TEACHERS' ICT INTEGRATION STATES ON THE EVE OF FATIH PROJECT

İsmail Yüksel, Melek Alemdar
Eskişehir Osmangazi University, Eskişehir, Turkey
E-mail: iyuksel@ogu.edu.tr , malemdar81@gmail.com

Abstract

Integration of Information and Communication Technologies into education has recently been one of the most challenging issues in educational improvement and recovery plan of Turkish government. Immediately before the implementation of Fatih Project (Action for Increasing Opportunities and Improving Technology), it is important to have a look at the insights of teachers. In this study, it was aimed to find out the level of background knowledge about the usage of Information and Communication Technologies (ICT) and the integration of ICT in education process by today's teachers. So as to find the answers to this question, the study was designed in quantitative research model as a survey research in cross-sectional survey design. The work group included 172 teachers who works in MNE schools. The data were collected through 'ICT Integration in Education' questionnaire. In the analysis of data; descriptive statistics, t-tests and Anova tests were used. And as a result, the study showed that current initiatives with ICT need further investigation for a successful implementation of ICT usage.
Keywords: *Information and Communication Technologies (ICT), technology integration, Fatih Project.*

Introduction

All the people through the world experience an era which the use of ICT penetrates all aspects of these innovative citizens' lives. The definition of both workplaces and workers of tomorrow's world has changed drastically. There is now such a climate that each individual should have clear properties such as being a problem solver, decision maker, analyzer, and evaluator and also as being creative and effective users of technology. All these properties can only be gained by education which should satisfy the needs of a changing economy and train future workers. Thus, schools cannot be the only place where they are not used effectively (Yelland, 2001).

With this new understanding, all over the world, the objectives of education attach importance to 'training individuals who can reach information easily and use technology efficiently' (Kurtoğlu, 2009; Kaya & Usluel, 2011; Akıncı & Seferoğlu, 2010). It has been shown that the use of ICT can be a catalyst for learning and engagement with activities in school and it would be relevant to explore the precise mechanisms that influence the interrelationships between learning and media (Yelland, 2001). In its sociological content, ICT competency is 'an essential life skill' as the same as literacy and numeracy (Göktaş, 2006; Barron, Kemker, Harmes & Kalaydjian, 2003).

In this innovative era, stating about ICT in the learning process means learning *with* ICT but not only learning *about* ICT. It's now impossible to make a good step by only starting a computer, opening some files, it is the time for integrating ICT skills both in context knowledge and in pedagogical knowledge. So, for many teachers and for many schools around us, the use of computers for educational purposes may still be seen as a threatening step. Schank and Cleary (1995, p. 4) indicated that "Today's schools are organized around yesterday's ideas, yesterday's

ISSN 1822-7864

needs, and yesterday's resources (and they weren't even doing very well yesterday)" (cited in Newhouse, 2002). So, there is a global trend in both educational policy and research to recognize the need to reform education from traditional paradigms of teaching and learning into more innovative forms of pedagogical practice (Ottestad, 2010).

Fatih Project of Turkey and the Possible Barriers in the Project

The quick rise of the Internet and the World Wide Web (www) has given rise to the adoption of objectives to supply all schools with access to these facilities in a relatively short period of time (Pelgrum, 2001). Though there has been a significant increase in the number of teachers using projectors, computers and interactive whiteboards as teaching tools in Turkey, only a minority of schools have them. For better evaluation of the use of ICT in education it is very crucial to make a detailed examination of the investments made by the Ministry of National Education (ISST, 2011). According to Information Society Statistics,

- The numbers of teachers per computer throughout the country in general are 24.6 and 17.8 in primary and secondary education.

- The number of students per computer throughout the country is 30.9 in primary schools and 27.3 in secondary schools.

With Turkish Ministry of Education's Fatih (Action for Increasing Opportunities and Improving Technology) Project-schools and classrooms will be equipped with technology resources- this deficiency is aimed to be resolved. The Project was introduced by the Ministry in 2010 and funded by the support of Turkish Ministry of Transport. It is hoped to bring about a new understanding towards strengthening the infrastructure and use of technology in schools in 3 years (2010-2013) time (ISST, 2011). It is assumed that 40.000 schools and 620.000 classrooms in Turkey will have access to the internet with the help of technological hardware and infrastructure (Bilici, Akdur, Yıldızbaşı, Günday & Çiçek, 2011). Within the next two years, the reflections of outcomes of the project and the evaluation of the process will be monitored (Alkan, Bilici, Akdur, Temizhan & Çiçek, 2011).

Table 1. 2011 Installation Plan.

Number of Institution	3.657
Interactive Boards	84.921
Documentary Camera	3.657
Printer (a2 + a3)	3.657
Distance Education Centers	110

(Adopted from fatihprojesi.meb.gov.tr)

After the installation plan had been carried out, the pilot application started in 52 schools through 17 cities in February, 2012. 10.000 students (9th grade classes) and 2.500 teachers became acquainted with using interactive boards (fatihprojesi.meb.gov.tr)

Alkan et al (2011) asserted that, schools at all levels in Turkey-primary, secondary, high schools, etc.- are aimed to be equipped with ICT and effective ICT usage in teaching system. To achieve these objectives, Fatih Project has 5 components (Alkan et al., 2011).

PROBLEMS
OF EDUCATION
IN THE 21st CENTURY
Volume 44, 2012

- Provision of the hardware and software
- Provision and management of educational e-content
- Effective use of ICT in curriculum
- In-service training of teachers
- Providing the conscious, secure and reliable use of BIT with the help of network infrastructure and internet.

According to Bilici et al. (2011), 92% of Turkey's population (approximately 67 million people) has never had training about ICT usage. And it is remarkable that more than half of the population has no idea about www (Bilici et al., 2011). In addition to these results, with respect to the Strategic Plan 2010-2014 of MNE (2011), 'access to education' and 'contemporary educational goals (student centred approaches, quality, social needs)' are the top of the list of the most problematic issues in Primary education. When looking from the scope of these realities it will be helpful to examine the current perceptions of teachers about ICT usage, ICT integration and the foreseen advantages and disadvantages of using ICT in education.

In former studies, the researches put great emphasis on barriers/obstacles in the process of integration of ICT into education. The possible major barriers in this process are examined.

- At the primary level, the study of ICT has now become an integral part of the minimum compulsory curriculum in many countries in the EU (Göktas & Yıldırım, 2007). But in Turkey, there is no sign in the curriculum specifically about the integration circumstances. Another issue is that, the subject loads in curriculum are so filled up with extra information that teachers are prevented from using ICT so as to reach the subjects to the national examination dates. Also, access to technology without necessary knowledge of related curriculum materials did not encourage teachers to incorporate the technology in their classroom instruction (Kastberg & Leatham, 2005; cited in Niess et al., 2009). The curriculum should be designed from top to toe with new types of understanding (Yelland, 2005).

- Considering the National Policy of Turkey, to be appointed as a teacher, a person has to be a professional user of 3 areas of knowledge; content knowledge, pedagogical knowledge (pedagogical formation) and general cultural knowledge (MNE, 2009). Content knowledge (the knowledge of subject matter) is used to describe how subject matter should be taught (Koh, et al., 2010). Pedagogical knowledge is the knowledge of educational processes or methods of teaching and learning including classroom management, assessment of student learning, planning, etc. (Abbitt, 2011a). General cultural knowledge is used to represent intellectual stance-being aware of the cultural improvements in a whole. In worldwide studies today, content knowledge and pedagogical knowledge is blended as Pedagogical Content Knowledge (Mishra & Koehler, 2006; Abbitt, 2011a; Koh, Chai & Tsai, 2010). PCK presents a mixture of content and pedagogy into an understanding of how particular aspects of subject matter are organized, adapted and represented for instruction (Mishra & Koehler, 2006). After years of time, with the changes in both education and technology, this term has transformed into Techno-pedagogical content knowledge (Mishra & Koehler, 2006; Abbitt, 2011a; Koh, et al., 2010; Harris & Hofer, 2011; Wetzel & Marshall, 2011; An & Reigeluth, 2011). The term TPCK turned into TPACK for ease of pronunciation and also to emphasize the integrated use of technology, pedagogy and content knowledge for effective technology integration (Thampson & Mishra, 2007, cited in Koh et

al., 2010). TPACK does not stand as a unique body of knowledge; but was a simple combination of TK, PK, and CK that came about during teaching (Chai, Koh & Tsai, 2010). The framework articulates the role of technology in the process of teaching and learning in a truly integrated manner (Abbitt, 2011b). So, teachers of all levels can move beyond the borders and connect their content, pedagogy and technology knowledge into classroom discourse and context.

The issue of pedagogical knowledge and content knowledge are being discussed for the sake of a qualified education. But nowadays, the most popular issue is how to include technology into schools and technological knowledge into policies in an effective way.

- A lot of studies have shown that lack of teacher confidence is one of the main barriers for integration of ICT (Bingimlas, 2009; Schoepp, 2004). It influences the motivation of teacher if there is no interaction with such tools of technology (Cox, Preston & Cox, 1999b). The teacher's ability to design the types of activities that effectively apply collaborative inquiry to e-learning tasks for intensifying student knowledge continues to be crucial, whatever the subject area, student age or software choices (Kimber, Pillay & Richards, 2007). According to Pelgrum (2001), teachers did not have sufficient knowledge and skills regarding ICT; as most countries did not yet succeed in realizing adequate facilities to keep teachers up-to-date with regard to new technologies. Professional development is an outstanding issue and teachers need to feel themselves as professional users of technology. When they are taken into a system they are not enough capable of, their lack of confidence turns into fear of failure in using the technology (Beggs, 2000). It means, teachers need to be educated. The teacher training system in Turkey has not any specific education about the use of technology integration in learning and teaching process, indeed the teachers do not have either confidence or competence.

- In many resources on barriers, resistance to change is shown to have great influence in the use and integration of ICT (Cox et al., 1999b; Bingimlas, 2009; Schoepp, 2004). Akbaba (2006) asserted in her study that according to the views of computer coordinators, teachers are not volunteer to even set up an e-mail account and so teachers do not reflect enough interest in learning to use these technologies. Schoepp's study (2004) shows that though teachers felt that there was more than enough technology available, they did not accept that they were being supported, guided or honored in the integration of ICT into teaching. Cox et al. (1999b) found out that teachers resistant to change are the victims of lack of necessary education to back up the changes. As for most of the developing countries, the condition is not different in Turkey. We need to take a deep breath and refresh our minds, to be able to achieve the contemporary developments.

- Schools and educational systems must provide the infrastructure and support for students and teachers, and the maintenance of learning environments in which ICT is used (Kurtoglu, 2009; Newhouse, 2002). In many studies, the condition of infrastructure was seen as an effective barrier that is consistent (Göktaş, Yıldırım & Yıldırım, 2009; Beggs, 2000; Pelgrum, 2001; Newhouse, 2002; Almadhour, 2010). According to Goktas et al. (2009), 'crowded classrooms', 'lack of computers and other presentation equipment in classrooms' and 'lack of appropriate software & materials' are at the top of the list of main infrastructure problems. Also in Begss's (2000) study on influences and barriers to the adoption of technology, equipment availability (94.9% important to critically important) is the most important one.

PROBLEMS
OF EDUCATION
IN THE 21st CENTURY
Volume 44, 2012

As seen in the literature review, the investments on infrastructure gained importance and because of this affect, investments were made by MNE. According to ISST(2011) 27,999 information technology (IT) laboratories were established and ICT equipments were provided to 17,261 primary schools without the necessary capacity for the establishment of ICT infrastructure, in a way that one computer was provided for every 15 students and one projection device, one printer, and one scanner for every school by the end of 2009. At that point it is required an indicator of what are the perceptions of teachers on the integration of ICT.

In this study, it is aimed to determine the integration of 'Information and Communication Technologies (ICT)' into learning and teaching process. Within the scope of this aim, the research investigates the overarching questions:

- What are the levels of teachers' ICT integration into the teaching process before the implementation of Fatih Project?
- Does the level of teachers' ICT Usage differ by gender?
- Does the level of teachers' ICT Usage differentiate by their ICT degree?
- Does the level of teachers' ICT Usage differentiate by their field of study?
- Does the level of teachers' ICT Usage differ by their length of service?

Methodology of Research

General Background of Research

While performing the research, whose aim was to investigate the factors affecting the insights of ICT, a cross-sectional survey design was used. This type of research design pays attention to the relation and correlation between variables, examines assumptions more than one and also deduces about time sequences between the experiences and behaviors of past and today (Neuman, 2007). The cross-sectional design compares two or more educational groups in terms of attitudes, beliefs, opinions, or practices. These group comparisons may compare students with students, students with teachers, students with parents, or they may compare other groups within educational and school settings (Creswell, 2012). In this study, the participants were compared according to their gender, length of study, field of study and ICT degree.

Participants of Research

The participants of the study were 172 (100%) teachers who work in various public schools in Tepebaşı distrICT in Eskişehir area. The participants were selected voluntarily from 15 schools which have computer labs and interactive boards. 250 forms were sent to the teachers in these schools and 185 of them were gathered. 13 of the forms were unfilled or mistyped. The detailed information about the participants are demonstrated in Table 2.

Table 2. Demographic Values of Sampled Group: Frequencies and Percentages.

		f	%
Gender	Female	111	64.5
	Male	61	35.5
	Total	172	100.0
Length of Service	1-4 years	87	50.6
	5-9 years	27	15.7
	10-15 years	40	23.3
	16 years and over	18	10.5
	Total	172	100.0
ICT Degree	Low	33	19.2
	Moderate	94	54.7
	High	45	26.2
	Total	172	100.0
Field of Study	ELT	32	18.6
	Primary school T.	92	53.5
	Physical Sciences T.	18	10.5
	Social Sciences T.	17	9.9
	Vocational Teachers	13	7.6

The group consisted of 111 (64.5%) female teachers and 61 (35.5) male teachers. 50.6% of the teachers had 1-4 years teaching experience, 15.7% had 5-9 years, 23.3% had 10-15 years and 10.5% of them had 16 years and above teaching experience. The participant's ICT usage degree was also examined by 7 variables. For the questions belong to the ICT usage degree, 19.2% said 'Low', 54.7% said 'Moderate' and 26.2% said 'High'. The teacher's field of study was also given in the questionnaire. According to it, 18.6% were working as foreign language teachers, 53.5% were primary school teachers, 10.5% were physical sciences teachers, 9.9% were social sciences teachers and 7.6% were working as vocational teachers.

Instrument and Procedures

The data were collected through 'Ict Integration in Education' questionnaire which was adapted with the permission taken from authors.

For the Turkish adaptation of instrument, factor analysis was seen essential and exploratory factor analysis was performed. For the exploratory factor analysis, the suitability of the sample for factor analysis was examined. In other words the sample size was checked. According to Tabachnick & Fidell (1996) and Field (2005), 120 people are enough for factor analysis. This criterion was taken as a basis and ICT scale was applied to 172 teachers who work in Eskişehir area. After application, to test the validity of sample size statistically, Kaiser-Meyer-Oklin (KMO) measure of sampling adequacy tests were performed. In addition, when the Bartlett's Sphericity tests were statistically significant, it was interpreted as that the sample size for factor analysis is suitable and correlation matrix is appropriate (Field, 2005).

As the results of these processes, KMO value was found as 0.839 and Bartlett's Sphericity test was seen as statistically significant ($p<0.05$). As the calculated value of KMO was between 0.8 and 0.9 and Bartlett's Sphericity test was significant, the data matrix obtained from the sample was determined to be appropriate for factorisation (Field, 2005).

The exploratory factor analysis was made with 27 items. As the result of the exploratory factor analysis, the items' eigenvalue that were higher than 1 were collected in 2 sub-scales.

The resulting factor loads changed between 0.405 - 0.871. The first sub-scale included 7 items on 'Using ICT in Teaching, ICT Integration Process'. The second sub-scale which had 20 items included 'Using ICT in Teaching, Advantages& Disadvantages of Using ICT'.

The sub-scales and factor loads for the results of exploratory factor analysis were given in the Table 3.

Table 3. The Results of Factor Analysis for ICT Scale.

Sub-scales	Advantages/disadvantages	Integration
Item no	Factor load	Factor load
m17	0.871	
m18	0.840	
m11	0.836	
m21	0.825	
m16	0.816	
m19	0.810	
m12	0.809	
m23	0.721	
m9	0.666	
m20	0.654	
m24	0.599	
m22	0.591	
m25	0.581	
m8	0.575	
m14	0.573	
m10	0.558	
m27	0.510	
m15	0.509	
m13	0.462	
m26	0.405	
m7		0.872
m6		0.842
m1		0.836
m2		0.836
m3		0.615
m4		0.591
m5		0.441

In consequence of *Varimax Rotation* which was performed according to *Principal Component Analysis* in factor analysis, the items of the scale were collected under 2 sub-scales. The total amount of variance gathered in 2 sub-scales was 55.857%. In the factor analysis studies in literature, the sub-limit of the total variance explanation of loads was accepted as 40% (Kline, 1994).

The eigenvalues of sub-scales and the amount of variance explained by them were *(i)* 9.947 and 37.378%, *(ii)* 4.468 and 18.479% as seen in the Table 4.

Table 4. The Eigenvalues and Amount of Variance Explained by Sub-scales of ICT Scale.

Sub-scales	Eigenvalues	Variance explained
1- Advantages-disadvantages	9.947	37.378
2- ICT integration	4.468	18.479
Total	14.415	55.857

The adapted questionnaire was formed in 3 parts. The primary sections in the questionnaire are demonstrated in Table 5. It was developed by Cox et al. (1999) and had 27 items. The response categories include a 5-point Likert scale ranging from 'Strongly Disagree (1)' to 'Strongly Agree (5)'. The Cronbach's Alpha value was 0.634 for the first factor and 0.832 for the second factor. And Cronbach's Alpha value for the total was 0.84. The parts of the questionnaire and information require are shown in Table 3.

Table 5. The primary sections in the questionnaire.

Section	Title of Section	Type of Information Requested	Number of Items
1	Personal Information	Demographic Characteristics and ICT Degree	5
2	Using ICT in Teaching	ICT Integration Process	7
3	Using ICT in Teaching	Advantages& Disadvantages of Using ICT	20

Adapted from Cox et. al. (1999) with the permission of the authors.

Data Analysis

Since the data of the study were distributed normally the parametric tests were applied in the study. In order to determine whether there were differences between participants' views according to their gender T-test; to compare participants considering their ICT degree, field of study and length of service, one way analysis of variance was used. In the study the significance level was 0.05.

Results of Research

The results of t-tests, which were applied to find out the differences between men and women according to their ICT usage degree, are showed in Table 6.

Table 6. Independent t-tests of ICT Integration.

ITEMS	Gender	H	X	SD	t	p
Factor 1	Female	111	25.26	3.41	-0.883	0.378
	Male	61	25.74	3.34		
Factor 2	Female	111	73.63	8.94	-1.380	0.169
	Male	61	75.66	9.67		
df=170						

PROBLEMS
OF EDUCATION
IN THE 21st CENTURY
Volume 44, 2012

Table 6 manifested that there was no significant difference in total scores of 'Factor 1- ICT Integration' for males and females [$t_{(172)}$ = -0.883, p=0. 378]. And also independent samples t-test performed for 'Factor 2: Advantages& Disadvantages of Using ICT' indicated that there was no statistically significant difference in total scores for males and females [$t_{(172)}$ = -1.380, p=0. 169]. These results pointed out that the gender has no effect upon the integration of ICT in education process.

A one-way Anova was performed to explain the effect of 'ICT Usage Degree' on total items of 'Factor1: ICT Integration Process and also for 'Factor2: Advantages& Disadvantages of Using ICT'. Participants were divided into 3 groups according to their ICT Usage Degree (Group 1: Low; Group 2: Moderate; Group 3: High). The test results were shown in Table 5.

Table 7. Variance Analysis of ICT degree.

N, X and SD Values					Results of ANOVA					
	Group	n	X	SD	Source of Variance	Sum of Squares	df	Mean Square	F	p
Factor1	1	33	24.64	3.03	B.Groups	81.401	2	40.700	3.669	0.028
	2	94	25.18	3.55	W.Groups	1874.762	169	11.093		
	3	45	26.53	3.05	Total	1956.163	171			
	Total	172	25.43	3.38						
Factor2	1	33	69.70	9.85	B.Groups	2219.247	2	1109.623	15.192	0.000
	2	94	73.31	9.03	W.Groups	12343.823	169	73.040		
	3	45	79.93	6.13	Total	14563.070	171			
	Total	172	74.35	9.23						
		33	24.64	3.03						

Table 7 represented that, there was a statistically significant difference at p<0.05 level in Factor 1 [$F_{(2,169)}$ =3. 66, p=0. 028]. Tukey multiple comparisons performed at the 0.05 significance level indicated that the mean score for Group 3 was significantly different from Group 1 and Group 2. And also, there found to be a significant difference at p<0.05 level in Factor 2 [$F_{(2, 169)}$ = 15.192, p=0.000]. Post-hoc comparisons using Tukey showed that the mean score for Group 3 was significantly different from Group 1 and Group 2.

A one-way between groups analysis of variance was conducted to explore the impact of 'field of study' on the items of 'Factor 1: ICT Integration Process and also for 'Factor 2: Advantages& Disadvantages of Using ICT'. Participants divided into five groups according to their field of study (Group 1: Foreign language teachers; Group 2: Primary school teachers; Group 3: Physical sciences teachers; Group 4: Social sciences teachers; Group 5: Vocational teachers). The results were indicated in Table 6.

Table 8. Variance Analysis of Field of Study.

N, X and SD Values					Results of ANOVA					
	Group	N	X	SD	Source of Variance	Sum of Squares	df	Mean Square	F	p
Factor1	1	32	23.88	4.13	B.Groups	113.249	4	28.312	2.566	0.040
	2	92	25.57	3.16	W.Groups	1842.914	167	11.035		
	3	18	26.00	3.36	Total	1956.163	171			
	4	17	26.65	3.12						
	5	13	25.92	2.22						
	Total	172	25.43	3.38						
Factor2	1	32	71.19	10.09	B.Groups	743.261	4	185.815	2.245	0.066
	2	92	73.98	7.76	W.Groups	13819.809	167	82.753		
	3	18	77.28	14.02	Total	14563.070	171			
	4	17	76.24	8.17						
	5	13	78.23	8.01						
	Total	172	74.35	9.23						

Table 8 introduced that, there was a statistically significant difference at $p< 0.05$ level in Factor1 [$F_{(4,167)}$ =2.566, p=0.040]. Tukey multiple comparisons acted at the 0.05 significance level found that the mean score for Group 5 was significantly different from both Group 1and Group 4. On the other hand Group 2 and Group 3 did not differ significantly from either of the groups. Additionally, there was not statistically difference in the scores at $p<0.05$ level in Factor2 [$F_{(4, 167)}$ =2.245, p=0.066).

A one-way between groups analysis of variance was performed to examine the impact of 'length of service' on the total items of 'Factor1: ICT Integration Process and also for 'Factor2: Advantages& Disadvantages of Using ICT'. Participants divided into four groups according to their length of service (Group 1: 1-4 years; Group 2: 5-9 years; Group 3: 10-15 years; Group 4: 16 years and above). The results were shown in Table 7.

Table 9. Variance Analysis of Length of Service.

N, X and SD Values					Results of ANOVA					
Group		n	*x*	SD	Source of Variance	Sum of Squares	df	Mean Square	F	p
Factor1	1-4 Years	87	25.40	3.88	B.Groups	45.257	3	15.086	1.326	0.268
	5-9 Years	27	25.78	2.17	W.Groups	1910.906	168	11.374		
	10-15 Y.	40	25.88	2.56	Total	1956.163	171			
	+16 Years	18	24.06	3.75						
	Total	172	25.43	3.38						
Factor2	1-4 Years	87	74.59	9.78	B.Groups	241.028	3	80.343	.942	0.422
	5-9 Years	27	73.93	10.33	W.Groups	14322.041	168	85.250		
	10-15 Years	40	75.53	6.24	Total	14563.070	171			
	+16 Years	18	71.22	10.30						
	Total	172	74.35	9.23						

PROBLEMS
OF EDUCATION
IN THE 21st CENTURY
Volume 44, 2012

Table 9 indicated that, there was not statistically difference at $p<0.05$ level in total scores for both Factor 1 [$F_{(3,168)}=1.326$, $p=0.268$] and Factor 2 [$F_{(3,168)}=0.942$, $p=0.422$].

Discussion

ICT in education has become one of the most debated issues these days, the teachers are imposed to use it by the government. Additionally, teachers are responsible for the success of the implementation, but this implementation has been settled down without getting opinions of the implementers. This study is based on the opinions of teachers with many different variances.

The results reflect that the usage of ICT in education inholds many aspects apart from gender. In her study Koca (2006) found no significant difference between the scores for males and females. But in their studies, Karaman & Kurfallı (2008) and Proctor et al. (2006) found that male teachers report more significant usage of ICT in education.

It should be understood that, providing the appropriate conditions does not mean that all the teachers could carry out the principles of technology usage. Main psychological barriers should be lessened; teachers should feel confident in using all the different instruments of educational technology.

The more teachers are incorporated in the process of integration, the more they get motivated and believe the value of computers, tablets, projectors etc. These results showed that the most important factor that plays greatest role in the successful integration of ICT is the motivation of teachers. The teachers who use computers for professional and personal purposes may feel confident and bear positive attitudes towards them. Karaman & Kurfallı (2008) also stated that the more the teachers use ICT, the more they integrate it to their lessons.

The amount of exposure to computers affects the usage, in the curriculums of all lessons this exposure rate should be arranged. In the study of Koca (2006), she stated that the teachers of special branches found it easier to use ICT in education rather than the primary school teachers. The teachers from all different fields of the study should have in-service trainings and they should get included in all the decision processes. Also, equal provisions in educational courses may give teachers familiarity during their studies and lessons.

Karaman & Kurfallı (2008) also added that teachers who have 0-5 years of services are more confident about the use of ICT in education. This means that the teachers who have some part of their education by means of educational technology are more vulnerable. A supporting idea of Koca (2006) indicated that teachers who had more confidence and thus more working years in educational systems were more reluctant to use ICT in their classes. All these clues showed that when teachers get educated in their departments they have to be faced with ICT. That may accelerate the process and bring about preferable consequences.

The aim of FATIH project is said to develop the current state and increase the quality of education, but teachers' opinions showed that they need to be educated at first. And the technology should be used when needed, to make it compulsory creates bias among teachers as implementers. More research is needed about FATIH project, the pros and cons that the project may bring about.

Conclusion

In this research the integration of 'Information and Communication Technologies (ICT)' into learning and teaching process by teachers who have different variables as gender, field of study, length of service and ICT degree was investigated. According to the findings it can be concluded that;

- The gender of the participants in this study did not make any difference in participants' views on both the 'integration process' and 'advantages and disadvantages of ICT implications in education'.
- The teachers who have high ICT usage degrees are more confident than those who have low or moderate ICT usage degrees.
- Vocational school teachers felt them more motivated in the 'ICT Integration Process' than the other teachers.
- Teachers' fields of study made no difference in their views about 'Advantages& Disadvantages of Using ICT'
- Teachers' views on both 'ICT Integration Process' and 'Advantages& Disadvantages of Using ICT' did not change according to their lengths of services.

References

Abbitt, J. T. (2011a). An investigation of the relationship between self-efficacy beliefs about technology ıntegration and technological pedagogical content knowledge (TPACK) among preservice teachers. *Journal of Digital Learning in Teacher Education (JDLTE),* 27 (4), 134-143.

Abbitt, J. T. (2011b). Measuring technological pedagogical content knowledge (TPACK) in preservice teacher education: a review of current methods and instruments. *Journal of Research on Technology in Education*, *43* (4), 281-300.

Akbaba-Altun, S. (2006). Complexity of integrating computer technologies into education in Turkey. *Educational Technology & Society*, *9* (1), 176-187.

Akıncı, A., Seferoğlu, S. S. (2010). Bilişim Şuraları, Teknoloji Politikaları ve Eğitim. *Akademik Bilişim 2010, 10-12 Şubat 2010* / Muğla Üniversitesi, Muğla.

Alkan, T., Bilici, A., Akdur, T. E., Temizhan, O., Çiçek, H. (2011) Increasing opportunities improving technology movement (Fatih) Project. Paper presented at the 5th International Computer & Instructional Technologies Symposium, 22-24 September 2011 Fırat University, ELAZIĞ-TURKEY.

Almadhour, B. (2010). *The integratıon of informatıon and communıcatıon technology into secondary technology teachers'pedagogy in New Zealand*. Master's Degree Thesis, Auckland University of Technology, New Zeland.

An, Y. J., & Reigeluth, C. (2011). Creating Technology-Enhanced, Learner-Centered Classrooms: K–12 Teachers' Beliefs, Perceptions, Barriers, and Support Needs. Journal of Digital Learning in Teacher Education, 28 (2), 54-62.

Barron, A. E., Kemker, K., Harmes, C., Kalaydjian, K. (2003). Large-scale research study on technology in K-12 schools: Technology Integration as It Relates to the National Technology Standards. *Journal of Research on Technology in Education, 35* (4), 489.

Beggs, T. A. (2000). Influences and barriers to the adoption of instructional technology. Proceedings of Fifth Annual Mid-South Instructional Technology, Middle Tennessee State University, USA. From http://www.eric.ed.gov/PDFS/ED446764.pdf

Bilici, A., Akdur, T. A., Yıldızbaşı, A., Günday, Ö., Çiçek, H. (2011). Projected benefits and social effects of fatih in education process. Paper presented at the 5th International Computer & Instructional Technologies Symposium, 22-24 September 2011 Fırat University, ELAZIĞ- TURKEY.

Bingimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: a review of the literature. *Eurasia Journal of Mathematics, Science and Technology Education*, *5* (3), 235-245.

Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2010). Facilitating preservice teachers' development of technological, pedagogical and content knowledge (TPACK). *Educational Technology & Society*, *13* (4), 63-73.

Cox, M. J., Preston, C., & Cox, K. (1999a). What factors support or prevent teachers from using ICT in their classrooms. Paper presented at the BERA 1999 Conference. Brighton, from http://www.leeds.ac.uk/educol/documents/00001304.htm

Cox, M. J., Preston, C., & Cox, K. (1999b) What motivates teachers to use ICT? Paper presented at the British Educational Research Association Conference. Brighton. September, from http://www.leeds.ac.uk/educol/documents/00001329.htm

Creswell, J. W. (2005). Educational Research. Pearson Education Press, New Jersey.

Creswell, J. W. (2012). Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research (5. Edition). Pearson Education Press, Boston.

Demiraslan, Y., Usluel, Y. K. (2005a). Bilgi ve iletişim teknolojilerinin öğretme- öğrenme sürecine entegrasyonunda öğretmenlerin durumu. *The Turkish Online Journal of Educational Technology (TOJET), 4* (3), article 15.

Demiraslan, Y., Usluel, Y. K. (2005b). A framework to investigate ICT integration into teaching-learning process: activity theory. *Hacettepe Üniversitesi Egitim Fakültesi Dergisi, 28,* 134-142.

Devlet Planlama Teşkilatı. (2009*). Bilgi toplumu istatistikleri (ISST) 2011*. (DPT Yayın No: 2826). Ankara: Devlet Planlama Teşkilatı Müsteşarlığı Bilgi Toplumu Dairesi Başkanlığı

Goktas, Y. (2006). *The current status of information and communication technologies integration into schools of teacher education and k-12 in Turkey*. PhD Thesis. Middle East Technical University, Ankara, TURKEY

Goktas, Y., & Yildirim, Z. (2007). ICT Integration in Primary Education and Teacher Education Programs in Turkey and in EU Countries. *Education and Science*, *32* (143), 55-67.

Goktas, Y., Yildirim, S., & Yildirim, Z. (2009). Main barriers and possible enablers of ICTs integration into pre-service teacher education programs. *Educational Technology & Society*, *12* (1), 193-204.

Field, A. (2005). *Discovering statistics using SPSS* (2nd Ed.). London: Sage

Harris, J. B., & Hofer, M. J. (2011). Technological pedagogical content knowledge (TPACK) in action: A descriptive study of secondary teachers' curriculum-based, technology-related instructional planning. *Journal of Research on Technology in Education, 43* (3), 211-229.

Jamieson-Proctor, R., Burnett, P. C., Finger, G., & Watson, G. (2006). ICT integration and teachers' confidence in using ICT for teaching and learning in Queensland state schools. *Australasian Journal of Educational Technology*, *22* (4), 511-530.

Karaman, M.K and Kurfallı, H. (2008). Elementary school teacher's ICT usage level for instructional purposes. *Kuramsal Eğitimbilim*, *1* (2), 43-56.

Kaya, G., Usluel, Y. K. (2011). Content analysis of factors affecting ICT integration in teaching-learning process. *Buca Eğitim Fakültesi Dergisi, 31*.

Kimber, K., Pillay, H., Richards, C. (2007) Techno-literacy and learning: An analysis of the quality of knowledge in electronic representations of understanding. *Computers and Education, 48* (1), 59-79.

Kline, P. (1994). *An easy guide to factor analysis*. New York: Routledge.

Koca, M. (2006). *Examining teachers' use of information and communication technology according to variables of unified model of ınformation and communication*. Master's Degree Thesis, Hacettepe University, Ankara.

Koh, H. L., Chai, C. S., Tsai, C. C. (2010). Examining the technological pedagogical content knowledge of Singapore pre-service teachers with a large-scale survey. *Journal of Computer Assisted Learning, 26* (6), 563-573.

Kurtoğlu, M. (2009). *Analyzing secondary schools teachers' views about integratıon of information and communıcation technologıes into teaching-learnıng process accordıng to diffusıon of innovatıons theory*. Master's Degree Thesis, Cukurova University, Adana.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: a new framework for teacher knowledge. *Teachers College Record, 108* (6), 1017-1054.

Neuman, L. W. (2007). *Basics of social research: qualitative and quantitative approaches (2nd Ed.)*. Boston: Pearson/Allyn and Bacon.

Newhouse, P. (2002). *The impact of ICT on learning and teaching*. Perth, Western Australia: Department of Education.

Niess, M. L., Ronau, R. N., Shafer, K. G., Driskell, S. O., Harper S. R., Johnston, C., Browning, C., Özgün-Koca, S. A., & Kersaint, G. (2009). Mathematics teacher TPACK standards and development model. *Contemporary Issues in Technology and Teacher Education*, *9* (1), 4-24.

Ottestad, G. (2010). Innovative pedagogical practice with ICT in three Nordic countries – differences and similarities. *Journal of Computer Assisted Learning, 26* (6), 478-491.

Pelgrum, W. J. (2002). The effectiveness of ICT in schools: current trends and future prospects- discussion paper. *OECD/JAPAN SEMINAR*. Tokyo, Japan, 5-6 December 2002.

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers & Education*, *37*, 163-178. Retrieved from http://users.ntua.gr/vvesk/ICTedu/article5_pelgrum.pdf

Schoepp, K. W. (2004). Technology integration barriers in a technology-rich environment: *a CBAM Perspective.* Retrieved from http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED490211

Tabachnick, B. G., ve Fidell, L. S. (1996). *Using Multivariate Statistics.* Boston: Allyn and Bacon.

Wetzel, K., & Marshall, S. (2011). TPACK goes to sixth grade: Lessons from a middle school teacher in a high-technology-access classroom. Journal of Digital Learning in Teacher Education, 28 (2), 73-81.

Yelland, N. (2001). *Teaching and learning with information and communication technologies (ICT) for numeracy in the early childhood and primary years of schooling*. Report prepared for: Research and Evaluation Branch International Analysis and Evaluation Division Department of Education, Training and Youth Affairs, June 2001.

Yelland, N. (2005). The future is now: a review of the literature on the use of computers in early childhood education (1994-2004). *AACE Journal, 13* (3), 201-232.

Advised by Agnaldo Arroio, University of Sao Paulo, Brazil

Received: *May 12, 2012* Accepted: *June 17, 2012*

İsmail Yüksel	Assistant Professor at Eskisehir Osmangazi University, College of Education, 26480 Eskişehir, Turkey. E-mail: iyuksel@ogu.edu.tr
Melek Alemdar	Master's Degree Student, English Language Teacher, Eskişehir Anadolu Lisesi Kız Pansiyonu, Uluönder mah. İsmet İnönü 2 cad., Tepebaşı/Eskişehir, Turkey. E-mail: malemdar81@gmail.com