7 weeks period, course committed to experiment group by Web Based Problem Based Learning and committed to control group by Problem Based Learning. After the experimental process, Creative Thinking Scale applied to students and necessary statistical analysis were done.

Keywords: Creative Thinking Ability, Problem Based Learning, Web Based Instruction.

1. GİRİŞ

İnsanoğlu varolduğu günden itibaren sürekli olarak bir değişim, gelişim ve kendini yenileme süreci içerisinde bulunmuştur. Günümüzde bu değişim süreci geçmiş zamanlara oranla daha hızlı bir hal almıştır. Yaşadığımız yüzyılda kalkınmış ülkelerin her alanda teknolojiyi kullandıklarını ve bunun sonucunda da hayatın birçok alanında ilerlemeler kaydedebildiklerini gözlemleyebilmekteyiz. Tüm alanlarda olduğu gibi Eğitim alanında da çağın teknolojilerinin kullanımının sağlayacağı avantajlar çoğu insan tarafından kestirilebilir durumlardır.

Alkan'a (1987) göre teknoloji kavramı "makinelere, işlemlere, yöntemlere, süreçlere, sistemlere, yönetim ve kontrol mekanizmaları gibi çeşitli öğeleri kapsamakta ve teknoloji bu öğelerin belirli bir düzende bir araya getirilmesiyle oluşan ve bilim ile uygulama arasında köprü görevi yapan bir disiplindir". Bir toplumun kalkınmasında merkezi bir yer teşkil eden eğitimin, dolayısıyla da eğitim ortamlarının, çağın gelişmelerinden nasibini almaması ve çağın teknolojilerini kendisine entegre etmemesi ve kendisine has teknolojiler üretmemesi mümkün değildir. Günümüzde her alanda olduğu gibi eğitim alanında da önemli değişimler meydana gelmektedir. Bu alanda çalışmaların yoğunlaştığı konu başlıklarından birisi de öğrencilerin, bilgilerini çeşitli faaliyetlerle kendilerinin anlamlandırılmaları üzerine kurulmuş olan yapılandırmacı yaklaşımdır.

Yapılandırmacı öğrenme yaklaşımı, temelde öğrencilerin mevcut bilgilerini kullanarak yeni bilgi edinmelerini, öğrenmeyi ve kendine özgü bilgi oluşturmayı açıklamaya çalışan bir öğrenme kuramı olarak karşımıza çıkmaktadır (Özmen, 2004). Sınıf içinde kullanılacak öğretimsel uygulamalarda yapılandırmacılığın varsayım ve ilkelerinin nasıl karşılanabileceği düşünüldüğünde Probleme Dayalı Öğrenme (PDÖ) yapılandırmacı öğrenmenin önemli uygulamalarından sayılabilir (Yurdakul, 2005).

PDÖ; Bir problemi tanımlama, sunma, alternatif çözümler belirleme ve aralarından bir tanesini seçme ve çözümü planlı bir şekilde uygulamaya koymayı içeren bir öğrenme stratejisidir (Özdemir, 2005). PDÖ, gerçek yaşam problemleri üzerine kurulmuştur. PDÖ' de temel amaç, öğrencileri mesleki yaşamda karşılaşılabilecek durumlara uygun koşullarla karşı karşıya getirmek ve onlara günlük yaşam problemlerinin üstesinden gelebilmeyi öğrenmelerinde yardımcı olmaktır (Erdem, 2005). PDÖ kurslarında öğrenciler, problem çözme, muhakeme, iletişim ve kişisel yargıya varma gibi içerik bilgisini geliştirmeye yardımcı olan kompleks ve gerçek problemleri çözmek için sınıf arkadaşlarıyla birlikte çalışırlar (Center for Teaching and Learning, 2001). Eğitimi ya da yardımcı PDÖ'de bilgiyi vermekten ziyade ideal olarak öğrenme işlemine rehberlik etmek gibi önemli bir role sahiptir. PDÖ'de öğrenciler hem öğrenmeye hem de öğretmeye aktif olarak katılırlar. Öğrenciler öğrenme durumlarını bağımsız olarak araştırmaktan, bilgi organizasyonundan ve diğer öğrencilere bilgi öğretmekten, kavramlardan, öğrenme durumlarıyla ilgili prosedürlerden sorumludurlar (Catney & Currie, 1999).

PDÖ, sadece problem çözmek değildir; problemleri çözme aşamasında öğrencilerin üst düzey zihinsel becerilerini kullanarak bilgiyi ve anlamı zenginleştirmeleridir (Wood, 2003). Ruhbilimci Lorge' nin bilimsel araştırmaları, aynı özellikteki iki bireyden öğrenim hayatını devam ettirecek olanın zeka ve yeteneklerinin (üst düzey düşünme becerileri gibi) gelişmesi noktasında daha avantajlı olduğunu göstermiştir (Lauster, 1978). Bu ifadelerden de anlaşılacağı gibi öğrencinin içinde bulunacağı eğitim ortamında yaratıcılık gibi bir takım üst düzey düşünme becerileri gelişebilmektedir.

Tüm dünyada olduğu gibi, ülkemizde de geleneksel olarak tanımlanan ve genellikle öğretmenin aktifliğine dayanan ve öğrenciye kendi öğrenmelerini kendisinin gerçekleştirilmesi olanağını verme konusunda yetersiz kalan öğretim yöntemleri yerine, öğrenciyi merkeze alan yöntemlerin kullanılması gerektiği geniş ölçüde kabul görmektedir. Öğrencilerin bireysel yeteneklerini, zekasını ve yaratıcı düşünme becerilerini ortaya çıkarmak ancak bu tür yöntemlerle mümkün olabilmektedir (Alkan ve ark., 1995).

* Bu çalışma araştırmacının Yüksek Lisans tezinin bir bölümünden faydalanılarak düzenlenmiştir.

Yaratıcılık, sorunlara, bozukluklara, bilgi eksikliğine, kayıp öğelere, uyumsuzluğa karşı duyarlı olma, güçlüğü tanımlama, çözüm arama, tahminlerde bulunma ya da eksikliklere ilişkin denenceler geliştirme, bu denenceleri değiştirme ya da yeniden sınama, daha sonra da sonucu ortaya koymadır (Sungur, 2007). Yaratıcılık, bireyin öğrenme yaşantısı sonucunda öğrendiklerini birbiriyle ilişkilendirerek karşılaştığı bir sorunu çözebilmesi; bu ilişkileri kullanarak ortaya yeni, özgün bir düşünce ya da ürün koyabilmesi olarak açıklanabilir (Güleryüz, 2001).

PDÖ yaklaşımı, öğrencileri gerçek dünya problemlerine yönlendirmedeki farklılığı ile etkili öğrenme ürün ve sonuçlarının ortaya çıkmasına neden olmaktadır. Bu ürünlerden biri de yaratıcı düşünme becerisidir. PDÖ yaklaşımında öğrenciler, gerçek yaşam problemlerini çözümlerken, hayal güçlerini ve farklı zihinsel işlemleri kullandıklarından dolayı yaratıcı düşünme becerilerini geliştirebilirler. Çünkü PDÖ yaklaşımı öğrencileri problemleri çözerken birçok zihinsel etkinliğe yönlendirdiğinden, yaratıcı düşünme becerilerinin gelişimine olumlu katkı sağlar (Yaman ve Yalçın, 2005).

Milli Eğitim Bakanlığı tarafından “Eğitimin her kademesinde zihinsel gelişimi sağlayan, araştırmacılığı ve yaratıcılığı ön plana çıkaran, bilimsel ve teknolojik faaliyet programları geliştirilerek desteklenecektir” (MEB, 2007) gibi ifadelerle yaratıcı düşünme becerilerini geliştirecek bilimsel ve teknolojik faaliyet programlarının destekleneceği sık sık ifade edilmektedir

Çağın gereklerine uygun olarak düzenlenecek eğitim ortamlarında teknoloji ve yeni yaklaşımlar göz ardı edilemez. Geleneksel öğretim yöntemleri ile çağın gereklerine ve Millî Eğitim sisteminde değinilen özellikle bireylerin yetiştirilmesi mümkün olamayabilir. Günümüzün eğitim ortamlarının gereksinimlerini büyük oranda karşılaması ve öğrencileri aktif hale getirmesi yönüyle PDÖ'nin ve hemen her yaşta insanın en kolay ve verimli şekilde bilgiye ulaşmasına imkan tanıyan Web' in eğitim ortamlarına uyarlanarak öğrencilerin yaratıcı düşünme becerilerindeki gelişme, araştırılması gereken bir konudur.

2. ARAŞTIRMANIN AMACI

Bu araştırmanın genel amacı, web üzerinden gerçekleştirilen Probleme Dayalı Öğrenme süreci sonunda öğrencilerin yaratıcı düşünme becerilerindeki etkiyi incelemektir. Bu amaç doğrultusunda aşağıdaki sorulara yanıt aranmıştır:

1. Deney grubu öğrencilerinin öntest – sontest yaratıcılık ölçeğinden aldıkları puanlara göre yaratıcılık düzeyleri nedir?
2. Kontrol grubu öğrencilerinin öntest – sontest yaratıcılık ölçeğinden aldıkları puanlara göre yaratıcılık düzeyleri nedir?
3. Deney ve kontrol grubu öğrencilerinin yaratıcılık ölçeği puanları gruplara (deney-kontrol), ölçümlere (öntest – sontest) ve bunların ortak etkisine göre farklılaşmakta mıdır?

3. YÖNTEM

3.1. Araştırma Modeli

Araştırmada gerçek deneme modellerinden olan tek faktörlü öntest sontest kontrol gruplu deneysel desen kullanılmıştır. Buradaki faktör, bağımsız değişken olan uygulanan öğrenme stratejisi (Probleme Dayalı Öğrenme ve Web Tabanlı Probleme Dayalı Öğrenme) değişkenidir.

3.2. Çalışma Grubu

Bu araştırma, 2007-2008 öğretim yılı bahar yarıyılında Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Sınıf Öğretmenliği bölümünün 1A ve 1B sınıflarında öğrenim gören toplam 60 öğrenci üzerinde yürütülmüştür. Uygulanan Yaratıcı Düşünme Becerisi ölçeği sonuçlarına göre aralarında anlamlı fark bulunmayan 1A ve 1B sınıflarından 1A sınıfı tamamıyla kontrol, 1B sınıfı tamamıyla deney grubu olarak belirlenmiştir.

3.3. Öğrenme Materyali

Bu çalışmada deney grubu öğrencilerinin probleme dayalı öğrenme etkinliklerini gerçekleştirebilmeleri için daha önceden web tabanlı probleme dayalı öğrenme ile ilgili doktora çalışması yürütmüş olan iki araştırmacının çalışmaları incelenerek ve önerileri göz önünde bulundurularak araştırmacı tarafından web tabanlı olarak geliştirilen yazılım kullanılmıştır. Araştırmacı tarafından geliştirilen uygulamaya <http://pdo.yyu.edu.tr> adresinden erişen öğrenciler kendilerine verilen kullanıcı adı, şifrelerini girerek ve grup numaralarını seçerek ilgili sayfalara ulaşabilmişlerdir. Kontrol grubu öğrencileri ise PDÖ stratejisi ilkelerine uygun olarak bilgisayar laboratuvarı ortamında çalışmalarını yürütmüşlerdir.

3.4. Veri Toplama Aracı

Araştırmada, deney ve kontrol grubu öğrencilerinin yaratıcılıklarını belirlemek amacıyla Whetton ve Cameron' dan (2002: 176) alınan “how creative are you?” adlı ölçekten yararlanılmıştır. Ölçek, Aksoy(2004) tarafından “Yaratıcı Düşünme Becerisi Ölçeği” adı ile Türkçe'ye uyarlanmıştır. Adı geçen ölçekteki ifadeler Aksoy (2004) tarafından, Türkçeye çevrilmiş daha sonra araştırmanın amacı doğrultusunda her bir madde gözden geçirilerek ölçeğe alınıp alınmayacağına karar verilmiştir. Ölçek maddeleri incelenerek, 40 maddeden oluşan ölçek ön uygulama ölçeği haline getirilmiştir. Yaratıcılık ölçeği, öğrencilerin sahip olduğu özellikler, tutumlar, değerler, güdüler ve ilgileri karakterize etmektedir. Ayrıca öğrencilerin yüksek yaratıcı kişiliklerinin belirlenmesine yardımcı olmak amacıyla geliştirilmiştir. Ölçekte yer alan, öğrencilerin yaratıcılık özelliklerini belirlemeye yönelik her bir ifade için A)katılıyorum B)kararsızım C)katılmıyorum seçenekleri sunulmuş ve araştırmaya katılan öğrencilerden kendileri için en uygun olan seçeneği işaretlemeleri istenmiştir. Ölçekte yer alan her bir maddenin puanlaması farklı olmuştur. Ölçekte yer alan maddelerin sahip olduğu en düşük puan -2, en yüksek puan ise 3 olmuştur. Buna karşılık 40. soru dereceleme ölçeği türünde değildir. Bu soruda yaratıcılıkla ilgili 54 tane sıfat verilmiştir. Bu sıfatların ölçekteki puan değerleri 0 ile 2 arasında değişmektedir. Bu sıfatların puan değerleri de her öğrencinin toplam yaratıcılık puanlarının hesaplanmasında dikkate alınmıştır (Aksoy, 2004). Faktör analizi sonucunda ölçek tek boyutlu çıkmış açıklanan varyans %45 olmuştur. Ölçekte yer alan likert dereceleme ölçeğindeki 39 maddenin güvenirlik katsayısı Cronbach Alfa; .94 gibi oldukça yüksek bir değer çıkmıştır.

4. BULGULAR

4.1. Birinci Alt Probleme İlişkin Bulgular ve Yorum

Tablo 4.1.1.1. Deney grubu Öğrencilerinin Öntest ve Sontest Yaratıcılık Ölçeğinden Aldıkları Puanlara Göre Sahip Oldukları Yaratıcılık Düzeyine İlişkin Dağılım

| Yaratıcılık Grubu | Puan Aralığı | Öntest | | Sontest | |
|---------------------------|--------------|--------|-----|---------|------|
| | | f | % | f | % |
| Yaratıcılığı Olmayan | 10 dan az | - | - | - | - |
| Ortanın Altında Yaratıcı | 10 – 19 | - | - | - | - |
| Orta | 20 – 39 | 12 | 40 | 13 | 43,3 |
| Ortanın Üzerinde Yaratıcı | 40 – 64 | 18 | 60 | 16 | 53,3 |
| Oldukça Yaratıcı | 65 – 94 | - | - | 1 | 3,3 |
| Olağanüstü Yaratıcı | 95 - 116 | - | - | - | - |
| Toplam | | 30 | 100 | 30 | 100 |

Deney grubu öğrencilerinin deneysel işlem öncesi ve sonrası uygulanan yaratıcılık ölçeğinden aldıkları puanlara göre sahip oldukları yaratıcılık türleri Tablo 4.1.1.'de verilmiştir. Buna göre deneysel işlem öncesi deney grubu öğrencilerinin %40'ının "orta düzeyde yaratıcı" olduğu görülürken, %60'ının "ortanın üzerinde yaratıcı" olduğu görülmektedir. "Yaratıcılığı olmayan", "ortanın altında yaratıcı", "oldukça yaratıcı" ve "olağanüstü yaratıcı" gruplarında ise hiçbir öğrencinin yer almadığı görülmüştür. Bu bulgu deney grubu öğrencilerinin yaratıcılık ölçeği sınıflandırmasında orta derece ve ortanın üzerinde yaratıcılık özelliğine sahip oldukları şeklinde yorumlanabilir.

Öğrencilerin deneysel işlem sonrası uygulanan yaratıcılık ölçeğinden aldıkları puanlara göre sahip oldukları yaratıcılık türleri incelendiğinde, % 43,3' ünün "orta düzeyde yaratıcı" olduğu, % 53,3' ünün "ortanın üzerinde yaratıcı" olduğu, % 3,3' ünün ise "oldukça yaratıcı" olduğu görülür. Web Tabanlı Probleme Dayalı Öğrenme süreci sonucunda meydana gelen bu değişim uygulanan Web Tabanlı PDÖ yaklaşımının bir sonucu olarak değerlendirilebilir. Uygulanan Web Tabanlı PDÖ yaklaşımı sonucunda, ortanın üzerinde yaratıcı olarak nitelendirilen öğrenci sayısında iki kişilik bir azalma görülmüş, ancak bu azalma kendisini "orta düzeyde yaratıcı" ve "oldukça yaratıcı" olarak nitelendirilen öğrenci sayılarında birer kişilik artışla göstermiştir. Ortaya çıkan bu durum Web Tabanlı Probleme Dayalı Öğrenme işlemi sonucunda öğrencilerin yaratıcılık düzeyinde çok fazla bir değişim olmadığı şeklinde yorumlanabilir.

4.2. İkinci Alt Probleme İlişkin Bulgular ve Yorum

Tablo 4.2.1. Kontrol grubu Öğrencilerinin Öntest ve Sontest Yaratıcılık Ölçeğinden Aldıkları Puanlara Göre Sahip Oldukları Yaratıcılık Düzeyine İlişkin Dağılım

| Yaratıcılık Grubu | Puan Aralığı | Öntest | | Sontest | |
|---------------------------|--------------|--------|------|---------|------|
| | | f | % | f | % |
| Yaratıcılığı Olmayan | 10 dan az | - | - | - | - |
| Ortanın Altında Yaratıcı | 10 – 19 | - | - | - | - |
| Orta | 20 – 39 | 14 | 46,7 | 8 | 26,7 |
| Ortanın Üzerinde Yaratıcı | 40 – 64 | 16 | 53,3 | 22 | 73,3 |
| Oldukça Yaratıcı | 65 – 94 | - | - | - | - |
| Olağanüstü Yaratıcı | 95 - 116 | - | - | - | - |
| Toplam | | 30 | 100 | 30 | 100 |

Kontrol grubu öğrencilerinin deneysel işlem öncesi ve sonrası uygulanan yaratıcılık ölçeğinden aldıkları puanlara göre sahip oldukları yaratıcılık türleri Tablo 4.2.1.'de verilmiştir. Buna göre deneysel işlem öncesi kontrol grubu öğrencilerinin % 46,7'sinin "orta düzeyde yaratıcı" olduğu görülürken, % 53,3'ünün "ortanın üzerinde yaratıcı" olduğu görülür. "Yaratıcılığı olmayan", "ortanın altında yaratıcı", "oldukça yaratıcı" ve "olağanüstü yaratıcı" gruplarında ise hiçbir öğrencinin yer almadığı görülmüştür. Bu bulgu kontrol grubu öğrencilerinin yaratıcılık ölçeği sınıflandırmasında orta derece ve ortanın üzerinde yaratıcılık özelliğine sahip oldukları şeklinde yorumlanabilir.

Kontrol grubu öğrencilerinin deneysel işlem sonrası uygulanan yaratıcılık ölçeğinden aldıkları puanlara göre sahip oldukları yaratıcılık türlerine bakıldığında ise öğrencilerin % 26,7'sinin "orta düzeyde yaratıcı" olduğu, çoğunluğu teşkil eden % 73,3'ünün ise "ortanın üzerinde yaratıcı" olduğu görülmektedir. PDÖ süreci sonucunda meydana gelen bu değişim uygulanan PDÖ yaklaşımının bir sonucu olarak değerlendirilebilir. Nitekim PDÖ işlemi öncesi "ortanın üzerinde yaratıcı" grubunda yer alan öğrencilerin oranı % 53,3 iken PDÖ işlemi sonucunda bu oran % 73,3'e çıkmıştır. Ortaya çıkan bu durum PDÖ'nün öğrencilerin yaratıcılık düzeylerinin gelişmesine olumlu yönde bir katkı sunduğu şeklinde yorumlanabilir.

4.3. Üçüncü Alt Probleme İlişkin Bulgular ve Yorum

Tablo 4.3.1. Öğrencilerin Yaratıcılık Ölçeğinden Aldıkları Öntest-Sontest Ortalama Puan ve Standart Sapma Değerleri

| GRUP | N | | \bar{x} | | S | |
|---------|--------|---------|-----------|---------|--------|---------|
| | Öntest | Sontest | Öntest | Sontest | Öntest | Sontest |
| Deney | 30 | 30 | 42,400 | 43,567 | 7,2616 | 9,2090 |
| Kontrol | 30 | 30 | 42,467 | 44,900 | 8,1272 | 7,4201 |

Tablo 4.3.1 incelendiğinde, Web Tabanlı PDÖ stratejisinin uygulandığı deney grubu öğrencilerinin deneysel işlem öncesi yaratıcılık ölçeği ortalama puanı $\bar{x} = 42,4$ iken, bu değer deneysel işlem sonrasında $\bar{x} = 43,567$ olmuştur. PDÖ stratejisinin uygulandığı kontrol grubu öğrencilerinin ise uygulama öncesi yaratıcılık ölçeği ortalama puanı $\bar{x} = 42,467$ iken, bu değer uygulama sonrasında $\bar{x} = 44,9$ olmuştur. Buna göre hem Web Tabanlı PDÖ hem de PDÖ stratejisi uygulanan grupların yaratıcılıklarında olumlu yönde bir artış gözlenmiştir.

Tablo 4.3.2. Yaratıcılık Ölçeği Öntest – Sontest Puanlarının ANOVA Sonuçları

| Varyansın Kaynağı | Kareler Toplamı (KT) | Serbestlik Derecesi (sd) | Kareler Ortalaması (KO) | F | p |
|-------------------------------|----------------------|--------------------------|-------------------------|--------------|-------------|
| Gruplar Arası | 5408,667 | 59 | | | |
| Grup (D/K) | 14,700 | 1 | 14,700 | ,158 | ,692 |
| Hata | 5393,967 | 58 | 92,999 | | |
| Gruplarıçi | 22,16 | 60 | | | |
| Ölçüm (Öntest-Sontest) | 97,200 | 1 | 97,200 | 2,676 | ,107 |
| Grup*Ölçüm | 12,033 | 1 | 12,033 | ,331 | ,567 |
| Hata | 2106,767 | 58 | 36,324 | | |
| Toplam | 7624,667 | 119 | | | |

Tablo 4.3.2 incelendiğinde, araştırmanın daha önce belirtilen hipotezlerine ilişkin bulgular aşağıdaki gibidir;

1. Deney ve kontrol grubunun deney öncesi ve deney sonrası öntest ve sontest toplam yaratıcılık ölçeği puanları arasında anlamlı bir fark yoktur [$F_{(1,58)} = .158$; $p > 0.05$]. Bu bulgu, deney ve kontrol gruplarında bulunan öğrencilerin yaratıcılık ölçeği puanlarının ölçüm ayrımı (deney öncesi ve deney sonrası) yapılmadığında uygulanan öğretim modeline bağlı olarak değişmediğini göstermektedir.
2. Öğrencilerin yaratıcılıkları ile ilgili olarak, öntest - sontest ortalama yaratıcılık puanları arasında anlamlı bir farklılık yoktur [$F_{(1,58)} = 2.676$; $p > 0.05$]. Bu bulgu, grup ayrımı yapılmadığında öğrencilerin yaratıcılıklarının uygulanan öğretim modeline bağlı olarak değişmediği şeklinde yorumlanabilir.
3. Tablo 4.3.2’ deki analiz sonuçlarına göre iki ayrı öğretim modelinin uygulandığı deney ve kontrol grubu öğrencilerinin yaratıcılıklarının deney öncesinden sonrasına anlamlı farklılık göstermediği, yani farklı işlem gruplarında (deney ve kontrol grubu) olmak ile tekrarlı ölçümler faktörlerinin yaratıcılık düzeyleri üzerindeki ortak etkilerinin anlamlı olmadığı bulunmuştur [$F_{(1,58)} = .331$; $p > 0.05$]. Bu bulgu, Web Tabanlı PDÖ stratejisi ile öğrenen öğrenciler ve PDÖ stratejisi ile öğrenen öğrencilerin yaratıcılıklarını arttırmada uygulanan stratejinin aynı etkiye sahip olduğunu göstermektedir. Yani, deney ve kontrol grubundaki öğrencilerin yaratıcılıkları denemelere bağlı olarak farklılık göstermemektedir.

Araştırmada uygulanan deneysel desen sonrasında deney grubunun ve kontrol grubunun yaratıcılık düzeylerinde yükselme meydana gelmiştir. Web Tabanlı PDÖ ve PDÖ stratejileri öğrencilerin yaratıcılıklarını kullanmalarını sağlayan fırsatlar sunmaktadır.

5. SONUÇ

Web Tabanlı PDÖ ve PDÖ’ nün öğrencilerin yaratıcı düşünme becerilerine olan etkileri ortaya koymayı amaçlayan çalışma sonucunda web tabanlı probleme dayalı öğrenme süreci sonunda öğrencilerin yaratıcı düşünme becerileri düzeylerinde çok fazla bir değişim olmamış; probleme dayalı öğrenme süreci sonucunda ise öğrencilerin yaratıcı düşünme beceri düzeylerinde artış tespit edilmiştir. Ayrıca öğrencilerin yaratıcılık ölçeği ortalama puanları üzerinden yapılan istatistiksel çözümlere göre ise deney ve kontrol grubundaki öğrencilerin deneysel işlem öncesinden sonrasına ortalama puanlarında artış gözlenmiş, fakat bu artış istatistiksel olarak anlamlı görülmemektedir. Buna göre deney ve kontrol grubunda bulunan öğrencilerin yaratıcılıklarındaki değişim uygulanan yöntemle göre farklılık göstermemektedir sonucuna ulaşılmıştır.

6. KAYNAKLAR

- Aksoy, B. (2004). *Coğrafya Öğretiminde Probleme Dayalı Öğrenme Yaklaşımı*. Yayınlanmamış Doktora Tezi. Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.
- Alkan, C. (1987). *Eğitim Teknolojisi*. (3. baskı). Ankara: Yargıçoğlu Matbaası.
- Alkan, C., Deryakulu, D. ve Şimşek N. (1995). *Öğretim teknolojilerine giriş "Disiplin süreç ürünü"*. Ankara: Önder Matbaacılık.
- Catney, M.C. & Currie J.D. (1999). Implementing Problem Based Learning with WWW Support in an Introductory Pharmaceutical Care Course. *American Journal of Pharmaceutical Education*. 63(1). 96-105.
- Center for Teaching and Learning. (2001). Problem Based Learning. *Speaking of Teaching*. 11(1).
- Erdem, E. (2005). Probleme Dayalı Öğrenme. Ö.Demirel(Ed). *Eğitimde Yeni Yönelimler*. (2. baskı). Ankara: Pegem A Yayıncılık. 80-91.
- Gülyüz, H. (2001). *Eğitim Programlarının Dili ve Yaratıcı Öğrenme*. Ankara: Pegem A Yayıncılık.
- Lauster, P. (1978). *Yetenek Ölçümü*. İstanbul: Evrim Bilimsel Eğitim Araçları.
- MEB (2007). Eğitimde Hedef ve Stratejiler. 23.10.2007’ de MEB sayfasından alınmıştır. Web üzerinde : <http://www.meb.gov.tr/Stats/Apk2002/4.htm>
- Özdemir, S. (2005). *Web Ortamında Bireysel ve İşbirlikli Problem Temelli Öğrenmenin Eleştirel Düşünme Becerisi, Akademik Başarı ve İnternet Kullanımına Yönelik Tutuma Etkileri*. Yayınlanmamış Doktora Tezi. Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.
- Özmen, H. (2004). Fen Eğitiminde Öğrenme Teorileri ve Teknoloji Destekli Yapılandırmacı (Constructivist) Öğrenme. *The Turkish Online Journal of Educational Technology*. 3(1).
- Sungur, N. (1997). *Yaratıcı Düşünce*. İstanbul: Evrim Yayınevi.
- Wood, D. F. (2003). ABC of Learning and Teaching in Medicine: Problem Based Learning. *Clinical Review*. 326.
- Yaman, S. ve Yalçın, N. (2005). Fen Bilgisi Öğretiminde probleme dayalı öğrenme yaklaşımının yaratıcı düşünme becerisine etkisi. *İlköğretim Online*. 4,(1). 45-52.
- Yurdakul, B. (2005). Yapılandırmacılık, Ö.Demirel, (Ed). *Eğitimde yeni yönelimler*. (2. Baskı). Ankara: Pegem A Yayıncılık. 38-66.

WEB-BASED DEMONSTRATION OF PHYSICAL TESTS IN TEXTILE

Res. Asst. Zehra Yıldız¹, Res. Asst. Kazım Yıldız², Net. Eng. Şükrü Erdal³

*1 Marmara University Technical Education Faculty, Department of Textile Education,
Kadikoy /Istanbul, TURKEY, zehra.yildiz@marmara.edu.tr*

*2 Marmara University Technical Education Faculty, Department of Electronic-Computer Education,
Kadikoy /Istanbul, TURKEY, kazim.yildiz@marmara.edu.tr*

*3 TURCOM Technology
Etiler/ Istanbul, TURKEY, merdalist@gmail.com*

Abstract

Recently, as a result of increasing the internet usage rate and online education activities, the distance learning shows a rather good improvement. Considering this improvement, it will be so useful to design different education environments with web-based distance learning.

In this study, in order to design different education environments, physical tests that apply on textile materials have been formed as web-based, so they can be understood and learnt by so many people. These tests, classified into three groups. These groups are: tests that apply on textile fibres, textile yarns, and textile fabrics. Test procedures for each test type were told according to the TSE standarts. In the study also, a menu, that will be used for the simple calculations to evaluate the tests results, was composed. Operations such as average value, standart deviation, coefficient variation (%CV), and material count transformations can be done in that computation menu. It was aimed with this distance learning material to be a bedside resource for textile education students and private sector personnel.

Key Words: Education, textile, web-based, distance learning, PHP (Personel Home Page).

INTRODUCTION

New technologies, that generated in the second half of 20th century, have reached the power of changing the social and economical conditions all over the world. Many parts in our daily lifes we live so intimate with these technologies with or without realization. Recently, in our country, computer is one of technological products that attracts an intense attention (Ağaoğlu 1989).

Internet is a technology which emerged after the day by day increasing willingness of human's "save or share the data and reach it easily". With the help of this technology, people can reach datas in so many fields in an easily, cheap, fast and safety way. In this way, we can simulate the internet to an information sea or a huge library [Retrieved February 16, 2010, from <http://www.po.metu.edu.tr/links/inf/css25/bolum1.html>].

Computer networks which occur the connection of computers to perform a work and the data transaction with each other, has rendered the computers' potential power to the incredible dimensions. Internet, that consists of these total networks, supplies a global access to the data and computer sources (Acun 1998).

Web aided learning applications with internet, that enables to reach the data easily, have gained rather importance recently, and became the center of interest of education area staff. The aim of this study, to make the physical tests that apply on textile material as web based, so to provide the datas in this field available to use for so many people. In order to perform this aim, a web page has formed in Dream Viewer programme and encoded in PHP. Then page content has performed by gathering the datas about physical tests together. Also a menu that can compute the average value, standart deviation, coefficient varitaion (%CV), and material count transformations takes place in the web page.

Physical Tests in Textile

Textile materials comprises one of the most important part among human basic needs matreials. Hence, properties of textile materials are very important. In textile industry and also in other industries as well, the success depents on the production of high quality materials in an economical way and in competitive prices. To be provided of this success, mostly scientific methods must be used in production and management processes. Physical tests in textile and quality control are the two scientific methods that have proved their values in developed countries.

Physical test that applies on textile materials can be classified into three groups.

Physical Tests That Apply on Fibres

Textile fibres are the raw material of textiles, they are stretchable, twistable with tensile strength (spinning), colourful or colourless, they have the ability of adhesion onto each other and their length very longer than their width. Because of their different structures they all do not show the same properties.

Many tests can be applied to determine the physical and mechanical properties of textile fibres. Physical tests that apply on fibres are; fibre analysis, measurement of moisture, fibre strength, fibre length, fibre fineness, measurement of colour and trash. These tests are done to determinate just fibres' physical properties such as fineness, length.

Physical Tests That Apply on Yarns

For a high quality production, some tests must be applied on yarns both during the yarn production process (semi-finished product) and after production. This also purposes to supply of production line control. Yarn is the raw material of fabric and weaver have to know everything about yarn. Consequently yarn tests are so important for all textile stuff.

Physical tests that apply on yarns are determination of yarn count, twist, measurement of yarn evenness, tensile strength, yarn abrasion, and yarn hairiness.

Physical Tests That Apply on Fabrics

Physical tests that apply on fabrics are cloth thickness test, measurement of yarn crimp in fabric, crease recovery angle, tensile strength, tearing strength, fabric abrasion and pilling test.

Web Page Desingning

While constructing the web page the Dreamweaver programme was used for desingning, and code blocks were formed by using PHP (Personel Home Page). The reason in choosing Dreamweaver programme is to be simple and understandable.

Editor programmes which have visual programming property and use ready objects, were improved for HTML like in programming scripts. With the help of these programmes, it was reduced the HTML script to a simpler state, ready objects was used as visiuil instead of writing so many pages of programme codes. The Dreamweaver programme is one of them. [Retrieved February 16, 2010 http://egitek.meb.gov.tr/dersdesmer/DersDestek/dersdestekmerkezi/BilgKitap/pdf/BOLUM9_webtasarim.pdf].

Dreamweaver is a professional web desing packet for prepared the web designers. A web site can be formed like forming a simple document file. Dreamweaver does not limits the site desing with its own properties. It provides to cue and start it with the help of connections between the other programmes, and it supports the objects that you formed. It also supplies to prepare your web pages to the broadcasting that you formed, and it improves the site management in an optimal level. [Retrieved February 16, 2010 http://egitek.meb.gov.tr/dersdesmer/DersDestek/dersdestekmerkezi/BilgKitap/pdf/BOLUM9_webtasarim.pdf].

PHP (Personel Home Page) is a sided script and programming language. PHP, was firstly improved by Rasmus Lerdorf via using a range of Perl script in order to watch web page visitors. Nowadays, PHP is being used in every kind of fuction such as; blogs, forums, portal systems, databases, artificial neural networks, smart systems, classess and functions. [Retrieved February 18, 2010 <http://tr.wikipedia.org/wiki/PHP>].



Figure 1. The main page of "Physical Tests in Textile" lecture.



Figure 2. Display of the theoretical information of a textile test.

MARMARA ÜNİVERSİTESİ TEKNİK EĞİTİM FAKÜLTESİ
Tekstil Eğitimi Bölümü İplik Anabilim Dalı
ARŞ.GÖR ZEHRA YILDIZ

Ana Sayfa Tekstilde Fiziksel Testler Hesaplamalar Kaynaklar İletişim

HESAPLAMALAR

İPLİK NUMARA DÖNÜŞÜMLERİ

| | |
|-------------------------------------|----------------------|
| <input type="radio"/> Nm | <input type="text"/> |
| <input checked="" type="radio"/> Ne | 30 |
| <input type="radio"/> tex | <input type="text"/> |
| <input type="radio"/> denier | <input type="text"/> |

HESAPLA

© Zehra YILDIZ 2010

Figure 3(a). The material count transformation page.

MARMARA ÜNİVERSİTESİ TEKNİK EĞİTİM FAKÜLTESİ
Tekstil Eğitimi Bölümü İplik Anabilim Dalı
ARŞ.GÖR ZEHRA YILDIZ

Ana Sayfa Tekstilde Fiziksel Testler Hesaplamalar Kaynaklar İletişim

HESAPLAMALAR

İPLİK NUMARA DÖNÜŞÜMLERİ

| | |
|--------|-------|
| Nm | 50.8 |
| Ne | 30 |
| tex | 19.7 |
| denier | 177.2 |

© Zehra YILDIZ 2010

Figure 3(b). The material count transformation page after the calculation process.

MARMARA ÜNİVERSİTESİ TEKNİK EĞİTİM FAKÜLTESİ
Tekstil Eğitimi Bölümü İplik Anabilim Dalı
ARŞ.GÖR ZEHRA YILDIZ

Ana Sayfa Tekstilde Fiziksel Testler Hesaplamalar Kaynaklar İletişim

HESAPLAMALAR

ORTALAMA, STANDART SAPMA, %CV

Dosya: Dosya Seç | txt.txt | Submit

© Zehra YILDIZ 2010

Figure 4(a). The calculation page of average value, standart deviation, and coefficient variation. The test results' file should be uploaded to this page in order to calculate average value, standart deviation, and coefficient variation.

| MARMARA ÜNİVERSİTESİ TEKNİK EĞİTİM FAKÜLTESİ | |
|--|----------------------------|
| Tekstil Eğitimi Bölümü İplik Anabilim Dalı | |
| ARŞ.GÖR ZEHRA YILDIZ | |
| Ana Sayfa | Tekstilde Fiziksel Testler |
| Hesaplamalar | Kaynaklar |
| İletişim | |

| HESAPLAMALAR | |
|-------------------------------|-----------|
| ORTALAMA, STANDART SAPMA, %CV | |
| Dosya | Dosya Seç |
| Dosya seçilmedi | Submit |
| ORTALAMA | 5.5 |
| STANDART SAPMA | 3.03 |
| % CV | 55.05 |

© Zehra YILDIZ 2010

Figure 4(b). After the calculation process of mathematical operations.

CONCLUSION

In this study, a web based demonstration of lecture of “Physical Tests in Textile” in Textile Education was formed. It was aimed this web page to be an auxiliary education material. Via this web page, students can be reach to the theoretical informations about the empirical studies that performed in laboratory and they can also calculate the tests’ results in this page. Besides, this page is so useful for private sector stuff as well. Textile workers can be reach to the informations about this field whenever they want from everywhere at any time.

This study can be improved by adding small videos that tells the tests in an applied way. So besides the theoretical expression, the visual expression takes place in the web page as well.

The web page can be seen on this address; “ <http://mimoza.marmara.edu.tr/~zehra.yildiz/>”.

REFERENCES

Acun, Ramazan (1998). “Bilim, Bilgi Teknolojisi ve Türkiye”, Milli Kültürler ve Küreselleşme.

Ağaoğlu, Esmehan (1989). “Bilgisayarlar ve Eğitim” Eğitim ve Bilim.

Akalın, Mehmet (1995). “Tekstilde Fiziksel Testler” Ders Notları.

İnternet Nedir? Temel Kavramlar , <http://www.po.metu.edu.tr/links/inf/css25/bolum1.html> (16th February 2010).

Wikipedi, <http://tr.wikipedia.org/wiki/PHP> (18th February 2010).

WebTasarımı, Macromedia Dreamweaver-4 http://egitek.meb.gov.tr/dersdesmer/DersDestek/dersdestekmerkezi/BilgKitap/pdf/BOLUM9_webtasarim.pdf (16th February 2010).

WEB-BASED INTERACTIVE CHILDBIRTH EDUCATION PROGRAM: OUTCOMES

Kerziban Yenil, PhD
Dokuz Eylul University School of Nursing, Izmir, Turkiye
e-mail: kerziban.koyun@deu.edu.tr

Ümran Sevil, PhD
Ege University School of Nursing, Izmir, Turkiye
e-mail: umransevil@gmail.com

Abstract

This study was conducted for the purpose of investigating the effect of a web-based pregnancy counseling and childbirth educational program on pregnant women's activities of daily living. This is a quasi- experimental study. In the study in the education, counseling and data collection stages the web site named, <http://web.deu.edu.tr/gebelik> was used. The sample was 32 pregnant in their 12th-26th week of pregnancy. Individual counseling and a two-week standard education was given to the pregnant women who participated in the study. In the data collection forms developed by the researcher were used for the purpose of determining the pregnant women's activities of daily living (ADL). The pregnant women were assessed before education (BE), one (OM) and two month (TM) after education. The pregnant women's ADL scores steadily increased ($p=.000$). This result shows that web-based childbirth education and counseling has a positive effect on pregnant women's ADLs. Web-based childbirth education and counseling can be given to pregnant women by nurses and midwives.

Key Words: "activities of daily living", "counseling", "pregnancy", "Web-based education"

INTRODUCTION

Becoming a parent is one of the most important decisions made in a person's life. Pregnancy is the first stage in the parenthood role. Mothers-to-be experience both physical and psychosocial changes in the prenatal, childbirth and postnatal periods. These changes make it necessary for pregnant women to make changes in their ADLs. It is necessary for individuals to develop new coping strategies for adapting to these situations (Murray, Mckinney& Gorrie, 2002). For families to be able to cope with these types of crises they begin searching for information to help them adapt to ADLs that change in the prenatal period (Okumuş, Mete, Aytur, Yenil&Demir, 2002).

In recent years major changes have been experienced in science and technology. In Turkey, as in the rest of the world, the number of computer and internet users is rapidly increasing. According to year 2005 data from the Turkish Statistical Institute (TSI) 22.97% of the internet users in Turkey took advantage of health-related web pages on the internet. Of these 22.38%, the largest section used the internet to find health related information (TSI, 2005).

Significant changes experienced in technology and people's interest in this has also increased health care workers' interest in this subject. Computer-based education programs for ill and well individuals began to be developed. This has brought a new dimension to the understanding of classic education and counseling (Richardas, Colman& Hollingsworth, 1998).

In the place of classic face-to-face education or education with educational booklets the use of the internet as an interactive method provides a rapid, low cost educational environment that allows for concomitant use by one individual and many individuals, for as much time as they want for counseling (Colvin, Chenoweth, Bold&Harding, 2004; Soop, Riet &Berg, 2004; Partridge, 2004; Nguyen, Kohlman& Rankin, 2004). In a variety of research studies Web-based individual/patient education has been shown to be beneficial (Nguyen, Kohlman& Rankin, 2004; Adler& Zarchin, 2002; Herman, Mock, Blackwell &Hulsey,2006).

Nurses, who are important members of the health care team, cannot ignore the effectiveness of these developments. Change and improvements in information technology has given a new dimension to education and counseling, the most important nursing roles. These nursing roles are extremely important for pregnant women and their families to be able to adapt and appropriately cope with difficulties they experience (Murray, Mckinney& Gorrie, 2002).

Based on this information the purpose of this study was to investigate the effect of Web-based pregnancy counseling and childbirth education programs (WEBCEP) on pregnant women's ADLs.

METHODS AND PROCEDURES

Design and Participants

The research was conducted as a quasi-experimental study. The quasi-experimental time series design of pretest and posttest in a single group was used. The research was conducted on the web site: <http://web.deu.edu.tr/gebelik>

After the web page was created all (6-40 week) pregnant women were given counseling by e-mail who requested it from the web page. The research population was comprised of the 161 pregnant women who became members by accessing the web page.

From these pregnant women 62 were determined to want to receive on-going education. Of these 62 pregnant women who wanted on-going education 32 pregnant women were taken into the sample who were in their 12th-26th week of pregnancy, completely filled out all three forms and were healthy and not having a risky pregnancy.

The reason for taking 26 week or less pregnant women into the sample was related to the research method. The final test was planned three months after the beginning of the education so women in pregnancies greater than 26 weeks and for whatever reason women who delivered before the final test were not included in the study. The women who requested on-going education and who were not yet at their 12th week of pregnancy were explained the purpose of the study and asked to wait until their 12th week.

Data Collection Method

Data Collection Tools

Form 1: This form needed to be completed by all the pregnant women or their husbands. It contains 19 questions for the purpose of obtaining the pregnant women and their husbands' sociodemographic characteristics.

Form 2: This form needed to be completed by pregnant women who participated in the WEBCEP. The form had 16 items which were directed at determining whether or not the pregnant women had experienced minor discomforts.

Form 3: This form was developed by the researcher taking advantage of the Activities of Daily Living (ADL) Model, developed by Nancy Roper, Winifred Logan and Alison J. Tierney. Roper, Logan, and Tierney's ADL model has a total of 12 items (Roper, Logan& Tierney, 1990). The researcher selected from these 12 items eight that are affected in pregnancy and created a new form, Form 3. The four items from ADL that were not included were communication, body temperature control, work and use of free time habits, and death. The basic reasons for removing these items was that they would not have an effect from the internet and thinking that examining the death related item in pregnancy would not be appropriate.

Form 3 was developed to determine the pregnant women's ADLs and their appropriate and inappropriate behaviors in response to frequently encountered discomforts and the Web-based education's effect on these behaviors. The pregnant women completed this form three times: before education, one and two month after the end of the educational program.

This form has 32 questions, 22 of which were designed as multiple choice questions for the purpose of determining the pregnant women's appropriate and inappropriate behaviors. The pregnant women could mark more than one answer to these questions. These questions were scored by giving one point for every correct answer and zero points for every incorrect answer. One question was written in a table format in which the women could mark the amount of food consumed daily from each food group. This table was scored by giving one point for every appropriate amount selected for every food group and giving zero points for every amount that was excessive or insufficient. The maximum score possible from the ADLs is 75. In the findings the scores the pregnant women obtained were converted and given out of 10 to make them easier to read and interpret.

There was one open-ended question on Form 3 that asked the pregnant women's height, pre-pregnancy weight and their weight at the time they completed the form. According to their pre-pregnancy Body Mass Index (BMI) their appropriate weight gain was evaluated. The weight that should be gained according to BMI before pregnancy is shown below (Williamson, 2006).

These values are accepted as the basis for evaluating whether or not they had gained the appropriate weight according to month of pregnancy.

| BMI Before Pregnancy | Diagnosis | Weight (in kg) Needed to be Gained During Pregnancy |
|----------------------|-----------|---|
| <19.8 | Low | 12.5-18 |
| 19.8-26 | Normal | 11.5-16 |
| >26 | High | 7-11.5 |
| >29 | Obese | ≤ 6 |

Research Implementation

Creation of Web Page: Taking advantage of Dokuz Eylül University's web hosting services a web page was created on the World Wide Web. Windows software program was used in the preparation of the information. Because all of the internet procedures hosting have Linux management system this management system was used to create the page. When the Web page was created php script language and HTML were used. Support and guidance were received from a computer technician and computer education and instruction technology in the page design and preparation.

On the home page there are three buttons on the left: "New Registration," "Member Log-on," and "Who Is Kerziban Yenel?" The system was run by opening the sub-topics.

Conducting Counseling and Education: By filling out the new registration form (Form 1) any pregnant woman could become a member and receive counseling about subjects of interest to them during pregnancy. These pregnant women were sent to the counseling section of the web page where they could write about a topic for which they wanted counseling. The researcher answered these questions within at the most 48 hours by sending information to their email address.

Pregnant women who wanted to participate in the WEBCEP ongoing education program were given a planned two week education program. On Monday of every week were sent a new topic by e-mail. If they had any questions about the topic they were answered by e-mail by Friday of that week.

Educational topics in WEBCEP: 1st Week: Nutrition in pregnancy, 2nd Week: ADLs in pregnancy and precautions to take for common complaints.

In addition to the standard WEBCEP the pregnant women were also given individual counseling about what they needed to do for minor complaints they had identified on Form 2 and for inappropriate behaviors that were identified on Form 3.

Data Collection Procedures

All of the forms sent to the pregnant women from the web page were connected to the researcher's e-mail. All of the pregnant women who wanted to be a member of the web page and who agreed to participate in the study completed the new registration form (Form 1) found on the home page of the web page. Pregnant women who were members were sent to their e-mail address a user's name and password determined by the experts who designed the web page. Together with the user's name and password, information about how they could take advantage of these services was sent to them. All pregnant women who wanted to take advantage of the on-going educational service used their user name and password to get access to the other forms from the home page log-on for members. Pregnant women who completed Form 2 and Form 3 were sent the first educational topic to their e-mail address on the same day. Within the first 48 hours individual counseling was given to the pregnant women according to the information on the form. After completing the 2-week educational program the pregnant women were reminded by e-mail to complete Form 3 again one and two month after finishing the education. The forms were completed by the pregnant women on the web page. At the beginning of the forms information about how to complete them was given. Counseling was provided by e-mail when they felt a need. Pregnant women and their spouses who completed the educational program and filled out the forms three times were sent a "Model Soon-to-be-Parent Certificate" designed by the researcher to their mail address.

Analysis

The SPSS 11.0 packet program was used for statistical analysis of all findings obtained from the data collection tools. The research participant pregnant women and their husbands' sociodemographic and obstetric characteristics were given as a percentage. In the examination of the effect of the WEBCEP on pregnant women's ADLs repeated measures One Way Analysis of Variance was used. The appropriateness of weight gain from the time before education was given until two month after the conclusion of the educational program was tested using McNemar test.

Ethical Explanations

Permission was received from Ege University School of Nursing Scientific Ethics Committee prior to beginning the research.

RESULTS

The sociodemographic and obstetric characteristics of the participants are shown in Table 1. The mean age of the research participant pregnant women was 28.8 years and their husbands' mean age was 31.1 years. It was determined that the pregnant women and their husbands had high educational levels and high income levels, and the majority of the pregnant women were employed. The current pregnancy was the first for 84.4% of the women and 87.5% did not have any living children.

When the status of receiving information about pregnancy was examined it was determined that 87.5% of the pregnant women had received information, and the sources of their information for 68.3% was their physician, for 65.6% books and magazines, and for 59.4% other web pages.

Table 1. Sociodemographic and Obstetric Characteristics of Pregnant Women and Spouses

| Characteristic | | Total (n=32) |
|---|----------------------------------|--------------|
| Age Mean ($\bar{X} \pm SD$) | | 28.8 (3.1) |
| Women's Educational Level | High school | 1 (3.1) |
| | University | 25 (78.1) |
| | Postgraduate education | 6 (18.8) |
| Employment Status | Employed | 26 (81.2) |
| | Not employed | 6 (18.8) |
| Husband's Mean Age ($\bar{X} \pm SD$) | | 31.1 (3.9) |
| Husbands' Educational Level | High school | 4 (12.5) |
| | University | 17 (53.1) |
| | Postgraduate education | 11 (34.4) |
| Income Status | Income less than expenses | 4 (12.5) |
| | Income and expenses balanced | 18 (56.3) |
| | Income more than expenses | 10 (31.3) |
| Week of Pregnancy (at first registration) | 12-19 week | 18 (59.4) |
| | 20-26 week | 14 (40.6) |
| Number of Living Children | 0 | 28 (87.5) |
| | 1 | 4 (12.5) |
| Status of Having Received Information about Pregnancy | Received | 28(87.5) |
| | Have not received | 4(12.5) |
| Distribution of information source* n=28 | Physician | 22(68.3) |
| | Nurse | 2(6.3) |
| | Books and Magazines | 21(65.6) |
| | Preparation for Childbirth class | 1(3.1) |
| | Other Web Pages | 19(59.4) |

*Data include making more than one selection.

The results obtained for the pregnant women's total and subcategory ADLs are given in Table 2. The pregnant women's ADL subcategory and total scores were examined with repeated measures one way analysis of variance. Statistically significant differences were found in all of the subcategories of ADL. To determine at which measurement, from BE, one and two month after the conclusion of educational program measurements was the source of the difference Bonferroni corrected t test in paired samples was used.

Table 2. Comparison of the Pregnant Women's ADL Subcategory Scores BE, OM, and OM

| Activities of Daily Living | BE | OM | TM | F/P | Difference Over Time | |
|-----------------------------------|------------------|------------------|------------------|---------|----------------------|-------|
| | $\bar{x} \pm SD$ | $\bar{X} \pm SD$ | $\bar{X} \pm SD$ | | | |
| 1. Ensuring safety | 4.2±2.3 | 6.7±1.6 | 7.1±1.8 | 25.31 | 0.000 | a<b,c |
| 2. Breathing | 1.72±1.9 | 6.1±2.3 | 6.7±2.1 | 272.756 | 0.000 | a<b,c |
| 3. Nutrition | 3.9±1.3 | 6.3±1.5 | 6.8±1.4 | 65.528 | 0.000 | a<b<c |
| 4. Elimination | 5.5±2.9 | 7.2±1.6 | 7.5±2.1 | 10.115 | 0.000 | a<b,c |
| 5. Personal Cleanliness and Dress | 4.2±1.8 | 6.4±1.9 | 6.9±1.8 | 40.472 | 0.000 | a<b<c |
| 6. Exercise | 3.5±4.3 | 5.2±4.7 | 5.2±4.2 | 46.209 | 0.000 | a,b<c |
| 7. Sexuality | 4.9±2.4 | 6.3±2.6 | 6.3±2.0 | 264.132 | 0.000 | a<b,c |
| 8. Sleep | 2.9±2.3 | 6.1±2.2 | 5.8±2.5 | 227.181 | 0.000 | a<b,c |
| Total Score | 4.1±1.4 | 6.4±1.3 | 6.8±1.4 | 76.221 | 0.000 | a<b<c |

a= Score BE b= Score OM c= Score TM

In the advanced analysis with the pregnant women's nutrition, personal cleanliness-dress and ADL total scores significant differences were determined between all three measurements. The scores in these two subcategories and the total ADL were seen to steadily increase. In the advanced analysis of the pregnant women's scores from the ensuring safety, breathing, elimination, sexuality, and sleep subcategories significant differences were determined between BE and OM and between BE and TM. There was no significant difference between OM and TM. The scores at both measurements after completion of education were found to be higher than the scores BE. In the advanced analysis of the pregnant women's scores in the exercise subcategory a statistically significant difference was found between BE and TM (P=0.019). A significant difference was not found between the BE and OM scores (P=0.062), or between the OM and the TM scores (p= 1.0).

If the pregnant women's weight gain was normal according to their BMI it was described as normal, if more or less it was described as inappropriate. In the results of the pregnant women's weight gain, evaluated according to their BMI, at the pre-education and two month post-education times 46.9% of the women had an appropriate weight gain at the pre-education time period but the rate of appropriate weight gain had increased to 78.1% 3 months later. According to the McNemar analysis the difference was determined to be statistically significant (p= 0.021).

In the analysis of the participating pregnant women's positive opinions about receiving web-based education it was determined that 53.1% of the pregnant women answered that they found this method to be beneficial and practical, 40.6% that they had no unanswered questions, 31.2% that they liked the ability to ask questions whenever they wanted. In the examination of the pregnant women's opinions about the web-based education they received 15.6% answered that a form could be added, 9.3% that exercised could be improved, and 9.3% that there could be more visual materials.

DISCUSSION AND CONCLUSION

The subcategory scores that increased the most, compared to the other subcategories, were those in the nutrition, personal cleanliness and dress subcategories. Nutrition in pregnancy is important in many cultures. In Turkish culture as well great significance is given to nutrition during pregnancy. The value given to nutrition in Turkish culture is shown in various beliefs. Importance is given to various foods and others are avoided for the infant who will be born to be intelligent, pretty and not handicapped (Taş, 1994; Artun, 1998). The personal cleanliness and dress subcategory for ADLs, as with nutrition, is another topic that is given importance in society. What a pregnant woman should wear, her hygienic and self-care needs are given importance by pregnant women and their families. For this reason it is thought that these topics were better assimilated by the pregnant women after completing the education and re-reading it. The finding that the pregnant

women continued to benefit from the information in these areas after the completion of the educational program is an encouraging result from the standpoint of the education's effectiveness and usability.

In the results of the pregnant women's weight gain, evaluated according to their BMI, at the pre-education and two month post-education times, 46.9% of the women had an appropriate weight gain at the pre-education time period but the rate of appropriate weight gain had increased to 78.1% three months later ($p=0.021$). The increase in number of pregnant women who had appropriate weight gain after the educational program may be related to the high educational level of the pregnant women who participated in the education and their being at the appropriate age for childbirth. In various studies a correlation between pregnant women's appropriate weight gain and their educational level has been shown (Maddah et al., 2005; Maddah, 2005).

The ADL subcategory least affected after education was exercise. Included in the education given to the pregnant women was the importance of exercise, areas to be careful about, things that should not be done and information about exercises that pregnant women can do (walking, aerobic, etc.) However the exercises that can be done during pregnancy were not explained with pictures. Ethically because of possible injury that could occur from incorrect exercise the exercise diagrams were not shown. For this reason the pregnant women may have been less affected from this education. In addition exercise not being a habit in the pregnant women's work lives and normal pre-pregnancy lives may have created difficulty. In a previous study women who exercised before pregnancy (39%) continued to exercise during pregnancy. In the same study pregnant women were found to consider rest and relaxation to be more important than exercise (96%) (Clarke, Gross, 2004). In a study by Okumuş et al. (2002) after education 12.3% of the participants exercised regularly three times a week.

Statistically significant differences were found between the pregnant women's BE, OM and TM ADL total scores. In the advanced analysis significant differences were determined between the three time periods. The pregnant women's ADLs steadily increased.

In general the women who participated in this web-based education had positive opinions about the education. In a study by Herman et al. (2005) web-based social support was provided for low income women. The women were determined to be pleased with the social support they received.

In a study by Adler and Zarchin (2002) an online communication method was used for social support for women who were on bedrest at home because of their risk for early delivery. All of the women stated that this method helped them cope at home. In a study by Diaz and colleagues (2002) counseling was given over the internet for health promotion. Sixty percent of the patients answered that the counseling they received from the internet was the same or better than that received from their physician. In their evaluation of this as a source of information in general they found it to be good and only 6% found it to be a weak source of information.

The results obtained from this study show that pregnant women can benefit from a two-week educational program, and that education and counseling has a positive effect on pregnant women's ADLs. The steady increase in total score showing that the pregnant women continued to use the information after the completion of the educational program is an encouraging result. Web-based health education can be considered to be an appropriate educational method.

REFERENCES

- Adler, C.L., & Zarchin Y.R.(2002). The "virtual focus group": using the internet to reach pregnant women. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 31, 418-427.
- Artun, E. (1998). Tekirdağ halk kültüründe geçiş dönemleri (Past ages in Tekirdağ public culture). *Türk Dünya İncelemeleri Dergisi (Turkish World Studies Journal)*, 9, 1-8.
- Clarke, P.E., & Gross, H.(2004). Women's behavior, belief and information sources about physical exercise in pregnancy. *Midwifery*, 20, 133-141.
- Colvin, J., Chenoweth, L., Bold, M., & Harding C.(2004). Caregivers of older adults: advantages and disadvantages of internet based social support, *Family Relation*, 53, 49-57.
- Diaz, J.A., Griffith, R.A., Ng, J.J., Reinert, S.E., Friedman, P.D., & Moulton A.W. (2002). Patients' use of the internet for medical information. *Journal of General Internal Medicine*, 17,180-185.
- Herman, J., Mock, K., Blackwell, D., & Hulsey, T. (2006). Use of pregnancy support web site by low – income African American women. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 34,713-20.
- Maddah, M., Karandish, M., Mohammadpour, B., Neyestani, T.R, Vafa, R., & Rashidi, A.(2005). Social factors and pregnancy weight gain in relation to infant birth weight: a study in public health centers in rasht. *European Journal of Clinical Nutrition*, 59,1208.
- Maddah, M., (2005). Pregnancy weight gain in Iranian women attending a cross-sectional study of public health centres in rasht. *Midwifery*,21,365-370.
- Murray, S.S., Mckinney, E.S., & Gorrie, T.M. (2002). *Foundations of Maternal-Newborn Nursing*. 3rd ed. Philadelphia: Saunders comp. 120, 240.
- Nguyen, H., Kohlman, V., Rankin, H., Slaughter, R., Stulbarg, M.S.(2004). Internet based patient education and support interventions: a review of evaluation studies and directions for future research. *Computers in Biology Medicine*,34, 95-112.
- Okumus, H., Mete, S., Aytur, T., Yenal, K., & Demir, N.(2002). Effectiveness of childbirth education class on labor outcomes. *Journal of Clinical Sciences & Doctor*, 2002, 8, 771-775.
- Partridge, M.R. (2004). An assessment of the feasibility of telephone and e-mail, consultation in a chest clinic. *Patient Education And Counseling*, 54, 11-13.
- Richards, B., Colman, A.W., & Hollingsworth, R.A. (1998). The current and future role of the internet in patient education. *International Journal of Medical Informatic*, 50, 279-85.
- Roper, N., Logan, W., & Tierney, A. (1990). *The Elements of Nursing a Model for Nursing Based o a Model of Living*. 3rd ed. Livingstone: Edinburgh Churchill.
- Soop, A.P., Riet, A., & Berg, M.(2004). Using information technology for patient education: realizing surplus value?. *Patient Education and Counseling*, 54,187-195.
- Taş, H. (1996). *Türk Kültüründen Derlemeler (Compilation from Turkish Culture)*, Kültür Bakanlığı Halk Kültürlerini Araştırma ve Geliştirme Genel Müdürlüğü Yayınları, No: 228, Ankara, 190-191.
- Turkish Statistical Institute (TSI).(2005). *Hane Halkı Bilişim Teknolojileri Kullanımı Araştırması Sonuçları (Hane Public Science Technology Use Research Results)*. [Online]. Available: <http://www.tuik.gov.tr/VeriBilgi.do> . Accessed: July 28, 2006.
- Williamson, C.S.(2006). Nutrition in pregnancy. *British Nutrition Foundation Nutrition Bulletin*,31, 28-59.
- Zrebiec, J.F., & Jacobson, A.M.(2001). What attracts patients with diabetes to an internet support group? a 21-month Longitudinal Website Study. *Diabetic Medicine*,18, 154-158.

WHAT EFFECTS OF PRESERVICE TEACHERS TO BE COMPUTER LITERATE?

Assist.Prof.Dr.Ayfer Alper
Ankara University
Faculty of Educational Sciences
Computer Education and Instructional Technology Department
ayferalper@yahoo.com

Abstract

Computer Course is one of the first year and first semester courses of most Universities of Turkey. Although it is one of the literacy courses, the usage of computers especially word processing programs may varied depending on students. The aim of this study is to compare the achievements of preservice teachers' computer literacy depending on the different instructional methods, kinds of high school graduation, scores and field of University entry exam, prior knowledge of computer usage. The participants are 155 freshman students from Faculty of Education Sciences of Ankara University. These students were followed Computer Course I in two different instructional methods namely: distance education; presentation and application. End of the semester students were administered an application exam of Computer Literacy. Students were asked to fill out a survey to understand their properties. In summary, this study describes comparisons of the properties of students and their achievements of computer usage applications.

Keywords: Computer Literate, Preservice Teachers' Properties.

Introduction:

Computer literacy is one of the basic human body skills of in recent decay. The trend of **information technology** has been increased in the late 1980s. Today being a teacher request basic computer skills, understand the basic of **internet**, **using computerized** instructional materials.

The term of "Computer Literacy" are varied to different people and countries. Mason and Marow (2006) intend to show that the meaning of "computer literacy" actually encompasses two distinct components: an *awareness* component that requires an individual to have knowledge of how computers affect his/her daily life or society as a whole, and a *competence* component that requires an individual to demonstrate "hands on" proficiency with a software application. A student who is **technically proficient** (i.e. competent) but lacks *awareness* cannot be said to be "computer literate." The reverse is also true.

According to Richter *et al.*(2001), computer literacy comprises declarative and procedural computer-related knowledge, familiarity with computers and self-confidence in using the computer: (i) Declarative computer-related knowledge is constituted by general knowledge on common computer applications and the possibilities and functionalities of computers, as well as acquaintance with abbreviations in the field. (ii) Procedural computer-related knowledge comprises the skills required to use a computer, such as specific know-how related to common applications such as word processors or file managers, and general routines that apply to many programs. (iii) Familiarity with computers is a subjective estimation of one's competence in dealing with different kinds of computer applications. (iv) Self-confidence in using the computer can be characterized by a lack of doubts about one's competence in dealing with computers (Richter *et al.* 2001).

By 1980, Educators most often think of computer literacy as the ability to use the computer as an information appliance for such purposes as word processing, running simulations, accessing educational CD-ROMs, navigating the Internet, and using presentation software such as PowerPoint (Turkle, 1984). On the contrary Hoffman (2003) mentioned that by 2000, Computer Literacy courses included entire sections dedicated to the "literate" use of the Web.

While the literature discussing the new role of computer literacy education (Hoffman and Blake, 2003), Turkish freshmen trying to achieve basic skills of computer. In Turkey, Faculties of Education offers the computer literacy course "Computer Course I," which is required for most students being literate. The contents of the course are soft wares, history of computers, basic internet communications, Word Processing, Power point, and Excel.

Before entering the University, students acquire their computer literacy two ways: formally through school programs or in the workplace, and informally, whether at home, from friends or by themselves. We find that a few students, as they enter University, are proficient in many of the applications considered essential by a functional definition of computer literacy. These students are exempted from Computer Course I. However most of the rest students should take this course. The aim of this study is to compare the achievement of the students having different properties in two different instructional methods.

Methods:

Subjects:

In this study 155 students were participated from four different departments of Faculty of Education at Ankara University. The name of departments is Department of Guidance and Psychological Counseling (GPC), Department of Pre School Education (PSE), Department of Mental Retarded (MR) and Department of Culture of Religion and Ethics Education (CREE) and Department of Social Studies (SS).

Materials:

Computer literacy assessment scores as well as additional demographic data were collected from 155 first semester freshman students enrolled in a required "Computer I" course at Ankara University Faculty of Education.

In terms of demographic data name of the department, gender, age, University Entrance Examination Score (UEES) and its weighted sections, types of graduated High school asked to the participants. In the second part of the survey some information about the computer usage before starting to course were gathered.

Procedure:

At the beginning of the semester, students were randomly selected into three different groups depending on instructional methods. First group is followed the computer course in a designed online environment called ECDL. ECDL Training Software that is applied by Ankara University offers Training in Office 2000, XP and 2003 formats, and in Windows 2000 and XP formats; all fully approved by the ECDL Foundation. ECDL Training Software includes high levels of interactivity with demos and practices; over 1000 "hands-on" interactive simulations bringing learning to life. It has user friendly content from the outset. Learning Management System allows administrators to track and record student progress. The second group studied the topics from the book before come to the computer laboratory and they followed the guidelines of the book and made a practice end of the course. The third group followed the instructor demonstrations and explanations than they made practice too.

The developed form and practice exam was administered end of the fall semester (2009). The form includes students' properties about entering university exam; types of their graduated high school; knowing before computer usage and Microsoft Office Programs. During the exam, all students apply the instructors' guidelines. The application topics cover three different Microsoft Office Programs: Word, Power Point and Excel.

Analysis:

ANOVA and t-test for independent samples were performed to test the hypotheses.

Findings:

Some demographic characteristics of students are shown in Table1 and Table2. The number of boys and girls are varied for each department. For this study girls dominated at 60% however males dominated at 40%. The age of the students that were participant of this study is varied between 17 and 22, majority participants (60%) from the 19-21 age groups.

Table1. Crosstabulation of Gender and Department.

| | | Departments | | | | | Total |
|--------|-------|-------------|-----|------|-----|----|-------|
| | | SE | GPC | CREE | PSE | SS | |
| Gender | Girls | 5 | 30 | 21 | 28 | 9 | 93 |
| | Boys | 12 | 2 | 20 | 4 | 24 | 62 |
| Total | | 17 | 32 | 41 | 32 | 33 | 155 |

Department of Guidance and Psychological Counseling (GPC), Department of Pre- School Education (PSE) and Department of Mental Retarded (MR) and Department of Culture of Religion and Ethics Education(CREE), Department of Social Studies (SS).

Table2. Crosstabulation of gender and age.

| | | age | | | | | | Total |
|--------|-------|-----|----|----|----|----|----|-------|
| | | 17 | 18 | 19 | 20 | 21 | 22 | |
| Gender | Girls | 1 | 14 | 35 | 25 | 7 | 11 | 93 |
| | Boys | 4 | 6 | 16 | 14 | 9 | 13 | 62 |
| Total | | 5 | 20 | 51 | 39 | 16 | 24 | 155 |

The participants are graduated from different high schools (Table3). Most students are graduated form Anatolia High School (37%) and General High School(%30).

Table3. Cross tabulation of Department and Types of School

| | Types of Schools | | | | | | | Total |
|-------|---------------------|----------------------|------------------------|------------------------------|---------------------------------------|----------------------------------|---|-------|
| | General High School | Anatolia High School | Vocational High School | Girls Vocational High School | Anatolia Girls Vocational High School | Vocational Religious High School | Anatolia Vocational Religious High School | |
| MR | - | 14 | 1 | 2 | - | - | - | 17 |
| GPC | 19 | 13 | - | - | - | - | - | 32 |
| CREE | - | - | - | - | - | 29 | 12 | 41 |
| PSE | 3 | 23 | - | 3 | 3 | - | - | 32 |
| SS | 25 | 8 | - | - | - | - | - | 33 |
| Total | 47 | 58 | 1 | 5 | 3 | 29 | 12 | 155 |

Table4. The independent sample t-test compares achievement versus instructional methods.

| methods | N | X | S | sd | T | p |
|---------|---|---|---|----|---|---|
|---------|---|---|---|----|---|---|

| | | | | | | |
|--------------------|----|-------|--------|-----|------|------|
| <i>ecd</i> | 73 | 79,49 | 10,364 | 142 | 3,23 | ,002 |
| <i>traditional</i> | 71 | 73,08 | 10,362 | | | |

The independent samples t-test analysis indicates that the 73 distance education students had a mean of 79,49 total points, the 71 traditional students had a mean of 73,08 total points, and the means are significantly different at the $p < .05$ level.

Table5. The independent sample t-test compares achievement versus gender.

| <i>Gender</i> | <i>N</i> | <i>X</i> | <i>S</i> | <i>sd</i> | <i>T</i> | <i>p</i> |
|---------------|----------|----------|----------|-----------|----------|----------|
| <i>Girl</i> | 86 | 77,33 | 9,130 | 142 | 1,47 | ,142 |
| <i>Boy</i> | 58 | 74,66 | 12,596 | | | |

The 86 girls had a mean of 77,33 total points and the 58 boys 74,66 total points and their means are not significant ($p < .05$).

Table6. The ANOVA results between Weighted University Entrance Examination scores and achievement

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 1344,981 | 3 | 448,327 | 4,176 | ,007 |
| Within Groups | 15030,019 | 140 | 107,357 | | |
| Total | 16375,000 | 143 | | | |

The key interpretive element of interest in the original ANOVA table is that, based on a $p = .007$, a marginally significant difference exists within comparisons of achievement scores among the four different University Entrance Examination scores ($F_{3,140} = 4,17$, $p < .05$). There are four different Weighted University Entrance Examination scores namely Equally Weighted Composite 1 and 2; Weighted Verbal Composite 1 and 2.

According to Post Hoc Test results, the participants who enter the University with "equally weighted composite 2" ($X = 81,85$) scored significantly higher on achievement test than did "equally weighted composite 1" ($X = 73,34$).

Table7. The independent sample t-test compares achievement versus computer usage out of the class.

| <i>computer usage out of the class</i> | <i>N</i> | <i>X</i> | <i>S</i> | <i>sd</i> | <i>T</i> | <i>p</i> |
|--|----------|----------|----------|-----------|----------|----------|
| <i>Yes</i> | 132 | 76,55 | 10,774 | 142 | 1,12 | ,261 |
| <i>No</i> | 12 | 72,92 | 9,643 | | | |

The independent samples t-test analysis indicates that the 132 participants who can reach computer out of the course had a mean of 76,55 total points, the 12 participants can not use computer had a mean of 72,92 total points, and the means are not significantly different at the $p < .05$ level.

Table8. One-way ANOVA compares achievement versus knowing word processing before the course.

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 1341,318 | 2 | 670,659 | 6,290 | ,002 |
| Within Groups | 15033,682 | 141 | 106,622 | | |
| Total | 16375,000 | 143 | | | |

According to ANOVA results, there is a significant difference between achievement scores and three different level of knowing word processing before the course ($F_{2,141} = 6,29$ $p < .05$).

Depending on the Post Hoc Test results, the participants who know the word processing before the course ($X = 81,32$) scored significantly higher on achievement test than did partially ($X = 74,61$) or non knowing word processing ($X = 73,53$).

Table9. One-way ANOVA compares achievement versus knowing Power Point before the course.

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 814,265 | 2 | 407,132 | 3,689 | ,027 |
| Within Groups | 15560,735 | 141 | 110,360 | | |
| Total | 16375,000 | 143 | | | |

According to Table 9, there is a significant difference between achievement scores and three different level of knowing Power point presentation program before the course ($F_{2,141} = 3,68$ $p < .05$).

In terms of the Post Hoc Test results, the participants who know the Power Point before the course ($X = 79,75$) scored significantly higher on achievement test than did not knowing Power Point before the course ($X = 73,33$).

Table10. One-way ANOVA compares achievement versus knowing Excell before the course.

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 1454,766 | 2 | 727,383 | 6,874 | ,001 |
| Within Groups | 14920,234 | 141 | 105,817 | | |
| Total | 16375,000 | 143 | | | |

According to ANOVA results, there is a significant difference between achievement scores and three different level of knowing Excel before the course ($F_{2,141}=6,87$ $p<.05$).

Depending on the Post Hoc Test results, the participants who know the word processing before the course ($X=80,50$) scored significantly higher on achievement test than not knowing Excel before the course ($X=73,00$).

Discussion and Conclusion:

First semester of the Turkish Universities follow the “Computer Course 1” to enrich the students’ computer literature. There are different instructional methods have been applied to be literate however some difficulties have been encountered. In order to understand these difficulties both two different instructional methods and some properties of the students were compared with achievements of computer applications.

First group is followed the computer course in a designed online environment called ECDL. The second group studied the topics from the book before come to the computer laboratory and they followed the guidelines of the book and made some practices end of the course. The achievement of these two groups is significantly different. The first groups are more successful than the second group. ECDL program covers many applications to gain the basic skills of the computer. Although there are also some applications for the second group, repeating the applications in any time in online environment may affect this achievement.

On the contrary comparing achievement versus computer usage out of the class, there is no significant difference. This paradox may explain that the usage of computers out of the course may be benefit for different aims such as e-mail, chat etc. instead of studying course subjects.

Comparing with the demographical characteristics of students and their achievements, there are no significant difference within comparisons of achievement scores among the both age and gender. Since range of ages is much closed between 17 and 22, the result can be acceptable.

In the University Entrance Examination, the candidates answer only the items of the test which are related to their field. All the candidates are expected to answer the items of the Turkish, Social Science-1, Math-1, Science-1 tests. Then, they select two of the Literature-Social, Social Science-2, Math-2 and Science-2 tests which are related to their field in the high school. Their selection, of course, determines the type of weighted composite scores calculated for them. The participants of this study have four different Weighted University Entrance Examination scores namely Equally Weighted Composite 1- 2 and Weighted Verbal Composite 1- 2. A marginally significant difference exists within comparisons of achievement scores among the four different University Entrance Examination scores. According to the results, the participants who enter the University with “equally weighted composite 2” scored significantly higher on achievement test than did “equally weighted composite 1”. As is understood that who have more ability for Math, Turkish and Science also have more achievement about computer usage.

In terms of the basic computer literature skills, students should apply the word processing, Power Point and Excel. As the result of the statistical analysis mentioned that students who have prior knowledge about these programs, they can easily develop their literacy skills and are more successful.

In summary, age and gender differences does not affect being a computer literate. Spending more time with computer out of the class does not helpful, too. On the contrary, studying with online environment and ability for basic disciplines such as Mathematics, Turkish and Science have a helpful effects being a good computer literate.

References:

- Mason, J. & Morrow R. M.(2006). *YACLD (Yet another Computer Literacy Definition)*, Journal of Computing Sciences in Colleges, 21, 5, 94 – 100.
- Turkle, S.(1984). *The second self: Computers and the human spirit*. <http://www.mitpress.mit.edu>
- Hoffman, M. And Blake, J.(2003). *Computer Literacy:Today and Tomorrow*. Journal of Consortium for Computing in Small Colleges, 18,5, 221-233.
- Richter T., Naumann J.& Groeben N. (2001). The computer literacy inventory (INCOBI): an instrument for the assessment of computer literacy and attitudes toward the computer in university students of the humanities and the social sciences). *Psychologie in Erziehung und Unterricht* 48, 1–13.

WHAT HAPPENS IF THE TEACHING OF “EDEB”İYAT GETS SENSORIAL?

Fundagül APAK

Abstract:

Nowadays, we see that many people, from “amir to memur”, “doctor to tabib”, “inşaatçı to amele” don’t know the literal meaning of their job that they do because of the incoherence between the meaning which is given to the job that they do and its literal meaning, we take part in a job that we don’t know the meaning of its name. What about “edeb”iyat?

We have a huge population who confuse the field of “yazın” and “edebiyat” who study Turkish language and literature at domestic and abroad universities but don’t know the meaning of “edebiyat” and its alteration in historical period. Every year the number of new academic staff who cannot symbolize an image which is beyond the mind and cannot express it in Turkish is increasing. We possessed the teachers who get lost in the universe of signifier and signified who are not able to see what is signe as a consequence of concept confusion such as edeb with terbiye and ahlak; mütercim with tercüman; sanat with yaratıcılık; zanaat with taklit, who think that “eflatun” and “mor” as different colours who do not know the difference between “laf” and “söz” who always says that once upon a time the signifier “otobüs” was tried to be signified as “çok oturaklı götüreç”, how an academic staff who are not aware of the literal meaning of “dil” (language) can teach which reality/irreality with which words that the “gerçek”(real/irreal) can be taught?

The answer of it goes through getting the unapparent side of words sensorial. Thousands of pages can be written about a phenomenon and it can be discussed for years. However, sensing this phenomenon by sense organs from the first hand worth thousands of papers; because the reality of knowledge which is received by senses is the most impressive thing. In this respect, the aim of this study is to observe and show how much the technology that is used in literature courses like films, power point presentations affect self-awareness.

Keywords: Edebiyat, language, teaching, sense, technology

WHERE ARE WE IN THE OPEN WORLD? AN ANALYSIS OF EDUCATIONAL TECHNOLOGY IMPLEMENTATIONS IN TURKEY

Cengiz Hakan AYDIN

Abstract:

This presentation provides a critical analyses of educational technology implementations in Turkey according to Bonk's WE ALL LEARN approach. In The World Is Flat: A Brief History of the Twenty-First Century, Thomas L. Friedman in 2005 claimed that the perceptual shift required for countries, companies and individuals to remain competitive in a global market where historical and geographical divisions are becoming increasingly irrelevant. Bonk (2009) inspired by this book and generated an idea or approach concerning learning. He called his approach as WE ALL LEARN by using the first letters of the recent top ten technology movements experiencing in the field of educational technology that require us to change our preconceptions regarding learning and education and opening the education systems to all. These movements are listed as;

Web Searching in the World of e-Books
E-Learning and Blended Learning
Availability of Open Source and Free Software
Leveraged Resources and OpenCourseWare
Learning Object Repositories and Portals
Learner Participation in Open Information Communities
Electronic Collaboration
Alternate Reality Learning
Real-Time Mobility and Portability
Networks of Personalized Learning

In this presentation I as the presenter used this approach to assess if we are able to provide enough open learning opportunities to our citizens or all or namely if we are able to open up education to all (not only people in Turkey but also all the world citizens).

Keywords: open education resources, online learning

WHY THE PLACE OF LCMS CAN NOT BE FOUND IN THE INSTITUTIONAL COMMUNICATION?

Edina Kriskó, Csilla Muhari
PTE BTK, DE IK

krisko.edina@communicatio.hu, csmuhari@yahoo.com

Abstract:

Colleges and universities have to deal with the Learning Content Management Systems (LCMS) on strategic level nowadays. They have to choose and position the means in the everyday practice and communication of the institution consciously so that it could gain support and rank. Intentional decisions based on quality management issues and commitments are made instead of spontaneous acts. Beyond teaching and administration LCMS also provide norms and help building the community which helps the institution with „selling” itself and its educational services. Even if it does not act like that (does not communicate) it is able to figure out (it is communicative in this sense) the main principles of the institution, the organisational culture, the consciousness of the management, the similarity of the institutional decisions and the extent of the commitment to the goals (and also reflects to these areas). We shall therefore list the questions which are necessary for the positioning of LCMS, the shortcomings and contradictions that can be found in the Hungarian higher education.

Keywords: LCMS, Corporate PR, Quality management, education, eLearning, communication

INTRODUCTION

The starting point of the article is the assumption that the LCMS (or Learning Management Systems – LMS) have fallen into line with the conventional methods of the organisational communication. Building an image and communication within the organisation require phasing of the available materials, messages and performing an integrated communication. It means that LMS and LCMS have to be inserted into the communication strategies as well, just as the homepages of the institution, the intranet systems, newsletters or the media. In this article we describe the bare essentials first, then we wish to examine what would happen if they can not be fulfilled. We intend to figure out the origins of uncertainty and deficiency of the organisational communication in the matter of LMS/LCMS in the Hungarian higher educational practice.

COMMUNICATION

We accept the pre-assumption that the organisation have to think in terms of an integrated communication. The base of the Integrated Communication (IC) is that the organisation coordinates messages and mediums on a strategic level so that it could shape the opinion about the institution and the provided services. It accords to the base assumption of the Integrated Marketing Communication which says that an overall plan gains extra value and the highest communication effect can be reached perspicuity and phasing. (In: Nyárády-Szeles: Public Relations I-II., Perfekt Kiadó, 2004. p. 78., after: Keegan-Moriarty-Duncan, 1991., Schultz, 1990., AAAA 1993.)

All means of communication have to be prepared strategically coordinated and consciously for the sake of reaching the maximum effectiveness. Only that communication can be efficient which covers the whole system of institutional relations, is based of the consistency of the messages (and the generated tonic effect) and may support the organisational goal(s). Public Relations (PR) literatures come up with the „waterfall model”. (In this model management decisions – goals, strategies, mission, vision – are the starting points of the lower level decisions and action plans. The communication follows it as well, so each and every activity stems from the strategy and the goals. (Nyárády-Szeles, 2004. p. 80.) It seems to be well used and applicable in the hierarchical higher education.

Due to the institutional integrations in the last few years the hierarchy and bureaucracy has become even more intensified in Hungary. Centralisation is the source of several strains since in many cases the different faculties (previously separate colleges) are working against each other instead of cooperation. Educational technology and support is one of these controversial areas.

EDUCATION SUPPORT AND PR, E-PR

Education support shows the student (teacher) friendly approach, the open-mindedness, the lateral thinking or lack of these. Actuation of LMS/LCMS is close-knit with the institutional EPR (ePublic Relations).

According to the reference of (<http://www.cerp.org/>, <http://www.cipr.co.uk/>) CERP (Confédération Européenne des Relations Publiques) the EPR contains all forms of communication in which partners communicate with each other in e-messages, interactively both inside or outside of the organisation, either via Internet or Intranet. EPR therefore involves WEB EPR, Net PR and Online PR as well (Baráth, 2006).

Interactivity and polynomial communication are emphasised in all areas of EPR. Without this criteria all opportunities provided by the Internet are considered to be commercial and propaganda materials. This polynomiality is the most important value of using LMS/LCMS.

WHERE CAN THE COMMUNICATIONAL PLANNING WORK BEGIN?

If we are thinking in an integrated communication on which areas is it required to plan LCMS strategically? The main question is the management of the institution, its strategy and the computational or development strategy. The Quality Management Handbook and the institutional communication strategy are of the greatest importance among the overall regulatory documents.

These documents and generally the strategic planning are questionable in Hungary as in most cases they come to an end in the forms of the incidentally compulsory documents (required by supervisory organs). The orderly and operative methods of the accomplishment are not always ensured. Furthermore the appointing of the responsible persons would not always ensure the feedback. It is only mentioned in the oral reports of the management that can be a field of research only with strict distinctions.

We can only examine how the theoretical commendations should work and how they are put into the practise. On one hand we can also examine the ambient factors stemming from the infrastructure and the regulatory documents, on the other side however we can rely upon our own observations.

Let us see how a communication expert would start! First of all (s)he takes stock of all the ambient factors that give the background of a functional LCMS and asks the following questions:

- Do the documents mentioned above exist at all?
- Which of these mentions LCMS or specific methods?
- Do at least the executive instructions allude to LCMS if the strategic documents would not?

- Does the certain LCMS or the one that is in use appear in the documents?
- If yes, how is the operation regulated?
- Is it part of the quality management system? To what extent is it embedded?
- Who are the circle of users?
- What is the institutional goal of LCMS?
- What is its communicational aim?
- How publicly is it operated?
- How was the introduction of LCMS communicated?
- Is the continual promotion of the system necessary? What are the possible methods?
- Are there any surveys about the use and the difficulties of it (attitude, functionality, availability, infrastructure, cost- and educational effectiveness)?
- Do LCMS compete with any other registry, editory, content sharing or managing systems within the institution?
- Where did the claim for LCMS come from? From the management, students or the lecturers?

Probably this list is not complete but answering these questions can help with showing the main direction of the communication.

STRATEGIC DOCUMENTS

In the followings you can find the strategic documents mentioned in the previous list.

- The *Institutional Development Plan (IDP)* is the strategic base document of the higher educational institutions that needs to be prepared compulsory (see: Law CXXXIX. of 2005, about the higher education) in each institution. By IDP the Ministry of Culture and Education enters into contract with the institution for four years. In this contract they set the project of realization, its timing, controlling and monitoring, and the financial conditions.
- The *Quality Management Handbook* is an essential document of the quality management system which sets the obligatory principles so that the institution could fulfill the required quality measures.
- The *self-rating survey* deals with the 9 EU-criteria (EFQM excellence model): management, strategy, collegial leadership, resources and relationships, collegial satisfaction, student satisfaction, social effect and achievement. The current field can be measured on a 5 grade scale.
- *Communicational strategy* determines the interactive relation between the institution and its environment. It provides the base of theoretical, professional and business realization in each and every process of the institution.

MEANS

The institutions can choose – one or more – means of communication from the list below for bending their administrative, examination, educational tasks. Since featuring the whole toolset exceeds the length of this article we focus on the mostly spread and used means.

- *Neptun*: The single educational system is used in 34 universities and colleges in the capital and in the country as well. In this system it is possible to manage the leaning, financial and educational activities of the institution. It was developed by the Hungarian SDA Stúdió Ltd. which also does the servicing and the newer innovations of it satisfying the needs occurring in the institution. It is typically used by institutions with the highest number of students.
- *ETR*: Single educational system. It is the concurrency of Neptun in the field of higher educational administration. 15 institutions are the member and developer of it. It is mostly used by institutions with lower number of students.
- *Modulo*: It is known as a client-friendly electronic service in different Hungarian higher educational institutions. It allows the electronisation of student administration, applications for student hostels, credit transfer, financial and other kinds of requests. (Forms like that can also be wield by Coospace.)
- *Coospace*: The developing company provides it as a cooperational portal. The aim was to provide a scene for cooperation beyond the lectures and seminars through information and document sharing. Development aim has been changed to fulfill the needs of a complex system of e-learning and distant part-time education. (Also appropriate for managing forms and applications.)
- *Sharepoint*: The intranet system of the institution that provides message boards for each sections of the institution in the form of document sharing (handouts, invitations, announcements). Also involves the visit hours of the lecturers, list of exam themes, scholarships, trainee positions and job opportunities.
- *Moodle*: is a course management system (CMS) which provides the frame of e-learning and e-teaching. Can also be used with LMS web 2.0 applications.
- *Ilias*: Similar to Moodle, also one kind of LMS but not with open source-code. The developers in Berlin are eager to build in the upcoming needs in the newer versions.
- *Anasco RevisiON*: electronic examination system. (Transacting e-exams are also possible with Coospace, Moodle and Ilias as well.)
- *Institutional homepage*: an obvious mean of communication that can not be ignored by any institutions. All documentation in connection with the function of the institution can be displayed on it.

The question occurring in connection with the variety of means is if they are present at the same time or if we can witness means competing with each other due to their functional similarities?

PRESENTATION OF AN INSTITUTION

The institution presented below is an economical college with more different faculties (commerce, finance, business) in Budapest. The faculties are available in full-time, part-time and (on two faculties) in distant learning form as well. Training supply is the following: 8 bachelor's, 6 master's and 21 vocational trainings. The number of students in 2008 was more than 17 thousand. About 15 thousand of them were studying in bachelor's, more than 2 thousand in vocational trainings, about 15 thousand in master's and about 800 persons in postgraduate courses. The total number of students exceeded the number of 20 thousand, 3500 of them in the examined faculty. In 2009 8.2% of the students on this faculty were studying in vocational training, 7.3% in the previous bachelor's not according to the Bologna system, 77.8% in bachelor's and 4.7% in master's. 75% of the students were studying full-time, 25% part-time.

Considering the facts written above we examine the means of communication found in this institution.

- Despite the notable number of students the institution does not have an *informatical strategy*, only has an Informatical Security Regulation.
- Infrastructure development, reconstruction and foundation of a quality management program can be found among the development areas (14 in number). It shows that the institution is in a transformation period since the quality assurance documents need to be created. One of the development points is the system of life long learning „services”. It only describes a possible new master’s course in a virtual university project but does not say anything about the material and infrastructural needs of it. The IDP appropriates a complex infrastructural development that creates the supply of modern education and the necessary assumptions. Further ameliorating of the infrastructural services aims extending the lecture room capacity and fulfilling the needs for services.
- In the quality management documents it is obvious that the institution would like to use the most modern means and methods, supports life long learning and the quality management of the education. For the good of these it confesses the quality management system of MSZ EN ISO 9001:2001. It compounds the European standard of higher educational quality management (ENQA – European Association for Quality Assurance in Higher Education/2005) with an EFQM-based self-rating survey. The Standard specifies the followings: The institutions have to provide the resources of teaching and means to all of their programmes. The directive mentions the infrastructural resources like library, access to computers, the working milieu (e.g.: temperature, lighting, level of noise), the human resources (lecturer, consultant, administrator...) but it does not deal with the softwares.
- The *self-rating survey* deals only with questions in connection with computational supply. It blenches the internet access, software supply, learning supporting systems, knowledge bases, knowledge communities.
- *Communication strategy* is created by an external company and is still not available.
- The *annual report* provides more information about learning management and learning support systems. The summary of the year 2008 mentions Neptun and Coospace applications. Coospace appears as education supporter software in each faculty. It was introduced in 2008.
- *Institutional homepage*: the new page which is available abreast with the old one casts doubt on the presence of strategic thinking. All institutional sections and faculties are listed on it. (This is the only way it follow the idea of Sharepoint.) All subjects and their descriptions and literatures are there as well. Hereby can the aim and the relation with other educational systems and LMS raised.

The different organisations of the college are present on communal webpages like iwiw. These appearances are absolutely incidental since almost every (student) organisation has its own profile (e.g.: sportfans, young economists, AIESEC etc.) Students also operate a separate webpage for the learning materials, schedules, notes and forums. The majority of these domains are owned by individuals. Some of these were registered in Switzerland. The effort of the college to possess these pages seems to be overdue.

From a communicational angle this dispersion is not advantageous as the harmonisation of the appearances are not aligned. The main reason for it is that most organisations would like to be independent from the college itself but also enjoy the presence of the college.

The *age compound* in the teachers’ and lecturers’ community is unfavourable in many institutions. In the college described above – according to the datas of 2009 – almost half (44%) of the 150 capita lecturer team is older than 55 years, 54% is between 30-55 years and only 2% (3 persons) are under 30. Though the older teachers do not mean automatically a spacer clue (many of them are willing to learn about e-learning, develop teaching materials and try to catch up with the new technologies) there are more negative examples than positive ones.

There is no information about the *computational skills of the lecturers*. (Passing ECDL certificate is only compulsory for the non-lecturers.) Those ones who have good computational skill do not have any experiences in e-learning, did not have any connection to LCMS previously. Preparing electronic learning materials require more time from the lecturer in the first times and the offset for this is not impregnated into the system. Many authors have already drawn attention that „*Whilst configuring electronic programmes the management and the lecturers’ team should deliberate the questions of load, compensation, tenure of mental possessions and the effect on the professional judgement of the lecturers. This common agreement should be ideally based on a policy accepted by any of the parties concerned.*” (Szűcs András, Zarka Dénes: A távoktatás módszertanának fejlesztése, pp. 122-124)

Lack of all these the following opinion would stand out about the participation.

The most widely used functions in Coospace are testing, uploading files, accessing and uploading assignments. Use of community and communicational functions are not typical however, like chat, message boards, forums, blogs.

Besides testing Moodle started in the fall semester of 2009/10. The most preferable areas are testing and development of teaching materials. Its functional operation is possible through servers and 1 full-time employee. The number of teacher using Moodle is 7.

LCMS are each other’s concurrencies in the institution but none of them has a wide circle of users. The conflict can only be observed between the documents and the practise, not among people. The demand of introducing LCMS occurred from the lecturers’ side but can not be judged for sure if it follows personal, professional or institutional interests.

CONCLUSIONS

As presented above, in this institution more means are in use side by side. The strategic documents do exist but do not refer to the different applications. Only general directives are mentioned in the quality management documentations and the means of realization are entrusted to other regulatory documents. Circle of users is dependent on the lecturers taken into the programme since students can only be seen in the system if they were given a compulsory assignment. For the others it is only incentive.

It is also taken as evidence that for making electronic learning environments organisations provide continual technical and function support. It is only possible if LCMS has a determined role in the institutional operation.

Then can the responsible persons be appointed, instructed and trained. They can gain proficiency in the technological applications and can realize changes in the appearance and management.

Would any of the systems introduced it is necessary to promote the use of it continually. If no learning aims and assignments are related to them it will not become part of the training process and students can not be obliged to use them.

There are two general methods for introducing an institutional LMS/LCMS. Either it is the result of a central decision and declaredly announced choice (in case of a central budget institution through public procurement procedure or tender), or the practise becomes generally used in the operation of the institution through individual initiation. The two cases mean different ways of development and need different communicational support.

- The first one is characteristic for institutions – mostly dealing with distant learning and e-learning – from which the Hungarian Accreditation Committee expects the adequate support of the self-learning teaching materials, continual and high standard materials, access to these materials and consultation opportunities. (Requirements for BA and MA courses accreditation are found on www.mab.hu/doc/80425BsMsKovH.doc MAB nr. 2008/4/IV. decision, the modification of nr. 2007/10/V. Decision.) In this case positioning, introducing, operating and outlet of LCMS is followed by conscious change management.

- At the institutions which do not use LMS/LCMS officially it would die away sooner or later or after reaching a critical level its operation, planning and regulations become conscious. Until this however the institution passes by many unused opportunities és unanswered questions. You can find the review of these below.

| | |
|--|--|
| <p>Student</p> <ul style="list-style-type: none"> - Shortcomings about the system frames or disorganised knowledge, - Lack of motivation, - Presence in many electronic systems. | <p>Teacher</p> <ul style="list-style-type: none"> - Not compensated overtime at first, - Load decreasing increments appear delayed (often some semesters later), - Inviolability of contact lessons, - Lack of computational skills, - Lack of e-methods. |
| <p>Management</p> <ul style="list-style-type: none"> - Lack of strategic documents, - No relation among side strategies, - Difficulties with drawing employees, - Insufficient communication, - Need of effectiveness, - Financial point of view. | <p>Operation</p> <ul style="list-style-type: none"> - Low acceptance of the function, - Operating several systems for the same dues side by side, - Competition among operations of different means, - Difficulties in measuring effectiveness showing the causality relations. |

Table 1, Blocking factors of the success of LCMS

It is important to note that introduction itself is not enough since it has to be operated as well. It **not only means availability**, servicing and refreshing. Operating also involves feedback about the effectiveness of the system to the **management**. Using **qualitative surveys** beside the use of the system has to be emphasized since these data are necessary for the further **planning** as well. **Lecturers** need to be instructed as well since it can increase their commitment to the system.

All the considerations above are essential from the angle of the success of introduction. **These assume** however technical, financial and administrative wills which is only provided if a central decision is made about the introduction of LCMS. The major problem is that LMS/LCMS and other communication networks are not anchored in the institutional **operation** until they are used as hoc.

REFERENCES

- A MAB 2008/4/IV. sz. határozat, a 2007/10/V. sz. határozat módosítása, Downloaded: 11/03/2010, www.mab.hu/doc/80425BsMsKovH.doc
- A Moodle – MoodleDocs, http://docs.moodle.org/hu/A_Moodle, Downloaded: 28/02/2010
- Baráth Tamás: Új fogalom a public relations területén, az "EPR", avagy a public relations és az Internet kapcsolata, 2006, Downloaded: 13/01/2010, <http://www.fibraco.hu/epr.htm>
- Charered Institute of Public Relations, CIPR, the professional body of the PR industry, Downloaded: 07/04/2010, <http://www.cipr.co.uk/>
- Confédération Européenne des Relations Publiques, Downloaded: 12/02/2010, <http://www.cerp.org/>
- Dexter.hu – CooSpace, <http://www.dexter.hu/hu/592/CooSpace.page>, Downloaded: 28/02/2010
- Dexter.hu – ETR, <http://www.dexter.hu/hu/482/ETR.page>, Downloaded: 28/02/2010
- Dexter.hu – Modulo, <http://www.dexter.hu/hu/593/Modulo.page>, Downloaded: 28/02/2010
- Neptun Terméktámogatási Portál – Hírek, <http://www.neptun.org.hu/>, Downloaded: 03/03/2010
- Nyárády Gáborné-Szeles Péter: Public Relations I-II., Perfekt Kiadó, Budapest, 2004.
- Szűcs András, Zarka Dénes: A távoktatás módszertanának fejlesztése, pp. 122-124, Downloaded: 13/09/2009, https://www.nive.hu/konyvtar/content/edoc/files/06_szucs.pdf

YABANCI DİL DERSİNDE YARATICI ÖĞRENME YÖNTEMİNİN ÖĞRENCİ BAŞARISI VE MEMNUNİYETİ ÜZERİNE ETKİSİ

(DİYARBAKIR GAFFAR OKKAN ANADOLU LİSESİ ÖRNEĞİ)

Saygın Eylem YAVUZ ve Murat İbrahim YAVUZ

sevavuz@hotmail.com

Özet

İçinde bulunduğumuz, hızla değişim ve gelişim gösteren teknoloji çağında, internet sayesinde gelişen iletişim olanakları, benzer ve farklı zevklerin yanı sıra, gereksinimlerin de paylaşılmasını kolaylaştırmıştır.

Avrupa Birliğine aday ülkelerden biri olarak Türkiye'nin, var olan genç nüfusunu eğitirken, yabancı dil yeterliliğini de artırması gerekmekte ve bu bağlamda yabancı dili etkin ve kalıcı şekilde öğrenenlere aktarabilmesi önem kazanmaktadır.

Yabancı dil öğretiminde, tüm alanlarda olduğu gibi, öğretmen merkezli öğretim anlayışı, giderek yerini öğrenci merkezli öğretim anlayışına bırakırken, "çoklu zeka", "hafıza teknikleri", "bilişsel biçim farklılıkları", "yaratıcı öğrenme" gibi kavramlar öğretimde daha çok yer almaya başlamıştır. Bu anlayış çerçevesinde sınıf içi uygulamalarda değişiklikler olmakta ve daha etkili öğrenme-öğretme yöntem ve teknikleri uygulanmaktadır.

Bu araştırmada, öğrenenlerin bilişsel biçimleri tesbit edildikten sonra, sonuçlara göre düzenlenmiş öğretim materyalleri ile, yaratıcı öğrenme tekniği kullanılarak, yabancı dil eğitiminin, daha kalıcı hale getirilmesi amacıyla sınıf içi bir uygulama yapılmış, sonuçları, akademik başarı, memnuniyet ve diğer kriterlere göre değerlendirilmiştir. Bunun yanı sıra, bireysel farklılıkların nasıl bilimsel olarak tesbit edilebileceği, bu farklılıkların eğitim ve öğretim sürecine olan etkisinin neler olduğu, buradan hareketle materyal hazırlamada öğretmenlere sunulabilecek stratejiler de ortaya konulmuştur.

Bu araştırma, yarı deneysel bir çalışmadır. Araştırma, sonuç, öneriler, ekler ve kaynakçası bildiri tam metninde mevcuttur.

Anahtar Kelimeler: yaratıcı öğrenme, yabancı dil öğretimi

ABSTRACT

There are rapid changes and development in the area of technology. Internet facilities communication capabilities, and the sharing requirements among people. While training the existing young population, Turkey as one of the candidate countries of European Union, increasing foreign language proficiency is required in the country. In this context for those who can transfer foreign language learning effective and lasting way is important subject.

Like in all other areas in language teaching ,teacher centered teaching method leaves its place to student centered teaching approach. Within this context more effective teaching and learning methods are being applied in classrooms such as 'multiple intelligence', 'memory techniques', 'form of cognitive differences', 'creative learning' .

In this study, after identifying those cognitive styles of the learners, classroom practice has been organized using learning techniques. Results are assessed according to the academic achievement, satisfaction and other criteria. In addition to these results, determination of individual differences and their effects on education and training process have been identified. As a result of those findings, new strategies are presented to teachers for preparing instructional materials. This research is quasi-experimental study. Research results, recommendations, bibliography and appendix are available on the full text of the report.

Key Words: creative learning, foreign language teaching

1.GİRİŞ

Literatürde yabancı dil öğretim yöntemi olarak, yedi temel yöntem belirtilmektedir. Dilbilgisi-Çeviri Yöntemi (Grammar-Translation Method), Düze Varım Yöntemi (Direct Method), Kulak -Dil Alışkanlığı Yöntemi (Audio-Lingual Method), Bilişsel Şifreleme Yaklaşımı (Cognitive-Code Approach), İletişimci Yaklaşım (Communicative Approach), Doğal Yöntem (Natural Method), Seçmeli Yaklaşım (Eclectic Method). Ancak hiçbir yöntemin diğerine göre üstün olduğunu söylemek doğru değildir. Öğretici öğreteceği konuya, ortama, öğrenene göre, bir ya da bir kaç yöntem seçip kullanabilir.

Son yıllarda öğrenme öğretme araştırmalarında önemli bir ivme kazanan yapıcı öğrenme-öğretme anlayışları, bireylerin ancak bir bağlam içinde öğrenebildikleri ilkesini savunmaktadır. Gerçeklerin bireylerin dış dünyasında olduğu varsayımını destekleyen nesnelci kuramların aksine, dış dünyadaki anlamların bireylerin kendileri tarafından yapılandırıldığı görüşünde birleşen yapıcı yaklaşım yeni bir paradigma olarak önem kazanmaktadır (Ataizi, 1999).

Gelişen eğitim teknolojileri sayesinde, tüm alanlarda olduğu gibi yabancı dil öğretiminde de öğretmen merkezli öğretim yaklaşımı yerini öğrenci merkezli öğretim yaklaşımına bırakmıştır. İşte bu noktada bireysel farklılıklar ve yetenekler söz konusu olmuştur.

Howard Gardner'ın 1983 yılında "Frames of Mind:The Theory of Multiple Intelligences adlı eserinde ortaya koyduğu "Çok Boyutlu Zeka Kuramı", zekanın toplumlar ve eğitim üzerinde yıllardır sürüp giden etkisini yani sadece dil ve matematik zekasını hesaba katan klasik zeka testi ve zeka tanımlamasını tarihe karıştırmıştır. Gardner bireylerin aynı düşünüş tarzına sahip olmadıklarını ve eğitimin eğer bu farklılıkları ciddiye aldığı düşünülürse, bütün bireylere en etkili şekilde hizmet edeceğini belirtmiştir(Demirel, 2005).

Tuckman(1991), Gage ve Berliner(1989)'e göre, yaratıcı düşünme yeteneğinin, genel yetenekle yüksek ilişki göstermediğinden yola çıkarak, bu araştırma yapılmadan önce, öğrenenlere herhangi bir zeka ya da genel yetenek testi uygulanmamış, öğrenenler, herhangi bir şekilde sınıflandırılmamış, çalışmada her öğrenme stiline, zekasına ve yeteneğine sahip, karma gruplarla çalışılmış, özellikle sınıflardaki tüm öğrenenler katılımcı olarak ele alınmıştır.

Araştırmalar öğrenmede farklı tercihler olduğunu ortaya koymuştur. Görsel, İşitsel ve Dokunsal Öğrenme. Aslında öğrenmenin maksimum seviyeye çıkarılması için bilginin her üç tarzda da işlenmesi gerekir. Hem gördüğümüz hem duyduğumuz hem anlattığımız hem de bizzat uyguladıklarımızı hatırlama oranımız %90'lara çıkmaktadır (Duyar, 2001).

Yaratıcılık; henüz doğru cevabı bulunmayan problemlere yeni yollar, yeni çözümler, yeni fikirler, yeni buluşlar üretme yeteneğidir. Yaratıcılığın genel yetenekle yüksek ilişki göstermediğine ilişkin kanıtlar bulunmaktadır (Tuckman, 1991; Gage ve Berliner, 1989). Yaratıcılıkta önemli olan, bireyin geleneksel olmayan yollarla problemlere çözüm yolları bulmasıdır. Yaratıcı birey, problemin farklı

yönlerini görebilmek için alternatif çözümler üretebilir. Yaratıcılık, değişik durumlarda esnek, akıcı, özgün, alışılmıştan farklı bir şekilde düşünmeyi kapsar (Senemoglu, 2000).

Analytik ve yaratıcı düşünce belli basamaklardan oluşur ve aşağıda da belirtilen temel ayrılıkları olduğu görülür (Baytekin, 2001).

| | | | | |
|------------------|------------|----------------------------------|---------|-------|
| Analytik Düşünce | Mantık | Tek yada az sayıda çözüm | Kesişen | Dikey |
| Yaratıcı Düşünce | Hayal gücü | Pek çok olası yanıt yada düşünce | Ayrışan | Yatay |

Kuşkusuz, yaratıcılık sevgi, güven ve özgürlük ortamında gelişir. Çocuğun düşüncelerini korkmadan, çekinmeden söylemesine izin verilmeli ve çocuk yanlış düşüncelerinden dolayı hiç bir zaman cezalandırılmamalıdır. Tersine, yaratıcı düşünce ve davranışlar ödüllendirilmelidir. Sınıfta, çeşitli resimler verip yorumlatma, çok bilinen nesnelere için (örneğin, su bardağı) değişik kullanım yerleri düşünme vb. etkinlikler düzenlenebilir (Sprinthall ve Sprinthall, 1977). Sonuç olarak yaratıcılığın en önemli insan özelliklerinden biri olduğu, sınıf içindeki ve dışındaki etkinliklerin seçimi, öğretim programlarının hazırlanması ve uygulanması sırasında yaratıcılığı geliştirici önlemlerin alınması gerektiği söylenebilir (Açıkgöz, 2003).

Kelime öğretimi ile ilgili kullanılabilecek pek çok yöntem vardır. Hiç bir yöntemin diğerine oranla çok daha başarılı olduğunu söylemek doğru değildir. Yöntemlerin başarısı, öğrenene, öğreticiye, kullanılabilecek teknolojiye, zamana, mekana, bireysel farklılıkların ne oranda dikkate alındığına vb. göre değişkenlik gösterebilir.

2. ARAŞTIRMANIN AMACI

Bu çalışmanın genel amacı, yabancı dil öğretiminde, yaratıcı öğrenme kapsamında, çeşitli hafıza teknikleri yardımıyla, Anadolu Lisesi 9. sınıf öğrencilerine, yabancı dili sevdirecek, gereksinimlerini karşılayabilecekleri bir ortam sunmak ve sonuçlarını değerlendirmektir. Bu nedenle, Anadolu Liselerinde 9. sınıflarda okutulan İngilizce Dersinde kelimelerin öğretilmesinde, yaratıcı yöntem ile geleneksel yöntemin öğrenci başarısı ve memnuniyeti üzerindeki etkisi karşılaştırılmak istenmiştir. Bu genel amaç doğrultusunda aşağıdaki sorulara yanıt aramak istenmiştir:

- Kelimelerin yaratıcı öğrenme yöntemi ile karikatürize edilerek, öğrenci merkezli verilmesi yöntemi, öğrencilerin yabancı dilde akademik başarılarına ne ölçüde etki etmiştir?
- Alan bağımlı ve alan bağımsız öğrencilerin yaratıcı öğrenme uygulamaları kapsamında, akademik başarıları arasında anlamlı bir fark var mıdır?
- Alan bağımlı öğrencilerle alan bağımsız öğrenciler arasında yaratıcı öğrenme uygulamaları kapsamında, memnuniyet konusunda anlamlı bir fark var mıdır?
- Takım çalışması eğitiminin yaratıcı öğrenme uygulamaları öncesinde öğrencilere verilmesinin öğrenciler üzerindeki etkileri nelerdir?
- Yaratıcı öğrenme uygulamalarının öğrencilerin bireysel yeteneklerinin gelişmesine, karar verme, bir takımın üyesi olma, diğer üyelerin fikirlerine saygı gösterme, görüşlerini ve duygularını sözlü ve yazılı olarak ifade edebilme, rol oynama, takımı temsil etme gibi bazı sosyal becerilerin gelişmesine ne ölçüde katkı sağlamıştır?
- Kız öğrencilerle, erkek öğrenciler arasında memnuniyet ve akademik başarı bazında anlamlı bir fark var mıdır?

3. YÖNTEM

3.1. Araştırma modeli

Bu araştırma yarı deneysel bir çalışmadır. Verilerin toplanmasında aşağıda yer alan veri kaynakları kullanılmıştır: Gizlenmiş Şekiller Grup Testi, Memnuniyet Anketi, Başarı Testi (test -tekrar test yöntemi), Karşılaştırma (test ve kontrol sınıfları arasında), Araştırmacının gözlemleri, Yurt içinde ve yurt dışında yayınlanmış, ulaşılabilen yazılı kaynaklar, Takım çalışması eğitimi.

Gizlenmiş Şekiller Gurup Testi daha çok bireylerin bilişsel algı yetenekleri ile öğrenme becerileri arasındaki korelasyonu ölçmek için kullanılmaktadır. Bu ölçek, öğretim süreçlerinin ve dersin sunumunun tasarlanması ve uygun öğretim yöntemlerinin belirlenmesi açısından öğreticilerin işini kolaylaştırmaktadır. Gizlenmiş Şekiller Testi'nin Türkiye'deki uygulamaları araştırıldığında, testin Murat Ataizi tarafından 1999 yılında, Eskişehir'de özel bir okulda uygulandığı gözlemlenmiştir. Testin güvenilirliği Spearman-Brown formülüne göre 0.82'dir (Doğan, Cansu, 2008).

3.2. Evren ve Örneklem

Araştırmada Diyarbakır Gaffar Okkan Anadolu Lisesi tüm 9. Sınıf öğrencileri yer almış, toplamda 119 kişi olan sınıflardan iki sınıf, 60 kişi deney ve iki sınıf, 59 kişi kontrol grubu olarak random atama ile belirlenmiştir. Öğrencilerin bilişsel biçimlerinin belirlenmesi için, Gizlenmiş Şekiller Grup Testi uygulanmıştır. Deney sınıflarına takım çalışması eğitimi verilmiş, beşer kişilik 6 takım oluşturulmuştur. Oluşturulan takımlarda kız-erkek ve alan bağımlı-alan bağımsız öğrencilerin dağılımının eşit olmasına dikkat edilmiştir.

Öğrencilerin hatırlamakta zorlandıkları kelimeleri belirlemeleri istenmiş, yaklaşık 200 kelime arasından 40'ı random atama ile seçilmiştir. Belirlenen 40 kelime, takımlara eşit olarak pay edilmiş ve bu kelimeleri anlamlarına yardımcı olacak Türkçe cümleler kurmaları istenmiştir. (ÖRNEK: miss : özlemek Annemin MISS kokulu böreğini ÖZLEDİM.) Yeni kelimeyi ve Türkçe karşılığını daha kolay anımsamalarına yardımcı olmak için bu sözcükler, büyük, kalın, italik, renkli, altı çizili, gibi yollarla yazılarak farklı öğrenme biçimindeki öğrenciler dikkate alınmıştır. Öğrencilerden ürettikleri cümlelere resim, karikatür, müzik gibi görsel, işitsel öğeler eklemeleri istenmiştir. Tüm takımların çalışmaları birleştirilerek bütün kontrol sınıfı öğrencileriyle paylaşılmıştır. Kontrol sınıflarına aynı 40 kelime, direct method kullanılarak, Türkçe karşılıklarıyla verilmiş, bir puzzle içinde, verilen kelimeleri bulmaları istenmiş, birer cümle kurularak anımsamalarına yardımcı olmak amaçlanmıştır. Tüm uygulamalardan sonra deney sınıflarına, memnuniyet anketi uygulanmış ve çalışmanın öğrenciler tarafından değerlendirilmesi sağlanmıştır..

4. BULGULAR ve YORUM

Öğrenci Sayıları Tablosu

| | toplam | Kontrol Sınıfı | Deney Sınıfı | 9 A | 9 B | 9 C | 9 D |
|------------------------------|--------|----------------|--------------|-----|-----|-----|-----|
| Öğrenci sayısı | 119 | 59 | 60 | 30 | 29 | 30 | 30 |
| Kız öğrenci | 58 | 30 | 28 | 14 | 16 | 14 | 14 |
| Erkek öğrenci | 61 | 29 | 32 | 16 | 13 | 16 | 16 |
| Alan bağımlı öğrenci sayısı | 91 | 44 | 47 | 23 | 21 | 25 | 22 |
| Alan bağımsız öğrenci sayısı | 28 | 15 | 13 | 7 | 8 | 5 | 8 |

Akademik Başarı Testi Sonuçları Tablosu

| | 9 A | 9 B | 9 C | 9 D | Kontrol Sınıfları | Deney Sınıfları |
|---------------|------|------|------|------|-------------------|-----------------|
| Alan Bağımsız | 22 | 28 | 39.6 | 39.7 | 25 | 39.6 |
| Alan Bağımlı | 25 | 27 | 39 | 39.6 | 26 | 39 |
| Kız | 27.5 | 29.9 | 39.7 | 39.7 | 28.7 | 39.7 |
| Erkek | 20.8 | 27 | 38.6 | 39.5 | 24 | 39 |
| Toplam | 24 | 26 | 39 | 39.6 | 25 | 39.5 |

Tekrar Test Sonuçları Tablosu

| | 9 A | 9 B | 9 C | 9 D | Kontrol Sınıfları | Deney Sınıfları |
|---------------|------|------|------|------|-------------------|-----------------|
| Alan Bağımsız | 24 | 29.5 | 39 | 40 | 26.7 | 39.6 |
| Alan Bağımlı | 26.9 | 26 | 39.8 | 39.9 | 26 | 39.8 |
| Kız | 30 | 29 | 39.9 | 40 | 29.5 | 39.9 |
| Erkek | 24 | 28.5 | 39.5 | 39.8 | 26 | 39.6 |
| Toplam | 27 | 28.7 | 39.7 | 39.9 | 27.8 | 39.8 |

Genel amaçlar doğrultusunda, yanıtları aranan sorular ve elde edilen bulgular özetle şöyle ifade edilebilir:

- Uygulamadan 1 hafta sonra tüm sınıflara 'Akademik Başarı Testi' uygulanmış, deney sınıflarının ortalama başarısı, 100 tam puan kabul edildiğinde, 98.5 olarak belirlenmiş, öte yandan kontrol sınıflarının ortalama başarısının 62.5 olduğu görülmüştür.
- Birinci başarı testinden 2 hafta sonra, tüm sınıflara 'Tekrar Test' uygulanmış deney grubu öğrencilerinin ortalama başarısı, 100 tam puan kabul edildiğinde, 99.5 iken, kontrol sınıflarının ortalama başarısı, 69.6 olmuştur.
- Alan Bağımlı ve Alan Bağımsız öğrenciler arasında, akademik başarı bağlamında anlamlı bir fark görülmemiştir.
- Kız öğrencilerin dil konusunda daha başarılı oldukları genel kanısına rağmen, bilimsel olarak değerlendirildiğinde, bu uygulamada, kız ve erkek öğrenciler arasında, akademik başarı anlamında anlamlı bir fark belirlenmemiştir. Ancak, iki hafta sonra tekrarlanan 'Tekrar Test' baz alındığında, kız öğrencilerin öğrenileni anımsama oranlarının daha yüksek olduğu ve erkek öğrencilerle aradaki küçük akademik başarı farkını artırdıkları tesbit edilmiştir.
- Öğrenciler, takım çalışması eğitiminin, yaratıcı öğrenme uygulamaları öncesinde kendilerine verilmesinden memnun olduklarını belirterek, bu eğitim sayesinde, takım çalışmasının kriterleri konusunda bilgi sahibi olmamalarının, çalışmalarını olumsuz yönde etkileyebileceği olasılığı azaltmış olduklarını, öte yandan, birlikte nasıl çalışacakları, birbirlerine ve diğer takımlara karşı sorumluluklarının neler olduğu konusunda aydınlanmış olmalarının, amaçlarına ulaşmada etken olduğunu vurgulamışlardır.
- Öğrenciler, Yaratıcı öğrenme uygulamalarının, bireysel yeteneklerinin gelişmesine, karar verme, bir takımın üyesi olma, diğer üyelerin fikirlerine saygı gösterme, görüşlerini ve duygularını sözlü ve yazılı olarak ifade edebilme, rol oynama, takımı temsil etme gibi bazı sosyal becerilerin gelişmesine son derece olumlu etki ettiğini, özellikle açık uçlu 20 sorunun yanıtı olarak belirtmişlerdir.

5. SONUÇ ve ÖNERİLER

- Deney sınıflarının akademik başarı ortalaması (100 tam puan kabul edildiğinde) 98.5, Kontrol sınıflarının akademik başarı ortalaması 62.5 olarak tespit edilmiştir. Tablolar 40 kelimedeki kaç doğru kelime yanıtlandığını göstermektedir. Her doğru yanıt 2.5 ile çarpılarak, öğrencinin 100 puan üzerinden alacağı puan tesbit edilir.
- Öğreticinin yaratıcı öğrenme konusunda bilgili olması, uygulamanın doğru şekilde ilerlemesine yardımcı olmuş ve zaman kaybını önlemiştir.
- Öğretici, öğrenenin duygu ve düşüncelerini açıkça ifade edebilmesini sağlamak için, asgari şartları sağlayabilmelidir. Bu uygulamada asgari şartlar sağlanmıştır.
- Öğrenenlerin, yaratıcı öğrenmeye engel teşkil edebilecek önceki deneyimleri, içinde buldukları kültürel şartları, duygusal ve algısal etmenleri göz önünde bulundurularak, öğretici, öğrenenlerin düşüncelerini ifade etmede, kendisinden ya da diğer öğrenenlerden kaynaklanan çekincelerinin en aza indirilmesi amacıyla, demokratik ve objektif bir rehberlik anlayışı sergilemiş, öğrenenlerin, bireysel becerilerini ön plana çıkararak takımlarına katkıda bulunmalarını destek olmuştur.

• Süreç boyunca, öğrencilerin bir arada ya da ayrı olduklarında, teknolojinin de desteğiyle, birbirleriyle etkileşim içinde olmaları sağlanmış ve tümüyle öğrenci merkezli bir öğretim yapılandırılmış, böylelikle öğrencilerin çekincelerinin en aza indirgenmesi yoluyla bireysel becerilerinin de ön plana öikarılması amaçlanmıştır.

• Öğretici, öğrenenlerin bazılarının dokunsal, bazılarının görsel, bazılarının işitsel öğrenme stiline yakın olduğunu unutmadan, öğrencilerin uygulamalarını bu üç gruba hitap edecek şekilde planlamalarına yardımcı olmuş, yapılan bu uygulamada, görsel öğrenmeye yakın olanlar için resim, power point sunusu, projektör, işitsel öğrenenler için, uygulama ile bağdaşan müzikler, dokunsal öğrenenler için çeşitli objeler kullanılmıştır. Ayrıca ortaya çıkarılan kelimeler sınıfta 'role-play' tekniğiyle canlandırılmıştır. Kontrol grubunun akademik başarısının, test grubuna oranla daha yüksek olmasına yukarıda sayılan faktörlerin yüksek etkisinin olduğu düşünülmektedir.

• Yapılan tüm uygulamalar toplamda 20 saat ve 1,5 ay sürmüştür. Bu süreçte takım çalışması eğitimi almış ve örnek farklı uygulamalar yapmış olan öğrenciler, üstlendikleri roller aracılığıyla sorumluluklarını dile getirmekteki çekingenliklerinden uzaklaşmış, ayrıca her uygulamada gruba ait yazman, sözcü vb. gibi görevlilerin değişmesiyle, bilişsel farklılıklarını da ortaya koyarak, grupta her bireyin etkin rol üstlenmeleri sağlanmış, her gurup üyesinin aynı derecede önemli ve değerli olduğunun kavranmasıyla, birbirlerini dinledikleri ve görüşlerine saygı gösterdikleri araştırmacı tarafından gözlenmiştir. Yaratıcı öğrenme uygulamaları ile ilgili görüşlerini öğrenciler memnuniyet anketinin açık uçlu 20. sorusunda ifade etmişlerdir.

ÖNERİLER

• Yabancı dil öğretiminde, yaratıcı öğretim yöntemleri uygulamalarında, zaman sınırlaması yapılmamasına dikkat edilmelidir. Öğrenenlere yeterince zaman verildiğinde bireysel becerilerini ortaya koymaları, pek çok yeni fikir üretmeleri mümkün olmaktadır.

• Öğrenme ortamının düzenlenmesinde ses, görüş açısı ve oturma düzeni dikkatle oluşturulmalı, her öğrenenin uygulamayla temasını bireysel olarak yapabilecek şekilde düzenlenmesine dikkat edilmelidir. Aksi takdirde, öğrenen, başka bir öğrenenin aktarımlarından ve yorumundan etkilenebilir ve yaratıcılığını ortaya koyamayabilir.

• Öğrenenlerin tedirginliklerini yansıtmadan, özgürce düşüncelerini ifade edebilmesini sağlayabilmek için, Öğretmenin yaratıcı öğrenme, problem çözme, ve diğer yeni öğretim yaklaşımlarını iyi bilmesi ve sınıfta nasıl uygulayabileceği konusunda deneyimli olması gereklidir. Sınıf içinde olabilecek engellemelere karşı hazırlıklı olmalı ve uygulamanın doğru yürütülebilmesi için, doğru yönlendirme yapabilecek durumda olması gereklidir.

• Öğretmen yetiştirme programlarında, yeni öğretim yaklaşımları ilk ve ortaöğretim olarak, uygulamalı olarak öğretilmeli ve öğretmenin deneyim kazanması sağlanmalıdır.

• Yabancı dilde, öğrenilecek bilginin, öncelikle ana dildeki karşılığının öğrenilmesi isteğine karşın, öğrenenlere, yalnızca bu bilginin hatırlamaya etkisinin çok az olabildiği vurgulanarak, bilgiye kendilerinin ulaşabilmesine yardımcı olacak, ip uçlarının verilmesi, bilişsel farklılıklarıyla ve bireysel yeteneklerini ortaya koyarak ve öğrenilecek veriye eklemelerle, bilginin daha kalıcı olabileceği bu veya benzeri uygulamalarla, bireysel ya da takım çalışmalarının katkılarıyla isbat edilebilir.

• Öğretici, öğrenenin aktif olduğu yöntemlerin kullanımı ile ilgili istekli olmalı, otorite değil rehber rolünü üstlenmelidir.

• Öğretici, öğrenenleri hedeften haberdar etmeli, yaratıcı eğitim etkinlikleri yoluyla yaratıcı düşünmenin her alanda kullanılabilmesini belirterek, eleştiriyeye açık, farklı düşünceleri yadsımayan, geniş açılı düşünebilen bireyler olabilmelerine destek olmalıdır.

• Öğretmenler takım çalışması ve bu çalışmanın yaratıcı öğretim yönteminde kullanılması konusunda aydınlatılmalıdır. Teknolojinin bu yöntemle nasıl birleştirilebileceği öğretmenlere ve öğretmen adaylarına anlatılmalıdır.

KAYNAKÇA

- Açıkgöz, Kamile Un."Etkili Öğrenme ve Öğretme" Eğitim Dünyası Yayınları, İzmir, 2003.
- Ataizi, Murat. "Bilgisayar Destekli Durumlu Öğrenmede Bilişsel Biliş ve İçeriğin Gerçeklik Düzeyinin Sorun Çözme Becerilerinin Gelişimine Etkisi". (Yayınlanmamış doktora tezi) Eskişehir, 1999.
- Baytekin, Çetin. "Neniçinneden Öğreniyoruz ve Öğretiyoruz" Anı Yayıncılık, Ankara, 2001.
- Demirel, Özcan. "Öğretimde Planlama ve Değerlendirme. Öğretme Sanatı.Pegem Yayıncılık,Ankara, 2005.
- Doğan, Zekiye, Cansu Tuba."Çevrimiçi Gizlenmiş Şekiller Grup Testi" Bilişsel Biçim Ölçeğinin Geçerlik- Güvenirlik Çalışması, <http://home.anadolu.edu.tr/~tcansu/bildiri.doc>, 2008.
- Duyar, Melik Safi. Accelerated Word Memory Power.Yoncahes Ltd.Sti.Ankara,2001.
- Gardner, Howard. 'Frames of Mind:The Theory of Multiple Intelligences, 1983.
- Özden, Yuksel."Öğrenme ve Öğretme"Pegem A Yayıncılık, Ankara, 2000.
- Senemoğlu, Nuray. "Gelisim Öğrenme ve Öğretim" Gazi Kitapevi, Ankara, 2000.
- Sprinthall, N.A. Sprinthall. Educational Psychology: A Developmental Approach. London: Addison-Wesley Publishing Company, 1977.

YAPICI ÖĞRENMEDE TEKNOLOJİNİN ROLÜ

Nejdet KARADAĞ

Özet:

Bu çalışmada, yapıcı öğrenme teknolojinin rolüne değinilmiş, bir uygulama çerçevesinde ilköğretim 6.sınıf öğrencilerinin teknolojinin yapıcı kullanımına ilişkin görüşlerine başvurulmuştur.

Uygulamada, öğrencilerden işbirliğine dayalı otantik görevleri yerine getirmeleri ve bu süreci video kamera ile kayıt altına almaları istenmiştir. Uygulamaya katılan öğrencilerin bu sürecin öğrenmelerine ne oranda katkı sağladığı yapılandırılmış görüşme sorularıyla elde edilen cevaplarla belirlenmeye çalışılmıştır.

Anahtar Kelimeler: Yapıcı öğrenme, aktif öğrenme, amaçlı öğrenme, teknoloji

IETC 2010

YAPILANDIRMACI EĞİTİM YAKLAŞIMI VE BU YAKLAŞIMIN GETİRDİĞİ ALTERNATİF ÖLÇME DEĞERLENDİRME YÖNTEMLERİ HAKKINDA ADAY ÖĞRETMENLERİN GÖRÜŞLERİ

Araş. Gör. Berna KAYA (bkorkmaz@sakarya.edu.tr)

Özet

Bu araştırma Sakarya Üniversitesi Eğitim Fakültesi Sosyal Bilgiler Öğretmenliği bölümünde 2009/2010 öğretim yılında öğrenim gören 4. Sınıf öğrencilerinin yapılandırıcı yaklaşım ve alternatif ölçme değerlendirme konusunda yeterli bir eğitim alıp almadıklarını sorgulamak amacıyla yapılmıştır. Nitel araştırma tasarımı ile gerçekleştirilen araştırma da yarı yapılandırılmış görüşme protokolü veri toplama aracı olarak kullanılmış, elde edilen veriler betimsel analiz yöntemi ile analiz edilmiştir. Verilerin analizi sonucu yeni programa göre eğitim alan öğretmen adaylarının yapılandırıcı eğitim ve alternatif ölçme değerlendirme araçları konusunda kısmen yeterli eğitim aldıkları sonucuna varılmıştır. Öğretmen adayları ile birlikte bu durumun nedenleri sorgulanarak daha iyi bir lisans eğitimi için yapılması gerekenler konusunda ortaya öneriler atılmıştır.

Anahtar Sözcükler: Yapılandırıcı Eğitim, Alternatif Ölçme Değerlendirme Araçları,

Abstract

This study has been performed in order to question if the senior students of Social Sciences Teaching Department of Sakarya University have received sufficient education on structural approach and alternative measurement and evaluation methods during 2009/2010 educational year. Semi structured interview method has been employed as data collecting method in this study prepared by qualitative research design and collected data have been analyzed by descriptive analysis method. As a result of analysis of the data, it has been concluded that teacher candidates receiving education in compliance with the new program have received partially sufficient education on structural education and alternative methods of research and alternative measurement and evaluation tools. Suggestions have been put forward together with the teacher candidates questioning the possible reasons in order to ensure a better undergraduate education.

Keywords: Structural Education, Alternative Measurement and Evaluation Tools.

GİRİŞ

Gelişen ve ilerleyen dünyada bilimsel ve teknolojik alanlarda görülen hızlı değişme ve gelişme eğitim kurumlarında da yapılan değişikliklerle kendini hissettirmiştir. Bu değişimden ülkemizin eğitim sistemi de etkilenmiştir. Bu değişikliklerin genel amacı öğrencilerin öğrenme seviyesini ve başarı düzeyini artırarak, öğrencinin değişen ve gelişen dünyada gerekli olan bilgi ve beceriyi kullanmasını sağlamaktır (Algan,2008). Ezbere dayalı bir eğitim sisteminin çocuğu sosyal yaşama hazırlaması günümüzde imkânsız hale gelmiştir. Günümüzün öğrencisinin kendisinin, çevresinin toplumun ve ülkesinin karşılaştığı problemleri çözmek için düşünme, bilme, öğrenme ve üstesinden gelebilme beceri ve yeteneğini geliştirmesi için çabalaması gerekmektedir (Duman,2008:243). Bu amaçla davranışçı öğrenme yaklaşımı terk edilerek öğrencinin öğrenmeye aktif olarak katıldığı ve kendi öğrenmesinde sorumluluk taşıdığı bir öğrenme yaklaşımı olan yapılandırıcı öğrenme yaklaşımı eğitim sistemimizde yerini almıştır.

Sosyal bilgiler dersi, sosyal alandaki tarih, coğrafya, vatandaşlık, turizm, tarım, sanayi ekonomi ve çevre eğitimi gibi derslerin bileşkesinden oluşan disiplinler arası bir derstir. Bu ders öğrencinin, sosyo-ekonomik, çevresel, kültürel, yerel ve küresel anlamda hem kendisini hem çevresini, yaşadığı toplumu ülkesini ve dünyayı tanıma, algılama ile ilgili sorunları çözme açısından önemli bir derstir (Duman,2008:243). Sosyal yaşama doğrudan ilişkisi olan bu derste eğitim yapılandırıcı öğrenme yaklaşımına uygun olarak verilmelidir. Sosyal bilgiler programı yeni haliyle hem öğretmenin hem de öğrencinin özelliklerinin değişmesine neden olmuştur. İlköğretimde sosyal bilgiler dersinin yapılandırıcı öğrenme yaklaşımına uygun olarak işlenebilmesi için sosyal bilgiler öğretmenlerinin yapılandırıcı öğrenme yaklaşımının bütün özelliklerini bilmelerini ve derslerini bu özelliklere uygun işlemeleri gerekir. Bunun başarılması içinde öğretmen adaylarına lisans eğitimi boyunca yapılandırıcı eğitim yaklaşımı hem teorik olarak öğretilmeli hem de öğretmen adaylarının bu yaklaşıma uygun uygulamalar yapmalarına imkân verilmelidir.

2004 yılında sadece pilot okullarda uygulamaya konulan yapılandırıcı sosyal bilgiler öğretim programı 2005-2006 eğitim öğretim yılından itibaren ülke genelinde uygulanmaya başlamıştır. Milli Eğitim Bakanlığı (MEB) ilköğretim ve ortaöğretim ders programlarındaki değişikliklerin Eğitim Fakültelerinin programlarına da yansıtılması gereğini vurgulamıştır. Bu temel gerekçeler ile Yükseköğretim Kurulu, Eğitim Fakülteleri yöneticileri ve öğretim elemanları ile konuyu paylaşarak lisans programının aksayan yönlerini giderme ve geliştirmeye yönelik bir çalışma başlatılmıştır. Revize edilen eğitim fakülteleri programı 2006-2007 eğitim-öğretim yılından itibaren birinci sınıflardan başlanarak uygulanmış, diğer sınıflar eğitimlerini başladıkları programla sürdürmüşlerdir. Ders programlarının uygulanmasında, yeni ilköğretim programlarının yapılandırıcı felsefesinin bir gereği olarak, önce deneyim ve yaşantılardan yola çıkılması, daha sonra kavram ve tanımlara ulaşılması büyük önem taşımaktadır. Ders konularının da Milli Eğitim Bakanlığı'nın ilgili kademe için hazırladığı ders programları ile ilişkilendirilmesi ve günlük yaşamdan örneklerle zenginleştirilmesi dikkate alınması gereken diğer bir husustur (Kavak., Aydın Altun, 2007: 66). Lisans öğrencileri bu yeni program hakkında lisans dersleri yoluyla bilgi alırken, çalışan öğretmenlere de hizmet içi eğitim kursları ile bu yeni program tanıtılmaya çalışılmıştır.

Yapılandırıcı öğrenme yaklaşımı, öğrencinin önceki bilgi ve deneyimlerine göre bilgiyi yapılandırması, bu bilgi ve deneyimlerle yeni karşılaştığı problemlere, durumlara alternatif çözümler bularak onları yorumlaması, kendi algılamasına göre yapılandırması anlayışı üzerine kuruludur (Duman,2008:243).

Yapılandırıcı yaklaşıma uygun ders işleyen bir öğretmen bilgi sunan bir otorite değil, öğrencilerin kendi bilgilerini yapılandırmasına, hatalarını fark etmesine, önbilgilerini işleyerek rafine etmesine, diğer insanlarla ve bilgi kaynakları ile etkileşime girmesine yardımcı olan kişidir (Şimşek, 2004). Öğretmen öğrencilere aktif olarak katılacakları yaşamın içinden problem ya da görev verir. Oluşturulan problemin çözümü için öğretmen öğrenci ile birlikte hareket ederek öğrenciye önceki öğrenmeleri ile yeni öğrenmeleri arasında ilişki kurdurur. Öğretmen öğrencilerin ürettikleri düşünceleri, önerileri, yanıtları yargılamaz, doğru yanlış gibi kesin ifadeler kullanmaz. Teknolojiyi kullanan ve kullanılmasına olanak sağlayan öğretmen araştırmacıdır. Değerlendirme ölçütlerinden öğrenciyi haberdar eden öğretmen öğrencilerin kendilerini ve birbirlerini değerlendirmeleri için de ortam hazırlar (Bıyıklı, Veznedaroğlu: 2008: 34). Öğretmen daha çok öğrenme ortamını düzenleme ve danışmanlık rollerini üstlenir. Bu yaklaşımda asıl olan, öğrenenin öğrenme sürecinde aktif olması ve öğrendiklerini var olan bilgileri ile yapılandırıp anlamlandırmasıdır (Şaşan,2002).

Yapılandırıcı anlayışta öğrenme; mevcut durumdaki etkinliklerden oluşan ve yaşam boyu ilerleyen bir süreçtir. Bilgi yaşantıları anlamlı hale getirmek için birey tarafından yapılandırılmalıdır.

Yapılandırmacılıkta anahtar sözcükler yansıma, iletişim, yorumlama ve kaynakların etkin kullanımı olmalıdır. Tüm öğrenme etkinlikleri, geniş bir görev ya da probleme bağlanmalıdır. Karar verme ve becerilerin gelişiminde öğrenme sorumluluğu öğrenenlere bırakılır (Yurdakul, 2005).

Eğitimde programların istenilen başarıyı gösterip göstermediği, öğrencilerde beklenen bilgi ve beceri ve tutumların gelişip gelişmediği ölçme-değerlendirme yoluyla belirlenmektedir. Yapılandırmacı yaklaşım ile, ürün odaklı eğitim yaklaşımlarının yerini süreç odaklı yaklaşımlarının almasına paralel olarak süreç/performance dayalı değerlendirmeyi öngören alternatif ölçme yaklaşımları öne çıkmaya başlamıştır. Alternatif ölçme değerlendirme öğrenci merkezli, öğrencilerin bireysel özellikleri göz önünde bulundurularak, öğrencilerin sahip olduğu bilgi ve becerileri gerçek yaşama ne derece uygulayabildiğini ortaya çıkarıcı farklı ölçme tekniklerini içeren bir yaklaşımdır. Alternatif ölçme değerlendirme yaklaşımında, geleneksel öğretim yaklaşımında değerlendirilen bilişsel davranışların yanı sıra duyuşsal ve psikomotor davranışlardaki gelişmeler de gözlemlenir (Çalışkan, Yiğittir, 2008). Alternatif ölçme araçları içinde portfolyo, kavram haritası, sergi, sözlü sunum, anekdot, çeklist (soru listesi, kontrol listesi), rubrikler, tartışma, ilgi envanterleri, öğrencinin kendini değerlendirmesi gibi ölçme değerlendirme araçları bulunmaktadır (Tekindal, 398).

Öğretmenlerin ölçme ve değerlendirme araçlarını yerinde, kuralına uygun olarak objektif ve güvenilir bir şekilde kullanabilmeleri için, ölçme değerlendirme konusunda yeterli bilgiye sahip olmaları ve bu bilgileri etkin bir şekilde kullanabilmeleri gerekmektedir.

Geleceğin bireylerinin yetiştirilmesinde aktif rol oynayacak ve yeni programın uygulanmasında aktif rol oynayacak sosyal bilgiler öğretmeni adaylarının yapılandırmacı yaklaşım ve ölçme değerlendirme konusundaki görüşlerinin belirlenmesi önemli bir ihtiyaçtır. Bu çalışma hem aday öğretmenlerin eksiklerini görmesini hem de öğretmen adayı yetiştiren eğitim fakültelerinin eksiklerini görmeleri açısından önemlidir.

Araştırmacının Amacı

Bu araştırmanın amacı, Sakarya Üniversitesi Eğitim Fakültesi Sosyal Bilgiler Öğretmenliği ana bilim dalında 2009/2010 eğitim yılında eğitim almış olan öğrencilerin yapılandırmacı eğitim yaklaşımına yönelik eğitimlerini ve öğrencilerin yapılandırmacı yaklaşım hakkındaki düşüncelerini ortaya koymaktır.

YÖNTEM

Katılımcılar

Çalışmanın katılımcıları, nitel araştırmaların belirgin örnekleme yöntemi olan amaçlı örnekleme seçilmiştir. Amaçlı örnekleme, derinlemesine yapılan çalışmalarda bilgi bakımından zengin kaynak sağlama gücüne sahiptir (Patton, 2002). Çalışmaya Sakarya üniversitesi sosyal bilgiler öğretmenliği bölümünde 2009/2010 eğitim yılında eğitim gören 9 öğrenci katılmıştır. Araştırmaya katılan öğrenciler gönüllülük esasıyla seçilmiş olup, araştırmanın amacı hakkında öğrenciler bilgilendirilmiştir. Katılımcıların kimliklerinin korunması amacıyla her bir katılımcı takma bir adla ifade edilmiştir.

Katılımcı Öğrenciler

| Rumuz | Cinsiyet | Yaş | Branş (Lisans) |
|---------|----------|-----|-----------------|
| Canan | Kadın | 23 | Sosyal Bilgiler |
| Seda | Kadın | 23 | Sosyal Bilgiler |
| Aysel | Kadın | 24 | Sosyal Bilgiler |
| Ayşe | Kadın | 23 | Sosyal Bilgiler |
| Ahmet | Erkek | 23 | Sosyal Bilgiler |
| Kerim | Erkek | 24 | Sosyal Bilgiler |
| Ali | Erkek | 25 | Sosyal Bilgiler |
| Hüseyin | Erkek | 23 | Sosyal Bilgiler |
| Erdal | Erkek | 24 | Sosyal Bilgiler |

Verilerin Toplanması ve Analizi

Nitel araştırma deseniyle gerçekleştirilen bu çalışmada, katılımcı öğrencilerden detaylı veri toplamak amacıyla yarı yapılandırılmış mülakat kullanılmıştır. Mülakat sürecinde veri kaybını önlemek adına katılımcıların cevaplarıyla neyi kastettiklerine yönelik ek soruların yanında katılımcı tarafından onay veya ret bekleyen sorulara da yer verilmiştir.

Her bir öğrenci ile birebir görüşme yapılarak bu görüşmeler ses kayıt cihazı ile kayıt altına alınmıştır. Ardından elde edilen kayıtlar transkript edilmiş ve veriler yazılı hale dönüştürülmüştür. Araştırma verilerinin analizinde betimsel analiz yöntemi kullanılmıştır. Analizin ilk aşamasında her bir görüşme metni baştan sona okunarak katılımcıların görüşlerine ilişkin bütüncül bir bakış açısı kazanılmaya çalışılmıştır. Ardından görüşme metinleri ayrı ayrı ele alınarak sistematik kodlamaya gidilmiştir. Daha sonra kodlar arasındaki ilişkiye dikkat edilerek kategorilere ve bunlardan da temalara ulaşılmıştır.

BULGULAR VE YORUMLAR

Bulgular kısmı üç ana başlık altında işlenmiştir.

1. Öğrencilerin Yapılandırmacı Eğitimi Algılaması Ve Lisans Eğitimi Boyunca Yapılandırmacı Yaklaşımına Yönelik Bir Eğitim Verilip Verilmediği

Araştırma konusu ile ilgili olarak Sosyal Bilgiler Öğretmenliği 4. Sınıf öğretmen adaylarının öncelikle yapılandırmacı yaklaşım konusunu nasıl algıladıkları ortaya konulmaya çalışılmıştır. Öğretmen adaylarının lisans eğitiminde yapılandırmacı yaklaşıma uygun bir eğitim alıp almadıkları sorgulanmıştır. Görüşmeler sonucunda ortaya çıkan sonuca göre öğretmen adayları lisans dersleri boyunca kısmen yeterli bir eğitim almışlardır. Yapılandırmacı yaklaşım konusunda bilgileri eksik olan öğretmen adayları bu durumun farkındadırlar. Öğretmen adaylarının yapılandırmacı yaklaşıma uygun olarak aldıkları eğitim belirli derslerle sınırlı kalmıştır. Oysa eğitim fakültelerinde 2006/2007 öğretim yılında değiştirilen eğitim-öğretim programı ile amaçlanan kendisine söylenecek olan teknisyen öğretmen yerine, problem çözen ve öğrenmeyi öğreten entelektüel öğretmen yetiştirmek hedeflenmektedir. Öğretmen adayları yapılandırmacı yaklaşıma uygun bir eğitimin nasıl olması gerektiğini kendi görüşleri ile ortaya koymuşlardır. Ayrıca öğretmen adayları lisans eğitiminde yapılandırmacı eğitim yaklaşımının nasıl olması gerektiği hakkında öneriler ortaya koymuşlardır. Bu görüşler öğretmen adaylarının yapılandırmacı yaklaşımını nasıl algıladıklarını ortaya koymaktadır.

Öğretmen adayları Aysel yapılandırmacı yaklaşımın 4-7 sınıflar arasında kullanımının uygun olduğunu düşünmektedir. Aysel'in ifadesine göre yapılandırmacı yaklaşım "4-5 de bayağı faydalı oluyor 6-7 de öğrenciler biraz sıkılıyor... 8 de çok zorlanıyor". 4. sınıf öğrencilerinin kitaba bağlı kalmadan yorum yapabildikleri ancak 8. sınıf öğrencilerinin kitaba bağlı kaldığını ifade etmiştir. 8. sınıf öğrencilerinin zorlanmasının nedeni olarak da "sekizinci sınıftaki kazanımları etkinlik yapmaya uygun değil, uygun etkinlikleri bulamıyoruz" ifadesini kullanmıştır.

Öğretmen adayları Seda da “ yapılandırmacı yaklaşım sosyal bilgiler dörtten başlıyor gibi geliyor. Dört, beş, altı, yedi de eski sisteme oranla çok iyi ama sekizinci sınıflarda kullanmak biraz zor oluyor... Aslında dörtle yediye baktığımız zaman dört daha zevkli geliyor çünkü dördü gerçekten tam olarak oyuna çevirebiliyoruz yani” diyerek iki aday öğretmen de aynı durumdan bahsetmiştir.

Hüseyin “Dört ile beşe daha uygun oradaki konular etkinlik hazırlamaya daha uygun altı, yedi, sekize geçtiğimizde artık tarih, coğrafyanın konuları giriyor bir tarih dersi daha çok düz anlatıma daha uygun bana göre orada yapılandırmacı yaklaşıma uygun etkinlikleri pek uygulamayız gibi geliyor bana dört ile beş bu etkinlikleri vermek açısından bence daha uygun”

diyerek üç aday öğretmen de aynı durumdan yapılandırmacı yaklaşıma yönelik etkinlikleri alt sınıflara uygulamanın daha kolay olduğunu ifade etmektedirler.

Öğretmen adayları Canan yapılandırmacı eğitim yaklaşımının davranışçı yaklaşımdan farklı olduğunu artık ezberlenen, unutulmuş bilgilerin olmadığını ifade ediyor.

“Davranışçı yaklaşımda düşündüğüm zaman hani ilk olarak ders sırasında yapılandırmacı yaklaşım hani öğrenciyi aktif hale getiren öğrencinin aktif olduğu daha sonra öğrencinin hani neler öğrendiğinin farkında olduğu bir yaklaşım mesela biz işte öğretmen derste anlatırdı bir şeyler tamam öğreniyorduk ama daha sonra o bilgiyi kullanmadığımız için o derste kalırdı bir de yazılıda karşımıza çıkardı sınavlarda daha sonra hiç karşımıza çıkmazdı taki bir daha ki seneye kadar. Ama şimdi hani öğrencilerin öğrendikleri şeyler farklı etkinliklerle tekrar tekrar karşımıza çıkıyor bence o da öğrenmede kalıcı hale getiriyor.”

Öğretmen adayları Kerim yapılandırmacı yaklaşımın davranışçı davranıştan farkını şu şekilde ifade etmiştir:

“Davranışçı yaklaşımda hani sonuç değerlendiriliyor yapılandırmacı yaklaşımda süreç değerlendiriliyor yani çocuğun yıl içinden yılsonuna kadar yapmış olduğu etkinlikler değerlendiriliyor. Ondan sonra davranışçı yaklaşımda şey var mesela öğrenciler genellikle bire bir değerlendirilirken yapılandırmacıda önemli olan olaylardan biri çocukları grup olarak çalıştırmak. Hani çocuklar grup olarak birbirlerine daha çok destekliyorlar. İşte öğrenmeleri daha kolay oluyor. İşte yapılandırmacı yaklaşımda bilgiden ziyade etkinlikler hazırlanıyor.”

Öğretmen adayları yapılandırmacı yaklaşım hakkında kendilerinin de yeterli bir eğitim aldıklarını düşünmemektedirler.

Yapılandırmacı yaklaşım ismini ilk defa üçüncü sınıfta duyan öğretmen adayları ilk başta yapılandırmacı yaklaşımın gereksiz olduğunu düşünmüştür. Ancak öğretmenlik uygulaması dersi sayesinde gerçek bir MEB okulunda bu yaklaşımı uygulama imkânı bulan öğretmen adayları Seda o aşamadan sonra bu sistemin gerçekten gerekli olduğunu düşünmüştür.

Seda “mesela biz ilk ben özel öğretim yöntemleri dersini gördüğüm zaman ilk defa yapılandırmacılıkla orada karşılaştım.”

Hüseyin “Yapılandırmacı yaklaşıma yönelik ilk eğitimi üçüncü sınıfta özel öğretim yöntemleri dersi ile aldım. Aynı hocanın bir başka dersinde de teorik bilgilerimi uygulama imkânı buldum. Diğer hocalardan yapılandırmacı yaklaşıma yönelik bir eğitim almadım”

Erdal de diğer arkadaşlarını destekler bir şekilde “İlk defa üçüncü sınıfta duydum, sadece tek bir hocanın dersinde yapılandırmacı yaklaşımı öğrendik diğer ders hocaları yapılandırmacı yaklaşımdan bahsetmedi” diyerek lisans derslerindeki eğitimin yetersizliği ifade etmişlerdir.

Öğretmen adayları lisans programındaki dersleri yapılandırmacı yaklaşımın öğretimi adına yetersiz bulmaktadırlar. Üçüncü sınıfta yapılandırmacı yaklaşımla tanıştığını belirten Aysel “hocaların da yapılandırmacı yaklaşım konusunda çok eksikleri var” ifadesini kullanmaktadır.

Kerim “ Biz bu okulda yapılandırmacı yaklaşımı üçüncü sınıfta alan hocalarımızdan birinin etkisiyle öğrendik tam olarak. Daha öncesinde ise eğitim bilimleri hocaları sadece yapılandırmacı yaklaşım nedir? vs. gibi konuları açıkladı ama bu hocalardan bir uygulama görmedik.” diyen öğretmen adayları uygulamanın yokluğundan şikayetçidir.

Ayşe “coğrafya ve tarih alanına yönelik derslerimizde ise yapılandırmacı yaklaşımdan hiç bahsedilmedi bu alanlar da daha iyi eğitim görmek isterdim” diyerek de bu derslerdeki eksiklikleri dile getirmiştir.

Lisans eğitiminin daha iyi bir hale getirilmesi için Ahmet’in ortaya koyduğu öneri şu şekildedir.

“Yapılandırmacı yaklaşım olarak bir ders konulabilir. Çünkü eğer bunu işte bu ülkede uygulamak istiyorsanız ilk önce teori yani nedir bu? Hani bize bunu açıklamaları gerekir. Yapılandırmacı yaklaşım nedir? Yapılandırmacı yaklaşımın aşamaları? Böyle dersler olmalı sonra uygulamaya geçilmeli”

Erdal da “Yapılandırmacı yaklaşım isimli ayrı bir dersin konulmasını, orada öğrencilere yoğun bir eğitim verilmesini isterdim. O derste teorikten uygulamaya giden bir eğitim verilmeli. Aldığım eğitimi yetersiz buluyorum.” diyerek diğer arkadaşlarıyla aynı düşünceleri paylaşmaktadır.

Seda da sistemin düzelmesi için birinci sınıftan itibaren ders konulması gerektiğini “en azından madem böyle bir sistem var hani bunu bize birinci sınıftan beri öğretmeleri gerekiyordu” bu cümlelerle ifade etmiştir.

Aysel’in düşüncesi de; “Sadece üçüncü dördüncü sınıfta değil de bunun teorik kısmını birinci ikinci sınıfta verip üçüncü dördüncü sınıfta sadece uygulamaya yüklenilmesi lazım yani çünkü gerçekten önemli” diğer öğretmen adaylarıyla hemen hemen aynıdır.

Ayşe “Yapılandırmacı yaklaşım sadece öğretmen adaylarının ders anlatması, hocanın sınıfta oturarak öğrenciyi dinlemesi olarak algılanıyor. Yapılandırmacı olunabilmesi için ilk önce derslerimize giren hocalarımızın yapılandırmacılığı iyi anlamaları ve ona göre ders işlemeleri daha sonra bunları öğretmen adaylarından istemeleri gerekiyor.” Yapılandırmacı yaklaşımın öğretilmesi konusunda dersler açısından değil de hocalar açısından bakan Ayşe olayın farklı bir boyutunu ortaya koymuştur.

Ali de “alanlarıyla ilgili yapılandırmacı yaklaşımı benimsemiş ve uygulayan hocalar derslere girmelidir” ifadesi ile yine ders hocalarının önce yapılandırmacı yaklaşım konusunda gerekli altyapıya sahip olmasının önemi vurgulanmaktadır.

Kerim de “ Teknik altyapı sahibi olan hocalar tarafından bol bol öğretmen adaylarına uygulama ortamı oluşturulmalı” diyerek uygulamanın önemine dikkat çekmektedir.

Öğretmen adayları 4 yıl boyunca aşamalı olarak (teoriden-uygulamaya) yapılandırmacı yaklaşımın kendilerine anlatılmasını istemektedirler. Hatta birinci ve ikinci sınıfta yapılandırmacı yaklaşımın teorik kısmını öğrenmek isteyen öğrenciler üçüncü ve dördüncü sınıfta uygulama yapmak istemektedirler.

Öğretmen adayları lisans dersleri ile yapılandırmacı yaklaşımın yeterince öğrenilmiş olması gerektiğini belirtiyorlar. Aysel bu sayede “ hiç olmazsa öğrencileri de birer denek olarak kullanmayız” diye belirterek de lisans derslerinde verilen yeterli eğitimin önemini ortaya koymaktadırlar.

Buradan da anlaşıldığı gibi öğretmen adayları lisans dersleri ile yeterli teorik ve uygulamalı eğitim alırsa öğretmenliğe başladıkları zaman zorlanmayacaktır.

2. Aday Öğretmenlerin Alternatif Ölçme Değerlendirme Hakkındaki Görüşleri

Alternatif ölçme değerlendirme, tek bir doğru cevabı olan çoktan seçmeli testlerin de için de bulunduğu geleneksel değerlendirme yaklaşımının dışında kalan tüm değerlendirmeleri kapsar. Öğrenci merkezli olan bu değerlendirme yöntemleri sadece ürünü değil süreci de değerlendirir.

Öğretmen adayları yapılandırmacı eğitim hakkında teorik ve uygulamaya ilişkin kısmen bilgi sahibiyken adayların yapılandırmacı yaklaşımın bir parçası olan alternatif ölçme değerlendirme araçları konusundaki bilgileri oldukça eksiktir. Öğretmen adayları daha çok kendi okumaları, çalışmaları ile performans ödevi, akran değerlendirme gibi alternatif ölçme değerlendirme araçlarını öğrenmişlerdir.

Öğretmen adayları alternatif ölçme değerlendirme araçları hakkında kısmi teorik bilgiye sahip olmasına rağmen uygulayabilirlik aşamasında bu öğretmen adayları da alternatif ölçme değerlendirme yaklaşımlarını nasıl uygulayacakları konusunda yeterli bilgiye sahip değildirler. Teorik bilgileri kısmen yeterli olmasına rağmen daha çok uygulama yapmaları gerekmektedir.

Öğretmen adayları Seda alternatif ölçme değerlendirme konusunda aldığı yetersiz eğitimi şu cümlelerle ifade etmiştir. “Kavram haritası sadece hocamıza bize gösterdi. Bu bir kavram haritası demişti. Hani bu nasıl yapılır nelere dikkat edilir falan söylememiştii.”

Öğretmen adayları Ahmet de alternatif ölçme değerlendirme senin için ne ifade ediyor diye sorulduğunda

“Alternatif ölçme kavramı valla şimdi ne desem yalan olur. Alternatif ölçme yani şey yazılı testler haricinde ölçme yani mesela yani benim için etkinliklerle ölçme. İşte öğrenciyeye mesela öz değerlendirme formları dağıtarak akran değerlendirme formları bunlarla ölçmeyi ifade ediyor yani. Öğrencinin kendi kendini ölçmesi öğretmenin öğrenciyeye ölçmesi değil de öğrencinin kendi kendini ölçmesi arkadaşını ölçmesi” şeklinde alınan cevap öğrencinin bu konuda yetersiz kaldığını göstermektedir.

Aysel alternatif ölçme değerlendirme yöntemleri kendisine bilip bilmediği sorulduğunda “ O konuda pek bir bilgim yok” cevabını vermiştir. Aysel bu yetersiz eğitimin sistemin değiştiği yıllarda hale eski sisteme yönelik ders almalarının etkisinden bahsetmektedir.

“Yetersiz eğitim aldık gerçekten. Birde şeydi değişti kazanım falan değişmişti ama biz ona göre anlattık yine eski sisteme göre aldık derslerimizi yine hedef olarak kazanım değil hedef olarak davranış olarak o şekilde aldık.”

Diğer bir öğretmen adayları Canan da, “Alternatif ölçme kavramı işte öğrencilerin mesela akranlar kendilerini ölçmesi değerlendirmesi. Öğrencilerin işte kendilerinin oluşturduğu bu portfolyo. Ürün dosyaları. Onları hatırlatıyor bana. Kavram haritaları da galiba bunun içinde öyle değil mi? kavram haritaları. Daha çok hani öğrencinin kendi yaptığı şeyler, kendisinin ortaya koyduğu şeyleri.” alternatif ölçme hakkında ilk aklına gelenlerin bunlar olduğunu söylemiştir. Canan’ın ifadelerinden de anlaşılmaktadır ki aday öğretmen bilgilerinden de emin değildir.

Seda’ya bildiği ve uygulayabileceği alternatif ölçme değerlendirme araçları sorulduğunda; “Ölçme değerlendirmeyle ilgili özellikle çok acayip eksikim var yani görmedik gibi bir şey oldu ” diyerek de bu alandaki eksikliğini dile getirmiştir.

Erdal “Alternatif ölçme değerlendirme araçlarını uygulayamam, pratik bir eğitimim yok, sadece teorik olarak biliyorum, biliyorum ama uygulayamam. Özel öğretim yöntemleri, KPSS kitaplarından bu bilgiyi kazandım. İsim olarak biliyorum ama uygulayamam. “ diyerek bilgisinin yetersizliğini ifade etmiştir.

3. Aday Öğretmenlerin Bakış Açısına Göre MEB’de Yapılandırıcı Yaklaşımın Yönelik Eğitim Veriliyor mu Verilmiyorsa Bunun Nedenleri Nelerdir?

2004 yılında sadece pilot okullarda uygulamaya konulan yapılandırıcı sosyal bilgiler öğretim programı 2005-2006 eğitim öğretim yılından itibaren ülke genelinde uygulanmaya başlamıştır.

Öğretmen adaylarına öğretmenlik uygulaması adı altında aldıkları derste staj yaptıkları okullarda yapılandırıcı yaklaşıma uygun etkinliklerle derslerin işlenip işlenmediği sorulmuştur. Öğretmen adayları staj yaptıkları okullardan gördükleri kadarıyla yapılandırıcı yaklaşımın MEB’e bağlı okullarda uygulanmadığını ifade etmektedirler. Yapılandırıcı yaklaşımın uygulanmama nedeni olarak da öğretmenlere yeterli bir eğitim verilmemesi gösterilmiştir.

Aysel “MEB’deki öğretmenler yapılandırıcı yaklaşımı uygulayamamaktadırlar. Öğretmenler kitaba bağımlı kalıp etkinlikler yapmamaktadırlar.”

Canan bu durumu şu cümlelerle “Staj okullarına gittiğimiz okullarda. Türkiye için bence uygulanması çok zor. Yani yerleşmesi bu yaklaşımın hani yerleşmesi bence uzun bir süre alacak yani. Çünkü öğretmenler şu an hani görevde olan öğretmenler bilmiyorlar yapılandırıcı yaklaşımın hani nasıl olduğu nasıl uygulanması gerektiğini. Sadece prosedürlere göre gidiyorlar hani kitaplarda yazıyor işte performans ödevleri. Performans ödevi veriyorlar. Hani bu performans ödevi nedir, nasıl yapılır, süreci nasıldır, değerlendirmesi nasıldır gibi bir bilgiye sahip değiller. Ya da etkinlikler nasıl hazırlanır. Seviyeye göre nasıl belirlenir bunları bilmiyorlar. Şu anda yetişen öğretmenlerin farkında. Onlarda ne zaman atanacak hani ne zaman göreve başlayacaklar” ifade etmiştir.

Seda da yapılandırıcı yaklaşıma yönelik bir eğitim verilmediğini “Yani şu an davranışçı bir yaklaşım yani sadece soru cevap yöntemi kullanılıyor.” diyerek ifade etmiştir.

Hüseyin da “Normal düz anlatım kitaptan okunuyor kitaptaki konu, çıkıyor çocuklar kitaptaki konuyu okuyorlar. Öğrenciyi sadece arada soru cevapla derse katıyorlar.”

Erdal “Yok verilmiyor, kesinlikle verilmiyor, okullarımız çok kalabalık, öğretmen kendi anlatıyor, davranışçı yaklaşımı benimsiyor, öğrencinin pasif kaldığı sadece soru sorulduğu zaman cevap verildiği bir obje olarak görülüyor öğrenci, hiç hizmet içi eğitim de verilmiyor bu konuda öğretmenlere, normal davranışçı yaklaşım devam ediyor.”

Canan eğitim fakültelerinde okuyan öğretmen adaylarının yapılandırıcı yaklaşımın farkında olduklarını ifade etmekte ancak “onlarda ne zaman atanacak hani ne zaman göreve başlayacaklar” diyerek sistemden umutsuz olduğunu ifade etmektedir.

Bu ifadelerde gösteriyor ki gidilen staj okullarında yapılandırıcı yaklaşım tam anlamıyla uygulanmamaktadır.

Ali, “Biz burada (lisans eğitiminde) mesela bir sürü teknik bir sürü yöntem öğrendik. İşte eğitsel oyunlar öğrendik. Bunların hiç biri yapılmıyor staj okulunda” ifadelerini kullanarak MEB’de yapılandırıcı yaklaşıma yönelik bir eğitimin verilmediğini belirtmektedir.

MEB’deki öğretmenlerin ilgili olduklarını ancak kendilerini geliştirmek için bir çaba harcamadıklarını “Hani en azından bizde gittiğimiz okullarda hocaların oradaki hocalarda gerçekten çok meraklılar.... Çünkü ellerinde bir öğretmen uygulamaları gereken bir öğretmen kılavuz kitabı var ama hiçbir şey bilmiyorlar” Canan belirtmiştir.

Seda MEB’deki öğretmenlerin yapılandırıcı yaklaşıma yönelik bir eğitim veremediklerinin farkında oldukları ancak meraklı olup, bir şeyler öğrenme çabasında oldukları “Hocalar çok meraklıydı ne olduğuna karşı. Onlar şey diyorlar uygulayamadıklarının farkındalar. Hani biz yapamadık siz bu konuyu nasıl işliyorsunuz? Hani biz bunu böyle işliyoruz ama doğru mu falan diyorlar onlarda bizden öğrenmeye çalışıyorlar” şeklinde ifade etmişlerdir.

Seda MEB’deki öğretmenler tarafından yapılandırıcı eğitimin yanlış anlaşıldığını “stajdaki okullardaki hocalar için yapılandırıcılık çocuğa dersten okutup işte kitaptan mesela konuyu okutuyorlar işte belirli bir yerde duruyorlar işte burada ne demek istenmiştir. Her konuya aynı yöntemi kullanıyorlar” ifade etmektedir.

Canan MEB’de yapılandırıcı yaklaşıma yönelik eğitimin daha kısa sürede yerleşmesi için geliştirdiği çözüm önerisini, “Bence artık emeklilik yaşı gelen öğretmenler emekli edilmeli. Yeni yetiştirilen öğretmenler atanmalı. Bence ilk olarak o yapılmalı. Daha sonra bu hani şu an da görevde olan öğretmenlere bence altı aylık bir kurs yeterli olmayabilir çünkü bizde zaten beş altı ay ders görüyoruz. Daha uzun süreli yapılandırıcı yaklaşımın hani yapılandırıcı yaklaşım nedir bunu fark etmelerini sağlaması. İlk olarak bunu öğrenmeleri gerekiyor” bu cümlelerle ifade etmiştir.

Yapılandırıcı yaklaşımın kullanımı deneyimlere bağlı diyen Ayşe “iki üç yıl bence tam bir öğretmen tam olarak yapılandırıcı yaklaşımı doğru dürtüst uygulayamaz ama daha sonra hani deneyim kazandıkça işte pratik kazandıkça bir şeyler yapar ilerler” olduğunu ifade etmiştir.

Seda da Ayşe ile benzer şekilde “Biz mesela staja gittiğimizde bizim staj grubumuzdan öğrenmeye çalışıyorlar hocalarda bize soruyorlar. Şu an değil belki ilerde böyle hani yeni mezunlar olanlar gerçekten oturtturabilirlerse iyi bir yöntem olacak” ifadesini kullanarak şimdi için değil ancak ilerisi için eğer meslekteki öğretmenlere yeterli eğitim verilirse ya da yeterli eğitim almış öğretmenler mesleğe başlarsa yapılandırıcı yaklaşımın faydalı olacağını belirtmiştir.

MEB’de yapılandırıcı yaklaşıma yönelik alternatif ölçme değerlendirme araçlarının kullanılmadığını ifade eden Seda, “Sadece işte ellerinde bir öğretmen kılavuz kitabı var. Diyorum ya onda da diyor ki şu ölçme yöntemini kullan bilmiyorum ki diyor nasıl kullanacağım. Hani burada anlatıyor ama ben bunu yapamam çünkü bilmiyorum görmedim. Hani benim bildiğim standarttır diyor. Ben öğrenciyi

gözlemlerim notumu veririm işte sene sonu sınavımı yaparım notumu veririm diyorlar ve öyle de yapıyorlar” ifadeleriyle davranışçı yaklaşıma göre öğrencilerin değerlendirilmesinin devam ettiğini belirtmektedir.

Staj uygulamalarının öğretim elemanları tarafından iyi denetlendiğinde aday öğretmenler için faydalı olduğu görülmektedir. Lisans derslerinde aldığı teorik ve uygulamalı eğitimi öğretmen adayı gerçek ortamda uygulayarak kendilerine olan güveni arttırmakta ve yapılandırmacı yaklaşımı gerçek ortamında uygulama imkânı bulmaktadır.

SONUÇ

Yapılandırmacı eğitim yaklaşımı ve bu yaklaşımın getirdiği alternatif ölçme değerlendirme yöntemleri hakkında aday öğretmenlerin görüşlerini almak amacıyla yapılan bu çalışmada öğretmen adaylarının kısmen yeterli bir eğitim aldığı sonucu ortaya çıkmıştır. Yapılandırmacı eğitimin tüm Türkiye’de ilköğretim okullarında uygulanmaya başladığı 2005/2006 öğretim yılından bir yıl sonra lisans eğitimine başlayan öğretmen adayları yapılandırmacı eğitimin varlığından ancak 2008/2009 öğretim yılında gerçek anlamıyla haberdar olmuşlardır. Öğretmen adaylarına aldıkları 4 yıllık eğitim boyunca sınırlı sayıda öğretim elemanı yapılandırmacı yaklaşıma yönelik eğitim vermiştir. Yani yapılandırmacı yaklaşım alt yapısı hazırlanmadan uygulamaya koyulmuştur. Yeni bir sistem getirilmiştir. Ancak bu sistemi uygulayacak olan öğretmen adaylarına tam anlamıyla yeterli bir eğitim verilmemektedir. Yapılandırmacı yaklaşımın ilköğretimde uygulanmaya başlamasının ardından 2006/ 2007 öğretim yılında lisans ders programlarında da yapılandırmacı yaklaşıma uygun bir değişikliğe gidilmiştir. Ancak uygulama yapılan okulda değişen derslerin içeriğine yönelik ders işlemek yerine öğretim elemanına göre ders işlenişinin değiştiğini sonucu ortaya çıkmıştır. Bu sonucun ortaya çıkma nedenini de öğretim elemanlarının yeni sisteme yönelik bir eğitim almamış olması olabilir. Araştırma sonucuna göre yapılandırmacı yaklaşımı tam anlamıyla, yapılandırmacı yaklaşıma yönelik eğitim almış genç öğretim elemanları uygulamaktadır.

Yapılan görüşmelerin değerlendirmesi de göstermektedir ki öğretmen adaylarının yapılandırmacı eğitim ve bu eğitim sisteminin getirdiği alternatif ölçme değerlendirme sistemi hakkında bilgileri eksiktir. Öğretmen adayları lisans eğitiminde yapılandırmacı eğitime dair yeterli bir eğitim almamışlardır. Aday öğretmenlerin göreve başladıklarında başarılı olabilmesi için kendilerini yapılandırmacı eğitim konusunda yetiştirmeleri gerekmektedir. Üniversitelerde yapılandırmacı eğitim yaklaşımına yönelik yeterli bir eğitim verilmesi için de öğretim elemanları kendilerini bu konuda yetiştirmeli ve gerekirse öğretim elemanları için de hizmet içi eğitim kursları düzenlenmelidir. Çünkü yapılandırmacı yaklaşıma yönelik eğitimi MEB okullarında tam anlamıyla ancak lisans döneminde iyi bir eğitim almış öğretmenler uygulayabilir.

KAYNAKÇA

- Algan, Serkan. “İlköğretim 6. Ve 7. Sınıf Sosyal Bilgiler Dersi Öğretim Programının Ölçme ve Değerlendirme Ögesinin Öğretmen Görüşleri Açısından Değerlendirilmesi” Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü, 2008
- Bıyıklı C., Veznedaroğlu L., Yapılandırmacılığı Nasıl Uygulamalıyız, Odtu Yayıncılık, 2008
- Çalışkan, H. ve S. Yiğittir. Sosyal Bilgilerde Ölçme ve Değerlendirme. Özel Öğretim Yöntemleriyle Sosyal Bilgiler Öğretimi. Tay, B. ve A. Öcal (Ed.). Ankara: Pegem A Yayıncılık, 2008.
- Duman B., Öğrenme- Öğretme Kuramları ve Süreç Temelli Öğretim, Anı Yayıncılık, 2009
- Kavak Y., Aydın A. ve Altun S., Öğretmen Yetiştirme ve Eğitim Fakülteleri (1982-2007) 2007. Yükseköğretim Kurulu Yayını 2007-5, <http://www.yok.gov.tr/content/view/16/52/> adresinden 22 Şubat 2010 tarihinde edinilmiştir.
- Patton, M. Q. (2002). Qualitative Research & Evaluation Methods, California: Sage Publications.
- Şaşan, Hasan H. “Yapılandırmacı Öğrenme”, Yaşadıkça Eğitim Dergisi, Sayı: 74-75, 2002.
- Şimşek, Nurettin. “Yapılandırmacı Öğrenme ve öğretime Eleştirel Bir Yaklaşım”, Eğitim Bilimleri ve Uygulama, Cilt:3, Sayı:5, Haziran 2005.
- Tekindal, Satılmış. “Hayat Bilgisi ve Sosyal Bilgiler Derslerinde Ölçme ve Değerlendirme”, Hayat Bilgisi ve Sosyal Bilgiler Öğretimi, (Editör: Cemil Öztürk) Pegem Yayınları, Ankara, 2007.
- Yurdakul, Bünyamin. “Yapılandırmacılık”, Eğitimde Yeni Yönelimler, (Editör: Özcan Demirel), Pegem A Yayıncılık, Ankara, 2005.

YAZILIMA ÖZEL LOG-TABANLI KULLANILABİLİRLİK TESTİ

Gökhan Akçapınar
Hacettepe Üniversitesi
gokhana@hacettepe.edu.tr

Petek Aşkar
Hacettepe Üniversitesi
paskar@hacettepe.edu.tr

Özet

Bu çalışmada, kullanıcıların yazılım ile etkileşimleri sonucu elde edilen log kayıtları kullanılarak yazılımdaki kullanılabilirlik sorunlarının tespit edilmesi amaçlanmıştır. Bu amaçla ilgili alanyazınında önerilen yöntemler incelenmiş ve bir model oluşturulmuştur. Oluşturulan model kapsamında kullanılabilirlik, “verimli kullanım” açısından ölçülmüştür ve sorunlarının tespit edilmesinde performans metriklerinden “görev başarısı” metriği dikkate alınmıştır. Veri toplama yöntemi olarak ise log kayıtlarından yararlanılmıştır. Kullanılabilirlik çalışmalarında log kayıtlarının kullanılması çok sayıda kullanıcıdan eş zamanlı ve otomatik olarak veri toplanmasına olanak sağlamaktadır ve özellikle kullanıcı yazılım etkileşimi ile ilgili problemlerin tespit edilmesinde diğer yöntemlere göre önemli avantajlar sağladığı görülmektedir.

Anahtar kelimeler: kullanılabilirlik, log-tabanlı, performans metrikleri

Abstract

The purpose of this study is to identify software usability problems by means of users' interaction log files. To do this, a literature review was done and a model was developed in the light of related studies. In this model usability is measured by “efficiency of use” and “task success” is taken into consideration as a performance metric to identify usability problems. Log files were used as a data-collection technique. A major advantage of log based usability techniques is that they make data collection from large numbers of user synchronously and automatically without any interference to the user. They also provide critical data while detecting problems within the interaction structure.

Keywords: usability, log-based, performance metrics

Giriş

Bir yandan İnternet erişim hızları artarken diğer taraftan İnternet erişim ücretlerinin azalması İnternet'in hızla yaygınlaşmasını da beraberinde getirmiştir. İnternet kullanıcı sayısındaki ve bağlantı hızlarındaki bu artış yazılım geliştiriciler için de ürünlerinin tanıtımından pazarlamasına kadar birçok hizmeti İnternet üzerinden gerçekleştirdikleri yeni bir dönem başlatmıştır. Buna yazılımın kullanıcıya ulaştırılması da dahildir. Günümüzde birçok firmanın ürünlerini cd, dvd vb. araçlarla dağıtmak yerine internet üzerinden dağıtmayı tercih ettiği görülmektedir. Yazılımların İnternet üzerinden dağıtılmasının sağladığı bir diğer avantaj ise yazılım geliştirme sürecinin önemli bir bölümünü oluşturan kullanılabilirlik çalışmaları için gerekli verilerin hızlı ve kolay bir şekilde toplanacağı yeni bir ortam oluşturmalarıdır. Bu veriler kullanıcıların arayüz ile etkileşimleri sonucu elde edilen her türlü bilgi olabilir. Verilerin ortak bir yerde toplanması ve bu verilerin analiz edilmesi ile birlikte kullanılabilirlik sorunlarının daha hızlı ve etkili bir şekilde tespit edilmesi olanaklı hale gelmektedir. Burada önemli olan nokta ise bunun için nasıl bir model kullanılması gerektiğidir. Bu çalışmanın amacı bu amaçla kullanılacak bir model oluşturmaktır.

Kullanılabilirlik

Uluslararası standartlar komisyonu (ISO 9241-11) kullanılabilirliği “Kullanıcıların belirli bir bağlam içerisinde belirlenen hedeflere etkili, verimli ve doyum içersinde ulaşması” olarak tanımlamaktadır. Kullanılabilirlik Profesyonelleri Derneği (UPA) ise “giderleri düşürmek ve kullanıcı ihtiyaçlarını karşılayan ürünler geliştirmek için kullanıcılardan alınan geribildirimlerin geliştirme döngüsüne katıldığı bir ürün geliştirme yaklaşımı” olarak tanımlamaktadır.

Nielsen (1993), soyut bir kavram olan kullanılabilirliğin ölçülebilmesi için bir model önermiştir. Bu modele göre kullanılabilirlik ölçülebilir bir takım niteliklerle tanımlanmaktadır ve tanımlanan nitelikler ile ilgili olarak toplanan nicel veriler sayesinde ölçme işlemi gerçekleştirilmektedir. Nielsen (1993) kullanılabilirliğin niteliklerini şu şekilde tanımlamıştır: Öğrenilebilirlik, Verimlilik, Hatırlanabilirlik, Hatalar ve Doyum. Tanımlanan nitelikler ile ilgili veri toplamak için de bir takım kullanılabilirlik yöntemleri önermiştir. Gözlem, Anket ve Görüşmeler, Odak gruplar, Log kayıtları, Kullanıcı geri bildirimleri gibi yöntemler bunlardan bazılarıdır.

Performans Metrikleri

Tullis ve Albert (2008), ise performans metriklerinin kullanılabilirlik çalışmalarında kullanılan en değerli araçlar olduğunu ve bu metriklerin birçok farklı ürünün etkililiğinin ve verimliliğinin test edilmesinde kullanılacak en etkili yol olduğunu belirtmektedirler. Performans metriklerini ise “görev başarısı”, “görevde harcanan süre”, “hatalar”, “etkililik” ve “öğrenilebilirlik” olarak sınıflandırmışlardır. Bu metrikler kullanılarak kullanıcıların ürünü kullanırken karşılaştığı kullanılabilirlik sorunları tespit edilebilmektedir.

Bu çalışma kapsamında oluşturulan modelde performans metriği olarak “görev başarısı” dikkate alınmıştır. Görev başarısı görev içeren her türlü kullanılabilirlik çalışmasında kullanılabilir ve kullanıcıların verilen görevleri ne kadar etkili bir şekilde başarabildiklerini ölçmek için kullanılır (Tullis & Albert, 2008).

Log Tabanlı Kullanılabilirlik Çalışmaları

Kullanıcıların verilen görevi başarıp başaramadığı ile ilgili veri toplama yöntemlerini incelediğimizde en çok kullanılan yöntemin sözlü veya yazılı olarak kullanıcıdan dönüt alınması şeklinde olduğu görülmektedir. Bu yöntemlerle veri toplanabilmesi için kullanılabilirlik testlerinin laboratuvar ortamında yapılması gerekmektedir. Laboratuvar ortamında yapılan testlerin ise bir takım sınırlılıkları vardır. Kullanıcılar laboratuvar ortamında normalden farklı davranışlar sergileyebilirler ve de bu ortamlarda yapılan çalışmalar genellikle sınırlı sayıda kullanıcı ile yürütülür. Bu kullanıcılar da genellikle programın gerçek kullanıcıları değil kolay ulaşılabilen kişilerden oluşur. Veri toplama yöntemi olarak log dosyalarının kullanılması programın hedef kitlesini oluşturan çok sayıda kullanıcıdan otomatik olarak veri toplanmasına olanak sağlar.

Nielsen (1993) log tutma yönteminin diğer kullanılabilirlik yöntemlerine göre en önemli avantajını kullanıcıya hiçbir şekilde müdahale edilmemesi olarak belirtmiştir. Hidehiko ve Toshiyuki (1999) ise log verileri gerçek kullanım sırasında alındığı için log tabanlı yöntemlerinin gerçek sorunları belirlemedeki önemine dikkat çekmektedir.

Log tabanlı kullanılabilirlik çalışmaları incelendiğinde log kayıtlarının tutulma şekline göre iki farklı yöntem izlendiği görülmektedir. Birinci yöntemde hazır yazılımlar kullanılmaktadır ve bu yazılımlar ekran görüntüleri, süre, klavye ve fare hareketleri gibi verileri kayıt etmektedir (Rubin, 1994). Diğer yöntem ise yazılımın kodlarına müdahale edilerek istenilen verilerin log dosyalarında kayıt edilmesi esasına dayanır (Kawalek, Stark, & Riebeck, 2008). İki yöntemin birbirine göre avantaj ve dezavantajları vardır. Hazır yazılımların kullanılması test uygulayıcılar için büyük kolaylık sağlarken yazılımın kodlarına müdahale edilmesi istenilen her türlü verinin kayıt edilebilmesine olanak sağlar.

Hidehiko ve Toshiyuki (1999) yazılımlardaki kullanılabilirlik sorunlarını belirlemeye yönelik log tabanlı bir araç geliştirmişlerdir. Geliştirilen araç kullanıcıların, yazılımı kullanırken gerçekleştirdikleri fare hareketlerini kayıt ederek belirlemiş oldukları kullanılabilirlik nitelikleri ile ilgili verileri toplamaktadır. Daha sonra bu verilere dayanarak kullanıcıların davranış örüntülerini çıkartmakta ve bu örüntüler

sayesinde de kullanılabilirlik problemlerinin tespit edilmesine olanak sağlamaktadır. Bazı çalışmalarda ise kullanıcılara ait log kayıtları görselleştirilerek kullanılabilirlik sorunlarının tespit edilmesinde kullanılmıştır (Malý & Slavík, 2007; Guzdial, Santos, Badre, Hudson, & Gray, 1994). Aynı zamanda log dosyaları, kullanıcıların kullanım desenlerinin belirlenmesi amacı ile de kullanılmaktadır (Guzdial, Santos, Badre, Hudson, & Gray, 1994).

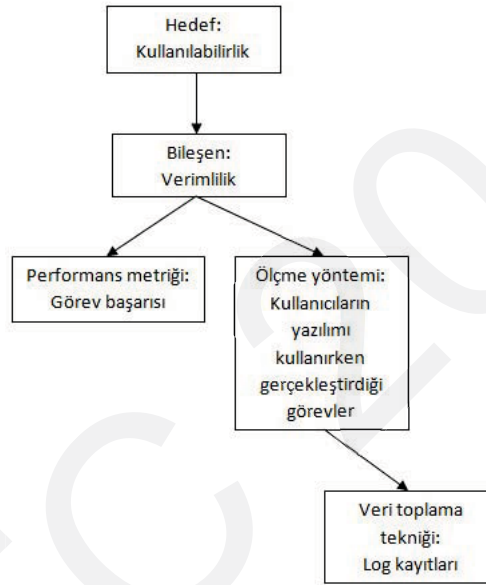
Kawalek, Stark ve Riebeck (2008) kullanılabilirlik sorunlarının belirlenmesinde hangi yöntemin daha etkili olduğunu araştırmak için yaptıkları çalışmada üç farklı ortamda üç farklı yöntem kullanılarak bir yazılıma ait kullanılabilirlik sorunlarının tespit edilmesini amaçlayan bir araştırma gerçekleştirmişlerdir. Çalışma kapsamında sesli düşünme, log dosyaları ve video kayıt yöntemleri karşılaştırılmıştır. Araştırma sonucunda log dosyalarının başta etkileşim problemleri olmak üzere kullanılabilirlik sorunlarının tespitinde önemli veriler sağladığı ve sesli düşünme ile birlikte kullanıldığında ise kullanılabilirlik sorunlarının önemli bir kısmını ortaya çıkarttığı görülmüştür.

Log kayıtları ve genel olarak performans metriklerinin diğer yöntemlere göre en önemli dezavantajı ise bu veriler ile problem tespiti yapılabilir fakat problemin neden kaynaklandığı ile ilgili doğrudan bir bilgi vermezler. Bu sorunun kaynağını söyleyebilmek için “gözlem” veya “sesli düşünme” gibi farklı verilerle desteklenmesi gerekmektedir. (Tullis & Albert, 2008).

Çalışmanın Modeli

Bu çalışma kapsamında araştırmacılar tarafından geliştirilen ve dağıtımı İnternet üzerinden yapılan bir yazılıma ait kullanılabilirlik sorunlarının belirlenmesi amacıyla bir kullanılabilirlik modeli geliştirilmiştir. Kullanılabilirlik sorunlarının kapsamını sınırlamak açısından sadece yazılımın indirilmesi, kurulumu ve kullanımı konusundaki sorunların tespit edilmesi amaçlanmıştır.

Bu amaçla geliştirilen model Nielsen'in kullanılabilirlik ölçme modeli ve Tullis ve Albert tarafından önerilen performans metriklerinin bir arada kullanılması ile oluşturulmuştur. Performans metrikleri kullanılabilirliği ölçmek için dikkate alınan niteliğin sayısallaştırılması amacıyla kullanılmıştır. Bu model bileşenleri, metrikleri, ölçme ve veri toplama yöntemleri açısından yazılımdan yazılıma farklılık gösterebileceği için yazılıma özel olarak yeniden tasarlanmalıdır. Şekil 1'de bu çalışma kapsamında dikkate alınacak model görülmektedir.



Şekil 1. Kullanılabilirlik modeli

Bu çalışma kapsamında geliştirilen modelde kullanılabilirlik verimliliği açısından ele alınmıştır. Verimliliğin ölçülebilmesi için bir takım görevler tanımlanmış ve bu görevlerin başarılanma oranlarına göre kullanılabilirlik sorunlarının tespit edilmesi amaçlanmıştır. Göreve dayalı çalışmalar incelendiğinde genel olarak kullanıcıların laboratuvar ortamında verilen görevleri gerçekleştirdiği ve bu süreç boyunca da çeşitli yöntemlerle veri toplandığı görülmektedir. Bu çalışmada da görevler kullanılmıştır fakat diğer kullanılabilirlik testlerinden farklı olarak burada tanımlanan görevlerin, kullanıcılar tarafından özel olarak gerçekleştirilmesi istenen görevlerden değil kullanıcıların programı günlük kullanımları sonucu farkında olmadan gerçekleştirdikleri ve programı kullanabilmek için gerçekleştirmek zorunda oldukları görevlerden oluşmaktadır. Bu amaçla kullanılacak görevler tanımlanırken dikkat edilmesi gereken bir diğer nokta ise görevlerin açık ve net bir şekilde belirlenmesi ve bu görevlerin başarılıp başarısızlığı ile ilgili bilgilerin doğrudan log kayıtları ile elde edilebilir olması gerekliliğidir.

Seçilen yazılımı incelediğimizde, yazılımı kullanmak isteyen bir kullanıcının gerçekleştirmesi gereken temel görevlerin programı İnternet sitesinden indirmesi, bilgisayarına kurması, üyelik işlemini gerçekleştirmesi ve programı kullanmaya başlaması şeklinde olduğu görülmektedir. Tablo 1'de bu görevler ve bu görevlerin gerçekleştirilmesi için başarılanması gereken alt görevler sunulmuştur. Tablo 1'i incelediğimizde 1. ve 2. görevin birçok yazılım için geçerli olduğu görülürken 3. ve 4. görevin seçilen yazılıma özel görevler olduğu görülmektedir.

Tablo 1. Kullanıcıların gerçekleştirmesi gereken görevler

| Ana görevler | Alt görevler |
|---------------------|--|
| 1. Programı indirme | a) Yazılımın indirileceği web sitesini ziyaret b) İndirme sayfasını ziyaret c) Yazılımın indirilmesi |
| 2. Kurulum | a) Yazılımın bilgisayara kurulması |
| 3. Üyelik | a) İnternet üzerinden üyelik işleminin yapılması b) Programın sorunsuz bir şekilde başlatılması |
| 4. Kullanım | a) Kelime gruplarının oluşturulması b) Teste başlanması c) Yazılımın düzenli olarak kullanılması |

Görevler belirlendikten sonra yazılım üzerinde bu görevlerin başarılıp başarısızlığı ile ilgili bilgilerin kayıt edilebilmesi için gerekli düzenlemeler yapılmalıdır. Bu çalışma kapsamında seçilen yazılım ile ilgili görevler yazılıma ait web sitesini de kapsadığı için web ve yazılım olmak üzere iki farklı boyutta log kayıtlarının tutulması gerekmektedir.

Veri Toplama Yöntemi

Birinci görevi ve ilgili alt görevleri başarı ile gerçekleştiren kullanıcıların sayısını elde etmek için web sitesi, ilgili log kayıtlarını tutacak şekilde düzenlenmiştir. Diğer görevleri başarı ile gerçekleştiren kullanıcıların sayısına ulaşmak için ise yazılım üzerinde bir takım düzenlemeler yapılmıştır. Seçilen yazılımın çalışması için İnternet bağlantısı gerektiğinden ilgili log kayıtlarının da İnternet üzerinde bir sunucuda toplanması uygun görülmüştür. Bu sayede bütün kullanıcılar ile ilgili verilerin tek bir merkezde toplanması olanaklı hale gelecektir. Bu da veri toplama ve analiz sürecinde harcanan zaman ve emeği azaltacaktır.

Sonuç ve Tartışma

Bu çalışmada log verilerine dayanan ve kullanılabilirliğin verimlilik açısından ölçülmesine olanak sağlayan bir model oluşturulması amaçlanmıştır. Geliştirilen model doğrultusunda seçilen yazılım üzerinde gerekli düzenlemeler yapılmıştır. İleriki çalışmalarda toplanan verilerin nasıl yorumlanacağı ile ilgili araştırmalar yapılacaktır. Farklı yazılımlarda ihtiyaçlar ve görevler farklı olacağı için ileriki çalışmalarda kullanılabilirliğin farklı nitelikler ile ölçüldüğü ve bu niteliklerin sayısallaştırılmasında farklı performans metriklerinin kullanıldığı yeni modeller oluşturulabilir. İstendiği takdirde log kayıtlarından yararlanılarak kullanılabilirlik çalışmalarında kullanılan diğer özellikler ile ilgili de veriler toplanabilir.

Geliştirilen modeli incelediğimizde, çok sayıda kullanıcıya ait veriyi tek bir merkezde toplamaya olanak sağlaması, bu işlemi otomatik olarak gerçekleştirmesi ve bu verilerin laboratuvar ortamında belirli kullanıcılardan değil programın gerçek kullanıcılarının program ile günlük etkileşimleri sonucu elde edilen verilerden oluşması bu modeli diğer kullanılabilirlik yöntemlerinden ayırmaktadır. Fakat bu avantajlarının yanında her bir yazılım için ayrı modelleme yapılması gerekliliği ve modelin uygulanması için programlama/veritabanı bilgisi gerektirmesi şu an için uygulanabilirliğini sınırlamaktadır.

İleriki çalışmalarda kullanıcı davranışları ile ilgili olarak etkili bir veri toplama yöntemi olan log kayıtlarının kullanılabilirlik testlerinde daha farklı metrikler ile ilgili olarak da kullanıldığı çalışmalar yapılabilir.

Kaynaklar

- Guzdial, M., Santos, P., Badre, A., Hudson, S., & Gray, M. (1994). *Analyzing and Visualizing Log Files: A Computational Science of Usability*. Georgia Institute of Technology.
- Hidehiko, O., & Toshiyuki, A. (1999). GUITESTER: A Log-Based Usability Testing Tool for Graphical User Interfaces. *IEICE Transactions on Information and Systems*, 1030-1041.
- Kawalek, J., Stark, A., & Riebeck, M. (2008). A New Approach to Analyze Human-Mobile Computer Interaction. *Journal of Usability Studies*, 90-98.
- Malý, I., & Slavík, P. (2007). Towards Visual Analysis of Usability Test Logs Using Task Models. In K. Coninx, K. Luyten, & K. A. Schneider, *Task Models and Diagrams for Users Interface Design* (pp. 24-38). Berlin: Springer.
- Nielsen, J. (1993). *Usability Engineering*. Boston: Academic Press.
- Rubin, J. (1994). *Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests*. New Jersey: John Wiley & Sons, Inc.
- Tullis, T., & Albert, W. (2008). *Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics (Interactive Technologies)*. Morgan Kaufmann.

YENİ İLKÖĞRETİM PROGRAMININ EĞİTİM TEKNOLOJİSİ KULLANIMI ÜZERİNDEKİ ETKİSİYLE İLGİLİ ÖĞRETMEN GÖRÜŞLERİ*

TEACHER'S VIEWS ABOUT THE EFFECTS OF NEW ELEMENTARY EDUCATION CURRICULUM ON USING EDUCATIONAL TECHNOLOGY

H. Aysel AYGÜN

Bilişim Teknolojileri Öğretmeni, Kadıköy Anadolu Lisesi
ayselaygun@yahoo.com

Özcan Erkan AKGÜN

Yrd.Doç.Dr. Sakarya Üniversitesi Eğitim Fakültesi,
Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
oakgun@sakarya.edu.tr

Özet: Bu çalışmada öğretmenlerin, Eğitim teknolojilerini eski ve yeni ilköğretim programına göre eğitim öğretim faaliyetlerinde ne düzeyde kullandıkları incelenmiştir. Araştırma 2008-2009 eğitim öğretim yılının birinci döneminde, İstanbul ili Ümraniye ilçesinde seçkisiz yöntemle seçilen 16 okuldan 300 öğretmene uygulanarak gerçekleştirilmiştir. Araştırmada genel tarama modellerinden ilişkisel tarama modeli kullanılmıştır. Verilerin analizinde frekans, yüzde, ortalama, ANOVA, t testi, Kruskal Wallis H testi, Mann Whitney U testi ve ki-kare testi kullanılmıştır. Öğretmenler için iki farklı anket geliştirilmiş ve uygulanmıştır. Eski ve yeni ilköğretim programı (YİP) açısından öğretmenlerin öğrenme-öğretme süreciyle ilgili eğitim teknolojilerinden yararlanmaya ilişkin görüşleri karşılaştırıldığında öğretmenlerin YİP'le birlikte öğretim materyali hazırlamada daha etkin oldukları ve üst düzey öğrenme ürünlerini hedefleyen yöntemleri kullanmaya daha olumlu baktıkları görülmektedir. Öğretmenlerin eski ve yeni ilköğretim programında teknoloji ve yöntem kullanma sıklıkları incelendiğinde YİP'le birlikte modern eğitim teknolojilerini klasik teknolojilere göre daha çok kullandıkları ve üst düzey öğrenmeyi hedefleyen yöntemleri daha çok tercih ettikleri görülmüştür.

Anahtar sözcükler: eğitim teknolojileri, yeni ilköğretim programı

Abstract : This is a survey study that it is aimed to find out how teachers use technology in education according to old and new elementary education curriculum. Sample was randomly selected from Umraniye district from Istanbul. From this sample 300 teachers participated in the research. Frequency, percentage, mean, ki-kare t-test, Kruskal Wallis, Mann Whitney U and ANOVA have been used to analyse data. Two different scales for teachers developed and implemented. According to results teachers are more effective with the new curriculum about developing instructional materials and more preferably using teaching methods aiming higher order level of learning than the old curriculum. Frequencies about using technology in education show that the teachers use more frequently the modern educational technologies with the new education curriculum than the classic educational technologies.

Keywords: educational technology, new elementary education curriculum

1. GİRİŞ

Değişen ve gelişen teknolojiyle birlikte bilgi toplumunda bireylerin bilgiye ulaşma yolları, öğrenme biçimleri, bilgiyi uygulama biçimleri geleneksel topluma göre oldukça değişmiştir. Teknolojik alanların öğrenme ve öğretme süreçlerinde etkin olmasıyla eğitim alanında da köklü değişimler yaşanmıştır. Bunun sonucunda, günümüz eğitim sürecinde sergilenen çeşitli çağdaş yapılanmalarla eğitime farklı bir anlayış ve yapı getirilmiştir.

2004-2005 öğretim yılından itibaren kısmen uygulanmaya başlanan yeni ilköğretim programı da eğitim sistemimizdeki en önemli değişimlerden biri olmuştur. Yeni ilköğretim programıyla bireylerin farklı öğrenme biçimleri dikkate alınarak, geleneksel eğitim anlayışında uzaklaşmış ve araştıran, eleştiren, keşfeden bireyler yetiştirilmesi amaçlanmıştır.

Teknoloji ve eğitimi birleştirmek çağdaş eğitim anlayışlarından biri olmuştur. Yeni ilköğretim programıyla varılmak istenilen hedeflerden biri de eğitimde teknoloji kullanımını arttırmaktır. Bu anlayışla eğitim teknolojisi kavramının ne kadar etkili olduğunu belirleyebilmek düşüncesi araştırmanın başlangıcını oluşturmuştur.

Yapılan bu araştırma öğretmenlerin yeni ilköğretim programının uygulanmasıyla öğretmenlerin eğitim teknolojilerine ilişkin görüşlerini belirleyerek, bu değerlendirmeden alınacak dönüt ile öğrenme-öğretme etkinliklerinde seçilen teknolojiye göre ortamı düzenleme ve kullanma, eksikliklerin ortaya konması ve giderilmesinde yardımcı olacağı düşünülmektedir. Böylece değişen eğitim anlayışının sınıf içindeki yansımaları belirlenmeye çalışılmıştır.

Bu bağlamda araştırmanın amacı, yeni ilköğretim programının uygulanmasıyla birlikte; öğretmenlerin, eğitim teknolojisi kullanımına yönelik görüşlerini belirlemek, eğitim teknolojisi kullanımını öğretmen görüşleri ve kullanım sıklıklarına göre karşılaştırmaktır.

Genel amaca ulaşabilmek için aşağıdaki sorulara yanıt aranmıştır:

1. Öğretmenlerin eski ve yeni programda eğitim teknolojisi kullanımına ilişkin görüşleri arasında anlamlı bir fark var mıdır?
2. Öğretmenlerin eski ve yeni ilköğretim programına göre eğitim teknolojisinin ortam ve süreç boyutlarından yararlanma sıklıkları
 - a. Görsel ve işitsel araçlar
 - b. Elektronik ve çevrimiçi ortamlar
 - c. Okul içi, okul dışı etkinlikler ve
- d. Öğrenme-öğretme yöntem ve teknikleri açısından anlamlı bir farklılık göstermekte midir?

2. YÖNTEM

2.1 Araştırmanın Modeli

* Bu çalışma Hatice Aysel AYGÜN'ün Sakarya Üniversitesi Sosyal Bilimler Enstitüsü'nde ikinci yazarın yönetiminde tamamladığı "Yeni İlköğretim Programının Uygulanmasıyla Eğitim Teknolojileri Kullanımına İlişkin Öğretmen Görüşleri" adlı yüksek lisans tezinin bir kısmının özeti'dir.

Araştırma tarama türüdür. Araştırma kapsamında öğretmenlere yönelik iki ölçek geliştirilmiştir. Bunlarla birlikte uygulanan ankette katılımcılara ilişkin kişisel bilgilerin sorulduğu bir bölümde yer almaktadır. Birinci ölçek, eski ve yeni ilköğretim programında eğitim teknolojisi kullanımına yönelik öğretmen görüşleri ölçeği (EYPETK); ikinci olarak eski ve yeni ilköğretim programında öğretmenlerin teknoloji ve yöntemlerden yararlanma sıklığı ölçeği (EYPTYYS)'dir. Bu veri toplama araçlarının geliştirilmesi ile geçerlik ve güvenilirliklerine ilişkin bulgular ayrı alt başlıklar altında verilmiştir.

2.2 Evren ve Örneklem

Araştırmanın evrenini 2008-2009 öğretim yılında İstanbul ili Ümraniye ilçesinde bulunan resmi ve özel ilköğretim okullarında görev yapan branş ve sınıf öğretmenleri (2428) oluşturmaktadır. Çalışma evreninde yer alan 51 ilköğretim okulundan 16 tanesi seçkisiz örneklem grubu içine alınmış ve bu okullarda görev yapan, toplam 300 branş ve sınıf öğretmeni araştırmanın örneklemi oluşturmuştur.

2.3 Veri Toplama Araçları

Araştırma kapsamında kullanılan veri toplama araçlarına ilişkin bilgiler ayrı alt başlıklar şeklinde verilmiştir.

2.3.1 Eski ve yeni ilköğretim programında eğitim teknolojisi kullanımına yönelik öğretmen görüşleri ölçeği:

Bu ölçek yeni öğretim programının uygulanmasıyla eğitim teknolojileri kullanımının değişip değişmediğinin belirlenmesi amacıyla araştırmacı ve danışmanı tarafından geliştirilmiştir. Bu değişimi saptamak ve değişimi belirleyebilmek adına eski ve yeni ilköğretim programlarına ilişkin öğretmenlerden görüş alınmıştır.

2.3.1.1 Geçerlik.

Eski ve yeni ilköğretim programında eğitim teknolojisi kullanımına yönelik öğretmen görüşleri ölçeği'nin geçerliği için görünüm geçerliği ve kapsam geçerliği sağlanmıştır. Anketin iki boyutu olması ve iki farklı durum için görüşlerin belirlenmesi nedeniyle soru bazında karşılaştırma yapılabilmesi ve iki farklı boyutta aynı soruların yer almasının önemli olması nedeniyle istatistiksel olarak yapı geçerliğini incelemek tercih edilmemiştir. Kapsam geçerliğini incelemek için alanında deneyimli uzmanlardan ve öğretmenlerden oluşan bir ekipten anketi değerlendirmeleri istenmiştir. Ölçeğin kapsam geçerliğinin sağlanması amacıyla dört öğretim üyesi, üç bilgisayar öğretmeni, bir Türkçe uzmanının görüşleri alınarak maddeler incelenmiş ve gerekli görülen düzeltmeler yapılmıştır. Ekipten alınan geri bildirimler dikkate alınarak bazı sorular revize edilerek, bazı sorular anketten çıkarılarak ve bazı yeni sorular eklenerek anketin son formu oluşturulmuştur.

2.3.1.2 Güvenirlik

Kapsam geçerliği sağlanan ölçeğin eski durumu belirten ve yeni durumu belirten iki farklı veri setinden yararlanılarak güvenirliliğin incelenmesi amacıyla iç tutarlık katsayıları hesaplanmıştır. Anketin eski ilköğretim programıyla ilgili görüşlerin belirtildiği verilerden elde edilen güvenirlilik katsayısı .71, yeni ilköğretim programına yönelik görüşlerin belirtildiği verilerden elde edilen güvenirlilik katsayısı ise .73 olarak hesaplanmıştır.

2.3.2 Eski ve yeni ilköğretim programında öğretmenlerin teknoloji ve yöntemlerin yararlanma sıklığı ölçeği

Bu ölçek yeni öğretim programının uygulanmasıyla eğitim teknolojileri kullanımının değişip değişmediğinin belirlenmesi amacıyla araştırmacı ve danışmanı tarafından geliştirilmiştir. Bu değişimi saptamak ve değişimi belirleyebilmek adına eski ve yeni ilköğretim programlarına göre öğretmenlerin eğitim teknolojilerini kullanma sıklığına ilişkin öğretmenlerden görüş alınmıştır.

2.3.2.1 Geçerlilik

Eski ve Yeni ilköğretim programında, öğretmenlerin teknoloji ve yöntemlerden yararlanma sıklığı ölçeğinin geçerliği için görünüm geçerliği ve kapsam geçerliği sağlanmıştır. Anketin iki boyutu olması ve iki farklı durum için görüşlerin belirlenmesi nedeniyle soru bazında karşılaştırma yapılabilmesi ve iki farklı boyutta aynı soruların yer almasının önemli olması nedeniyle istatistiksel olarak yapı geçerliğini incelemek tercih edilmemiştir. Kapsam geçerliğini incelemek için alanında deneyimli uzmanlardan ve öğretmenlerden oluşan bir ekipten anketi değerlendirmeleri istenmiştir. Ölçeğin kapsam geçerliğinin sağlanması amacıyla dört öğretim üyesi, üç bilgisayar öğretmeni, bir Türkçe uzmanının görüşleri alınarak maddeler incelenmiş ve gerekli görülen düzeltmeler yapılmıştır. Ekipten alınan geri bildirimler dikkate alınarak bazı sorular revize edilerek, bazı sorular anketten çıkarılarak ve bazı yeni sorular eklenerek anketin son formu oluşturulmuştur.

2.3.2.2 Güvenirlik

Kapsam geçerliği sağlanan ölçeğin eski durumu belirten ve yeni durumu belirten iki farklı veri setinden yararlanılarak güvenirliliğin incelenmesi amacıyla iç tutarlık katsayıları hesaplanmıştır. Anketin eski ilköğretim programıyla ilgili görüşlerin belirtildiği verilerden elde edilen güvenirlilik katsayısı .89, yeni ilköğretim programına yönelik görüşlerin belirtildiği verilerden elde edilen güvenirlilik katsayısı ise .93 olarak hesaplanmıştır.

2.4 Verilerin Toplanması

Araştırmaya başlayabilmek için öncelikle İstanbul İl Milli Eğitim Müdürlüğü'nden gerekli izinler alınmıştır. Alınan izin belgesi Ek 1'de sunulmuştur. Araştırmaya dâhil olan okullara gidilerek alınan izin belgesi okul idaresine verilmiştir. Okul idaresi ve öğretmenlere gerekli açıklamalar araştırmacı tarafından yapılarak idare ve öğretmenler için uygun olan zamanlarda, uygun yerlerde ölçekler uygulanmaya başlanmıştır. Araştırmanın okullardaki uygulama safhası 2008-2009 öğretim yılında gerçekleştirilmiştir. Uygulanmak üzere okullara gönderilen, dönen ve geçerli sayılan anket sayıları Tablo 1'de verilmiştir.

Tablo 1. Okullara gönderilen, dönen ve geçerli sayılan anket sayıları.

| Anket | Öğretmen |
|--------------------------|----------|
| Gönderilen | 430 |
| Dönen ve Geçerli Sayılan | 300 |
| Gerİ Dönüş Oranı (%) | %70 |

2.5 Verilerin Çözümlemesi

Araştırma kapsamında toplanan verilerin analizi için öncelikle veri seti çok değişkenli normallik varsayımının karşılanıp karşılanmaması açısından incelenmiştir. Verilerin analiz edilmesinde normal dağılımın varsayımının karşılandığı durumlarda t-testi ve ANOVA, karşılanmadığı durumlarda ikiden çok sayıda karşılaştırmalar için Kruskal Wallis analizi, ikili karşılaştırmalar için ise Mann Whitney U analizi kullanılmıştır. Ancak analizlere ilişkin sonuç tabloları bu çalışma için belirtilen sayfa sınırlaması nedeniyle verilememiş, bulgulara ilişkin özet tablolar sunulmuştur. Bunun yanı sıra öğretmenlerin eski ve yeni ilköğretim programına göre teknoloji ve yöntemlerden yararlanmalarına ilişkin tutumlarını karşılaştırmak için Ki-kare analizi kullanılmıştır. Verilerin frekans ve yüzde değerleri de hesaplanmıştır.

3. BULGULAR

Çalışma evrenini oluşturan İstanbul ili Ümraniye ilçesinde görev yapmakta olan 430 sınıf ve branş öğretmenine araştırma anketi verilmiştir. Geriye dönen ve geçerli sayılan 300 anketin sahiplerinin görev yaptığı okul türüne, cinsiyetine, hizmet yılına, branşına, yaş gruplarına, eğitim durumuna ve mezun olduğu bölüme ile ilgili bilgiler şu şekildedir: Çalışma örneklemini oluşturan okulların %90'ı (270) devlet okulu. %10'u (30) özel okul'dur. Okul türü değişkeni verilerin analizinde bağımsız değişken olarak kullanılmamıştır. Araştırmaya katılan öğretmenlerin

%59'u (177) kadın, %41'i (123) erkektir. Bu öğretmenlerin %22'si (66) 0-5 yıl, %32.3'ü (97) 6-10 yıl, %22.7'si (68) 11-15 yıl, %8'i (24) 16-20 yıl, %15'i (45) 21-25 yıl ve üzeri kıdeme sahiptir. Öğretmenlerin %53'ünün (159) sınıf öğretmeni, %15.3'ü (46) sosyal bilimler alanındaki branşlarda, %31.7'si ise fen bilimleri (95) alanındaki branşlar öğretmenlerinden oluştuğu görülmektedir. Çalışma örneklemini oluşturan öğretmenlerin % 25'i (75) 20-29 yaş grubunu, %44.7' si (134) 30-39 yaş grubunu, %20.3'ü (61) 40-49 yaş grubunu, %10'u (30) ise 50 yaş ve üstü yaş grubunu işaretlemişlerdir. Öğretmenlerin, %10.7'si (32) Önlisans, %76.7'si (230) Lisans, %12.3'ü (37) Yüksek lisans, %3'ü (1) Doktora derecesinde mezuniyete sahiptirler. Öğretmenlerin %55.7'si (167) eğitim fakültesi, %32.3'ü (97) 4yünlük lisans seçeneğini, %1.3'ü (4) lisans tamamlama – AOF seçeneğini, %10.7'si (32) eğitim enstitüsü seçeneğini işaretlemişlerdir. Öğretmenlerin %66'sı (198) yeni ilköğretim programına ilişkin hizmet içi eğitim faaliyetine katıldıklarını belirtirken, %34'ü (102) hizmet içi eğitim almadıklarını belirtmiştir.

Tablo 2. Eski ve yeni ilköğretim programına ilişkin öğretmen görüşlerine ait özet tablo.

| Öğretmen Görüşleri | Eski İÖP * | Yeni İÖP |
|---|------------|----------|
| 1. Öğretmen, öğretim materyallerini okuldan temin eder. | √ | - |
| 2. İlköğretim programını en uygun yöntemleri seçerek ders anlatabilecek şekilde esnek bulurum. | - | √ |
| 3. İlköğretim programı öğrencilerimin ilgi ve ihtiyaçlarına uyarlama açısından esneklerdir. | - | √ |
| 4. Öğretim materyali hazırlamak için yeterli zamana sahip değilim. | √ | - |
| 5. Öğretim materyallerini kullanmakta zorlanırım. | √ | - |
| 6. Öğretim materyallerini hazırlamakta zorlanırım. | √ | - |
| 7. İlköğretim programını uygulamakta zorlanırım. | √ | - |
| 8. Ders işlerken ilköğretim programına bağlı kalmakta zorlanırım. | √ | - |
| 9. İlköğretim programını uygulamak, sınıfta eğitim teknolojilerini kullanmamı gerektirir. | - | √ |
| 10. Öğrenci ders kitabında yer alan hazır bilgiyi kullanır. | √ | - |
| 11. Ders anlatmak için, önceden bildiğim bilgiler yeterlidir. | √ | - |
| 12. Okulda ilköğretim programına uygun teknolojiler ve öğretim materyalleri bulunmaktadır. | √ | - |
| 13. İlköğretim programında yer alan etkinliklerin sayısını azdır. | √ | - |
| 14. Almış olduğum eğitim, ilköğretim programını uygulamak için yeterlidir. | - | √ |
| 15. İlköğretim programını uygulamak için teknolojiden yararlanmak gerekir. | - | √ |
| 16. Okuldaki materyallerin sayısı öğrenci sayısına göre yeterli değildir. | - | √ |
| 17. İlköğretim programını kalabalık sınıfla uygulamak zordur. | - | √ |
| 18. İlköğretim programında yer alan etkinlikleri fazla bulurum. | - | √ |
| 19. İlköğretim programında yer alan etkinlikleri basit bulurum. | √ | - |
| 20. Piyasada satılan öğretim yazılımlarını ders içeriğine uygun bulmuyorum. | √ | - |
| 21. Hazır öğretim materyallerini kullanmayı tercih ederim. | - | √ |
| 22. İlköğretim programı öğrencileri araştırma ve yaratıcı düşünmeye daha fazla yönlendirmektedir. | - | √ |
| 23. Eğitim cd'leri MEB tarafından hazırlanmalıdır. | - | √ |
| 24. İlköğretim programını uygulamak için teknoloji destekli eğitime geçmek gerekmektedir. | - | √ |
| 25. Öğretim materyallerini kendim hazırlamayı tercih ederim. | - | √ |

* Öğretmen görüşlerinin hangi programda daha olumlu olduğunu göstermek amacıyla onay işareti kullanılmıştır. Onay işareti koyulan taraftaki öğretim programında ilgili maddeye ilişkin değerler anlamlı olarak daha yüksektir.

Tablo2 incelendiğinde; öğretmenlerin yeni ilköğretim programıyla eski ilköğretim programına göre, öğretim yöntem ve teknikleri ile öğrenci ihtiyaç ve beklentilerini karşılaması açısından daha esnek buldukları, eğitim teknolojilerinden daha fazla yararlandıkları, kalabalık sınıfta yeni programı uygulamakta zorlandıkları, etkinliklerin sayısını fazla ve karmaşık buldukları, almış oldukları eğitimi yeni programı uygulamak için yeterli buldukları, okuldaki materyal sayısını yeterli ve öğrenci sayısına uygun bulmadıkları, hazır materyalleri kullanmayı tercih ettikleri, yeni programın öğrencileri araştırma ve yaratıcı düşünmeye daha fazla yönlendirdiği ve son olarak teknoloji destekli eğitime geçmenin zorunlu olduğu görüşlerine katıldıkları görülmektedir. Konur ve diğerleri (2008), fen ve teknoloji öğretmenlerinin yapılandırıcı yaklaşıma dayalı etkinliklerde öğretim teknolojilerinin kullanılabilirliğine ilişkin öğretmen görüşlerini belirlemeye yönelik çalışmalarında, teknolojik araçların okullarda yeterli olduğunu ancak öğretmenlerin bu araçları kullanabilme noktasında problem yaşadıklarını belirtmişlerdir. Bu çalışma, öğretmenlerin yeni programı uygularken teknolojik araç kullanımı ile ilgili zamanın kısıtlı olması, kendilerini ve öğrencileri teknolojik araçları kullanma konusunda yetersiz gördüklerini ve eğitim yazılımlarının azlığı nedeniyle derslerin yürütülmesinde sorun yaşadıklarını ortaya koymuştur.

Tablo 3. Öğretmenlerin görsel – işitsel araçlardan yararlanma sıklıklarına ilişkin özet tablo.

| Görsel – İşitsel Ortamlar ve Araçlar | Eski İÖP * | Yeni İÖP |
|--------------------------------------|------------|----------|
| Ders Kitabı | √ | - |
| Araştırma Kitabı | - | √ |
| Kaynak (Başvuru Kitabı) | - | √ |
| Dergi | √ | - |
| Çalışma Kağıtları | - | √ |
| Sözlük | - | √ |
| Yazı Tahtası | √ | - |
| Beyaz Tahta | - | √ |
| Elektronik Tahta (Akıllı Tahta) | - | √ |
| Mantar Tahta | - | √ |
| Bülten Tahtası | - | √ |
| Döner Levha | - | √ |
| İlan Panosu | - | √ |
| Grafikler | - | √ |
| Şemalar | - | √ |
| Afişler | - | √ |
| Haritalar | - | √ |
| Plan ve Krokiler | - | √ |

Tablo 3. Öğretmenlerin görsel – işitsel araçlardan yararlanma sıklıklarına ilişkin özet tablo devamı.

| | | |
|------------------------|---|---|
| Resimler / Fotoğraflar | - | √ |
| Karikatürler | - | √ |
| Poster | - | √ |
| Basit Çizimler | - | √ |
| Projeksiyon | - | √ |
| Tepegöz | - | √ |
| Slaytlar (dia) | - | √ |
| Slayt Projektörü | - | √ |
| Opak Projektör | - | √ |
| Film Makinası | - | √ |
| Televizyon | √ | - |
| Radyo | √ | - |
| Teyp ve Ses Bantları | - | √ |
| Masaüstü Bilgisayar | - | √ |
| Dizüstü Bilgisayar | - | √ |
| Telefon | - | √ |
| Fotoğraf Makinası | - | √ |
| VCD Oynatıcı | - | √ |
| CD Çalar | - | √ |
| Video Kamera | - | √ |

| | | |
|--|---|---|
| Barkovizyon / Sinevizyon | - | √ |
| Video Konferans | - | √ |
| Telefon Konferans | - | √ |
| *Teknolojinin hangi programda daha çok kullanıldığını göstermek amacıyla onay işareti kullanılmıştır. Onay işareti, bulunduğu taraftaki öğretim programında, ilgili teknolojinin daha çok kullanıldığını belirtmektedir. | | |

Tablo 3. incelendiğinde yeni ilköğretim programının uygulamasıyla öğretmenlerin modern teknolojilerden klasik teknolojilere göre daha fazla yararlandıkları görülmektedir. Ayrıca yeni programla birlikte öğretmenler eski ilköğretim programına göre teknolojilerinde daha fazla yararlandığı görülmektedir. Ders kitabı, dergi, yazı tahtası, televizyon ve radyo gibi araç ve teknolojilerden eski ilköğretim programında daha fazla yararlandıkları görülmektedir. Teyp ve ses bantlarına ilişkin öğretmen görüşleri incelendiğinde, eski ve yeni ilköğretim programına göre yanıtların yüzdelik değerlerinin açık bir şekilde arttığı ya da azaldığı görülmemektedir. Öğretmenlerin; çalışma kağıtları, resim ve fotoğraflar, projeksiyon, slayt(dia), slayt projektör, masaüstü bilgisayar, dizüstü bilgisayar ve fotoğraf makinesinden yararlanma sıklığı yeni programla birlikte açık bir şekilde arttığı belirlenmiştir. Akpınar (2004), öğretmenlerin eğitim teknolojilerine verdikleri önemi tespit etmedeki eğitim teknolojisiyle ilgili ve öğrenci başarısını etkileyebilecek etmenlere karşı öğretmen tutumlarının incelemek ve öğretmenlerin öğretmen eğitimi programlarında eğitim teknolojilerine ne kadar yer verdiklerini saptamak için bir çalışma yapmıştır. 15 farklı ilde ilköğretim ve ortaöğretimde görev yapan 2139 öğretmene geliştirilen anket uygulanmıştır. Çalışmanın bulguları incelendiğinde öğretmenlerin ders araç gereçlerine bunları içeren ve daha genel bir ifade olan eğitim teknolojilerinden daha fazla önem verdikleri görülmüştür. Ayrıca öğrenme ortamının estetiğinin öğrenmeyi etkilediğini düşünen öğretmenler aksi yönde düşünen öğretmenlere oranla eğitim teknolojisinin öğretmenlik programlarında yer almasını ve öğrenme etmenlerini daha fazla önemsemediği görülmüştür.

Tablo 4. Öğretmenlerin elektronik ve çevrimiçi ortamlardan yararlanma sıklıklarına ilişkin özet tablo.

| Elektronik ve Çevrimiçi Ortamlar | Eski İÖP * | Yeni İÖP |
|--|------------|----------|
| 1. WWW | - | √ |
| 2. İtranet (okul içi ağ) | - | √ |
| 3. Haber Grupları | - | √ |
| 4. Forum Siteleri | - | √ |
| 5. Blog Siteleri | - | √ |
| 6. E-mail | - | √ |
| 7. Arama Motorları (google, altavista vs.) | - | √ |
| 8. Elektronik Veritabanları (online Kütüphane) | - | √ |
| 9. Anında Mesajlaşma (MSN, Yahoo Messenger) | - | √ |
| 10. Çevrimiçi (online) Dergi ve Gazeteler | - | √ |
| 11. E-kitap | - | √ |
| 12. E-dergi | - | √ |
| 13. Bluetooth | - | √ |
| 14. Flash Bellek | - | √ |
| 15. Harici Disk | - | √ |
| 16. CD | - | √ |
| 17. DVD | - | √ |
| *Teknolojinin hangi programda daha çok kullanıldığını göstermek amacıyla onay işareti kullanılmıştır. Onay işareti koyulan taraftaki öğretim programında ilgili teknolojinin daha çok kullanıldığını belirtmektedir. | | |

Tablo 4. incelendiğinde yeni ilköğretim programının uygulanmasıyla öğretmenlerin elektronik ve çevrim içi ortamlardan yararlanma sıklıklarının büyük bir oranda arttığı görülmektedir. Özellikle bilgiyi saklama ve taşıma işlemlerini yapabildikleri flash bellek, harici disk, cd, dvd ortamlardan yararlanma sıklıkları büyük bir oranda artarken; bilgiye ulaşabildikleri ve bilgiyi paylaşabildikleri www, forum siteleri, blog siteleri, intranet, arama motorları, e-posta kullanımı, e-kitap ve e-dergi gibi çevrimiçi ortamlardan yararlanma sıklıklarında önemli bir artış olduğu belirlenmiştir. Öğretmenler arası etkileşim, öğretmenlerin eğitim amaçlı gerçekleştirilen tartışma olanakları, bilgi aktarımı ve paylaşımı, verileri elektronik ortamda saklamak ve depolamak gibi birçok hizmet çevrimiçi ortamlarla sağlanabilmektedir. Yapılan çalışmalarda teknoloji kullanımıyla ses, video, metin, sanal gerçeklik ve benzeşimlerinin entegre edildiği hiper, çoklu ve web tabanlı ortam uygulamaları kullanılarak öğrencilerin görsel, işitsel ve iletişimsel kabiliyetlerini geliştirmesine olanak sağlandığı (Irving, 1991; Riddle, 1995; Ayersman, 1996; Thomas, 2000; Akt: Koç, 2005) ortaya çıkarılmıştır.

Tablo 5. Öğretmenlerin okul içi ve dışı etkinliklerden yararlanma sıklıklarına ilişkin özet tablo.

| Okul İçi ve Dışı Etkinlikler | Eski İÖP * | Yeni İÖP |
|--|------------|----------|
| 1. Eğitsel Oyunlar | - | √ |
| 2. Eğitsel Şarklar | - | √ |
| 3. Şiir | - | √ |
| 4. Tiyatro | - | √ |
| 5. Sergi | - | √ |
| 6. Gezi – Gözlem | - | √ |
| 7. Müze | - | √ |
| 8. Film / Sinema | - | √ |
| *Teknolojinin hangi programda daha çok kullanıldığını göstermek amacıyla onay işareti kullanılmıştır. Onay işareti koyulan taraftaki öğretim programında ilgili teknolojinin daha çok kullanıldığını belirtmektedir. | | |

Tablo 5. incelendiğinde öğretmenlerin okul içi ve okul dışı etkinliklerden yararlanma sıklıklarının yeni ilköğretim programının uygulanmasıyla artmıştır şeklinde yorumlanabilir. Veriler incelendiğinde öğretmenlerin eğitsel oyun, gezi-gözlem, film- sinema etkinliklerinden yararlanma sıklıklarında önemli oranda artış olduğu görülmektedir.

Tablo 6. Öğretmenlerin Öğrenme – Öğretme Yöntem ve Teknikleri Kullanma Sıklıklarına İlişkin Özet Tablo.

| Öğrenme – Öğretme Yöntem ve Teknikleri | Eski İÖP | Yeni İÖP* |
|---|----------|-----------|
| 1. Anlatım Yöntemi | √ | - |
| 2. Soru Cevap Yöntemi | - | - |
| 3. Örnek Olay Yöntemi | - | √ |
| 4. Tartışma Yöntemi | - | √ |
| 5. Gösterip Yaptırma | - | √ |
| 6. Grup Çalışması | - | √ |
| 7. Beyin Fırtınası | - | √ |
| 8. Rol Yapma- Drama | - | √ |
| 9. Eğitsel Oyunlar | - | √ |
| 10. Harmanlanmış Karma Öğr. (İnternet ve Sınıf) | - | √ |
| 11. Aktif Öğrenme | - | √ |
| 12. Probleme Dayalı Öğrenme | - | √ |
| 13. Bireysel Öğrenme | - | √ |
| 14. Programlı Öğretim | - | √ |
| 15. Buluş Yoluyla Öğrenme | - | √ |
| 16. Sunuş Yoluyla Öğr. | - | √ |
| 17. İşbirliğine Dayalı Öğr. | - | √ |
| 18. Bilgisayar Destekli Eğt. | - | √ |
| 19. Uzaktan Eğitim | - | √ |

*Yöntem ve tekniklerin hangi programda daha çok kullanıldığını göstermek amacıyla onay işareti kullanılmıştır. Onay işareti koyulan taraftaki öğretim programında ilgili teknolojinin daha çok kullanıldığı belirtilmektedir.

Tablo 6. incelendiğinde öğretmenlerin; öğretim-öğrenme yöntem ve tekniklerini kullanma sıklıklarına ilişkin görüşleriyle ilgili analiz sonuçları incelendiğinde, anlatım yönteminin eski ilköğretim programında daha sıklıkla kullanıldığı; soru ve cevap yönteminin kullanım sıklığında eski ve yeni ilköğretim programına göre farklılık olmadığı; aktif öğrenme, buluş yoluyla öğrenme, sunuş yoluyla öğrenme, işbirliğine dayalı öğrenme ve bilgisayar destekli eğitim yöntemlerinin kullanım sıklıklarında ise yeni ilköğretim programıyla birlikte büyük bir artış olduğu belirlenmiştir. Yeşilyurt (2007) yeni ilköğretim birinci kademe programları temel niteliklerinin öğretim yöntem ve tekniklerine göre değerlendirmesini yapmak amacıyla yaptığı çalışmada, problem çözme, proje, işbirlikli öğrenme, laboratuvar, tartışma, rol oynama, soru-cevap ve örnek olay yöntemleri ile beyin fırtınası, münazara ve grup çalışması tekniklerinin yeni ilköğretim birinci kademe programları için uygun olduğu tespit etmiştir. Bununla birlikte teknolojiyen ve yeni öğretim yöntemlerinin yeterince yararlanmayan ve öğretim programları arasındaki temel mantık farklılığının farkına varamamış öğretmenlerin olduğu da görülmektedir.

4. SONUÇ VE ÖNERİLER

Yeni ve eski öğretim programı açısından öğretmenlerin öğrenme öğretim süreciyle ilgili eğitim teknolojilerinden yararlanma görüşleri karşılaştırıldığında öğretmenlerin yeni programla birlikte modern eğitim teknolojilerini klasik teknolojilere göre daha çok kullandıkları, tek bir bilgi kaynağından çoklu bilgi kaynaklarına yöneldikleri, yeni programı uygulamakta ve daha uygun yöntem seçiminde yeni programı daha esnek buldukları görülmüştür. Ancak bu görüşler ağırlıkta olmakla birlikte ters yönde görüşü olan öğretmenler de bulunmaktadır.

Öğretmenlerin yeni ve eski ilköğretim programına göre teknoloji ve yöntemlerden yararlanma düzeyleri incelendiğinde bir önceki sonucu doğrulayıcı nitelikte modern eğitim teknolojilerinden daha çok yararlandıkları, aktif öğrenme, beyin fırtınası, probleme dayalı gibi daha etkileşimli ve öğrenci merkezli yöntemleri daha çok kullandıkları ve uzaktan eğitim, eğitim cd'si, ağ tabanlı uygulamalar gibi ileri teknolojileri daha çok kullanmaya başladıkları görülmektedir. İşman (2005) öğretmenlerin hangi eğitim teknolojilerini kullandığını ortaya çıkaran çalışmada; öğrenmeleri güdüleyen ve artıran eğitim teknolojilerinin eğitim-öğretim ortamlarında yeteri kadar kullanmadıklarını ortaya çıkarmıştır. Sakallı ve diğerleri (2008), KKTC'de görev yapan ilköğretim öğretmenlerinin yeni eğitim teknolojilerine ilişkin görüşlerini belirlemeye yönelik çalışmalarının sonucunda, öğretmenlerin büyük bir çoğunluğunun teknolojiyen yararlandığını, teknolojik materyalleri nerede ve ne zaman kullanacakları konularında bilgili olduklarını, öğretmenlerin eğitimde teknoloji kullanımının öğrencinin öğrenmesine daha fazla katkı sağladığı düşüncesinde olduklarını saptamışlardır.

Öğretmenler yeni ilköğretim programıyla ilgili kapsamlı bir eğitime alınmalıdır. Bu eğitim sürecinde her branş için okul içi yada okul dışı etkinliklerde yararlanılabilecek eğitim teknolojileri ile ilgili bilgi edinmeleri sağlanmalıdır. Bunun için Milli Eğitim Bakanlığı ve üniversitelerin birlikte çalışması, özellikle ihtiyaca yönelik bir eğitim verilmesi uygulamadaki eksiklikleri gidermek açısından daha etkili olacaktır. Görev yapmakta olan öğretmenler için de Milli Eğitim Bakanlığı'na, daha iyi planlanmış, yeterli süreye yayılmış, uzmanlar tarafından verilecek ve öğretmenlerin ihtiyaçlarına yanıt veren, onların fikirlerini de dikkate alacak şekilde çeşitli hizmet içi kurslar düzenlenebilir. Düzenlenecek kurslarda özellikle yeni ilköğretim programının uygulanmasına ve öğretim-öğrenme sürecinin doğru ve etkili planlanmasına ilişkin örnekler verilmelidir. Bilgi ve iletişim teknolojilerinin kullanımına yönelik açılan kursların yanı sıra öğretmenlerin bu teknolojileri sınıflarında nasıl daha planlı ve doğru şekilde kullanacaklarına ilişkin de bilgi verilmelidir. Öğretmenlere eğitim teknolojileri ve özel öğretim teknolojileri kullanımının öğretim-öğrenme sürecindeki etkililiği ve sağlayacağı katkı çeşitli kaynak ya da yayım organlarıyla anlatılabilir. Tanımların ve bilgilerin dışında küresel eğitim anlayışı sebebiyle Türkiye'deki ve dünyadaki güzel örnekler verilecek hizmetçi eğitimlerle öğretmenlere kazandırılabilir. Öğretmenlerin kendilerini ve eğitim sistemini geliştirebilmeleri için proje destekleri ve proje hazırlama konusunda öğretmenlere kapsamlı eğitimler verilebilir. Öncelikle yeni programın etkin uygulanırliğini sağlayabilmek için okullardaki materyal eksikliği giderilmelidir. Okulları sadece bilgisayarlarla donatmak yeterli değildir. Aldığı bilgisayar ve teknoloji eğitimini uygulamayan öğretmenin çağın gereksinimlerine uygun öğrenciler yetiştiremeyeceği açıktır. Öğretmenlerin aldıkları kurs sonucunda yapacakları etkinlikler müfredat ya da yıllık planlara dahil edilerek bilginin kaybolmaması sağlanmalı ve eğitimin etkinliğinin yitirilmesi engellenmelidir. Öğretmenlere sadece eğitim teknolojilerinin ortam boyutunun içeriğine ilişkin eğitimle değil aynı zamanda yeni eğitim anlayışı (yapılandırmacılık) ve uygulanabilirliği, eğitim felsefesi alanında da kuramsal ve teorik eğitimler düzenlenmelidir. İl Milli Eğitim'de bulunan Eğitim Teknolojileri Merkezi daha aktif hale getirilerek, öğretmenlerin burayı ziyaretleri organize edilebilir. Ayrıca bu merkezlerdeki materyallerin kullanımı ile ilgili bilgi sunmak için çeşitli öğretmen ya da uzmanlar görevlendirilebilir.

KAYNAKLAR

- AKPINAR, Y. (2004), "Eğitim Teknolojisiyle İlgili Öğrenmeyi Etkileyebilecek Bazı Etmenlere Karşı Öğretim Yaklaşımları.", *The Turkish Online Journal of Educational Technology – TOJET, Volume 3, Issue 3. Article 15.* Erişim Adresi: www.tojet.net/articles/3315.htm. [14.01.2010]
- ALKAN, C. (2005), *Eğitim Teknolojisi* (7.Baskı), Anı Yayıncılık, Ankara.
- AYGÜN, H. A. (2009), *Yeni İlköğretim Programının Uygulanmasıyla Eğitim Teknolojileri Kullanımına İlişkin Öğretmen Görüşleri*(İstanbul İli Ümraniye İlçesi Örneği), Basılmamış Yüksek Lisans Tezi, Sakarya Üniversitesi Sosyal Bilimler Enstitüsü.
- İŞMAN, A. (2005), *Öğretim Teknolojileri ve Materyal Geliştirme* (2.Baskı), Pegem A Yayıncılık, Ankara.
- KOÇ, M. (2005), "Öğrenme Teorilerinin Etkili Teknoloji Entegrasyonuna Ve Hizmet Öncesi Öğretmen Eğitimine Etkileri: Eleştirel Literatür Taraması." *Journal of Turkish Science Education (TUSED), Sayı:3, 2-15.*
- KONUR, B. K., SEZEN, G. ve TEKBIYIK, A. (2008), "Fen ve Teknoloji Derslerinde Yapılandırmacı Yaklaşım Dayalı Etkinliklerde Öğretim Teknolojilerinin Kullanılabilirliğine Yönelik Öğretmen Görüşleri.", *VIII. International Educational Technology Conference, 6-7-8-9 May, Eskişehir.*
- SAKALLI, M., BAKAY, G. ve HUSSEIN, G. (2008), "Yeni Eğitim Teknolojilerine İlişkin Öğretmen Görüşleri", *VIII. International Educational Technology Conference, 6-7-8-9 May, Eskişehir.*
- YEŞİLYURT, E. (2007), "Yeni İlköğretim Programları Temel Niteliklerinin Öğretim Yöntem ve Tekniklerine Göre Değerlendirilmesi", *Doğu Anadolu Bölgesi Araştırmaları, 164-167, Elazığ.*

YÜKSEK LİSANS ÖĞRENCİLERİNİN İNTERNET KAYNAKLARINI ARAŞTIRMA VE ÖĞRENME AMAÇLI KULLANIMININ İRDELENMESİ

Yrd. Doç. Dr. Servet DEMİR
Gaziantep Üniversitesi, BÖTE, sdemir@gantep.edu.tr

Özet

Farklı uygulamaları içerisinde barındıran internet, araştırmacılar için hızlı ve devasa bilgiler sunmaktadır. Araştırmacılara sunulan bu çeşitlik ve farklılık onlara bir takım sorumluluklar yüklemektedir. Bu sorumlulukların başında ulaştıkları kaynağın doğru, güvenilir, geçerli ve uygun olduklarının belirlenmesi gelmektedir. Bu araştırmada nitel araştırma yaklaşımı kullanılmıştır. Araştırmanın amacı yüksek lisans düzeyinde eğitim alan bir öğrencinin araştırma amacıyla internet kaynaklarını kullanırken nasıl bir yol izledikleri ve kaynakları incelerken nelere dikkat ettiklerinin belirlenmesidir. Araştırmada açık uçlu soru formu kullanılmış ve analiz için ise kodların frekansları ve yüzdeliklerine bakılmıştır. Araştırma sonuçlarına göre a) öğrenciler yazılı kaynakların elektronik formatlarını tercih etmişlerdir b) öğrencilerin kullandıkları kriterler daha çok ön değerlendirme düzeyinde kalmaktadır c) internetin popüler uygulamaları (e-posta, web günlüğü, sosyal paylaşım siteleri) öğrenciler tarafından araştırma kaynağı olarak görülmemektedir ve d) öğrenciler internet kaynaklarından öğrendikleri bilgilerle kendilerini yetersiz hissetmektedirler.

Anahtar Kelimeler: İnternet Kaynakları, Araştırma, Yüksek Lisans Öğrencileri

Abstract

Internet has various applications and offers fast and massive amount of information for researchers. However, these properties of internet impose responsibility to researchers. Researchers have to first determine whether an internet source is accurate, reliable, valid and relevant. A qualitative approach is used in the present study. The study aimed to find out what strategies and criteria are used by the graduate students to examine internet sources. Accordingly, an open ended questionnaire was used to gather the data. In the analysis, the frequency and percentage of the codes were computed. The results indicated that a) the students intended to use electronic type of printed materials, b) criteria being used by the students are found pre-evaluation level, c) the popular applications of internet (i.e. e-mail, blog, social networking site) were not seen by students as research sources and d) students perceived themselves as deficient in their knowledge acquired from internet sources.

Keywords: Internet Source, Research, Graduate Students

GİRİŞ

Artık internet eğlenceden başlayan ve alış-veriş, propagandaya kadar uzanan yelpazede çok farklı amaçlar için kullanılmaktadır. Bununla birlikte internetin eğitsel amaçlı kullanımı ile ilgili çalışmalar da artmaktadır. Özellikle internette yeni trend olan web 2.0 teknolojilerin yaygınlaşması ile birlikte öğrenenlere etkileşimli ve etkili kaynaklar sunulmaya başlanmıştır (Koçak Usluel & Mazman, 2009).

İnternet kaynakları kişilere kendilerini geliştirmede ve öğrenmede olanaklar sunmaktadır. Örneğin; 2010 başı itibarıyla Directory of Open Access Journal sistemine kayıtlı 4794 dergi ve 359541 makale bulunmaktadır (Directory of Open Access Journals, 2010). Bu kaynakların eğitim ve öğretim amaçlı kullanılması o kaynakların etkililiğini artıracaktır. Bu sürecin giderek artması internet kaynaklarının geleceğin eğitiminde büyük bir yere sahip olacağı düşüncesini desteklemektedir. Geleceğin eğitim kaynaklarının doğru bir şekilde yapılması ve çeşitlenmesi şu anda kullanan bireylerin tercihleri ile şekilleneceği söylemek yanlış olmayacaktır. Bu bağlamda bireylerin interneti öğretim amaçlı ve araştırma amaçlı kullanma durumlarının irdelenmesi önemlidir.

İnternet öğrenenlere yaşam boyu öğrenme kaynakları sunmanın yanında bazı sorumluluklar da yüklemektedir (Akkoyunlu, 2001; Kurbanoglu, 2002). Bu sorumlulukların başında ulaştığı kaynağın, bilginin tam olarak aramakta olduğu bilgi olup olmadığı belirlenmesi ve aynı zamanda bilginin kalitesinin kontrol edilmesi gelmektedir. Brandt (1996)'a göre bilginin önemli olduğunu herkes bilir. Elde edilen bilginin doğru, geçerli, inandır ve uygun olması daha da önemlidir (Brandt, 1996).

İnternet, araştırmacılara bilgiye ulaşmada baş döndürücü bir hız önermektedir. Artık bireyler ve kurumlar az maliyet ile devasa bilgilere ulaşabilmektedirler. Arama motorlarında birkaç kelime girilerek istenen konudaki birçok sayfaya ulaşabilmektedir. Örneğin araştırma metodları kelimeleri girildiğinde Google arama motorunda 109.000 ve akademik Google motorunda ise 11.900 web sayfası çıkmaktadır. Bu olanaklardan dolayı internet kaynakları araştırmacıların ilk tercihleri arasında olmaya başlamıştır. İnternet kaynaklarının artması öğrenenlere ve araştırmacılara kolaylık sağlamanın yanı sıra bazı endişeleri de yanında getirmektedir. Bu endişelerin başında kaynağın uygunluğu, güvenilirliği, doğruluğu ve kalitesi gelmektedir (Kurbanoglu, 2002).

Ayrıca internet kaynaklarının fazlalığı bireylere kaynak seçme özgürlüğü sunmanın yanında kaynak fazlalığı ve bunların birbirlerine benzerliği araştırmacıları da yanlış yönlendirebilmektedir. Bireylere interneti doğru ve etkili kullanmada belirli bir eğitim biliniyorsa yazarın yetkinliği ve güvenilirliği de bu aşamada göz önünde bulundurulmalıdır. Bu önerilerden başlıcalar şunlardır (Harris, 2007; Engle & Cosgrave, 2009; Smith, 2005; Christy, 2002; Kurbanoglu, 2002; Fritch & Cromwell, 2001):

- Ön değerlendirme yapılması önerilmektedir. Bu aşamada yayın tarihi, yayıncı, dergi ismi, kaynağın belirli bir otorite tarafından oluşturulup oluşturulmadığı gibi bilgilerin kontrol edilmesi önerilmektedir. Ayrıca kaynağın yazar/editörleri biliniyorsa yazarın yetkinliği ve güvenilirliği de bu aşamada göz önünde bulundurulmalıdır.
- Detaylı değerlendirme aşamasında ise içerik analizi yapılmalıdır. Bu ise hedef okuyucunun belirlenmesi, objektif olarak muhakeme edilmesi, kapsam, yazma stili, doğruluk ve diğer okuyucuların değerlendirme yorumlarının incelenmesi ile ilgilidir. Dokümanın güvenilirlik ve geçerliliğinin belirlenmesi, kaynakçalarının incelenmesi ve kendi içerisinde bir uyuma sahip olup olmadığının saptanması yine bu aşamada olmalıdır.

Kaynak değerlendirmenin bir sanat olduğunu belirten Harris (2007) internet kaynaklarını değerlendirmek için basit bir belirteç olmadığını savunmaktadır (Harris, 2007). Birçok araştırmacıya göre internet kaynaklarını değerlendirme kriterleri yazılı medyayı değerlendirme ile aynı olmaktadır (Brandt, 1996; Kurbanoglu, 2002). Fritch & Cromwell (2001)'e göre ise daha derin bir araştırmanın sağlanması için kaynakların değerlendirilmesinde son okuyucunun zihinsel otorite prensiplerini uygulamaları gerektiğini belirtmektedir (Fritch & Cromwell, 2001). İnternet üzerinde herkesin kolayca bilgi yayabiliyor olması, her hangi bir kontrol mekanizması olmaması, internet üzerindeki bilgilerin eksik, propaganda amaçlı ve kasıtlı olabileceği düşüncesini artırmaktadır. Bundan dolayı da internet kaynaklarının okuyucusu tarafından kontrolü yazılı kaynaklara oranla daha çok önem kazanmaktadır.

Yüksek lisans düzeyindeki öğrenciler ders ve tez çalışmalarını sürecinde araştırma amacıyla internet kaynaklarını sık sık kullanmaktadır. Bu araştırma sürecinde öğrencilerin araştırmayı planlamasından başlayan ve kaynakların seçimlerinde ön planda tuttukları kriterlerin neler olduğunun bilinmesi önemlidir. Çalışmalarda kullanılan kaynakların sağlıklı olmadığı durumlarda elde edilecek ürünler tartışmalı olmaktadır. Diğer bir açıdan internet kaynaklarının büyüklüğü ve farklılığı karşısında araştırmacıların bu kaynakları değerlendirme yeterliliğine sahip olması gerekliliği açıktır.

METOT

Bu çalışma 2009-2010 akademik yılı güz döneminde “Eğitim Programı ve Öğretimde Çağdaş Gelişmeler” dersine kayıtlı olan 4 yüksek lisans öğrencisi üzerine yapılmıştır. Araştırmada nitel araştırma yaklaşımı kullanılmıştır. Araştırmanın amacı yüksek lisans düzeyinde eğitim alan bir öğrencinin araştırma amacıyla internet kaynaklarını kullanırken nasıl bir yol izledikleri ve kaynakları incelerken nelere dikkat ettiklerinin belirlenmesidir.

Araştırma kapsamında şu sorulara cevap aranmıştır:

1. Kaynak seçiminde nasıl bir strateji belirlenmektedir?
2. Kaynak kontrolleri nasıl yapılmaktadır?
3. İnternet kaynaklarını tercih nedenleri nelerdir?
4. Bireyler internet kaynaklarından öğrendikleri ile kendilerini yeterli hissetmekte midirler?

Bu amacı gerçekleştirmek için öğrencilere ders kapsamında belirlenen konulardan birisi ile ilgili kaynak taraması yapmaları istenmiştir. Elde ettikleri bilgileri diğer arkadaşları ile paylaşmaları ve sınıf ortamında tartışmaları istenmiştir. Dönem sonunda öğrencilere ders hazırlık süreci ve kaynakları incelerken dikkat ettikleri kriterleri belirlemek için açık uçlu sorular yönlendirilmiştir. Öğrencilerin verdikleri cevaplar araştırmaya veri kaynaklığı yapmıştır.

Öncelikler öğrencilerin verdikleri cevaplardan internet araştırmasını yaparken nasıl bir yol izledikleri belirlenmiştir. Kaynaklar inceleme sürecini belirlemek için öğrencilerin cevapları okunmuş ve analiz çerçevesini oluşturan kategori ve kodlar belirlenmiştir. Tablo 1’de kategori, kodları ve öğrencilerin örnek cümleleri verilmiştir. Bu çerçevede elde edilen kodlar göz önünde bulundurularak öğrenci cevapları tekrar derinlemesine okunmuş ve hangi kodun hangi sıklıkta ve hangi öğrenciler tarafından kullanıldığı belirlenmiştir.

Tablo 1 Kategorileri, Kodların Tanımları ve Örnek İfadeler

| Kategori ve Kodlar | Tanım | Örnek İfadeler |
|-----------------------------------|---|--|
| Kaynak İnceleme Kriterleri | | |
| Alan yazın uyumu | Daha önce incelenmiş oldukları ve doğruluğuna inanılan kaynaklar ile uyum içinde olması | ✓ Bulduğum kaynaklardaki bilgileri ilgili alan yazındaki bilgilerle karşılaştırdım ✓ Öncelikle diğer kaynaklarla karşılaştırdım ve mantıksal analizler yaptım |
| Kendi kriterleri | Daha önce belirledikleri konu başlıklarına veya içeriğe uygun olan kaynaklar | ✓ Kaynakta anlatılanları benim konu başlıklarım ile içerikle uyusup uyusmadığımı kontrol ettim ✓ İlk başta belirlediğim konu başlıkları ve ödev içeriği ile gerekli karşılaştırmaları yaparak yeterliliği belirledim. |
| Yayıncısı | Kurumsal ya da hakemli dergilerde bulunan kaynaklara verilen atıflar | ✓ Bulduğum kaynakları aldığım yerlere dikkat ettim ve gerek bilimsel dergilerden gerek tezlerden ve Milli Eğitim Bakanlığında olmasına dikkat ettim ✓ Kaynağın yer aldığı site oldukça önem taşıyordu |
| İç uyum Güncellik | Kaynağın sunduğu bilgilerde iç uyumunun olması Kaynaklar incelerken yayınlanma tarihinin dikkate alınması | ✓ kendi içerisindeki uyumu dikkat ettiğim hususlar oldu ✓ Geçerlilik için ise güncel olması önemliydi |
| Kaynak Tercih Nedenleri | | |
| Zorunluluk | Çalışma yapılan alan ile ilgili e-kaynak dışında kaynak olmaması ya da katılımcının başka bir kaynağa ulaşamama durumunda tercih edilmesi | ✓ e-kaynakları tercih etmek zorunda kaldım. Matbu kitaplara erişemedim |
| Zenginlik | İnternet kaynaklarının çeşitliliği ve fazlalığından dolayı tercih edilmesi | ✓ Çok fazla kaynağa ulaşmak mümkündür. ✓ Basılı kaynaklara oranla daha fazla sayıda e-kaynak bulma imkânımız var ✓ Ayrıca internette sadece yazılı değil, görsel, interaktif, video vb. kaynaklar mevcut |
| Ucuz | Kaynaklara ulaşma maliyetinin azlığı | ✓ E-kaynak daha ucuz ve daha hızlı ✓ Kaynaklara ulaşmanın maliyeti daha az. |
| Kolay Kullanım | Kaynaklara ulaşmanın ve kullanımın kolaylığı | ✓ E-kaynaklara ulaşmak daha kolay ve daha hızlı ✓ İstedğim an kısa bir zaman içerisinde birçok kaynağa ulaşma imkânı vermesidir ✓ sunu olarak hazırlamak daha kolay |
| Yeterlilik Algısı | | |
| Yeterli | Araştırdığı konularda kendisini başarılı kabul etmesi | ✓ Kendimi yeterli hissediyorum çünkü yapılan çalışmaların araştırmaların sonucu ilgili alan yazındaki birçok şeyi öğrendiğimi fark ettim |
| Yetersiz | Araştırdığı konularda kendisini yetersiz kabul etmesi | ✓ Öğrendiklerim konusunda kendimi yeterli hissetmiyorum çünkü internette öğrenmem gereken konunun tüm detaylarını bulamadım |
| Detaysız | Öğrendiği konuları yüzyesnel öğrendiğini kabul etmesi | ✓ içeriği hakkında şu an genel bilgiye sahibim |
| Metot | Konuları ile ilgili nereden ve nasıl bilgi alacağını öğrenmesi | ✓ neyi nerede bulabileceğimi ve nasıl yapabileceğim nasıl öğreneceğimi daha iyi biliyorum |

Belirlenmiş olan kodlar alan yazın ile paralellik ve farklılık göstermektedir. “Alan yazın uyumu”, “yayıncısı”, “iç uyum” ve “güncellik” kodları alan yazın ile uyumluluk içerisinde olmasına karşın alan yazında öne sürülen “diğer okuyucuların yorumları”, “yazarın yetkinliği”, “hedef okuyucu” ve “kapsam” gibi noktalar öğrenci cevapları içerisinde bulunmadığı için kodlar arasına alınmamıştır.

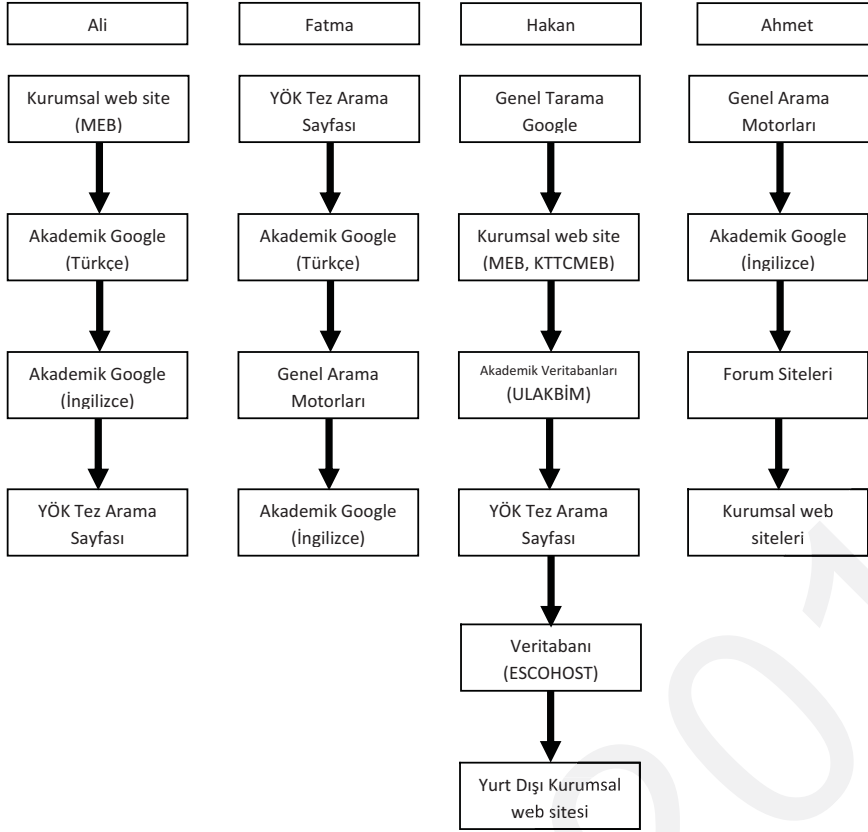
Araştırma sonuçları geleceğin eğitim kaynaklarının önemlilerinden birisi olacak olan internet kaynaklarının düzenlenmesi ve niteliklerinin artırılması konusunda bireylerin yetiştirilmesine destek olacağından dolayı önemlidir.

BULGULAR

Ele edilen bulgular a) internet kaynaklarında kullanılan stratejileri b) Kaynakların seçilmesi ve incelenmesi c) Kaynak tercih nedenleri d) Bireylerin Yeterlilik Algıları

Araştırma bulguları araştırma problemleri şeklinde kategori yapılarak sunulacaktır.

1. İnternet kaynaklarında kullanılmasının plan stratejileri



Şekil 1 İnternet kaynaklarını kullanım planları

İki öğrenci genelden özele doğru bir süreç takip ederken diğer iki öğrenci ise önce özel ve kurumsal sayfaları incelemeyi tercih etmişlerdir. Farklı sıralamalar tercih edilmesine karşın akademik makale araştırması ve kurumsal web sayfalarının incelenmesi her dört katılımcı tarafından da ön planda tutulmuştur. Bütün katılımcılar araştırmalarında hem Türkçe hem de İngilizce kaynaklara ulaşmıştır. Ayrıca akademik Google ve YÖK Tez tarama sayfası üç araştırmacı tarafından da tercih edilmiştir.

E-mail, forum ve tartışma sayfaları gibi internet olanaklarının kullanılmaması diğer öğrenciler tarafından planlamaya dahil etmemesi öğrencilerin bu kaynakları araştırmada bilgi kaynağı olarak kabul etmemesinden kaynaklanmaktadır. Forumlarda araştırma yaptığını belirten öğrenci dahi “*Konu ile ilgili araştırma yapılırken forum sitelerinden de faydalanıldı. Burada yer alan bilgiler akademik olarak değerlendirilmedi.*” ifadesini kullanmış ve bu yargıyı doğrulamıştır. Bununla birlikte web günlüğü (blog) ve açık ders kaynak siteleri gibi yeni internet olanakları tercih edilmemiştir.

2. Kaynakların seçilmesi ve inceleme kriterleri

Kaynağın incelenmesinde Tablo 1’deki kodlar çerçevesinde yapılan inceleme sonucunda elde edilen frekansların ve yüzdeliklerin yorumlanması kullanılmıştır.

Tablo 2. Kodların frekansı, yüzdelikleri ve kişi sayıları

| Kategori | Sayı | Kişi |
|--------------------------|-----------------|------|
| Kaynak İnceleme | | |
| Kendi Kriterleri | n=10 (%37.0) | 4 |
| Yayıncısı | n=7 (%25.9) | 4 |
| Alan yazın uyumu | n=6 (%22.2) | 3 |
| İç uyum | n=3 (%11.1) | 2 |
| Güncellik | n=1 (%3.7) | 1 |
| Tercih nedeni | | |
| Zenginlik | n=9 (%45.0) | 4 |
| Kolay kullanım | n=8 (%40.0) | 4 |
| Ucuz | n=2 (%10.0) | 2 |
| Zorunluluk | n=1 (%5.0) | 1 |
| Yeterlilik Algısı | | |
| Yetersiz | n=4 (%50.0) | 3 |
| Detaysız | n=2 (%25.0) | 2 |
| Yeterli | n=1 (%12.5) | 1 |
| Metot | n=1 (%12.5) | 1 |

Kaynakların incelenmesinde ve seçilmesinde öncelikle öğrencilerin kendilerinin belirlemiş oldukları kriterler (%37) ve kaynağın yayıncısı (%25.9) ön plana çıkmaktadır. Her dört öğrencinin bu kriterleri kullandıkları görülmektedir. Daha sonra ise alan yazın ile uyum (%)

22.2) ve iç uyum (%11.1) kaynakların değerlendirilmesinde önemli olmaktadır. İki öğrencinin kaynağın iç uyumuna bakarak inceledikleri ve bir öğrencinin ise kaynağın güncelliğine dikkat ettiği belirlenmiştir.

İnternet kaynağının zenginliği (%45) ve kolay kullanımı (%40) her dört öğrenci tarafından sıklıkla dile getirilen tercih sebebi olarak belirlenmiştir. İki öğrenci ucuz olduğundan dolayı ve bir öğrenci ise başka kaynak bulamadığından dolayı zorunlu olarak internet kaynaklarını tercih ettiğini belirtmiştir.

Katılımcıların birisi kendisini yeterli hissetmesine rağmen kalan katılımcılar yeterli hissetmemektedir. Bununla birlikte yetersiz hissedenler öğrendikleri bilgileri yüzeysel bulmuş bir öğrenci ise “*Yeterli hissetmiyorum ancak neyi nerede bulabileceğimi ve nasıl yapabileceğimi nasıl öğreneceğimi daha iyi biliyorum.*” ifadesi ile başka bir kazanımı ön plana çıkarmaktadır. Yetersiz hissin oluşmasında sınıf içerisindeki tartışmalarda öğrenciye yöneltilen sorular ve sorulara cevap verememe durumlarının etkisi olduğu düşünülmektedir.

SONUÇ VE TARTIŞMA

Araştırmada öğrenciler daha çok basılı kaynakların elektronik formatını tercih etmektedir. Yeni oluşan internet uygulamalarında karşılaşılan bilgiler akademik olmadığı düşüncesinden dolayı araştırma içerisine dahil edilmemektedir. İnternetin en çok kullanılan uygulamalarından birisi olan e-postalar, tartışma grupları araştırmacılar tarafından kaynak olarak kabul edilmemektedir. Her ne kadar bilgi kaynağının sübjektifliği söz konusu olsa da bu kaynakların birincil veri kaynağına ulaşmada önemli bir araç olduğu unutulmamalıdır. İnternetin giderek popüler uygulamaları olan sosyal paylaşım siteleri ve web günlükleri (blog) henüz akademik kaynak olarak görülmemektedir.

Öğrencilerin internet kaynaklarının doğruluğunu ve güvenilirliğini incelerken kullandıkları kriterler alan yazında ön değerlendirmede bahsedilen kriterlerdir. Ayrıca öğrencilerin kendi kriterlerini ön plana çıkarmaları onları kaynakları değerlendirirken objektif bir kriterlerin olmadığı görülmektedir. Kullandıkları kriterleri kaynağın değerlendirmesindeki her bir alt ölçüğe (güvenirlilik, doğruluk, geçerlik, uygunluk gibi) uygulamaları kriterlerinin yüzeysel olduğunu gösteren diğer bir delildir. Bu bağlamda araştırma metodolojisinin işlendiği ders kapsamlarında bu konular gündeme getirilmelidir.

Bu araştırma sonucunda öğrencilerin kendilerini yetersiz hissetmeleri ve öğrendiklerini yüzeysel kabul etmeleri geleceğin eğitim araçlarında birisi olarak görülen internet temelli uygulamalar için üzerinde düşünülmesi gereken bir durum ortaya çıkarmaktadır. Öğrencilerin internet kaynaklarında tam olarak yararlanmaları ve kendilerini yeterli hissetmelerini sağlayacak destek uygulama ya da kaynaklara ihtiyaç vardır.

KAYNAKÇA

- Akkoyunlu, B. (2001). Öğretmenlerin İnternet Kullanımları Üzerine Bir Çalışma. *Journal of Qafqaz* , 57-66.
- Brandt, D. S. (1996). Evaluating Information on the Internet. *Computers in Libraries* , v16 n5 p44-46.
- Christy, K. (2002, June 12). *Thinking Critically: Evaluating Web Resources*. 03 02, 2010 tarihinde Lamar Memorial Library: <http://faculty.maryvillecollege.edu/library/researchguides/Evaluating%20Web%20Sites.htm> adresinden alındı
- Ciolek, T. M., & Goltz, I. M. (1995). *The World-Wide Web Virtual Library*. 10 15, 2009 tarihinde Information Quality WWW Virtual Library: <http://www.ciolek.com/WWWVL-InfoQuality.html> adresinden alındı
- Directory of Open Access Journals. (2010, 03 02). *Directory of Open Access Journals*. Directory of Open Access Journals: <http://www.doaj.org/> adresinden alınmıştır
- Engle, M., & Cosgrave, T. (2009, September 1). *Critically Analysing Information Sources*. 10 1009, 15 tarihinde Cornell University Library: <http://www.library.cornell.edu/olinuris/ref/research/skill26.htm> adresinden alındı
- Fritch, J. W., & Cromwell, R. L. (2001). Evaluating Internet Resources: Identity, Affiliation, and Cognitive Authority in a Networked World. *Journal Of The American Society for Information Science and Technology* , 52(6):499–507.
- Harris, R. (2007 , June 15). *Evaluating Internet Research Sources*. 10 15, 2009 tarihinde VirtualSalt: <http://www.virtualsalt.com/eval8it.htm> adresinden alındı
- Koçak Usluel, Y., & Mazman, S. G. (2009). Adoption of Web 2.0 tools in distance education. *International Journal of Human Sciences* , 89-98.
- Kurbanoğlu, S. (2002). WWW Bilgi Kaynaklarının Değerlendirilmesi. *Hacettepe Üniversitesi Edebiyat Fakültesi Dergisi* , Cilt: 19 / Sayı: 1 /ss.11-25.
- Smith, A. (2005 , October 27). *Criteria for evaluation of Internet Information Resources*. 03 02, 2010 tarihinde World Wide Web Virtual Library: http://www.vuw.ac.nz/staff/alastair_smith/evaln/ adresinden alındı

DESIGN FOR CHILDREN: PARTICIPATORY APPROACH IN THE DEVELOPMENT OF A WEB-BASED COMIC-STYLE STORYTELLING SYSTEM

Muhammad Helmi Norman and Siti Salwah Salim
Faculty of Computer Science and Information Technology
University of Malaya, Malaysia
salwa@um.edu.my

ABSTRACT

This research uses the participatory design (PD) approach in the development of a web-based comic-style storytelling system for children named Comic4kids. The PD approach involved children as to consider their design ideas and needs regarding functional aspects of Comic4kids. A PD approach is integrated into the analysis, design and implementation stages to involve children as design partners. During analysis, three PD activities were conducted to define Comic4kids' functional and user interface requirements. During design and implementation, five PD activities were performed to create meaningful icons and investigate children's preference of the interface metaphor and interface layout. Three prototypes (low, high and final prototype) were produced at this stage. Each prototype was evaluated and children's feedback from was incorporated into each version of the prototype. A system evaluation was then conducted to assess the Comic4kids final prototype. The positive results of this evaluation underline the importance of participatory design practices in fulfilling the needs and requirements of children when making a system usable and enjoyable to use.

KEYWORDS

Participatory design, children, web-based comic-style storytelling system

INTRODUCTION

The rapid development of the internet has affected people of all ages, including children. As children have become users of the internet, a need exists to create suitable learning systems for them. This research focuses on creating a web-based comic-style storytelling system (WCSS) that allows children to tell stories by using comics. In addition, this type of system can aid children in organizing their ideas and thoughts during the process of story creation, as well as to express their ideas, thoughts and experiences in a meaningful manner (Barret, 2006).

Designers and developers often overlook the functional as well as the design aspects such as navigation, content, layout and style that are appropriate for children. This situation causes these systems to fail to meet the requirements and needs of children (Mazzone, 2007). One approach that does capture and consider children's needs and requirements in the design and development of a system is the participatory design approach (Druin, 1999). Children's involvement in participatory design stages can provide ideas that adult developers might not have thought about and ensures that these systems are more usable and suitable for children (Druin, 1999; Scaife & Rogers, 1999). Although participatory design has been implemented since the 1960s, user involvement is more focused on adults rather than children (Druin, 1999). As children have become regular users of technology over the net (National Schools Boards Foundation, 2009), they should be included as design partners in participatory design (Druin, 1999).

This research uses the participatory design (PD) approach suggested by Zafiris and Constantinou (2007) in the development of a web-based comic-style storytelling system, named Comic4kids, aimed at children in Malaysia. Currently there are no such systems in Malaysia, thus there is a need for developing a WCSS to promote storytelling among Malaysian children. In fact, through an extensive literature review, only two WCSS for children were found worldwide, namely: Professor Garfield's Comics Lab (Paws Inc., 2008) and Comic Creator (ReadWriteThink, 2008). These have been designed with very little consideration of children's views and ideas. In general, this research contributes to the study of designing applications/technology for children with children's involvement through participatory design activities.

WEB-BASED COMIC-STYLE STORYTELLING SYSTEMS: OVERVIEW

In a web-based comic-style storytelling system (WCSS), comics are used to tell the stories. A comic is a combination of words and pictures in sequence to illustrate connected events or a story (McCloud, 1994). As WCSSs use comic strips to tell stories, elements of comic strips are supported in this system. The elements are: background, dialogue, balloon, character, prop and caption (McCloud, 1994; Eisner, 1996; Sabin, 1996; Saraceni, 2003). Panels are frames, which divide words and pictures into a layout known as a comic strip. Balloons are floating objects that contain spoken dialogue and thoughts while captions are elements that show what the narrator has to say or which explain a certain panel. Dialogues are words that are contained in the balloons or captions. Characters are beings or creatures that take action in the comic, such as walking and talking, whereas props are unique objects featuring in the comic. The background describes the place where the characters are or where the plot of the story takes place.

RESEARCH APPROACH

The research approach consists of four parts: the literature review, the analysis, the design and implementation and the system evaluation (illustrated in Figure 1). In the first part of the research, a literature review was carried out across two main areas. The first main area is a review of existing WCSS – their main elements and features that support these main elements. The second main area is that of the design guidelines for children suggested by Gilutz and Nielsen (2002). For the second and third

parts of the research (i.e. analysis, and design and implementation of Comic4kids), the PD approach of Zaphiris and Constantinou (2007) is integrated. Activities in figure 1 which are in italic and bold represent the nine stages of Zaphiris and Constantinou's approach which are spanned over the two main phases of system development life-cycle (analysis, design and implementation). *Build bridges among PD team members* is the first activity of the PD approach. The aim is to form the PD team, as well as for the team members to get to know each other before performing PD activities together. Seven children were gathered and the PD team was formed. The participants were selected from students aged seven to ten years old.

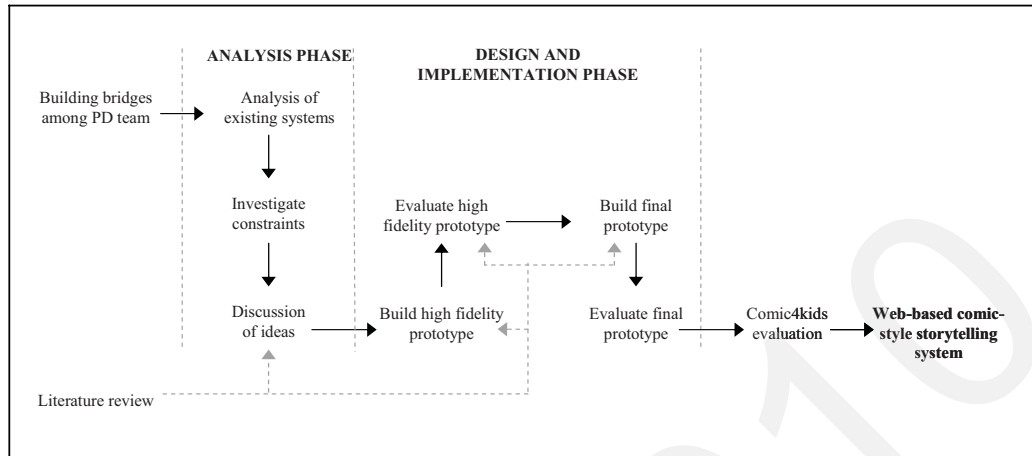


Figure 1: Research approach

PD approach is supported by participatory design techniques. The techniques describe on what activities are to be carried out, what equipment needs to be prepared and how the activities are conducted. PD techniques can be applied to different stages of a PD approach according to the suitability of the approach. When the PD team is made up of children, the technique should be that of a game or an environment that will stimulate them in contributing to PD (Morajevi et al., 2005). Due to this reason, the research focuses on the following techniques, namely: Contextual Inquiry (Preece et al., 2002, Holtzblatt et al., 2005, Gaffney, 2004), Comicboarding (Moraveji et al., 2007), Icon Design Game (Muller et al., 1997) and PICTIVE.

COMIC4KIDS ANALYSIS

Two participatory design techniques, Contextual inquiry (interviews and observation) and Comicboarding are used to support the Comic4kids analysis. Interviews are performed with the team members to investigate users' backgrounds and their value concerns and issues relating to WCSS. Observation is performed to identify what the users do or want to do with the system. In addition, the problems users face while using these systems are also identified. In order to obtain useful information, the researcher observed the team members as they used the two existing WCSSs (Professor Garfield's Comic Lab and ReadWriteThink's Comic Creator) and noted down their observations with the help of an observation checklist. The team members also noted down their preferences and problems encountered on sticky notes provided. The second PD technique, Comicboarding is conducted through a brainstorming session with the PD team to gather ideas for new features in Comic4kids and add more ideas about details of a certain feature. Outcomes from the PD activities along with the findings of the literature review (WCSS main elements and the features that support WCSS main elements) are synthesized to define the functional and user interface requirements of Comic4kids as shown in tables 1 and 2.

Table 1: Functional requirements for Comic4kids

| Functional Requirements | |
|--|--|
| R1 | To allow users to create a user account. |
| R2 | To enable users to login by validating the user information. |
| R3 | To provide information to users to view the instructions of Comic4kids and allow admin to edit the instructions. |
| R4 | To allow each user to create a comic: |
| | R4.1 To enable users to select, add, remove and manipulate a character in the comic. |
| | R4.2 To enable users to select, add, remove, and manipulate a prop in the comic. |
| | R4.3 To enable users to choose a background of the comic. |
| | R4.4 To enable users to select, add, remove and manipulate a balloon in the comic. |
| | R4.5 To enable users to add, remove, edit, print and save panels. |
| R4.6 To enable users to view saved comics and navigate between the panels in saved comics. | |
| R5 | To allow all users to view a list of comics available in the system repository and view each of the comics. |
| R6 | To allow admin to delete saved comics. |

Table 2: User interface requirements for Comic4kids

| User Interface Requirements | |
|-----------------------------|---|
| Graphical User Interface | |
| U1 | To create buttons that look clickable. |
| U2 | Buttons are to be distinguished from interface. |
| U3 | To use simple visual rollovers for buttons |
| U4 | Labels to be used are simple and understandable by children. |
| U5 | Comic panel to be made large and in a one column format. |
| U6 | To design an uncluttered user interface. |
| U7 | Bright and bright colours to be used. |
| U8 | Interface metaphor used reflects what the users are performing. |
| General Interaction | |
| U9 | To use standardized forms for password. |
| Text | |
| U17 | To use fonts that are simple and readable. |
| U19 | To use short sentences or simple words for instructions. |
| U20 | To use text that should not be animated. |
| U21 | Fonts to be used are to be at least 12-point print type. |
| U22 | Text to be placed on solid backgrounds. |
| Navigation | |
| U23 | Interface elements to have only one intended function. |
| U24 | Features offered by the system to be accessible all the time. |
| U25 | Navigation to always show where users are. |
| Content | |

| | | | |
|-----|---|-----|--|
| U10 | Icons used should be understandable by children. | U26 | To create content that is suitable for the user's age group. |
| U11 | To design for no scrolling. | U27 | To use familiar characters. |
| U13 | To design features that help users achieve what they want at the first attempt. | U28 | To include speech, thought and scream balloons. |
| U14 | Provide label or icon to indicate features. | U29 | Comics to be created are multi-coloured. |
| U15 | The system's icon should be big enough for children. | | |
| U16 | Make the features easy to use. | | |

COMIC4KIDS DESIGN AND IMPLEMENTATION

Three prototypes (low fidelity, high fidelity and final) were produced in the design and implementation phase.

Low Fidelity Prototype

In producing the low fidelity prototype two PD techniques, namely Icon Design Game and PICTIVE, were used.

Icon Design Game

In this technique, each team member draws his or her icon based on the icons in Comic4kids which are rotate, flip, enlarge, scale down and remove element. Then, a voting session is conducted to identify the most meaningful icon from the team's point of view. Each team member is given the opportunity to vote only twice for a specific icon. They are also allowed to vote for their own icons. The icons having the most votes were selected to be included into the system. A discussion on icon preference is then performed to discuss why the icons received the most and least votes. The results obtained from the Icon Design Game (highest votes) are displayed in Table 3.

Table 3: Icons designed and reasons for their selection

| Icons that receive the highest votes | Rotate | Flip | Enlarge | Scale down | Remove |
|--------------------------------------|--------|------|---------|------------|--------|
| | | | | | |

PICTIVE

PICTIVE was carried out to investigate the interface metaphor and the interface layout that the children prefer to have in Comic4kids. The interface metaphor was investigated to gather information on how the children prefer the user interface to look. The interface layout was investigated to know children's preferences in terms of the arrangement of the comic panel and buttons. The interface metaphor was investigated through sketches while the interface layout was investigated via paper prototypes.

i) Sketches

The team was divided to two groups. Each team was asked to discuss and draw three metaphors for the system in their respective groups. They were asked to incorporate the icons created during the Icon Design Game in their designs. The interface metaphors produced were: i) The main interface; ii) The buttons for add and select character/ prop/ balloon /background; and iii) The preview comic page.

Table 4 shows the metaphor created by both of the teams. Two metaphors were produced for the main interface, one illustrating a 'table' where children can draw their comics while the other one is a 'television' (TV). In the 'table' metaphor, a drawing on an art paper represents the comic panel and 'paper stickers' represent the icons created in the Icon Design Game. In the TV metaphor, the TV screen represents the comic panel while the TV's channel buttons represent the icons. For the button metaphor, the first team drew the buttons as 'paper stickers' while the second team drew their metaphor as a 'game console'. As for the preview comic page, the metaphors produced were those of a 'comic book' and a handheld game device.

Table 4: Metaphors created by Teams 1 and 2

| | Metaphors | | |
|--------|-------------------------------------|--------------------|--------------------------|
| | Main Interface | Buttons for WCSS | Preview comic page |
| Team 1 | Table where comics can be drawn | Paper stickers | Comic book |
| Team 2 | Television | Game console | Handheld game device |

A discussion was held among the team members to select which interface metaphor is to be used in Comic4kids. They were asked to state reasons why a certain metaphor should be selected or not. Some of the children stated that the 'creating comics on a table' metaphor is good because it reflects the user actually making a comic in real life. For the TV metaphor, they stated that the metaphor might mislead the user into thinking that the system is for viewing comics. Therefore, the children agreed to select the 'creating comics on a table metaphor' as the interface metaphor for the Comic4kids main interface. For the interface metaphor of the buttons and preview page, some of the children stated that it is important that these metaphors, 'paper stickers' and 'comic book', are related to the main interface metaphor (creating comics on a table). They also stated that the 'book' metaphor provides a bigger comic panel allowing a larger space to display comics as compared to the 'handheld game device' metaphor. In addition, one team member also argued that the 'cursor' on the 'handheld device' metaphor has four directions and may mislead the users in terms of the navigation of the comics on the preview page. Thus, the interface metaphor for buttons selected is 'paper stickers' and the metaphor for the preview page is the 'book' metaphor. The metaphors that were selected were made the basis to produce the paper prototype for the Comic4kids screen layout.

ii) Paper prototypes

Paper prototypes of the interface layout were produced to investigate children's preferences in terms of the arrangement of the comic panel and buttons in Comic4kids' main interface. Paper prototypes also helped in identifying other buttons that the children feel important to be included. In producing paper prototypes, the two teams were combined back together as one group. The main interface layout created by the PD team is shown in figure 2.



Figure 2: Main interface layout and arrangements of the buttons

The children placed the comic panel as a large one-column panel. They agreed that it is important to have such a large single column so that more characters, props and balloons can be put in the comic panel. The buttons to add WCSS main elements as well as the save and print buttons are placed on the bottom of the comic panel. Buttons that support WCSS elements are placed on the left of the comic panel.

High Fidelity Prototype

An interactive version of Comic4kids was produced based on the low fidelity prototype and the user interface requirements. This interactive version was produced so that the PD team could see the actual overall graphical user interface of the system – in terms of interface metaphor used, colours used, graphics used and fonts used. The children could then view the interactivity that the system offers – in terms of the effects used on a button or what happens if a button is a clicked. The high fidelity prototype is made using Adobe Flash. This prototype only consists of the main interface. No database is connected to the system. Only a limited number of features are supported in this prototype, which are: i) select and add character, object, places and words; and ii) drag, rotate, flip, enlarge, scale down and remove element. The PD team evaluated the high fidelity prototype and their comments were recorded. These comments aided in identifying enhancements to be implemented in Comic4kids. For the main interface, the team recommended the use of bright colours for the papers in the interface metaphor. In addition, they suggested positioning the navigation buttons closer to each other. The team also suggested replacing the current 'add and remove panel' buttons (using icons) with text buttons. Furthermore, they recommended adding an 'element indicator' so that the user knows which element is currently selected in a comic panel during editing.

Final Prototype

The third prototype developed is the final prototype, which is the complete and final version of Comic4kids. An evaluation on this prototype was performed with the team and suggestions from them were used to make final enhancements.

COMIC4KIDS EVALUATION

The evaluation was conducted with children who were not from the PD team. Fifteen school children were involved. Their ages ranged from seven to ten years old, and they were all familiar with computers. Comic4kids was evaluated to i) assess ease of use of its features; ii) to assess its graphical user interface, general interaction, text, navigation and content (how well Comic4kids supports the user interface requirements for children) and iii) to measure the overall reaction of children to Comic4kids. The evaluation was conducted using questionnaires where a 'Smileyometer' scale was used (Read & Macfarlane, 2006). The Smileyometer scale rates each question from a range on a one to five point scale. Lower points indicate that the output is negative while higher points indicate positive outputs.

Overall, the children found that Comic4kids' features were very easy to use. The children considered the element indicator (showing the current element selected) and 'add and remove comic panel' as important features. In terms of graphical user interface, children preferred the one-panel comic signifying that large comic panels allow users to add more detail to their stories. Simple rollover mouse effects are also important to be included as they help users in identifying the interface's buttons.

Positive results for Comic4kids' metaphor and icons suggest that they helped children in interacting with the Comic4kids' user interface. In terms of navigation, a high mean was received for navigation between panels signifying the importance to have a panel indicator, showing which panel the user is currently editing. As an overall, children felt that Comic4kids it was extremely easy to create comics in Comic4kids. A positive response was also received when asked whether the children would use the system again for creating stories using comics. In addition, results signified that children would use Comic4kids to share their stories with other children. For the last question, all of the children were either "extremely happy" or "very happy" with the system proving that the children liked the system.

CONCLUSION

This paper describes the design process for developing a web-based comic-style storytelling system for children (Comic4kids) with children's participation. It outlines the integration of participatory design in the system development phases of Comic4kids (analysis, design and implementation) for the children's participation as design partners. The positive results of the evaluation underline the importance of participatory design practices in catering to the needs and requirements of children when designing an application/technology for children's use. The results also show that feedback from children is essential in making a system usable and enjoyable to use for other children of their age.

REFERENCES

- Barrett, H. (2006). Researching and Evaluating Digital Storytelling as a Deep Learning Tool. In, C. Caroline, D.A., Willis, R. Carlsen, I. Gibson, K. McFerrin, J. Price, & S. Weber, *Proceedings of Society for Information Technology and Teacher Education International Conference 2006*. Held at Chesapeake, Virginia, April 2008, (pp. 647-654). AACE.
- Druin, A. (1999). Developing New Technologies for Children with Children. *CHI '99*. Pittsburgh, Pennsylvania, 15-20 May 1999, (pp. 592-599).
- Editorial. (2007). Special Issue on Participatory Design. *Design Studies* 28(3), May 2007, 213-215.
- Eisner, W. (1996). *Graphic Storytelling*. Tamarac: Poorhouse Press.
- ErgoSoft (2008). *What Is Participatory Design?* Retrieved 2 August, 2008, from http://www.ergolabs.com/participatory_design.htm
- Gaffney, G. (2004). *Contextual Enquiry - A Primer*. Retrieved 16 April, 2008, from <http://www.sitepoint.com/article/contextual-enquiry-primer>.
- Gilutz, S. and Nielsen, J. (2002). *Usability Websites for Children: 70 Design Guidelines*. Fremont: Nielsen Norman Group.
- Greenbaum, J. and Kyng, M. (1991). *Design at Work: Cooperative Design of Computer Systems*. New Jersey: Lawrence Erlbaum Associates Inc.
- Holtzblatt, K., Wendell, J. B. and Wood, S. (2005). *Rapid Contextual Design: A How-to Guide to Key Techniques for User-Centered Design*. San Francisco: Morgan Kaufmann.
- Mazzone, E. (2007). Requirements Gathering in Designing Technology for Children. *Proceedings of the 6th International Conference on Interaction Design and Children*. Aalborg, Denmark, 6-8 June 2007, (pp. 197 – 200).
- McCloud, S. (1994). *Understanding Comics: The Invisible Art*. New York: Harper Paperbacks.
- Morajevi, N., Li, J., Ding, J., O'Kelly, P. and Woolf, S. (2007). Comicboarding: Using Comics as Proxies for Participatory Design with Children. *CHI 2007*, San Jose, California, 28 April - 3 May 2007, (pp. 1371-1374).
- Muller, M. J. and Kuhn, S. (1993). Participatory Design, *Communications of the ACM* 36(6), June 1993, 24-28.
- Muller, M. J., Haselwanter, J. H. and Dayton, T. (1997). Participatory Practices in Software Lifecycle in, Helander, M., Landauer, T.K. and Prabhu, P. (Eds.), *Handbook of Human-Computer Interaction* (6th ed.), Elsevier.
- National School Boards Foundation. (2009). *Safe and Smart: Research and Guidelines for Children's Use of the Internet*. Retrieved 10 March, 2009, from <http://www.nsb.org/safe-smart/full-report.htm>
- Paws Inc. (2009). *Professor Garfield's Comic Lab*. Retrieved on 1 June, 2008, from http://www.professorgarfield.org/pgf_comics_lab.html
- Preece J., Rogers, Y. and Sharp, H. (2002). *Interaction Design: Beyond Human Computer Interaction*. New York: John Wiley & Sons.
- Read, J. C. And MacFarlane, S. (2006). Using the Fun Toolkit and Other Survey Methods to Gather Opinions in Child Computer Interaction. In, *5th International Conference for Interaction Design and Children (IDC '06)*, Tampere, Finland, 7-9 June 2006, (pp. 81-88).
- ReadWriteThink. (2008). *Readwritethink Comic Creator*. Retrieved 1 June, 2008, from <http://www.readwritethink.org/materials/comic/>
- Sabin, R. (1996). *Comics, Comix & Graphic Novels: A History of Comic Art*, London: Phaidon Press.
- Saraceni, M. (2003). *The Language of Comics*. New York: Routledge.
- Scaife, M., and Rogers, Y. (1999). Kids as Informants: Telling Us What We Didn't Know or Confirming What We Already Knew. In, A. Druin (Ed.), *The Design of Children's Technology*. San Francisco: Morgan Kaufmann, pp. 27-50.
- Zaphiris, P. and Constantinou, P. (2007). Using Participatory Design in the Development of a Language Learning Tool, *Interactive Technology and Smart Education* 4(2), 79-90.

INVESTIGATION OF CRITICAL COMPONENTS IN A WEB-BASED INSTRUCTION ON PROGRAMMING LANGUAGE

Halil ERSOY*, Ömer DELIALİOĞLU**, M. Yaşar ÖZDEN***

* Dr., Baskent University, e-mail: hersoy@baskent.edu.tr

** Specialist Dr., Middle East Technical University, e-mail: omerd@metu.edu.tr

*** Prof. Dr., Middle East Technical University, e-mail: myozden@metu.edu.tr

ABSTRACT

Web-based instruction is extending its borders within educational activities. As major consumers, students' perceptions about web-based instruction can be an important indicator of success of these new learning environments. In a way of developing better web based learning environments, this study is aimed to investigate students' perceptions about critical components of a web-based instruction with three perspectives: quality of content, structure and learner support. After an implementation of web-based support environment for a semester, data was gathered throughout a survey about students' perceptions. The overall results showed insights about critical components and features of WBI. According to the results, an in depth discussion on those components and features of the web-based environment and related perceptions is presented.

Keywords: web-based instruction, students' perceptions, components and features of WBI

INTRODUCTION

Internet-based technologies have attracted the educational specialists' attention very early. World Wide Web technologies provided the long-missed hypertext with animated graphics, sound and movies. The Web gave an opportunity to develop new learning environments and experiences for stakeholders. Web-based instruction (WBI), web-based training, and web-supported learning are such developing fields, where the names are used interchangeably for implying their ground technology. However, particular features draw lines among them in practice and definition.

Among the many Web-based instruction (WBI) definitions, Khan (1997) gave almost steady understanding as follow:

WBI is a hypermedia-based instructional program that utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported. (p.6)

For qualification in WBI, Khan (1997) deployed components-and-features specifications. In his set of specifications, Khan named the integral parts of a WBI system as components. For example, e-mail, forum and conferencing tools are the components of a WBI system. Features, on the other hand, are the processes or products of the WBI system via the components. For instance, asynchronous communication feature may use e-mail components in certain systems. One or more components may jointly contribute a feature, or a single component can serve for various features.

Perceptions About Critical Components of WBI

Research showed that learner perceptions about these components and features of a WBI are critical for meaningful learning. Lower perceptions may increase the dropout rates, decrease use of certain tools and affect overall satisfaction with a course.

There are various factors affecting the student's perceptions in learning environments. For example, Hara & Kling (2000) claimed that technical troubles in some components are one of the most frustrating problems that learners face with. On the other hand, student perceptions about WBI may be affected by components that require both additional and new skills to be successful. For example, learner preparedness is an important factor determining the achievement of students (Schilke, 2001). Beside the technical competencies for a particular technology, pedagogical skills to work in online environments, social interactions and other factors that are expected to be gained by the students can be challenges in WBI.

Similar prerequisites from students were reported as results of many studies in distance education where WBI is quite popular. Researches on distant learners showed that distance students should be mature, assertive, self-disciplined, and independent (Buchanan, 1999), be able to shape and manage change (Rogers, 2000), be high motivated and possess well-developed self-directed learning skills (Carlson & Repman, 2000) in order to reach effective distance learning.

The characteristics mentioned above are considered in distance settings where a learner is alone physically from the instructor and other learners. In other settings where WBI is used for supportive purposes to traditional education, other abilities may be required depending on the design, activities and mission of the WBI in overall learning. Hence, a component may not be utilized similarly in one setting with another.

Driver (2002) conducted a research study where the effect of small group online activities on the students' perceptions about overall interaction in web-enhanced environment. His study structured on the blend of web-based instruction and an ongoing broadcast-television instruction. Driver provided online communication tools like forum and chat in the web site for the course. The group-based project and discussions on certain topics were the main activities that were expected to be carried out through online environment. After a term, Driver delivered a survey to find out the perceptions about group interaction, class interaction and class satisfaction. He found that the students most liked the peer-to-peer interactions in their groups, but not much liked interactions with other students in the class or with the instructor. Consequently, Driver claimed that in web-enhanced learning environments, communication tools targeting peer-to-peer interactions in groups should be utilized, so that the instructor stays as a facilitator only and gain time and resources. In the same study, Driver reported that the chat tool had not been used ever. He said that the students had not used the chat because they had preferred face-to-face interactions if they had found a chance.

İnan (2003) reached out the same result in his study where he investigated the utilization of an online learning support system for pre-service teachers. İnan stated that the web site was not used for communication purposes, but students preferred to use telephone and

GMS for communicating. The possible reason, as he said, might be an existence of chance of face-to-face interaction and lack of privacy of the forum messages that rendered students passive participants.

As seen from the literature, different components and features of WBI have relative impacts on student perceptions about WBI in different contexts. More research studies are required for clear understanding of student perceptions about critical components of WBI in various contexts. With this purpose, this study is conducted to investigate student perceptions about critical components of WBI on programming language course. The main research question under the investigation is that “what are the learners’ perceptions about critical components of WBI in terms of (a) quality of the content, (b) structure and (c) learner support?”

METHOD

A descriptive study using quantitative data collection methods was designed to reach the research purpose. A web-supported learning environment for programming language course was designed and developed, then implemented for a semester as supportive environment to face-to-face instruction.

Ongoing instructional strategy of the programming language course before this study was a traditional lecturing with three-hour lessons in the classroom and two-hour laboratory works in a computer laboratory. The structure of the course was converted to web-supported instruction. The web site was adapted from the similar web-supported learning environment of a course, namely “Applications of Authoring Languages in Internet Environment” (Özden, 2002)

In the new structure, the web-site was expected to provide support to the students in terms of content related various resources, communicating with others and with the instructor via synchronous and/or asynchronous ways. The site was assumed to improve the implication of constructivist learning methodologies like problem solving and collaborative learning throughout its components. In order for meaningful learning to occur, both trainers and trainees need to be ready to learn (Özden, 2004). Since each individual constructs his/her own representation of knowledge, the Web environment was designed to create rich opportunities for trainees to communicate and collaborate with peers and trainers, and access a variety of resources.

At the beginning of the semester, usability test was conducted about the web site. The test captured the problems in the user interface design of the web-site with actual tasks and with real users. Based on the results of the test, significant upgrades were done to improve user interface and components to access information. During the semester, the web-site was put into use of the students and the instructor. At the end of the semester, the Web-Based Instruction Evaluation Questionnaire (WBI-EQ) was used as data collection tool to find answers for the research question mentioned above. The design summary is given at Table 1.

The subjects of the study were the students taking a programming language course at a public university in Turkey. Totally 65 students were involved in the course. The numbers of male and female students were 48 and 17 respectively. The students were 2nd year university students taking the course as a must course in their curriculum. None of students had attended an online course before the study. The programming language course was intended to provide detailed programming competencies in visual environments for the students.

Table 1. Research design

| Subjects | Case Attribute | Data Sources |
|--|---|---|
| Course Students, n=65, Female=17 Male=48 | Web-based instruction on programming languages | Web-Based Instruction Evaluation Questionnaire performed at the end of the semester |

The Components of the Web Site

The structure of the web site had many components presented on the screen within three frames; first one was the top frame showing the title of the course, user name and three buttons, which were the administrator options, user options and logout. The second one was the menu frame at the left side of the screen and included many links to certain content within the site and links for the communication/collaboration tools, i.e. chat, group chat and forum. The last frame was, at the right, content frame presenting the selected item’s content. While the contents of first two frames were stable, the content frame was dynamic according to the selections made on the menu frame. The user interface used in the web-site is presented in Figure 1.

Course Description page: It included the descriptive information about the course, its objectives, the course outline, the time and place information for classroom lessons and computer laboratories, the contact information with the instructor.

Lectures Page: It contained the presentation files used in the lessons both in Microsoft PowerPoint slides format and in HTML page format into which converted from the slides with Learning Resource iNterchange (LRN) Toolkit, software of Microsoft Cooperation (2002). The students were either able to see the lecture notes for each week on the web browser, or download them into local machines.

Laboratory Page: The information about the physical laboratories, the schedule of the laboratory hours for all sections, the problems that were handled by the students each week in the laboratory were presented here.

News Page: This page showed the short news announced by the instructor. The instructor could add new news, delete or modify existing news by his/her administrative privileges. The latest news was also presented on the Home page where every user comes to at the beginning.

Projects Page: The course had a project study for students in order to apply their knowledge into the practice. The project groups were composed of three to five pupils and semi-free topics. Since the instructor needed to observe particular skills and knowledge in

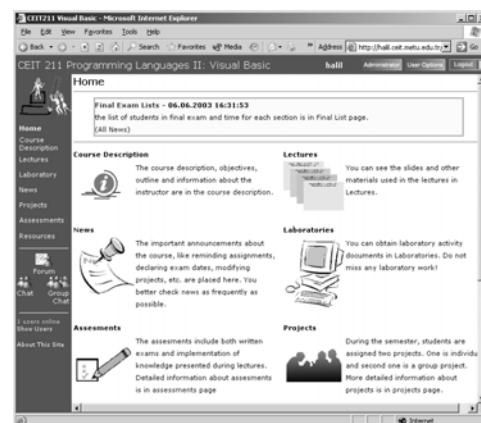


Figure 1. The User Interface of the Web site

the projects, the topics were judged after the discourse among the group members and the instructor. The project page was used to declare the group members and the topics. The students who were not a member of any group were expected to select and join one of the groups displayed here.

Assessments Page: It provided the whole grading information of the course. The percentages of the exams, laboratory works, projects, and time & place of them were given here. The results were also listed here.

Resources Page: The page provided a list of the electronic books about the Visual Basic and the hyperlinks to other information resources on the Internet. The information about the course textbooks could also be found at this page.

Forum Page: For asynchronous communication, forum was added to the web site. It was open to all students and instructor in order to leave messages or discuss about certain topics. Besides the instructor triggered topics, the students were free to start and continue on any topic.

Chat and group chat: For synchronous communication, textual chat component was adapted. In chat channel, any online students or the instructor could send textual messages to all participants. Moreover, a group of students had a chance to talk among them privately in group chat option.

Data Collection Instrument

The Web-Based Instruction Evaluation Questionnaire (WBIEQ) was used to collect student perceptions about WBI environment. It had been developed by Bayram (2002) with the reference of the study of Khan and Vega (1997). It was a 5-scale Likert-type survey and was composed of 20 items with one open-ended question. The subjects responded the items by checking one of the five options; from strongly agree (5) to strongly disagree (1).

The items were grouped under three categories: (1) Quality of the content, (2) structure of the web site, and (3) learner support. The open-ended question was asking for any comments related with WBI environment.

In the content sub-scale, the perceptions of the students about the content of the web site and the course were aimed to be discovered. In the second sub-scale, structure of the web site, the purpose was to understand the perceptions about the arrangement of the elements and general organization. In the last sub-scale namely learner support, perceptions about the support from the web site about various domains like technical and content related issues was inquired.

The scores of each item were presented with the mean statistic, and both the sub-scales' and overall means were calculated. The cronbach alpha reliability coefficient of the questionnaire was found as 0.86 which was acceptable value for research purposes (Fraenkel & Wallen, 1990).

RESULTS

For the first research question, the responses of the web-based instruction evaluation questionnaire (WBIEQ) were analyzed. The statistics of the questionnaire with four sub-scales are given in Table 2.

Table 2. Overall statistics of the WBIEQ

| Sub-Scales | Number of Items | Mean | St. Dev. |
|------------------------|-----------------|------|----------|
| Quality of the Content | 9 | 3.97 | 0.80 |
| Structure of the Site | 7 | 3.96 | 0.80 |
| Learner Support | 4 | 4.08 | 0.80 |
| Overall (N = 59) | 20 | 3.99 | 0.80 |

For the first sub-scale, the mean score of 9 items is 3.97, for the second sub-scale the mean of 7 items is 3.96, and for the last sub-scale of 4 items the mean is 4.08. The overall mean is 3.99, which means that, the students agree with almost all of the statements in the questionnaire. Student's comments about WBI were collected and grouped in Table 3 below with their frequencies.

Table 3. Answers and frequencies of open-ended question

| Students' Comments on Web-Based Instruction | F |
|--|---|
| Forum is not useful. | 5 |
| Chat is effective in sharing problems. | 1 |
| I have a limited access to the web site | 1 |
| More practice resources should be included in the web site in addition to assignments and lecture notes. | 1 |
| Having such a web site was good | 7 |

All comments are grouped according to the questionnaire they were collected. In the first group, the comments obtained from WBIEQ were mostly cumulated on the forum usability. As indicated before, the forum software had been acquired as freeware from Internet. At the beginning of the semester, the usability tests were done except on the forum interfaces because it was impossible to make any modification on the interface. In five comments, the students stated that the using forum was difficult in terms of usability.

One student said that chat was effective in problem sharing, and another pointed out the wish that more practice resources should have been included in the web site in addition to assignments and lecture notes. Another student stated that he/she could not have attended the forum since he/she had limited access to the Internet except the laboratory works.

Other seven comments were positive and appreciative thoughts about the having such a web site was good. These were not clear in deep and some were mixed with both positive and negative arguments stated above.

Quality of the Content

The first sub-scale of the WBIEQ was about the perception of the students about the quality of the content in the course. The 9 items were used in this sub-scale and the mean score for the sub-scale was found to be $M=3.97$. It can be stated that the students perceived the quality of the content fine and appropriate. The interpretations after data analysis are listed below:

- Most of the students ($SA+A = 89.9\%$), agreed that the course objectives were clear and achievable. The results clearly show that the students were aware of what was the expected from them at the end of the course and they believed that they could satisfy these expectations. Similarly 89.8% of the students strongly agreed or agreed with the statement that the course was accurate.
- The students perceived the new web based environment precisely.
- They also indicated that they found the course interesting.
- The students found the course was appropriate for the discipline (programming language) taught.
- Their perception about the method of course distribution was positive. WBI seemed to be acceptable and preferable method of distribution.
- The students expressed that they faced with typing errors rarely at the web site.
- They bridged the content and practice via the web site as sufficient practice provider.
- Majority of the students ($SA+A = 79.6\%$) were aware of the reaching to objectives as indicator of the course effectiveness.
- Most of them liked that the web site had many features rather than simple textual information.

Structure of the Site

Seven items in the questionnaire inquired the students' perceptions about the structure of the web site. The sub-scale mean score was found to be 3.96, so it is possible to say that the perception about the structure of the web site was positive and liked by the students.

According to data analysis, following interpretations can be made:

- The students perceived the web site navigation and structural organization easy and reasonable to cope with.
- Although the students liked its additional and distinguishing features than textual material, the majority of them were comfortable with the web site which supported their print-based material.
- They encountered no difficulties in understanding the language of the web site. Similarly there was no problem regarding the navigational icons.
- Majority of the students ($SA+A = 62.7\%$) claimed that the web site structure helped them comprehending and distinguishing information.
- Most of them ($SA+A = 81.3\%$) thought that the links were consistent with the knowledge related with the topic.

Learner Support

In the last sub-scale of WBIEQ, namely learner support, there were 4 items posed in order to see the perceptions about learner support feature of the web site. The overall mean was $M=4.08$ indicating agreement of the students with the items. After distribution data in Table 7, subsequent explanations about learner support can be summarized as follow:

- The web site provided sufficient facility for the students to communicate with other students and with the instructor which might had prevented them not fell alone.
- Majority of them thought that technical support for the web site was appropriate.
- The most of the students ($SA + A = 71.2\%$) knew that they had a chance of providing an informal feedback and evaluation about the learning experience.
- Greater majority declared they had no difficulties to access to the web site and the content.

CONCLUSION & DISCUSSION

According to the results above, it can be said that the web site was successful in terms of three perspectives under investigation: quality of content, structure and learner support. The overall mean score was (3.99) high enough to conclude that the features and components of the web site seemed to be perceived effective by the students. On the other hand, in depth discussion about sub-scales and open-ended items' responses could lead to better understanding about how those features and components were yielded such positive perceptions.

Quality of Content

After using the web site, the students perceived the course content and the web site content as qualified and adequate (Mean= 3.97). The possible reason for high satisfaction could be explained by gradual content updating which was keeping the attention high. The site presented not a static content. During the semester, as parallel with the face to face lectures, the content had being added with new documents, materials, and new resources by the instructor. It can be said that the live content of the web site might let the students expect differences or new materials to face with in every time when they enter the site. As opposed to many Web-based instruction design strategies (for example in Horton (2000)), putting content into web site in such blended environments could be done gradually like in this study to present students some thing new in every time.

Structure

The results show that students perceived the structure of the web site as convenient and they were comfortable with it (mean score is 3.96) except a forum component. The assumption could be grounded with two bases. First one is the usability test done at the design stage of the web site. In the test, the basic interface and navigation features of the web site were observed with real users. As results of this test, some modifications were made. Thus, some possible structural problems might have already been recovered. Driscoll (2002) stressed the importance of easy-of-use in the navigation and clearness in instructions in the web site. He warned that the lack of such features might frustrate learners. Second base is that the structure of the web site was constructed as similar to web-based learning sites of a mentor (Özden 2002a, 2002b, 2002c). His experience in the web-based learning might shape a web-based learning environment structure which has developed for a couple of years with usage of real students.

On the other hand, the warning of Driscoll (2002) about navigational lack of tools happened in the forum component. Being taken directly from the producer, the forum component was omitted in usability test and put into usage. Relatively complex interface of the forum lacked navigational support for user so that was easy to loose within discussion topics. Students reflected their complaints in open-ended item in the questionnaire. At first glance, the possible true action for the instructor or the designer of the web-site would be that the forum tool could have been included in the usability test and according to the results; modifications or training about the use of forum tool could be given at the beginning of the term. It is strongly emphasized that usability concerns in web-based instruction design are essential to eliminate user frustrations.

Learner Support

Learner support in the web site was perceived as adequate. The agreement in the learner support (Mean is 4.05) shows that recovering the students' problems about both, technical and instructional issues was performed as expected. The technical issues mentioned herein were not severe, for example some students forgot their passwords, and they asked to get a new one. Easy to access feature allowed the students connecting the web site without any advanced software, in fact, a web browser was the only tool needed to be engaged. In this regard, it is true to claim that student support features of such environments should be composed of easy-to-use components by the supporter, in the current case it was the instructor. For example, in order to reset a student password, an instructor with an ordinary level of computer literacy skills was able to do it with administrative components. Although "administrative" word might be interpreted by the reader as if it requires advanced technical skills, on the contrary, the web site included administrative tools accomplish complex tasks easily and simply by the instructor. With these components, the instructor but not someone else like an expert on web related technologies could provide technical help for his or her own students. Moreover, the learners were supported to communicate with and get feedback from the instructor by simple commonly used tools like emails, chat and forum. Getting immediate feedback was proved to be an advantageous feature of web-based systems.

With this perspective, it can be said that the web site carries minimum requirements fulfilling the students' web-based instruction perceptions (Overall mean is 3.96).

The logical next step of research on WBI could be searching for ways to improve the course quality and student satisfaction. Such environments might be created by integrating web-based instruction developed for this course with the face-to-face instruction components that the students are used to. A hybrid/blended learning environment might have the potential to overcome the complaints of students in the web-based instruction and could lead to higher satisfaction rates.

REFERENCES

- Bayram, L. (2002). Effectiveness of a Web-Based Tutorial on Computer Literacy for Pre-Service Teachers: A Case Study. Master's thesis, Middle East Technical University. Turkey.
- Buchanan, E. A. (2000). Assessment Measures: Pre-tests for Successful Distance Teaching and Learning? *Journal of Distance Learning Administration*, 2 (4). [Online]. Retrieved August 8, 2003, from <http://www.westga.edu/~distance/buchanan24.html>.
- Carlson, R. & Repman, J. (2000). Chalk dust from the virtual classroom: Building that human touch into your web-based course. *WebNet Journal*, 2(3), 9-11.
- Driscoll, M. (2002). *Web-Based Training: Creating e-Learning Experiences*. San Francisco: Jossey-Bass/Pfeiffer.
- Driver, M. (2002). Exploring students' perceptions of group interaction and class satisfaction in the web-enhanced classroom. *Internet and Higher Education*. 5, 35-45.
- Hara, N. & Kling, R. (2000). Student distress in a web-based distance education course. *Information Communication & Society*, 3(4), 557- 579.
- Horton, W. (2000). *Designing Web-Based Training*. New York: John Wiley & Sons, Inc.
- İnan, F. A. (2003). A design and development of an online learning support system for pre-service teachers: A discussion of attitudes and utilization. Unpublished master's thesis, Middle East Technical University. Turkey.
- Kahn, B. H. (1997). Web-Based Instruction (WBI): What is it and why is it? .In B. H. Khan (Ed.), *Web-Based Instruction*. (pp. 5-18). Englewood Cliffs, NJ: Educational Technology Publications. Inc.
- Kahn, B. H., & Vega, R. (1997). Factors to Consider When Evaluating a Web-Based Instruction Course: A Survey. In B. H. Khan (Ed.), *Web-Based Instruction*. (pp. 375-378). Englewood Cliffs, NJ: Educational Technology Publications. Inc.
- Özden M.Y. (2002). "Öğretici tabanlı öğrenmeden İnternet tabanlı çoklu ortam oluşturmacı yaklaşım uygulamalarına geçiş: Bir durum çalışması", *Bilişim Teknolojileri Işığında Eğitim Konferansı ve Sergisi, METU KKM*, [Conferans Journal], pp. 44-50.
- Özden, M. Y. (2004). Law of the minimum in learning. *Journal of Educational Technology & Society*, 7(3), 5-8.
- Rogers, D. (2000). A Paradigm Shift: Technology Integration for Higher Education in the New Millennium. *Educational Technology Review*. 1(13), 19-33.
- Schilke, R. A. (2001). A case study of attrition in web-based instruction for adults: Updating Garland's model of barriers to persistence in distance education. Dissertation Abstracts International (UMI No. 3013802).

DESIGN OF A *BAHASA MELAYU* GRAMMAR ONLINE LEARNING PORTAL FOR FORM TWO STUDENTS

Prof. Dr. Saedah Siraj, Dr. Chin Hai Leng and Alina Ranees
Faculty of Education
University of Malaya

ABSTRACT

This study was aimed at developing a Bahasa Melayu grammar learning portal for Form Two students (BMGLP). A developmental approach was used in this study. Needs analysis was carried out on the Bahasa Melayu teachers and Form Two students. The results of needs analysis on Form Two students showed that they preferred topics such as question answering techniques, and proverbs. The Delphi technique using consensus of experts in Bahasa Melayu was carried out in three rounds. The findings have resulted in successful development of a Bahasa Melayu Grammar Learning Portal for Form Two students. Hence it can be concluded that the BMGLP was successfully developed and can help students to acquire Bahasa Melayu grammar efficiently. Lastly, based on the findings, it is suggested that teachers and students use web portal materials as supplementary resources to diversify their learning activities besides enriching their knowledge of Bahasa Melayu grammar.

Development of a Bahasa Melayu Grammar Learning Portal for Form Two Students (henceforth BMGLP) can result in a conducive teaching and learning environment for Bahasa Melayu teachers and Form Two students in Malaysia. The teachers and Form Two students can access information at any time and place through the portal, and this will motivate the students in self learning using the BMGLP.

The rationale for building the BMGP was to help Form Two students in their online learning so that they can use the portal resources to supplement their classroom texts. The BMGLP was developed not only for use by Form Two students but it can also be accessed by Form One and Form Three students. It can be said that online Bahasa Melayu grammar learning materials for Form Two students are lacking. The existing online Bahasa Melayu grammar learning materials only cover limited topics. Chiero (1997) noted that insufficient training is the main obstacle in computer usage. Hence, teachers and students need to be given exposure through courses on ways to access the Internet, computer use, searching for resources on websites appropriate to the syllabus and students' cognitive level. The limited knowledge and expertise received enable Bahasa Melayu teachers to practice technology use as instructional aids when teaching the Bahasa Melayu subject in class (Zamri Mahamad & Mohamed Amin Embi, 2001).

Mohd. Arif Hj. Ismail and Mohd. Jasmy Abd. Rahman (2000, p. 261) suggest that developing one's own website offers many advantages such as: websites are a good alternative to the use of CD-ROMs as teaching resources; they can be developed taking into account aspects such as suitability to potential, level and interest of students; they can be accessed by students, parents and educators without restriction of space or time; they allow practical preparation for instructors and students before attending classes or lectures; they encourage Self-Access Learning; and, the website developed can be linked to other sites and integrated into other Internet applications such as e-mail, List Serv or Internet Relay Chat.

The use of Internet applications represent an innovation to teachers interested in attracting students to reading and information retrieval (Jamaludin Badusah & Hashimah Haji Hashim, 2005). Teachers can encourage students to use the Internet in the teaching and learning process in the computer laboratory. In the teaching of Bahasa Melayu, teachers can integrate use of web resources as a medium of teaching and learning and produce teaching materials for the classroom.

Besides that, resources in the BMGLP allow teachers and students to enhance their knowledge, access information and materials quickly at negligible cost. The system allows teachers and students to use grammar learning resources without restriction of time or place and indirectly encourages self-access learning among secondary school students. Internet curriculum materials are suitable for self-study and problem solving and the potential of the Internet lies in promotion of literacy and higher order thinking (Mike, 1996).

According to Mohd Arif Ismail, Zamri Mahamad dan Norizan Abdul Razak (2000) from the aspect of Bahasa Melayu learning, Internet use is able to enhance the effectiveness of teaching and can enhance learner

enthusiasm effectively; learners can understand a topic easily. Internet use can support multiple types of learning approaches, lessen the obstacles of time and place and dependence on resources for learning, make available resources for lifelong learning; and support collaborative learning activities that researchers believe are important in the learning experience (Jefferies & Fiaz Hussain, 1998).

Purpose of the Study

This study was aimed at identifying the needs of Bahasa Melayu teachers and Form Two students from the aspect of grammar learning resources needed for the BMGLP. It is also aimed at identifying the major components, learning topics, type of exercises, activities, type of assesment questions and grammar learning resources required by Form Two students and teachers in the BMGLP. This study also is targeted at identifying the main problems faced by Bahasa Melayu teachers in teaching activities and learning of grammar among Form Two students in school. It is also aimed at eliciting opinions from Bahasa Melayu outstanding teachers regarding topics, exercises, activities, assessment questions, and grammar learning materials for inclusion in the BMGLP.

Research Objectives

The research objectives are as follows:

1. To obtain feedback, opinions, and suggestions from Bahasa Melayu experts and Form Two teachers regarding topics, exercises and grammar learning materials to be included in the BMGLP.
2. To obtain from Bahasa Melayu experts information on what are considered appropriate techniques and approaches to teaching of Bahasa Melayu grammar in the BMGLP.

Research Questions

1. What are the contents for developing the BMGLP?
 - 1a) What grammar learning materials are suitable for inclusion in the BMGLP according to the opinion of Bahasa Melayu experts?
 - 1b) What are the main components for building the BMGLP in the opinion of Bahasa Melayu experts?
 - 1c) What are the grammar topics that need to be included in the BMGLP?
 - 1d) What types of exercises need to be included in the BMGLP according to the Bahasa Melayu experts?
 - 1e) What types of grammar activities must be included in the BMGLP according to the Bahasa Melayu experts?
 - 2) What are the techniques and approaches through the BMGLP that are considered appropriate according to the view of Bahasa Melayu experts?
- 3a) What types of assessment questions need to be developed for the BMGLP in the opinion of the Bahasa Melayu experts?
- 3b) What information sources should be included in the BMGLP?
- 3c) How can the BMGLP be used to enrich the grammar learning strategies among the Form Two students in the classroom?

The Delphi Technique

The Delphi technique was developed to collect opinions from experts in a certain field (Winzenried, 1997). The technique uses a series of questionnaires to collect knowledge, judgment or opinions of experts in answering a complex question (Roth, 1990). Delphi is a way to achieve consensus using expert opinions (Kalivoda & Simpson, 1992); it involves experts cooperating in solving a general problem (Buckley, 1995). The Delphi technique is one way to obtain an exact opinion arrived at by consensus of experts (Saedah Siraj, 2008). It is categorized as an approach for structuring the group communication process so that it is effective in allowing a group of individuals to solve a complex problem (Linstone & Turoff, 2002).

According to Linstone (1978, p. 405), in its simplest form, the Delphi technique is a carefully designed series of individual interrogations (usually conducted by written questionnaires) interspersed with information and opinion feedback. In the Delphi process, the focus is on how the opinion of experts in the group regarding the discussion differs in defending various types of situations and how the opinion of group members differ

among themselves (Wilhelm, 2001). A Delphi study is aimed at achieving expert consensus and consistent opinions from a panel of experts in two or more successful rounds in a particular research subject (Yang Yu Nu, 2003). In this study, the Delphi technique is used to achieve consensus among Bahasa Melayu experts in developing learning materials.

Developing a Web Portal for Use by Teachers and Students

According to Mohamed Amin Embi, Zalizan Mohd Jelas dan Sidek Ab Aziz (2001, p. 114), online programs in Bahasa Melayu specifically targeted at teachers are lacking; hence online resources need to be developed for teacher professional development using Bahasa Melayu and English as a communication medium.

VirTEC was developed in conjunction with UNESCO 2000/2001 by a group of researchers from Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM) dan Universiti Teknologi Malaysia (UTM) as a self-access portal for teacher professional education. Through VirTEC, teachers can access e-learning modules and other resources developed by teacher educators for teacher trainees and in-service candidates (Mohamed Amin Embi, Zalizan Mohd Jelas et al., 2001). Resources for English teachers in VirTEC include course information, e-lectures, tutorials, quizzes, the latest references, forums, bulletins, research and development projects, e-experts, e-conferences, lesson plans, teaching tips and teacher network (please see <http://web.myvirtec.net/home.cgi>).

A portal for English language learning in Malaysia called SMART Net was developed by Mohamed Amin Embi. Teachers and students can master English language learning strategies through SMART Net (<http://www.fpend.ukm.my/smartnet/index.htm>). According to Mohamed Amin Embi (1998, p. 161), teachers can use and integrate the web resources with teaching and learning of English language all over the world; the resources have been categorized according to language skills and fields of language. The SMART Net model encompasses grammar learning strategy, improvement of writing, oral communication skills, listening and vocabulary. Another study by Mohamed Amin Embi (2000) showed that teachers believed that SMART Net can be an Internet-based tool for raising the level of language teaching and learning.

A study was carried out using a survey questionnaire containing 12 items using a four point Likert Scale to investigate the perceptions of trainee teachers (n=167) regarding the capability and suitability of SMART Net as an Internet based learning tool for English language, Bahasa Melayu dan Arabic language. The survey findings showed that teachers had a positive view of the suitability and usability of SMART Net as a teaching learning tool for languages. However, TESL teachers had a more positive view as opposed to that of language and literature teachers and Islamic Education teachers (Mohamed Amin Embi, Jamaludin Badusah, Mohd Isa Hamzah & Alias Baba, 2000, p. 186).

Among the websites developed for facilitating the learning process is the SMIT-TeReC (*Science, Mathematics and Information Technology Online Teacher Resource Center*) also known as ELT-Trec or English Language Teaching Online Resource Centre. Developed as an online networking resource for teachers of science, mathematics and Information Technology, SMIT-TeReC (<http://www.smit.upm.edu.my>) helped in teacher professional development by offering online self-learning modules for science, mathematics and information technology teachers (Mohamed Amin Embi, Afendi Hamat & Muhammad Kamarul Kabilan, 2004).

Meanwhile, the SaLMas (*Self-access E-learning Management System*) was developed to help teachers develop and manage online learning activities (<http://www.eltreciukm.my/SaLMas>). SaLMas is a system for online lesson delivery that can be used by educators for self access for managing online teaching and learning (Mohamed Amin Embi & Afendi Hamat, 2004).

Besides that, University of Lapland (Finland) had developed an online curriculum based on Internet Web Portal as a pilot project for one course from 2001 until 2003 to integrate learning resources through the online curriculum or online syllabus (http://www.urova.fi/home/ktk/opettajankoulutus/tekhinen_tyol/). According to Miika (2003, p. 3), the portal is used for projects and studies related to various electronic resources and tools such as simulations in the context of Technology Education and provides resource integration and virtual learning activities in student learning. Studies show that students want to obtain resources for learning in their courses. The findings by Miika (2003) showed that students benefited from the system by having all the resources in one place, easily access updated data, and have access to links enabling collaboration through web applications.

Methodology

This study used the Delphi technique (three rounds) to obtain feedback from ten Bahasa Melayu experts through interview questions.

Sample

Bahasa Melayu experts were interviewed through the Delphi technique to elicit their feedback regarding the techniques for teaching grammar and what resources need to be placed in the grammar learning portal.

Research Instruments in Delphi Technique

Three rounds of the Delphi technique were used to elicit the views and feedback of Bahasa Melayu experts regarding the grammar teaching techniques and grammar learning materials appropriate for application in the classroom using the BMGLP. The instrument (interview) is appropriate for the sample size in this study.

Analysis of the First Round of the Delphi Technique

Interviews were carried out with 10 Bahasa Melayu experts to elicit their views regarding grammar teaching materials required and appropriate for inclusion in the web portal. Delphi technique was used to achieve consensus among the Bahasa Melayu experts. Data for the study were compiled through three rounds of interviews. The first round showed that the main components required in the BMGLP were exercises and information on word usage, affixes, grammar errors; notes; question bank; and the latest information.

The findings from interviews with Bahasa Melayu experts will be analyzed. The findings in the form of opinions and suggestions from experts in the first round will be used in the questionnaire for the second round. The findings from round one will be arranged according to themes and a 4-point Likert scale will be used to ascertain the agreement of the Bahasa Melayu experts.

Analysis of the Second Round of Delphi Technique

In the second round, a survey form in three parts (Part A on main components for building the web portal; Part B on Bahasa Melayu experts' opinion regarding techniques and approaches using the BMGLP; and Part C on the problems in learning Bahasa Melayu grammar faced by Form Two students) was distributed to ten Bahasa Melayu experts. The findings of Delphi Round Two were based on a 4-point Likert scale. In the Second Round, the median and interquartile range was calculated. The aim was to achieve consensus among the experts (the scale was: 1 = Highly disagree; 2 = Disagree; 3 = Agree; and 4 = Highly agree.)

Analysis of the Second Round was based on the median and interquartile range of responses. Items were arranged in descending order starting from the highest.

The items in the second round were based on the first round findings from the interviews with experts. The questionnaire was in three sections and responses were based on a four point Likert scale as in Round One.

The second round aimed at achieving consensus among Bahasa Melayu experts. Analysis of the results from this round involved the median and interquartile range. The median score was used to analyze the level of consensus of experts. Findings from this round showed that all items achieved consensus among Bahasa Melayu experts although there were differences in the level of agreement and extent of consensus among the Bahasa Melayu experts. Hence there were no significant differences between the experts regarding the items in Round Two.

Analysis of the Third Round of the Delphi Technique

The Bahasa Melayu experts were given three weeks to answer the survey questionnaire. In the third round, analysis of the second round and their original answers were sent to the Bahasa Melayu experts; the survey form was the same as that in Round Two, together with additional items. The questionnaire in the third round also included the median and interquartile range to allow the Bahasa Melayu experts to reconsider their answers in the third round by referring to the answers given by the group members. The Bahasa Melayu experts were given the opportunity to compare their answers with those of other expert group members.

In the third round, the experts can retain their original answer as given in round two where their answers are given as interquartile ranges. The Bahasa Melayu experts might change their answer in the third round if their initial responses fell outside the interquartile range or the experts may choose to retain their answers that fall outside the interquartile range, and give their reasons for retaining their answers. The third round is aimed at achieving consensus and narrowing the range of differences in opinion among the experts. After the third round, the data were analyzed and the median as well as interquartile range calculated. Findings from the Delphi third round were used to answer the research question.

Grammar Learning Resources According to Bahasa Melayu Experts

This section answers research question 1a, namely:

1. What are the contents for developing the BMGLP?

1a. What grammar learning materials are suitable for inclusion in the BMGLP according to the opinion of Bahasa Melayu experts?

Table 1

The Grammar Learning Resources Suitable for Inclusion in the BMGLP

| Item No. | Bahasa Melayu grammar learning materials | Position | Median | Quartile 1 | Quartile 3 | Interquartile Range |
|----------|---|----------|--------|------------|------------|---------------------|
| 17 | Materials on culture and literature | 5.5 | 4 | 3 | 4 | 1 |
| 3 | Audio, video, visual kinetic and music | 5.5 | 4 | 4 | 4 | 0 |
| 5 | Grammar learning materials suited to students' style and characteristics | 5.5 | 4 | 3 | 4 | 1 |
| 16 | <i>Dewan Bahasa Dan Pustaka</i> magazine | 5.5 | 4 | 4 | 4 | 0 |
| 1 | Materials on right usage of connectives/conjunctions | 5.5 | 4 | 4 | 4 | 0 |
| 14 | Radio and television materials | 5.5 | 4 | 3 | 4 | 1 |
| 9 | Materials on grammar error analysis | 5.5 | 4 | 4 | 4 | 0 |
| 2 | Newspapers, academic magazines and materials from story books | 5.5 | 4 | 3 | 4 | 1 |
| 8 | Materials from software (PowerPoint) | 5.5 | 4 | 3 | 4 | 1 |
| 7 | Illustrated charts | 5.5 | 4 | 3 | 4 | 1 |
| 19 | Materials on usage of verbs, adverbs, and others | 13.5 | 3.5 | 3 | 4 | 1 |
| 21 | Cartoons | 13.5 | 3.5 | 3 | 4 | 1 |
| 11 | Crossword puzzles | 13.5 | 3.5 | 3 | 4 | 1 |
| 13 | Materials on commentaries, focus of discussion and newspaper advertisements | 13.5 | 3.5 | 3 | 4 | 1 |
| 15 | Radio and television materials | 13.5 | 3.5 | 3 | 4 | 1 |
| 22 | Materials from outside the language field | 13.5 | 3.5 | 3 | 4 | 1 |
| 23 | Academic notes | 20 | 3 | 3 | 4 | 1 |
| 12 | Exercises on giving meaning to words | 20 | 3 | 3 | 4 | 1 |
| 10 | Quizzes | 20 | 3 | 3 | 4 | 1 |
| 6 | Notes on collective nouns | 20 | 3 | 3 | 4 | 1 |
| 20 | Song lyrics | 20 | 3 | 3 | 4 | 1 |
| 4 | Reference books | 20 | 3 | 3 | 4 | 1 |
| 18 | Traditional and modern literature texts | 20 | 3 | 3 | 4 | 1 |

Table 1 shows that the choice of items did not change much between the second and third rounds. Based on the findings of the third round, grammar learning materials for inclusion in the portal were as follows: literature materials, materials on right use of connectives, materials on grammar error analysis, academic magazines and story books, materials on usage of *kata pemeri*, verbs, crossword puzzles, non-language materials, academic notes, exercises on word meanings, quizzes, notes on collective nouns, reference books and traditional as well as modern literary works.

Main Components of the BMGLP

This section answers the research question 1b, namely: What are the main components for building the BMGLP according to the Bahasa Melayu experts?

Table 2
Main Components for Building the BMGLP

| Item No. | Main Components of the BMGLP | Position | Median | Quartile 1 | Quartile 3 | Inter Quartile Range |
|----------|--|----------|--------|------------|------------|----------------------|
| 11 | The latest spelling (as defined by the Language and Literary Agency) | 3.5 | 4 | 4 | 4 | 0 |
| 7 | Latest information | 3.5 | 4 | 4 | 4 | 0 |
| 13 | Grammar enrichment in various forms | 3.5 | 4 | 4 | 4 | 0 |
| 3 | Explanation/description of grammar errors | 3.5 | 4 | 3 | 4 | 1 |
| 4 | Notes with examples of sentences following the latest syllabus | 3.5 | 4 | 3 | 4 | 1 |
| 8 | Grammar exercises according to context and flow | 3.5 | 4 | 3 | 4 | 1 |
| 1 | Word usage | 8.5 | 3.5 | 3 | 4 | 1 |
| 12 | Language enrichment | 8.5 | 3.5 | 3 | 4 | 1 |
| 5 | Question bank | 8.5 | 3.5 | 3 | 4 | 1 |
| 9 | Errors in terminology/phrases | 8.5 | 3.5 | 3 | 4 | 1 |
| 2 | Use of prefixes and suffixes | 12 | 3 | 3 | 4 | 1 |
| 6 | Varied grammar exercises such as exercises on comparing differences in word usage in sentences | 12 | 3 | 3 | 4 | 1 |
| 10 | Proverbs/words of wisdom and others | 12 | 3 | 3 | 4 | 1 |

Note. The item number is based on findings of the Delphi Round One
Inter quartile range (IQ) = Q3 – Q1

In the third round of the Delphi technique, the questionnaire together with the answers from the second round were sent to the Bahasa Melayu experts; the experts were allowed to retain the answers they gave in Round Two or to change their answers in the Third Round after considering the opinions of the other experts.

Based on Table 2, the Bahasa Melayu expert panel members retained their initial opinion regarding many of the items. Main components suggested for inclusion in the BMGLP as concluded by consensus of experts were the following: notes on spelling, grammar enrichment, analysis of grammar errors, sentence examples, question bank, analysis of terminology and phrasal errors, use of affixes, and exercises on comparing word usage in sentences and use of proverbs.

Grammar Topics According to Bahasa Melayu Experts

This section will answer research question 1c, namely:

1c. What grammar topics need to be included in the BMGLP?

Table 3

Grammar Learning Topics for the Bahasa Melayu Grammar Learning Portal

| Item No. | Topics in Bahasa Melayu grammar learning in the BMGLP | Position | Median | Quartile 1 | Quartile 3 | Inter Quartile Range |
|----------|--|----------|--------|------------|------------|----------------------|
| 7 | Use of adjective according to sentence context | 5.5 | 4 | 4 | 4 | 0 |
| 1 | Types of words | 5.5 | 4 | 4 | 4 | 0 |
| 2 | Type sof sentences | 5.5 | 4 | 4 | 4 | 0 |
| 3 | Building sentences | 5.5 | 4 | 4 | 4 | 0 |
| 4 | Spelling system | 5.5 | 4 | 4 | 4 | 0 |
| 5 | Grammar errors | 5.5 | 4 | 3 | 4 | 1 |
| 6 | Use of affixes | 5.5 | 4 | 3 | 4 | 1 |
| 15 | Application of grammar required in contexts and situations | 5.5 | 4 | 3 | 4 | 1 |
| 11 | Grammar topics integrated into aspects of reading and writing skills | 5.5 | 4 | 3 | 4 | 1 |
| 14 | Application of grammar in writing essays | 5.5 | 4 | 3 | 4 | 1 |
| 10 | Exercises suitable to grammar topics | 12.5 | 3.5 | 3 | 4 | 1 |
| 9 | Identifying nouns and adjectives in context | 12.5 | 3.5 | 3 | 4 | 1 |
| 12 | Identifying adjectives and adverbs according to context | 12.5 | 3.5 | 3 | 4 | 1 |
| 13 | Errors in terminology | 12.5 | 3.5 | 3 | 4 | 1 |
| 8 | Function/Usage of words in sentences | 15 | 3 | 3 | 4 | 1 |

As seen in Table 3, topics recommended for the BMGLP include types of words, types of sentences, spelling system, grammar errors, use of affixes and use of words in sentences.

Types of Grammar Exercises

This section answers the research question 1d, that is:

1d. What are the types of grammar exercises that need to be included in the BMGLP according to the Bahasa Melayu experts?

In Table 4, the Bahasa Melayu experts had retained their answers to most of the items. According to the Bahasa Melayu experts the exercises in the BMGLP should include exercises on rearranging sentences, identifying errors in usage of connectives usage of affixes in sentences, correcting sentence errors, sentence building, sentence structure analysis, word usage in sentences analysis, improving word usage in sentences and language games.

Table 4

Types of Grammar Exercises for the Bahasa Melayu Grammar Learning Portal

| Item No. | Type of grammar exercise | Position | Median | Quartile 1 | Quartile 3 | Inter Quartile Range |
|----------|---|----------|--------|------------|------------|----------------------|
| 8 | Exercises in arranging sentences correctly | 6.5 | 4 | 4 | 4 | 0 |
| 1 | Exercises on identifying errors in use of conjunctions and affixes in sentences | 6.5 | 4 | 4 | 4 | 0 |
| 5 | Exercises in grammar use in various contexts | 6.5 | 4 | 4 | 4 | 0 |
| 6 | Exercises on sentence error correction | 6.5 | 4 | 4 | 4 | 0 |
| 7 | Exercises on sentence building | 6.5 | 4 | 4 | 4 | 0 |
| 9 | Exercises on grammar error analysis | 6.5 | 4 | 4 | 4 | 0 |
| 11 | Exercises on writing and speaking | 6.5 | 4 | 3 | 4 | 1 |
| 2 | Types of exercises on grammar applications learned by students | 6.5 | 4 | 3 | 4 | 1 |
| 12 | Exercises on analyzing word usage in sentences | 6.5 | 4 | 3 | 4 | 1 |
| 13 | Exercises on improving words in sentences | 6.5 | 4 | 3 | 4 | 1 |
| 4 | Exercises of interactive type | 6.5 | 4 | 3 | 4 | 1 |
| 14 | Self-created activities | 6.5 | 4 | 3 | 4 | 1 |
| 3 | Function/use of nouns, verbs, adjectives in building sentences | 15 | 3.5 | 3 | 4 | 1 |
| 10 | Exercises in the form of text analysis | 15 | 3.5 | 3 | 4 | 1 |
| 16 | Language games | 15 | 3.5 | 3 | 4 | 1 |
| 17 | Exercises in important contexts | 15 | 3.5 | 3 | 4 | 1 |
| 15 | Hands-on activities | 15 | 3.5 | 3 | 4 | 1 |

Types of Grammar Activities

This section answers the research question 1e, namely:

1e. What types of grammar activities need to be included in the BMGLP according to the Bahasa Melayu experts?

Table 5

Grammar Activities Suggested for the Bahasa Melayu Grammar Learning Portal

| No.Item | Grammar Activities | Position | Median | Quartile 1 | Quartile 3 | Inter Quartile Range |
|---------|--|----------|--------|------------|------------|----------------------|
| 12 | Interactive activities | 3.5 | 4 | 4 | 4 | 0 |
| 13 | Hands-on activities | 3.5 | 4 | 4 | 4 | 0 |
| 5 | Language games as enrichment | 3.5 | 4 | 3 | 4 | 1 |
| 7 | Identifying sentences and correcting errors in sentences | 3.5 | 4 | 3 | 4 | 1 |
| 4 | Exercises based on illustrations | 3.5 | 4 | 3 | 4 | 1 |
| 14 | Exercises using words based on context, culture, and discourse | 3.5 | 4 | 3 | 4 | 1 |
| 6 | Analyzing extracts | 7.5 | 3.5 | 3 | 4 | 1 |
| 2 | Objective questions | 7.5 | 3.5 | 3 | 4 | 1 |
| 9 | Exercises in the form of worksheets and question bank | 11.5 | 3 | 3 | 4 | 1 |
| 11 | Practice in word usage | 11.5 | 3 | 3 | 4 | 1 |
| 8 | Structured questions/Building sentences from given words | 11.5 | 3 | 3 | 4 | 1 |
| 1 | Fill in the blanks/cloze exercise | 11.5 | 3 | 3 | 4 | 1 |
| 3 | Quizzes | 11.5 | 3 | 3 | 3 | 0 |
| 10 | Exercises on collective nouns | 11.5 | 3 | 3 | 3 | 0 |

In the third round, Bahasa Melayu experts had suggested that activities in Table 5 were appropriate for Form Two students.

Activities that are required in the learning portal, according to the panel of experts, are language games, correcting errors in sentences, word usage exercises, building sentences from words given, fill in the blanks, quiz questions and exercises on collective nouns.

Learning Techniques and Approaches

This section answers the research question 2a namely:

2a. What are the techniques and teaching approaches through the BMGLP that are thought to be appropriate in the opinion of the Bahasa Melayu experts?

Table 6

Opinion of Bahasa Melayu Experts on Teaching Approaches in the BMGLP

| Item No. | Technique/Approach of Grammar Teaching Using the BMGLP | Position | Median | Quartile 1 | Quartile 3 | Inter Quartile Range |
|----------|---|----------|--------|------------|------------|----------------------|
| 4 | 'Hands-on' techniques have to be enhanced | 7.5 | 4 | 3 | 4 | 1 |
| 5 | Word exploration techniques on websites | 7.5 | 4 | 4 | 4 | 0 |
| 6 | Simulations and role play | 7.5 | 4 | 3 | 4 | 1 |
| 7 | Creative and Critical Thinking skills and Problem Solving | 7.5 | 4 | 4 | 4 | 0 |
| 8 | Comparison of word categories | 7.5 | 4 | 3 | 4 | 1 |
| 10 | Building sentences with and without affixes | 7.5 | 4 | 3 | 4 | 1 |
| 13 | Contextual activities | 7.5 | 4 | 3 | 4 | 1 |
| 1 | Drill technique | 7.5 | 4 | 3 | 4 | 1 |
| 2 | Questioning techniques | 7.5 | 4 | 4 | 4 | 0 |
| 3 | Interactive techniques | 7.5 | 4 | 4 | 4 | 0 |
| 9 | Comparison between active and passive sentences | 7.5 | 4 | 3 | 4 | 1 |
| 12 | Using electronic mail to publicize good essays | 7.5 | 4 | 3 | 4 | 1 |
| 16 | Smart strategy/smart elements | 7.5 | 4 | 3 | 4 | 1 |
| 11 | Student interactivity through chatting corner | 7.5 | 4 | 3 | 4 | 1 |
| 14 | Grammar quiz questions | 15.5 | 3 | 3 | 4 | 1 |
| 15 | Group activity | 15.5 | 3 | 3 | 4 | 1 |

The Delphi Round Three results for this category show that items required and suggestions included: contextual activities; interactive techniques; hands-on techniques have to be enhanced; grammar exploration techniques in web sites; problem solving and creative as well as critical thinking skills; drills; simulation and role play; use of e-mail in presenting the best essays; comparison between active and passive sentences; Building sentences without affixes; questioning technique; comparison of word categories and smart strategies/smart elements. These items received a high level of consensus and the Bahasa Melayu expert panel are in high agreement on them (interquartile range of between 0 to 1.0 and a median value of 4).

Other Findings from the Study

This section answers the research question on the assessment/evaluation questions that need to be developed in the BMGLP; the information sources required by students for inclusion in the BMGLP; and how the BMGLP can be used to enrich grammar learning strategies among Form Two students in class.

The majority of Bahasa Melayu experts were in high agreement with items related to assessment and evaluation. They were of the opinion that grammar assessment questions were appropriate and very helpful in evaluating student understanding. The type of questions suggested for the portal by the experts included questions on correcting errors in affix usage, word categories, correction of sentence errors, building simple

sentences, completing sentences, rearranging sentences, objective questions, cloze exercises and fill-in-the-blanks.

The median value for all items on information sources showed that the majority of experts very strongly agreed that and achieved consensus between 0 and 1. The majority of Bahasa Melayu experts strongly agreed and achieved consensus on all items related to information sources. They suggested that the web addresses are required as references for students. Resources recommended for inclusion in the portal included grammar reference books, websites on grammar, *Dewan Sastera* and *Dewan Pelajar* magazines and links to other Bahasa Melayu web sites. Given the consensus of experts, the fourth round was avoided. This shows that Bahasa Melayu experts achieved consensus regarding the main components in the BMGLP, topics for learning grammar, type of exercises, grammar activities, type of evaluation and assessment questions, reference sources, grammar learning materials, website address, learning problems and how to overcome them, besides the way to teach weak students in mastering Bahasa Melayu.

The respondents revealed that strategies used in learning grammar include *hands-on activities*, web surfing, referring to the latest information in the BMGLP, using web portal materials as exercises for students, encouraging students to surf the Internet, searching for information and other resources on the Internet, and referring to the Web portal as a learning resource.

Conclusion

The findings of this study enable the researchers to identify the needs of Form Two students from the viewpoint of grammar learning resources and building of the BMGLP for the use of Form Two students and Bahasa Melayu teachers. Students can use the grammar learning materials found in the BMGLP as grammar learning resources or revision materials in their grammar learning.

References

- Buckley, C. (1995). Delphi: a methodology for preferences more than predictions, *Library Management*, 16(7), 16-19. Retrieved from Emerald Database.
- Chiero, R. T. (1997). Teachers' perspectives on factors that affect computer use. *Journal of Research on Computing in Education*, 30(2), pp. 133-145. Retrieved from *ProQuest Education Journals*.
- Jamaludin Hj. Badusah, & Abd. Rashid Sohar. (1998, November). Penggunaan komputer dan Internet di kalangan guru-guru mata pelajaran Bahasa Melayu: Satu cabaran. *Prosiding Seminar Isu-isu Pendidikan Negara*, Fakulti Pendidikan, Universiti Kebangsaan Malaysia, 2, 26-27, pp. 345-351.
- Jamaludin Baadusah, & Hashimah Haji Hashim. (2005, December 6-7). Persepsi pelajar Sekolah Menengah terhadap penggunaan Internet dalam penulisan karangan. *Prosiding Seminar Kebangsaan E-Komuniti, Universiti Kebangsaan Malaysia, Putrajaya* (pp. 1-11). Retrieved from www.maele.net/articles/ekom2005/Paper/Jamaluddin%20UKM.pdf
- Jamalludin Harun, & Zaidatun Tasir. (2003). *Multimedia dalam pendidikan*. Pahang: PTS.
- Jefferies, P., & Fiaz Hussain. (1998). Using the Internet as a teaching resource, education and training. *MCB University Press*, 40(8), pp. 359-365.
- Jolliffe, A., Ritter, J., & Stevens, D. (2001). *The online learning handbook: Developing and using web-based learning*. London: Kogan Page.
- Kalivoda, P. L., & Simpson, R. D. (1992). The mission of *Innovative Higher Education: An update using the Delphi method*. *Innovative Higher Education*, 16(3), 199-210.
- Lammintakanen, J., & Rissanen, S. (2003). *An evaluation of web-based education at a Finnish University*. In Anil Aggarwal, *Web-based education learning from experience*. London: Information Science Publishing.

- Linstone, H. A. (1978). *The Delphi technique*. In R. B. Fowles, *Handbook of futures research*. Westport, CT: Greenwood Press.
- Linstone, H., & Turoff, M. (2002). *The Delphi Method: Techniques and Applications*. Retrieved from <http://www.is.njit.edu/pubs/delphibook/>
- Miika, L. (2003). The online interactive curriculum portal as one key to the well-structured learning activity of students. Retrieved from ERIC database. No: ED477053).
- Mike, D. G. (1996). Internet in the school: A literacy perspective. *Journal of Adolescent and Adult Literacy*, 4D(1). Retrieved from www.eric.ed.gov/ERICWebPortal/recordDetail?accno=EJ537419.
- Mike, T. (1998). The Internet curriculum materials and constructivist learning theory. ERIC Document Reproduction Service No: ED425706.
- Mohamed Amin Embi. (1998, November 26-27). Pengajaran dan pembelajaran bestari Bahasa Inggeris melalui 'SMART Net': Satu model belajar cara belajar Bahasa Inggeris berbantuan Internet. *Prosiding Seminar Isu-isu Pendidikan Negara*, Fakulti Pendidikan. Universiti Kebangsaan Malaysia. Vol 2, pp. 157-166.
- Mohamed Amin Embi. (2000, November 24-25). Teaching classroom language learners learning how to learn. *Prosiding Konferen Antarabangsa tentang Pengajaran dan Pembelajaran*. Fakulti Pendidikan. Universiti Kebangsaan Malaysia. Vol. 3, pp. 617-629.
- Mohamed Amin Embi, Afendi Hamat, & Muhammad Kamarul Kabilan. (2004). Development of self-access Learning Management System. In Hanafi & Rozhan M. Idrus, *Integrasi Reka Bentuk Instruksional dan Teknologi dalam Pengajaran dan Pembelajaran. Konvensyen Teknologi Pendidikan ke-17*. Kuala Lumpur: Persatuan Teknologi Pendidikan Malaysia.
- Mohamed Amin Embi, Jamaludin Badusah, Mohd Isa Hamzah, & Alias Baba. (2000, November 24-25). Persepsi guru terhadap kebolegunaan dan kesesuaian SMART NET sebagai alat pengajaran dan pembelajaran bahasa berasaskan Internet. *Prosiding Konferen Antarabangsa tentang Pengajaran dan Pembelajaran: Strategi Pengajaran dan Pembelajaran dalam Abad ke-2*. Fakulti Pendidikan, Universiti Kebangsaan Malaysia. Vol.1, pp. 178-187.
- Mohamed Amin Embi, Zalizan Mohd Jelas, & Sidek Ab. Aziz. (2001, November 12-13). Virtual teacher education (VIRTEC): Technology in development. *Prosiding Konferen Antarabangsa dalam Pendidikan Teknik-Vokasional: Trend Masa Depan dan Gobalisasai*. Fakulti Pendidikan, Universiti Kebangsaan Malaysia. Vol. 1, pp. 114-120.
- Mohd. Arif Hj. Ismail, & Mohd. Jasmy Abd. Rahman (2000, November 14-15). Pembinaan laman web untuk pengajaran: Fokus terhadap Kursus GE 2123 Teknologi dan Inovasi dalam pendidikan. *Seminar Prosiding Pendidikan Kebangsaan 2000. Pelbagai pelajar: Cabaran dan strategi pengajaran*. Universiti Kebangsaan Malaysia.
- Mohd Arif Ismail, Zamri Mahamod, & Norizan Abdul Razak (2000, November 24-25). Multimedia dan aplikasinya dalam pembelajaran bahasa. *Prosiding Konferen Antarabangsa dalam Pengajaran dan Pembelajaran. Strategi pengajaran dan pembelajaran di abad ke-21*. Fakulti Pendidikan. Universiti Kebangsaan Malaysia. Vol. 3, 24-25, pp. 916-929.
- Portal in higher and further education. (2002). EDNER (Formative evaluation of the distributed national electronic resource Project.) University of Manchester Metropolitan. Retrieved from ERIC database. No. ED470054.

- Roth, R. M. (1990). A Delphi approach to acquiring knowledge from single and multiple experts. Retrieved from ACM 08979/-416-3/90/0010/0301
- Saedah Siraj. (2008). *Kurikulum masa depan*. Kuala Lumpur: Penerbit Universiti Malaya.
- Wilhelm, W. J. (2001). Alchemy of the oracle: The delphi technique. *Delta Pi Epsilon Journal*, 43(1), pp. 6 – 26. Retrieved from ERIC database. (ERIC Document Reproduction Service No. EJ628933).
- Winzenried, A. (1997). Delphi studies: The value of expert opinion bridging the gap. Data to knowledge. ERIC Document Reproduction Service No. ED412971.
- Yang Yu Nu. (2003). Testing the stability of experts' opinions between successive rounds of Delphi studies. ERIC Document Reproduction Service No. ED472166).
- Zamri Mahamad, & Mohamed Amin Embi. (2001, November 12-13). Keberkesanan dan masalah penggunaan teknologi dalam pendidikan Bahasa Melayu. *Prosiding Konferen Antarabangsa tentang Teknologi dan Pendidikan Teknik-Vokasional: Gobalisasi dan Trend Masa Depan*. Vol 3, pp. 479-486. Bangi, Malaysia: National University of Malaysia, Faculty of Education.

IETC 2010