STUDENTS' PERCEPTIONS OF CHANGE READINESS OF A TURKISH EDUCATION FACULTY REGARDING INFORMATION AND COMMUNICATION TECHNOLOGIES

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ABSTRACT

A recent study investigated the degree of involvement in new teaching and learning methods by the academic staff of a large privileged Turkish state university, and revealed that faculties of education and open education were better in terms of change readiness than other faculties.

The current study builds on that study, and investigates the involvement of the institution and teaching staff in technology integration from observers' perspectives through administering a personal information form and a 31-item Likert questionnaire to 475 senior students of the Faculty of Education.

Findings revealed that what were reported by instructors in the previous study seem somewhat different from what is being reported by their students in the current study.

More specifically, students found their instructors and the infrastructure of the faculty quite inadequate in terms of the integration of information and communication technologies (ICT) within classroom settings. Implications and suggestions regarding the integration process are provided.

Keywords: Organizational change; professional development; higher education; technology integration; teacher education

INTRODUCTION

Embracing change is a must in all organizations. In order to embrace change, educational institutions should become learning organizations, which continually learn, adapt and develop in the face of changes in the environment (Latchem, 2008; Senge, 1990). However, most change initiatives tend to fail as the institution has not developed a culture of readiness for change (Latchem, 2008). In terms of technology integration, the change is so rapid and continuous that practitioners find very little time to adjust to new developments before a new advance comes out.

There are of course successful cases indicating that ICTs are being integrated into teaching-learning endeavors in ways that support and supplement current instructional practices (Hayes, 2007).

Nonetheless, sustainability is one of the key priorities of technology integration, that is, it should be investigated whether successful educational and technological innovations achieved during a unique implementation process endure over time. In this respect, Müller et al. (2007) list some central indicators of sustainability such as building a teachers network inside the school and among the schools, community support and institutionalization, school initiatives, emotional involvement of stakeholders, relation to official policies and practices, adaptation to existing structures, and fostering diversity rather than sustaining standardization. More specifically, one-shot case studies revealing a successful implementation might fail over time if above precautions for sustainability are not taken on time.

In several recent studies, researchers agreed that technology can be used as an effective cognitive tool and instructional media (Baek, Jung, & Kim, 2008) since it encourages inquiry, helps communication, constructs teaching products, and assists students' self-expression (Bruce & Levin, 2001). Even though ICTs have been reported to be effective instructional tools, several factors underlie the actual technology integration practices within educational settings. For instance, Baek et al. (2008) studied with a Korean sample and identified the factors influencing teachers' decisions about using technology in the classroom setting. They discovered six factors influencing teachers' technology use, which were adapting to external requests and others' expectations, deriving attention, using the basic functions of technology, relieving physical fatigue, class preparation and management, and using the enhanced functions of technology. Similarly, Akbulut, Kesim and Odabasi (2007a) studied with 359 education college students at a Turkish state university, and examined the technology integration indicators through the help of competences suggested by UNESCO (2002).

Indicators were combined within ten subtitles, namely;

- **ease of use,**
- **teaching-learning methods,**
- **ethics,**
- **special needs,**
- **infrastructure,**
- **professional development and obsolescence,**
- **access,**
- **health,**
- **policy, and**
- **ICT in the curriculum context.**

Further analyses with the data provided in the study indicated that participant opinions on ICT in the curriculum context were quite close to the average values; their opinions about technology ethics, staff development and healthy computer use were quite positive; and their opinions about technology integration in teaching-learning methods, ease of technology use in their institution, opportunities for students with special needs, technological infrastructure, access to technological facilities, and policies regarding integration were quite negative. Many obstacles that prevent teachers from using technology have been reported such as the level of teaching experience (Baek et al., 2008), lack of adequate resources and infrastructure (Barton & Haydn, 2006; Brill & Galloway, 2007; Mehlinger & Powers, 2002), lack of experience (Barton & Haydn, 2006), and the lack of systemic staff training and development (Latchem, 2008).

Interestingly, experience in the teaching profession seems to be an obstacle to technology integration rather than a facilitating factor. For instance, Baek et al. (2008) maintained through the findings of their descriptive study that while the majority of teachers wanted to implement instructional technology to support learning experiences, experienced teachers used technology involuntarily in response to external forces while teachers with little experience were more likely to use it on their own will.

Moreover, the more the teachers were experienced, the less they used the enhanced functions of technology. Finally, it was revealed that the most important factor influencing technology use was to meet external policies and needs rather than participants' personal belief of technology effectiveness. In this respect, having more experience meant to be at a more negative and remoter tip of the technology integration continuum, which leads to ineffective services for the new millennium learners who are already native technology-users.

Similar to the Baek et al. study (2008), Kadijevich and Haapasalo (2008) examined factors influencing student teacher's interest to achieve educational technology standards. They used a sample of 129 elementary student teachers from a highly and a poorly technologically developed country. Participants from the highly developed country had more experience with technology whereas participants from the poorly developed country had higher means in terms of computer attitude, computer experience and professional support from their institutions. It was revealed that in order to improve teachers' interest to achieve educational technology standards, it was necessary to improve computer attitude through computer experience. It was also found that professional support offered by educational institutions to achieve educational technology standards ameliorated the levels of experience and attitude simultaneously. Even though it is still dubious whether such interpretations would apply to a developing country like Turkey, the implications seems logical and applicable.

Few studies investigated university instructors' technology integration process. For instance, Brill and Galloway (2007) conducted a qualitative study at a large public university in the United States with the purpose of examining university instructors' technology integration practices. They primarily used surveys and interviews to examine trends in current and future technology use, positive influences of technology on instruction, and significant barriers to technology use. Findings revealed that most instructors found the technology they implemented positively influential on their teaching and students' learning. Poor classroom environments and a lack of or limited availability of equipment were stated as barriers to technology use. Similarly, Sahin and Thompson (2007) conducted an analysis of predictors influencing education faculty members' technology adoption level. They accessed 49 percent of the population and collected data through a questionnaire. Predictors of technology adoption were listed as the use of instructional courseware, online sources, up-to-date technology, nontraditional operating systems, self-directed informational sources, data analysis tools, management tools and collegial interaction.

However, when combined effects of these predictors were taken into account, it was found that the technology adoption stage of the faculty members was best predicted by three variables which were the knowledge of data analysis tools, self-directed informational sources and collegial interaction. This study should probably be replicated with a larger sample as the sample from which the regression equations derived was quite inadequate.

The current study primarily focused on the infrastructure and opportunities offered by a Turkish state university along with university instructors' integration of technology in classroom-based practices. The rationale for the study came from two recent studies. First, Selwyn (2007) stated that despite tremendous efforts to integrate ICTs into the university teaching and learning, many university students and faculty made quite limited academic use of such technologies. This is somewhat retained in the Akbulut et al. (2007a) study, which indicated that students opinions about technology integration in teaching-learning methods were quite negative. The second rationale came from the Akbulut et al. (2007b) study, which examined the degree of involvement in new teaching and learning methods, in-service training and research by the academic staff of the largest Turkish state university, and indicated that much of the change readiness and skills for educational technology transformation was mostly present in the Open Education and Education Faculty of the university. That study administered a survey to teaching staff to address their change readiness. After the study, two questions occurred. First, was the positive atmosphere reported by the academic staff enduring over time? Second, could the findings reported by the academic staff be retained by the data provided by their students? In this respect, the current study made a similar investigation, but administered a survey to senior students of the Faculty of Education since the Faculty of Open Education does not have any resident students.

Thus, the purpose of the current study was to describe students' ICT practices to some extent, and investigate the change readiness of the institution and teaching staff from students' perspectives.

CONTEXT OF THE STUDY

Turkey is a secular democracy with a considerable economic potential, candidacy for membership of the European Union, and a population over 70 million. According to the last census conducted in 2007 and announced recently by the Turkish Statistical Institute, the mean age of the population is 28.3. Approximately 38 million people are below the age of 28. Thus, there is an astronomic demand for university entry. In 2007, 1.615.534 students competed for 416.240 places in 113 conventional universities (86 state & 27 private). That is, one out of four candidates could pursue their formal education in conventional universities.

Moreover, more than 30 universities have recently been founded most of which are suffering from serious infrastructure and staff problems. In this respect, educating this enormous young population places a growing burden on the largest distance education provider of the country, Anadolu University.

Anadolu University is located in Eskisehir whose population is over 720 thousands and increasing approximately six people a day. Of 81 cities in Turkey, Eskişehir is the 28th city in terms of its population, and among unique crowded cities in Turkey which has more than one university. More than 99 percent of all distance education students are enrolled in Anadolu University, which makes Eskişehir the distance education metropolis of Turkey. The university has 12 faculties including three distance education faculties in which more than 1800 scholars and 2300 administrative staff is employed. As of the end of 2007, the university has 23.347 resident and 1.121.360 distance education students. A recent investigation by the university reveals that the majority of distance education students are employed.

Approximately 300 thousands of students live in villages. In addition, hundreds of disabled or imprisoned students continue their higher education through the distance programs offered by the university. The university is also meticulous in transparency and disseminating its experience as more detailed information about academic and administrative endeavors are easily accessible from the official website of the university (i.e. http://www.anadolu.edu.tr).

Along with the considerable budget dedicated to distance education practices, university's research endeavors, and high-tech infrastructure; the university is also the leader in Turkey in terms of student and faculty mobility. In addition to hundreds of institutions enrolled in the ERASMUS Program, the university has international agreements and memorandum of understandings with 23 universities all over the world. Anadolu University Office of International Affairs states that the vision of the university is to become one of the top three universities in the country by equipping its students with knowledge and expertise that are universally accepted, through use of innovative and multimedia teaching technologies and research; by sharing this accumulated knowledge and expertise in the national and international platforms and using it for the good of the world and human dignity (http://www.uib.anadolu.edu.tr). The mission of the university is paraphrased from the same source in Akbulut et al. (2007b; 335-336), which is 'to provide formal, distance, and lifelong education and training using ICT, and through research, participation, and sharing, help individuals to be truthful to themselves, rational, questioning, thinking, productive, sensitive to human and national values, cognizant of their environment, enlightened, and innovative'.

The context of the current study, the Faculty of Education is the second biggest constitution among all schools and faculties within the university. In early '80s, after the re-structuring of higher education institutions in Turkey, the faculty enrolled its first students in the Department of Foreign Language Education with two programs which were English and German Language Teaching. Today, the number of departments is six sheltering more than 12 programs and eight minors.

The aim of the faculty is stated on its official website as to train teachers with both academic and pedagogical knowledge that would enable them *to perform in a constantly changing world*. As of 2007 Fall Semester, the Faculty of Education has 3131 students and the Graduate School of Educational Sciences has 343 students 130 of which (37.9 %) are doctoral students. According to the last five years' average, 45 graduate students defend their dissertations on educational sciences each year, eight of which are PhD dissertations. The current study primarily focuses on the undergraduate students.

Thus, further details regarding the Graduate School of Educational Sciences are not within the scope of the current study. Of 52 education faculties in Turkey, Anadolu University Education Faculty ranks 5th in terms of the number of academic staff, 4th in terms of the faculty-to-student ratio, and 8th in terms of the university entrance exam averages. The average time for graduation in the Faculty of Education is 4.08 years with a mean dropout rate of 0.01.

Along with tens of books, book chapters, national peer-reviewed articles, research reports and conference proceedings, approximately ten international peer-reviewed articles are published by Education Faculty staff and indexed in SCI, SSCI and AHCI every year.

METHODS AND PROCEDURES

Participants

The reference population of the study was senior students of the Faculty of Education at Anadolu University. Since senior students were the most experienced students in the faculty and since they were about to begin their careers very soon, they were considered the most robust source of information regarding the current situation of the faculty. Of 852 senior students, 505 (59.27 %) voluntarily responded to the data collection tool. Questionnaires with critical missing values and invalid response patterns were eliminated which led to a total of 475 (55.75 %) respondents, 331 (69.7 %) of whom were female and 144 (30.3 %) male. The mean age of the respondents was 21.91. Table: 1 shows the distribution of students by department.

Table: 1
Frequency in terms of department

	f	%
German Language Teaching	30	6,32
Computer Education	52	10,95
French Language Teaching	18	3,79
Mathematics Teaching	50	10,53
English Language Teaching	108	22,74
Education of the Hearing Impaired	41	8,63
Pre-school Education	45	9,47
Primary School Education	38	8,00
Social Studies Education	25	5,26
Education of the Mentally Disabled	40	8,42
Fine Arts Education	28	5,89
Total	475	100

Data Collection Tool

The data collection tool developed for the current study involved a background information form followed by a 31-item questionnaire. The background information form was used to ascertain the technology backgrounds of participants and gauge their PC and Internet using practices. Age, gender, department, family income, and PC and Internet experiences of respondents were investigated through questions included in this part. The questionnaire consisted of 31 Likert-Scale items sheltering two parts. The first part focused on the evaluation of teaching staff's change readiness while the second part addressed the institution's change readiness regarding ICTs. Some statements were reverse coded so that respondents would not see a monotonous pattern to respond.

The frequency of a given statement was evaluated by respondents on 5-item scales: Never, rarely, sometimes, very often and always referred to 1, 2, 3, 4, and 5 respectively. Principal component analysis was conducted with the instrument which revealed ideal Kaiser-Meyer-Oklin Measure of Sampling Adequacy Values (.878) and a significant Chi-Square value in the Bartlett's Test of Sphericity (χ^2=6687.171; p<.001) both of which proved that the factorability of the correlation matrix was proper (Field, 2005; Pallant, 2001). Two-factor structure of the data collection instrument explained 40 percent of the total variance, which was ideal according to Dunteman (1989).

After the analysis, to see whether the questionnaire items were measuring the same underlying construct, the reliability of the data collection tool was checked through calculating Cronbach's Alpha.

The first part had an internal consistency coefficient (Cronbach's Alpha) of .868 while the second part had a coefficient of .883. Overall, the instrument had an internal consistency coefficient of .904.

Data Analysis

All analyses were conducted through SPSS 15.0 for Windows. Principal component analysis was conducted and internal consistency coefficients were calculated through SPSS as well. Further details about the factor analysis are not within the scope of the current study. In order to describe the characteristics of the sample, frequencies and percentages were used. These descriptive statistics were also used whenever it was necessary to scrutinize on categorical variables. Means and standard deviations were provided for continuous variables. Respondents rated the items of the questionnaire on a 5-point scale as mentioned beforehand. Based on the reports of the participants, the following interpretation was realized while dealing with means. If the average of the item 'y' was:

- **between 1.00 and 1.79, the instance mentioned in the statement 'never' occurred**
- **between 1.80 and 2.59, the instance mentioned in the statement 'rarely' occurred**
- **between 2.60 and 3.39, the instance mentioned in the statement 'sometimes' occurred**
- **between 3.40 and 4.19, the instance mentioned in the statement occurred 'very often'**
- **between 4.20 and 5.00, the instance mentioned in the statement 'always' occurred**

Pearson product-moment correlation coefficient was used to explore relationships among continuous variables whereas chi square was conducted to explore relationships among categorical variables. Males and females were compared with each other through conducting independent-samples t-test while analysis of variance (ANOVA) was used to compare the means of participants from different programs of study.

RESULTS AND DISCUSSION

Participants' Profile Regarding ICTs

Of all respondents, 288 (60.6 %) had a personal computer of their own at home or dormitory, 211 of whom (73.26 %) had Internet connection as well. Participants' experience levels regarding personal computers revealed that 51 percent of all respondents had four or less years of experience with a PC. That is, half of the participants owed their computer experience to undergraduate years.

Table: 2
No. of years' experience with a computer

	f	%
0-2 years	46	9,68
3-4 years	194	40,84
5-6 years	102	21,47
7-8 years	90	18,95
9-10 years	29	6,11
More than 11 years	14	2,95
Total	475	100

The fact that respondents owed their PC experience to undergraduate years did not necessarily mean that they learnt what they knew about PCs at school. The source of their PC knowledge was also investigated which led to interesting results. The following Table: 3 ranks the sources of respondents' PC knowledge from the most popular to the least popular. Note that respondents were allowed to ring as many options as appropriate:

Table: 3
Which of the followings helped you most to improve your PC experience?

	f	%
Individual efforts	226	47,60
University	190	40,00
Friends	146	30,70
Private Courses	128	26,90
High School	48	10,10
Family	42	8,80
Books	29	6,10
Work	18	3,80
Primary school	6	1,30

As can be seen in Table: 3, a considerable percentage of participants owed their PC knowledge to their own efforts (47.60 %), followed by the contribution of the university (40 %). Friends also had a considerable influence on their PC knowledge (30.70 %). As expected, only a few students were exposed to PCs during their primary school years (1.30 %).

Table: 4
How often do you use PC for your courses?

	f	%
Every day	144	30,32
2-3 times a week	203	42,74
Once a week	82	17,26
1-2 times a month	13	2,74
Less than once a month	21	4,42
Never	8	1,68
Missing	4	0,84
Total	475	100,00

The interesting result is that 26.90 percent of participants benefited from private courses to improve their PC knowledge. Perhaps, the PC experience they were exposed to at the university was not sufficient for their career purposes. On the other hand, findings revealed that they frequently used PCs for their coursework:

Table: 4 indicate that 73.06 percent of respondents used PCs for their courses at least 2-3 times a week. The cumulative percentage of respondents who used PCs less than once a week is only 9.68. A contingency Table: between the department and the frequency of PC use for instructional purposes revealed interesting findings with a significant Pearson Chi-Square value ($\chi^2 = 205.261$, $p < .001$).

More specifically, 22 percent of participants from the Education of the Hearing Impaired reported that they used personal computers for their courses either rarely or never. Except for this department, students mostly reported that they used PCs for their coursework.

Participants' PC using habits were further examined through additional questions provided in the questionnaire. Several computer applications were provided in order for respondents to rate the frequency of use on a 5-point scale, five being the highest grade.

Table: 5
In what ways do you use the personal computers?

	N	M	SD
Word processing	**46**	**4,1**	**0,9**
PC as a DVD / VCD player	**44**	**4,0**	**1,2**
Presentation (e.g. PowerPoint)	**45**	**3,5**	**1,1**
Graphics design (e.g. Photoshop)	**43**	**3,0**	**1,3**
PC Games	**44**	**2,4**	**1,3**
Spreadsheet (e.g. Excel)	**42**	**2,0**	**1,0**
Database (e.g. Access)	**41**	**1,5**	**0,9**

As expected, word processing was the most popular PC application among students as approximately 79 percent of participants reported that they used word processing very often. Only eight participants (1.7 %) reported that they never used the word processing. An interesting finding was that 68.5 percent of all participants reported that they never used spreadsheet applications (e.g. Excel).

Word processing applications, presentation applications (e.g. PowerPoint) and spreadsheet applications (e.g. Excel) are among the complimentary subjects covered in the Information Technology in Education Courses during the first year in all departments. The finding indicates that undergraduate students did not use or need the spreadsheet applications even though they all had the training to use them.

Along with PC using habits, Internet using habits of the respondents were investigated. Of all participants, 211 (44.42 %) had Internet connection at home, 108 (22.74 %) used facilities of the university for Internet connection, 139 (29.26 %) preferred Internet cafés and 17 (3.58 %) preferred other places to connect Internet. The average Internet use of participants was 3.62 hours per week.

However, results of the one-way between-groups ANOVA revealed that the average Internet use duration varied according to the program of study ($F_{10,\ 461}$=8.536; p<.001). Multiple comparisons conducted through the Scheffe Test revealed that the Internet use average of the Computer Education Department (5.19) was higher than those of many other departments including Mathematics Teaching (2.84), Primary School Education (2.55), Social Studies Education (2.44), Education of the Mentally Disabled (3.25), and Education of the Hearing Impaired (2.32).

In addition, participants from the Education of the Hearing Impaired had the lowest mean (2.32).

A negative, moderate and statistically significant relationship was found between the duration of Internet use per week and the frequency of PC use for courses (r=-.375, p<.001). That is, the more students used PCs for their courses, the less they used Internet. This was quite an unfortunate finding when the importance of Internet in current educational implications was taken into consideration.

This might mean that the institution could not pass from computer-based implications to web-based implications in instruction properly.

Similar to participants' PC using habits, their Internet using habits were further examined through additional questions provided in the questionnaire. Several Internet applications were provided in order for respondents to rate the frequency of use on a 5-point scale, five being the highest score.

Table: 6
In what ways do you use Internet?

	N	M	SD
School's registration page	460	4,270	0,849
Research	455	4,233	0,872
E-mail	464	3,978	1,080
News	441	3,399	1,064
Downloading	436	3,016	1,394
Discussion forums of the courses	435	2,724	1,390
Educational website/Online course desi	440	2,230	1,479
Games	434	2,154	1,358
Videoconferencing	426	1,754	1,016
Teleconferencing	419	1,549	1,016
Online shopping	427	1,471	0,851

As indicated in Table: 6, both instructional and non-instructional uses of Internet by respondents were ordered from the most popular to the least popular. When the compulsory use of the school's registration page was ignored, students mostly used Internet for research and e-mailing.

A deeper investigation revealed that 197 (41.47 %) respondents rarely or never used Internet for communicating with friends. In addition, it is clear from the findings that several significant open learning practices were neglected by respondents including course discussion forums, educational website and online course design, and videoconferencing.

Participants' Perspectives Regarding the Change Readiness of the Teaching Staff

As indicated before, the first 13 items of the questionnaire sought to investigate teaching staff's change readiness regarding ICTs from students' perspectives.

Means and standard deviations of each item are provided in Table: 7 below:

Table: 7
Descriptive statistics of participants' perspectives regarding ICT-related change readiness of the teaching staff

Our instructors are	N	M	SD
using technology assisted instruction in teaching subjects.	475	3,682	1,159
giving assignments that lead students to benefit from web facilities.	475	3,524	1,038
using additional course materials in addition to conventional classroom materials.	475	3,507	1,182
using Internet resources for teaching – learning endeavors.	475	3,192	0,993
using current technology to realize class activities.	475	3,120	0,930
making announcements regarding course materials and exams through the Web.	475	2,996	1,187
selecting and using technologies according to student needs.	475	2,933	0,983
modeling students in using current technology for instructiona endeavors.	475	2,865	1,016
using instructional technologies in a motivating way.	475	2,775	0,964
transferring classroom activities to web context.	475	2,600	1,116
creating environments where students can use technology for communication and problem solving.	475	2,499	1,046
using computer software for course activities.	475	2,491	1,097
communicating with students through e-mails.	475	2,303	1,066

It is fortunate to see that teachers referred to technology assisted instructional endeavors, gave assignments that led students to benefit from the Web, and used additional materials in addition to conventional classroom materials 'very often', as the means were between 3.40 and 4.19. However, none of the instances reached the 'always' level (i.e. between 4.20 & 5.00).

Instructors 'sometimes' used Internet resources for instruction, used technology to realize class activities, made announcements regarding course materials and exams through the web, selected and used technologies according to student needs, modeled students in using instructional technology, used instructional technologies in a motivating way, and transferred classroom activities to web context. They 'rarely' used computer software for instruction, communicated with students through e-mails, and created environments where students could use technology for communication and problem solving. Participants' perspectives regarding instructors' ICT-related change readiness varied between males and females as can be seen in Table: 8.

Table: 8
Independent-samples t test comparing males and females in terms of their perspectives on staff's change readiness

Gender	N	Mean	SD	t	df	p
Female	331	2,916	0,649	-2,225	473	0,027
Male	144	3,063	0,681			

More specifically, the mean of males (3.06) was significantly higher than that of females (2.92) revealing that males had more positive opinions about the ICT-related change readiness of their instructors. In addition to the variable of gender, the influence of the department on students' scores was examined. Descriptive statistics of each department is provided in Table: 9:

Table: 9
Descriptive statistics of each department in terms of student perspectives on staff's change readiness

Department	N	Mean	SD
German Language Teaching	30	2,623	0,839
Computer Education	52	3,713	0,504
French Language Teaching	18	2,538	0,371
Mathematics Teaching	50	2,871	0,504
English Language Teaching	108	2,899	0,548
Education of the Hearing Impaired	41	2,720	0,575
Pre-school Education	45	3,092	0,601
Primary School Education	38	2,846	0,628
Social Studies Education	25	3,274	0,639
Education of the Mentally Disabled	40	2,950	0,555
Fine Arts Education	28	2,624	0,758
Total	475	2,960	0,662

It seems that the Department of Computer Education had the highest mean whereas the Department of French Language Teaching had the lowest mean. However such rough comparisons might be misleading.

First, the ANOVA should be checked to see whether our observations on the means are statistically significant.

Table: 10
One-way ANOVA comparing departments in terms of student perspectives on staff's change readiness

Source	SS	df	MS	F	p
Between Groups	46,159	10	4,616	13,272	0,001
Within Groups	161,371	464	0,348		
Total	207,531	474			

An F value of 13.272 with a corresponding significance of .001 indicated that there was a significant difference among student perspectives from different departments.

To see the source of this difference, multiple comparisons were conducted through the Scheffe Test. Multiple comparisons revealed that the mean of the Department of Computer Education was significantly higher than all other departments except for that of the Department of Social Studies Education.

None of further comparisons among departments were statistically significant at a p level of .05 or below.

Participants' Perspectives Regarding the Change Readiness of the Institution

The second set of questions in the questionnaire sought to investigate the institution's ICT-related change readiness from students' perspectives.

Means and standard deviations of each item are provided in Table: 11 below:

Table: 11
Descriptive statistics of participants' perspectives regarding ICT-related change readines of the institution

In our institution	N	M	SD
technologies are regularly updated	475	3,331	1,007
Internet speed is sufficient in our campus.	475	3,004	1,201
I can use Internet on campus whenever I want.	475	2,983	1,246
there are sufficient licensed software programs.	475	2,592	1,078
computers are fast enough to use for instructional activities.	475	2,556	1,163
there are sufficient opportunities to improve my technology knowledge	475	2,505	1,109
we are informed about the administration's prospective technological endeavors.	475	2,467	1,144
there are warnings and explanations in technology classrooms which help me use the devices easily.	475	2,459	1,039
whenever I have a problem in laboratories or technology classrooms, I get quick and efficient technical assistance.	475	2,425	1,062
technology classrooms and laboratories are available whenever I need.	475	2,379	1,136
sufficient technology training is provided	475	2,352	0,983
I can find devices like scanner, printer and video camera whenev I want.	475	2,082	1,115
whenever I have problems with technological devices, there are warnings and user manuals to help me with what to do.	475	2,067	0,979
there are user manuals for technological devices I use.	475	1,992	1,098
there are sufficient computer laboratories.	475	1,989	1,122
there are sufficient computers for us.	475	1,916	1,116
administrators ask our opinions for their innovative applications.	475	1,909	1,049
I can easily find software related to my coursework	475	1,665	1,119

Interestingly, none of the items referring to the institution's technical infrastructure, technical assistance and access opportunities had averages over 3.40, which suggested that none of the instances mentioned in these statements occurred 'very often' or 'always'. Only three items were within the range of 'sometimes' (i.e. between 2.60 & 3.39) suggesting that technologies were regularly updated, Internet speed was sufficient and students could use Internet on campus whenever they wanted. Other items indicated that instances mentioned rarely occurred.

Similar to student perspectives on teaching staff's ICT-related change readiness, scores regarding the institution's change readiness differed between males and females.

Table:12. Independent-samples t test comparing mal and females in terms of their perspectives on t institution's change readiness

Gender	N	Mean	SD	t	df	P
Female	331	2,396	0,606	-3,555	473	0,001
Male	144	2,619	0,682			

More specifically, the mean of males (2.619) was significantly higher than that of females (2.396), which suggested that males had more positive opinions about the ICT-related change readiness of the institution. The influence of the department on students' scores was examined as well. Descriptive statistics of each department is provided in Table: 13.

Table: 13
Descriptive statistics of each department in terms of student perspectives on the institution's change readine

Department	N	Mea	SD
German Language Teaching	30	2,57	0,61
Computer Education	52	2,91	0,66
French Language Teaching	18	2,01	0,77
Mathematics Teaching	50	2,40	0,45
English Language Teaching	10	2,29	0,56
Education of the Hearing Impaired	41	2,38	0,62
Pre-school Education	45	2,35	0,51
Primary School Education	38	2,75	0,64
Social Studies Education	25	2,85	0,63
Education of the Mentally Disabled	40	2,56	0,52
Fine Arts Education	28	1,97	0,55
Total	47	2,46	0,63

The Department of Computer Education still had the highest mean whereas the Department of Fine Arts Education had the lowest mean. That is, Fine Arts students were quite unhappy with the ICT-related endeavors of the faculty. To be sure of the results, one-way between-groups ANOVA was conducted which is summarized below:

Table: 14
One-way ANOVA comparing departments in terms of student perspectives on the institution's change readines

Source	SS	df	MS	F	p
Between Groups	32,965	10	3,29	9,585	0,00
Within Groups	159,575	46	0,34		
Total	192,540	47			

The F value of 9.585 with a corresponding significance of .001 indicated that there was a significant difference among departments.

Results were similar to the previous analysis, that is, the Department of Computer Education had higher means than that of most other departments including French Language Teaching, English Language Teaching, Mathematics Teaching, Pre-school Education, Fine Arts Education and Education of the Hearing Impaired. In addition, Departments of French Language Teaching and Fine Arts Education had significantly lower means than Primary School Education and Social Studies Education.

A final analysis was conducted to see the relationship between participants' perspectives on teaching staff's ICT-related change readiness and the institution's ICT-related change readiness. A positive, moderate and statistically significant correlation between these two variables was found ($r=.435$; $p<.0001$). That is, the more students were happy with the institution's facilities, the more they were positive towards the teaching staff's ICT implementations, or vice versa.

CONCLUSION

Findings of the current study revealed that half of the participants owed their computer experience to undergraduate years; however, they reported that they learnt their PC knowledge on their own. The program has several compulsory ICT courses. In addition, the majority of the students maintained that they used PCs for their courses at least two or three times a week. This finding might interpreted in an optimistic way since it was revealed that computer experience ameliorates both computer attitude and interest to achieve educational technology standards (Kadijevich & Haapasalo, 2008). On the other hand, participants reported to have learnt everything about PCs on their own. They even resorted to private courses to meet the demands of these courses. This creates a serious paradox as the instructional endeavors seem somewhat ineffective in terms of equipping students with the skills demanded by the institution. This insight is somewhat supported by the fact that the majority of participants did never use spreadsheet applications (e.g. Excel) even though they all had a particular training on this subject. Students either did not apply what they learnt, or they were taught what they would not apply in real life. These contradictory findings suggest that revisions on the curriculum context are compulsory.

The fact that the frequency of instructional PC use negatively correlated with the duration of Internet use per week suggested that students did not participate in e-learning endeavors. It is quite clear from the findings that several significant e-learning practices such as course discussions, educational websites, online course design and videoconferencing were neglected by practitioners in the faculty. As suggested earlier, these might mean that the institution was ineffective in passing from the computer-based implications to web-based implications in instruction.

When the demographic information regarding the use of ICTs was examined, it was observed that the values of the Computer Education Department were higher than other departments as expected. Two interesting findings were observed regarding the Department of the Education of the Hearing Impaired. They had the lowest mean in terms of Internet use. In addition, the majority of the students from this department reported that they used personal computers for their courses either rarely or never.

A previous study by Akbulut et al. (2007a) lists ICT integration for special students as a weakness of technology integration endeavors at the same faculty. This finding might suggest that nothing has been done to fix this so far, or the process has been too slow to see the outcomes in such a short run.

Students found their instructors and the infrastructure of the faculty quite inadequate in terms of the integration of ICTs. They reported that their instructors rarely used instructional software, e-mailed students, and provided contexts where students could use technology for communication and problem solving. These findings shed doubts on the results of the Akbulut et al. (2007b) study, which revealed that Education Faculty instructors were better than the instructors of other faculties in terms of ICT-related change readiness. More specifically, assuming that participants in both studies were a hundred percent honest in their responses, one of the best faculties of the university in terms of ICT-related change readiness and the 8th education faculty in Turkey had serious problems in implementing ICTs in instructional endeavors. Items addressing the infrastructure offered by the institution had low means as well.

This was quite expected as several previous studies blamed infrastructure for interfering with integration (Akbulut et al., 2007a; Barton & Haydn, 2006; Brill & Galloway, 2007; Mehlinger & Powers, 2002). Interestingly, a positive, moderate and statistically significant relationship between instructors' ICT-related change readiness and the institutions' infrastructure readiness was found. That is, we could blame the infrastructure of the institution for being inadequate as commonly done rather than focusing on the problem deeply. Personal interview findings with four senior faculty members suggested that the faculty members were quite busy with research leading to immediate promotion; so, they neglected their instructional duties. They only used technology in order to analyze data as indicated by Sahin and Thompson (2007) or in response to other external factors as suggested by Baek et al. (2008). That is why the faculty members were found to be ready for change in a previous study but ineffective in terms of instruction from the students' points of view. Anadolu University is the most populated state university and the largest distance education provider in Turkey. The university seems relatively wealthier than several state universities in Turkey with a considerable budget and high-tech infrastructure. That is, the emphasis should be on something else rather than the infrastructure from now on. For instance, strategies identified and discussed by Lim and Khine (2006) might be quite helpful.

More specifically, some precautions might facilitate ICT integration within the institution such as the appointment of technical support staff, appointment and training of student ICT helpers, providing sufficient time to instructors to prepare for ICT-mediated lessons, sustaining collaboration among instructors to prepare ICT-mediated lessons, providing higher institutional support to address teachers' ICT concerns, and systemic training for instructors on how to incorporate ICT into classroom settings. Such practices might be realized if and only if the government does not interfere with the scientific, intellectual and economic development and autonomy of universities; and only if the administration is not intimidated by, but hunger for change.

The current study poses several limitations. For instance, the data collection tool should be extended in a way to cover more indicators of ICT integration. In addition, the study should be replicated with other undergraduate institutions in Turkey.

We have developed a more comprehensive ICT indicators measurement scale than that of Akbulut et al. (2007a) in order to investigate ICT-related change readiness of Turkish education faculties, and administered the tool to 2600 senior students in six randomly selected education faculties.

Findings will probably be published by the end of 2009. Further studies might focus on the ways to improve instructors' ICT-mediated lessons as the description of the current situation has been somewhat realized through the current study.

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