Investigation of FATİH Project within the Scope of Teachers, School Administrators and YEGITEK Administrators' Opinions: A Multiple Case Study[*]

FATİH Projesi'nin Öğretmenler, Okul Yöneticileri ve YEĞİTEK Yöneticileri Görüşleri Kapsamında İncelenmesi: Bir Çoklu Durum Çalışması

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Abstract: Information and Communication Technologies (ICT) affected educational environments as well as other areas. Recently, in Turkey, the government has initiated a project, FATİH Project (Movement of Enhancing Opportunities and Improving Technology Project). In this project, some technologies have been installed in K-12 schools all over the country. For the success of the FATİH Projects, not only how teachers perceive those technologies, but also what the school administrators' and project administrators' opinions might be important. Therefore, the purpose of this study is to investigate the teachers, the school administrators and YEGİTEK (General Manager of Innovation and Educational Technologies) administrators' opinions about and perceptions of the factors that affect successful usage and integration of those technologies into instruction in the scope of the FATİH Project. For this aim, "the facilitating conditions for effective ICT integration" were used as the theoretical base of the study, and qualitative, multiple-case study methodology was used. Two cases, a primary school and a high school (pilot schools) were selected in order to answer the research questions in all levels of K-12 schools. The data were gathered through in-depth interviews with the teachers and the administrators of the two K-12 schools, and YEĞİTEK administrators. Content analysis method with six steps was used for the analysis of the data. The findings of the study were presented primarily under the headings dissatisfaction with status quo, adequate time, resources, knowledge and skills, rewards and incentives, participation, commitment, and leadership.

Keywords: Information and Communication Technologies, Technology Integration into Education, FATİH Project.

Öz: Bilgi ve İletişim Teknolojileri (BİT) bir çok alanı olduğu gibi eğitim ortamlarını da etkilemektedir. Son yıllarda Türkiye'de devlet tarafından FATİH Projesi (Fırsatları Arttırma ve Teknoloji İyileştirme Hareketi Projesi) başlatılmıştır. Bu proje kapsamında çeşitli teknolojiler ülke genelindeki okullara kuruluyor. FATİH Projesinin başarısında öğretmenlerin bu teknolojileri nasıl karşıladıklarının yanısıra okul yöneticileri ve proje yürütücülerinin görüşleri büyük önem taşıyabilir. Bundan dolayı bu çalışmada öğretmenlerin, okul yöneticilerinin ve YEĞİTEK (Yenilik ve Eğitim Teknolojileri Genel Müdürlüğü) yöneticilerinin FATİH Projesindeki teknolojilerin eğitimde başarılı olarak kullanımını etkileyen faktörler hakkında görüş ve düşüncelerinin incelenmesi amaçlanmıştır. Bu amaç için "BİT'nin etkili entegrasyonunu etkileyen koşullar" çalışmada teorik temel olarak ele alınmış ve nicel çoklu durum çalışması metot olarak kullanılmıştır. Araştırma sorularını cevaplayabilmek için bir ilköğretim okulu ve bir lise çalışmada iki durum olarak seçilmiştir. Veriler bu iki okuldaki öğretmenler ve okul yöneticileri ile YEĞİTEK yöneticilerinden derinlemesine görüşme yöntemiyle toplanmıştır. Verilerin analizinde altı

basamaktan oluşan içerik analizi yöntemi kullanılmıştır. Çalışmada elde edilen bulgular mevcut durumdan memnuniyetsizlik, yeterli zaman, kaynaklar, bilgi ve beceriler, ödül ve teşvik, katılım, yükümlülük, ve liderlik başlıkları altında sunulmuştur.

Anahtar Kelimeler: Bilgi ve İletişim Teknolojileri, Eğitimde Teknoloji Entegrasyonu, FATİH Projesi.

INTRODUCTION

Recent developments in Information and Communication Technologies (ICT) have been affected educational environments as well as other areas like banking, health, governmental sectors, and etc. With the new technological developments, educational institutions have chances to reach more people, to provide flexibility in the teaching spaces and times, to offer rich learning settings and to use distance education opportunities. These developments also triggered people to question the adequacy of teaching and learning environments of conventional education. Hence, educational institutions need to review the ways of accomplishing their duties, especially their courses (Peterson, 1998; Pelgrum, 2001, Lloyd, 2005). In order to accomplish their duties effectively, educational institutions have been integrated most of technological developments in educational surroundings over a century (Lloyd, 2005). In the beginning of 20th century, audio-visual media became widely used instead of traditional ways. Then, other technological developments were seemed as rescuer of traditional education's problems. Some of these were audio and visual materials, radio, educational films, television, computers and the Internet. Nowadays along with the emergence of the Internet, educational researchers have been striving to integrate ICT to educational applications in order to reach efficient and effective usage of ICT in educational environments.

In most of the developed and developing countries all over the World, governments and other corporations have been making investments on educational technologies in order to provide better instructional and training facilities. For example, more than 40 billion dollars were spent in the U.S. for educational technologies between 1990 and 2000 (Ertmer et al., 2012). Similarly, in the beginning of the 2000s, 'computer laboratories' were established in the most of the K-12 schools in Turkey, and most of these schools are connected to the Internet. The main aims of these investments were to increase students' achievements and to provide alternative ways to teachers in their teaching through ICT. Nevertheless, these investments have not reached the intended aims over time (Cuban, 2001; Zhu, 2003; Wells & Lewis, 2006;Yıldırım&Göktaş, 2007; Miranda & Russell, 2011). Cuban (2001) and Eteokleous (2008) expressed that although various technologies have been used in educational environment, most of them had not changed the instructional ways substantially. For that reason, integration process of educational technologies has an important role for educational organizations in order to take advantage of these funds. The usage of ICT in educational institutions has been affected positively or negatively by varied factors. In integration process, however, there are various challenges such as lack of resources, deficient knowledge and skills of teachers, short technical and administrative support and poor technology planning. (Russell, Bebell, O'Dwyer & O'Connor, 2003; Belland, 2009). To overcome these challenges and to integrate technology into education effectively, there are variety of theories in the literature that provide bases in diffusion and integration of technology into educational environments. Among those 'Diffusion of Innovation', 'Perceived Attributes', 'Rate of Adaption', 'Technology Acceptance Model', 'Environmental Analysis', and 'User Oriented Instructional Development Process' (Surry & Farquhar, 1997; Rogers, 1995; Davis, 1989; Tessmer, 1990; Burkman, 1987) are some of the well-known theoretical orientations.

Conditions Facilitating Educational Innovations

In the light of abovementioned theories, Ely's theory (eight conditions that facilitate integration of ICT) was selected as theoretical framework of the current study. Because, Ely grouped well which factors might be effective for the integration of ICT in the educational institutions and presenting the effects of these conditions might be useful for the success of the FATİH Project. Ely (1990) developed eight conditions that facilitate integration of ICT into education. These

conditions were (1) Dissatisfaction with the status quo; (2) Adequate time, (3) Resources; (4) Knowledge and skills; (5) Rewards and incentives; (6) Participation; (7) Commitment; and (8) Leadership. It is emphasized that these conditions had important roles in the integration processes of technological innovations, program innovations and process innovations (Stein, 1997; Ravitz 1999; Ensminger, Surry, Porter & Wright, 2004). The role of these conditions for the effective technology integration in the educational environments was also emphasized by some researchers (Bauder, 1993; Read, 1994; Ravitz, 1999; Surry & Ensminger, 2002; Ensminger et al., 2004; Uluyol, 2013).

Ely's (1990) eight conditions are shortly explained as follows with the viewpoint of technology integration into schools. 'Dissatisfaction with the status quo' means to be displeased with the current situation such as classroom environment and used technologies. This condition was interested with Relative Advantage Theory of Rogers (1995). 'Adequate time' condition emphasizes the necessary time for users in order to learn the new skills and to adopt the technology for the courses. 'Resources' refers to available ICT in the school and other relevant materials like hardware, software, content and technical support. 'Knowledge and skills' contains the needed skills and knowledge of users in order to use ICT. Trainings may be investigated in this condition, because users may acquire these skills and knowledge at the trainings. 'Rewards and incentives' may be explained as either internal or external support for the users; like increased salaries, better resources or technological tools, more technical support, and getting promotions. 'Participation' condition refers the shared decision-making, communication among all stakeholders at any levels of the integration. Also, Burkman (1987) underlined the user's view at the development process in his User Oriented Instructional Development process. 'Commitment' means of apparent support by the upper level leaders or powerbrokers (Ensminger et al., 2004). This condition may be related with approaches of the senior management of the educational institutions like administrators at the Ministry of Education. 'Leadership' is related with the daily interactions, supports and encouragements of the school manager about the usage and problems of the teachers during the integration of ICT.

ICT Integration and Barriers to ICT Integration

It was declared in the World Bank Report that there were various barriers to ICT integration into educational institutions as lack of in-service training, time, appropriate teaching and learning materials, technical support, and the provision of leadership and management (World Bank, 2005). Moreover, the barriers to ICT integration into educational environments were listed as lack of knowledge and skills regarding ICT usage, lack of teacher confidence, lack of training, resistance to change, lack of content, lack of instructional resources, lack of technical support, lack of pedagogical support, lack of administrative support, lack of collaboration among teachers, inappropriate curriculum, lack of incentives, and teacher workload and lack of time (Cox et al., 1999; Beggs, 2000; Newhouse, 2002; Akbaba-Altun, 2006; Yıldırım, 2007; Göktaş, Yıldırım & Yıldırım, 2009; Bingimlas, 2009; Buabeng-Andoh, 2012; Yüksel & Alemdar, 2012).

When ICT integration into education in Turkey was analyzed, the first time that Ministry of National Education (MoNE) begun to use computers at secondary schools was in 1984 (Akbaba-Altun, 2006). During the 30 years after this attempt for technology integration process into schools, there were some activities of the MoNE such as Computer Assisted Education Project (CAEP) in 1988, Computer Experimental Schools Project (CES) in 1992, National Education Development Project (NEDP) during 1992 to 1997, Basic Education Project (BEP) in 1998, Second Phase of Basic Education Program (BEP-Phase II), Computer Based Education Support Project, 100% Support to Education Campaign (Askar, 1991; Schware & Jaramillo, 2004; Akkoyunlu, 2002; MEB-EĞİTEK, 2002; World Bank, 2002; MEB, 2004). Although most of the projects were implemented by MoNE, the goal of the integration of ICT into teaching and learning processes could not be achieved during these initiatives (MEB, 2003; Akbaba-Altun, 2004; Karagöz, 2004; Yılmaz, 2011). Lastly, in 2010, in Turkey, the government has initiated a project named Movement of Enhancing Opportunities and Improving Technology

Project (FATİH Project). The aim of the project is to facilitate equal chances in education and enhancing technology in the schools for the effective usage of ICT tools in the learning and teaching processes (YEGITEK, 2012).

FATİH Project
In this project, Ministry of National Education (MoNE) in coordination with Ministry of Transportation aimed to equip K-12 schools with ICTs all over the country. These classes may be named as 'Technology-Enhanced Classrooms' (TEC) or 'Smart Classrooms' (SC). With this project, 570.000 classes in 42.000 schools will be converted to Smart Classrooms that will be equipped with LCD Smart Boards, tablet PCs and high-speed Internet connection. In addition, MoNE has been planning to provide educational e-contents to teachers and students. As part of this project, in-service trainings for teachers have been started to ensure the effective usage of the ICT. MoNE has piloted the project with supplying the tablet PCs and LCD smart boards in the 52 schools across Turkey. Additionally, in 2012, the classrooms in the high schools around the country have been equipped with LCD smart boards as the 1st part of the project.

Purpose of Study
In FATİH Project, like in the most of the technology integration projects in educational institutions in the past, usage of these technologies by the teachers may not be guaranteed because of the usage problems, teachers' deficient knowledge and skills, and the inadequate support to teachers (Akbaba-Altun, 2006; Göktaş, Yıldırım & Yıldırım, 2009; Pamuk et al., 2013; Uluyol, 2013). In the study of Pamuk et al. (2013), various technical problems pedagogical and development issues were stated as important factors for the integration of the smart classroom technologies (SCT) within the scope of FATİH Project. Moreover, Uluyol (2013) also reported that MoNE has not taken into consideration adequately the needs of the users for ICT integration in the schools. It was also stated that MoNE did not properly conduct the well-planned technology integration processes in the last years before the FATİH Project (Özdemir & Kılıç, 2007; Usluel, Mumcu & Demiraslan, 2007; Uluyol, 2013). In addition, Mun and Hwang (2003) expressed that despite the high costs of implementing and maintaining educational technology, many of these technologies were underutilized and abandoned due to lack of user acceptance. For that reason, attitudes of teachers in the classrooms are important as the decider for the usage of ICT during their lessons. There were most of the theories in the literature emphasizing the receiving the opinions and needs of users might positively affect the integration process of the ICT in the educational environments (Burkman, 1987; Tessmer, 1990; Davis, 1989). In addition, the project coordinators' approaches play an important role in respect to how they manage this process, what plan or theory they follow, and what solutions they carry out for these problems. Furthermore, which factors affect the usage of ICT in educational environments may be important for the FATİH Project. Additionally, the other important point is whether the educational leaders are aware of the opinions of the teachers as users about the ICT usage in the FATİH Project. For that reason, the perceptions of not only teachers but also the project coordinators and school administrators may have a critical role in the integration process of the ICT into schools. However, in the literature, there were not enough studies about which factors might take role for the integration of the SCT within the scope of FATİH Project according to teachers, school administrators and project coordinators in the light of an elaborative theoretical framework. In the current study, the integration process of the ICT in the schools was investigated from the both viewpoint of practitioners (teachers and school administrators) and policy makers (YEGITEK administrators). Therefore, opinions of teachers, school administrators and the YEGITEK administrators could be compared according to results of this study.

In this context, the purpose of this study is to investigate the opinions and perceptions of the teachers, school administrators and YEGITEK administrators (as project coordinators) about what might affect the successful integration of these technologies in the FATİH Project. For this aim, the eight conditions (Dissatisfaction with the status quo, Adequate time, Resources,

Knowledge and skills, Rewards and incentives, Participation, Commitment, and Leadership) stated by Ely (1990) were used as the theoretical base of the study. In other words, in this study, the researchers tried to determine how teachers, school administrators and project administrators at YEĞİTEK define the conditions/barriers namely dissatisfaction with status quo, time, resources, knowledge and skills, rewards and incentives, participation, commitment, and leadership in the process of implementation of change/or use of SCT in the FATİH Project. For this aim, deductive approach was followed in order to define what participants think about the conditions/barriers stated by Ely. So, in the current study, it was tried to answer the research question following;

> How do teachers and school administrators define the conditions/barriers namely "dissatisfaction with the status qua; time; resources, knowledge and skills, rewards and incentives, participation, commitment and leadership" in the process of implementation of change/or use of smart classroom technologies?

METHOD

Research Design
The qualitative, multiple-case study methodology was used in this study. The reasons for selecting qualitative approach was that qualitative methodologies lead researcher to understand the phenomena and, moreover, to explore it deeply (Creswell, 1998; Bogdan & Biklen, 2007). In the qualitative approaches, generally, case studies provide researchers with opportunities to investigate the situations in their real-life context from the viewpoint of the participants involved in the situation (Gall, Gall, & Borg, 2003). Also, Yin (1994) stated that multi-case study method was useful in order to predict both similar and contrary results with predictable reasons to increase the external validity. For that reason, two cases (one primary school and one high school) were selected for the study in order to answer research question in all levels of K-12 schools. So, in this study, perceptions and opinions of teachers and administrators were investigated in-depth through interviews with the teachers, the school administrators and YEGITEK administrators. Using interviews as a qualitative data collection technique could give a chance to reach what participants actually thought about the subject with the aid of in-depth questions.

Participants
In this study, purposive sampling technique was used, when the researchers determined the participants of the study. In the qualitative studies, purposive sampling technique is the most frequently used sampling technique (Merriam, 2001). Patton (1990) stated that the purposeful sampling were useful when the researcher intentionally preferred the sample based on various characteristics. Two schools were selected as cases for the study according to some criteria. These criteria could be listed as being the pilot schools of the FATİH Project, socio-economic situations of the schools, willingness of the school administrators to participate in the study, importance of schools in the Project, features of ICT in the schools, and convenience for the researchers. In addition to people in the two cases, administrators of the FATİH Project at the MoNE were included as the participants of the study in order to investigate the administrators' viewpoint of FATİH Project.

Firstly, a primary school in Ankara, which is the capital city of TURKEY, was selected as the first case of the study. This school has first to eight grades students. This school was determined as the first pilot schools of the FATİH Project by MoNE in order to decide which technology should be installed in the schools in Turkey. In this school, 16 teachers from different branches were selected for the interviews. The criteria for the selection of the teachers as participants of the study might be listed as age and field of the teachers, grade levels that the teachers had taught, viewpoints of the teachers about technology usage in education, and the teachers who could provide in depth information. The school administrators provided the information about the teachers in regard to criteria determined for this study. In Table 1,

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demographics of these teachers were presented. 6 of selected teachers were primary teachers. Other 10 teachers were branch teachers as Math, Science, Turkish, English, Social Studies, Music, Religion, and Technology and Design. Most of the teachers in this school were young (between 20 – 35 years of age). They had classes in all grade levels in the school. Although most of the teachers had positive viewpoints about using ICT in education, a few teachers had some fears about the using them. In addition to teachers, school principal and one of the assistant principals were selected as participants in order to investigate the case from the point of school administrators.

Table 1. *Demographics of Participants in The First Case School*

Branch of Teachers	Gender		Age Interval		
	Female	Male	20 - 35	36 - 50	51 - 65
Administrators (2)	0	2	0	2	0
Primary Teachers (6)	2	4	4	2	0
Math (2)	1	1	2	0	0
Turkish (1)	0	1	0	0	1
Science (1)	1	0	1	0	0
Social Studies (1)	1	0	1	0	0
English (2)	2	0	2	0	0
Others (3)	0	3	1	1	1
Total (18)	7	11	11	5	2
	18		18		

For the second case, a high school in Ankara was selected. This school has 9th to 12th grade levels. This school was one of the first phase schools of the FATİH project. Reason of selecting this high school as a second case of the study was that it was similar to previous case. That is, there were similar technologies in each class in both schools. In addition, the other reason is that after investigating situation of smart classrooms at the primary school level, this case might give the researcher chance of examining the situation of smart classrooms at high school level. Therefore, the purpose of the study could be investigated at all levels of K-12 schools. In this second case school, 14 teachers from different branches (Math, Turkish Literature, Physics, Chemistry, Biology, History, Geography, and English) were selected for the classroom observations and interviews. In addition, the principal of the school and the mentor teacher (formator teacher) of the school who was responsible from the ICT in the school, were added to the participants of the study. Detailed information of participants in the second case school was presented in Table 2. Most of the teachers' ages were over the 36. Contrary to teachers in the first case school, most of the teachers in this second case school had some fears about using ICT in education. They had classes in all grades (from 9 to 12) in the school.

Table 2. *Demographics of Participants in The Second Case School*

Branch of Teachers	Gender		Age Interval		
	Female	Male	20 - 35	36 - 50	51 - 65
Administrators (1)	0	1	0	1	0
Mentor Teacher (1)	1	0	0	1	0
Math (2)	0	2	1	0	1
Turkish Literature (2)	0	2	0	1	1
Physics (2)	1	1	0	1	1

Chemistry (2)	1	1	2	0	0
Biology (1)	1	0	0	0	1
English (2)	2	0	0	1	1
History (1)	1	0	0	1	0
Geography (2)	1	1	1	0	1
Total (17)	8	9	4	6	7
	17		17		

In addition to the two cases as schools where the FATİH Project was implemented, administrators of the FATİH Project at YEĞİTEK were interviewed in order to investigate the administrative process of the FATİH Project. At YEGITEK, there were 36 personnel for the execution in the 5 components of the project. One person from the each component and the head administrator of the project were selected as the participant of the study. That is, 6 participants were added to the sample of the study as seen in Table 1.3.

Table 3. *Demographics of Participants at YEĞİTEK*

Task of the Coordinators	Gender		Age Interval		
	Female	Male	20 - 35	36 - 50	51 - 65
General Manager Assistant	0	1	0	1	0
General Coordinator	0	1	1	0	0
Teaching Programmes	0	1	1	0	0
Hardware & Software	0	1	1	0	0
In-service Training	1	0	1	0	0
E-content	1	0	1	0	0
Total (6)	2	4	5	1	0
	6		6		

Data Collection Instruments
In this study, semi-structured interviews were used as data collection method in order to reach what teachers, school administrators and administrators of the project in YEGITEK think about the research question of the study. The strengths of conducting interviews may be listed as one-to-one interaction with participants, getting large amounts of contextual data, reaching in-depth information with immediate follow-up questions, and having chance for discovering complex interactions in social relationship (Marshall & Rossman, 1989). In the semi-structured interview type, generally, there are open-ended questions with prepared probing questions.

The researchers developed the semi-structured interview protocols for the teachers, school administrators, and administrators of the project in YEGITEK. The interview questions were identified as the result of investigating the related literature about diffusion of innovations, technology integration into educational environments, barriers and conditions for the successful educational technology integration in line with the theoretical framework used (Ely, 1990; Ensminger, Surry, Porter & Wright 2004). After the preparation of the interview protocols by the researcher, five experts in the field provided feedback about the protocols in regard to clarity of the questions and suitable content to the study. Two of these experts were faculty member at Computer Education and Instructional Technology Department and one expert was also a faculty member at Education Faculty of a state university. Other two experts were also PhD candidate and research assistant at the same state university. Moreover, the interview protocols were piloted with one participant from each group. According to results of the expert reviews and pilot tests, the interview protocols were modified and a few questions were added. There were 16 open-ended questions in the interview protocols. While 5 of them were related with demographics of the participants, other 11 questions were about the conditions affecting the

integration of technology in the schools. These eleven questions covered the eight conditions for the successful technology integration in the study of Ely (1990).

On the other hand, in the current study, the researchers might be accepted main instrument of the research while asking questions and interacting with the participants during the interviews versus a survey or an analytic device in quantitative studies (Merriam, 2001). For that reason, the researcher was responsible from the context of the study, participants, situation of the cases, and development and interpretation of the data in order to prevent the researcher bias. The data collection and analysis procedures and results were depended to the researchers. That is, there might be the researcher's effect to case of the study, as well as there might be impact of the cases to the researcher. In order to minimize this effect, participants were informed about the aim of the study and 'informed consent form' were given to each participant. Furthermore, the researchers avoided asking leading questions during the interviews.

Data were collected in three phases in this study. Before these phases, there was the planning and permissions process at university level and MoNE level during March-April 2011. At this process, ethical approvals were taken from the Ethic Committee of a public university. Then, official leave was obtained from the MoNE. The data for first case school were collected in one month period (June, 2011). At the second phase, the researcher collected data from the administrators of YEGITEK during August, 2011. For the third phase of the study, planning and permission process at university level and MoNE were performed in November, 2012; and the data were collected during the January, 2013 at the second case school. The interviews were conducted individually in the participants' own work/school settings. The interviews took from 15 to 25 minutes.

Data Analysis

In this study, content analysis method was used with the six steps which were defined by Creswell (2012) as follows; (1) prepare and organize the data for analysis, (2) explore and code the data, (3) coding to build description and themes, (4) represent and report qualitative findings, (5) interpret the findings, and (6) validate the accuracy of the findings. In addition, there are two approaches in the data analysis for qualitative research; inductive and deductive data analysis. Holloway (1997) stated that while deductive approach were interested with the usage of the data in order to confirm the existed idea, inductive approach aimed to analyze the data in order to generate idea. To answer the research question of this study, deductive analysis was used. After completing the all data collection, the researchers firstly transcribed the interviews using Express Scribe (v 5.50). Transcriptions were transferred to MS Word. The researchers read the transcripts a few times to have the general outlook about the whole data. After this, the data were coded by using NVivo 8 qualitative data analysis software. Then, the code list was created. According relations of codes in this list, themes were determined. After the analysis process, 25 codes under the 8 conditions presented by Ely (1990) were formed. Reporting and interpreting the finding were presented in the results and discussion parts.

Trustworthiness

There is a different term for validity and reliability in the qualitative methodology on the contrary to quantitative methodology; "trustworthiness". Trustworthiness was interested with valid and reliable data in the qualitative data and it was defined as convincing the people reading the study that findings of the research were worth paying attention to (Lincoln & Guba, 1985). In order to establish trustworthiness of a qualitative study, there are four conditions named as 'credibility', 'transferability', 'dependability', and 'confirmability' (Denzin & Lincoln, 2005). In this study four techniques were used to establish these conditions for the trustworthiness of this qualitative study. These are triangulation, member checking, thick description and peer debriefing.

Triangulation was defined as the collecting data from multiple data sources to support each other (Bogdan & Biklen, 2007). In the current study, data were collected from different participant groups like teachers, school administrators and YEGITEK administrators in order to

investigate the phenomena from different viewpoints. Therefore, opinions of teachers, school administrators and project coordinators might be compared and the researchers could discuss comparatively in the discussion section. On the other hand, data collection at two case schools was useful for the triangulation of the data. That is, opinions of the participants in different schools might also be presented.

Member checking was defined as "a process in which the researcher asks one or more participants in the study to check the accuracy of the account" (Creswell, 2012, p.259). In this study, interviews were recorded with audio-recorder and transcribed. For the member checking, they were given to the participants in order to see if they were plausible to enhance credibility of the study. In order to supply transferability of the study, thick description technique was performed. The researchers explained every process of the study in-depth so that the readers understand the findings. Peer debriefing process was applied in the study in order to supply credibility of the study. Erlandson et al. (1993) stated that sharing the findings with the colleagues might supply conducting research honestly. For that reason, the researchers shared the information of the study with three colleagues in the same department in order to examine if there were any problem in the process.

Finally, there were some additional points for the trustworthiness of the study as such getting permission from the Ethics Committee, preparing a consent form for each participant, providing direct quotations from the interviews and describing the case in details as indicated by Marshall and Rossman (1989) For that reason, the case study methodology provided trustworthiness with its own structure.

FINDINGS

The findings of the study were presented in accordance with the eight conditions of Ely's (1990).

Dissatisfaction With Status Quo

The findings showed that most of the teachers, school administrators and project coordinators (N=20) highlighted the problems of current situation in educational environment as the factor for the integration of ICT into school. Especially, some teachers stated that there were lots of problems while they teach such as intensive curriculum, crowded classrooms, difficulties for motivating students and deficiencies of traditional teaching methods. They asserted that most of these problems of current situation could be solved with the integration of these technologies into schools in the scope of FATİH Project. For example one of the teachers said that;

The curriculums of Math course for 9th, 10th, 11th grades are too intense, and many Math teachers could not finish the subjects in the curriculum in the whole year. After installation of these technologies, Ministry of National Education might revise the Math curriculums, and would rearrange subjects according to these technologies. (C2_M2)

In addition, a Math teacher from the first case school expressed that "*while I can solve only a few questions in a lesson, now, with aid of smart board, I can solve more questions in a lesson, and I will be able to follow the curriculum regularly*" (C1_M1).

Usefulness and ease of use provided by SCT to teachers were declared by approximately half of the teachers as factors to integrating the SCT into educational environments. Nevertheless, 4 teachers in the second case school expressed that some teachers did not want to use these technologies in their lessons in spite of usefulness and ease of use of. Moreover, a teacher (C1_PT10) in the first case school explained that installation of these technologies should not cause extra problems and workloads for teachers while they were using them. He gave some example for these extra problems and workloads as preparing and searching e-content for the SCT, preparing SCT for the usage and calibration adjustment problem.

On the other hand, school administrators and project coordinators stated that the age of the teachers was the determinant for the teachers' dissatisfaction with the current situation of the schools. The administrator of the second case school explained that;

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Although young teachers are dissatisfied with the traditional school environments and want to use ICT in their lessons, the older and more experienced teachers are generally pleased with their conditions and they said that they would not use them. (C2_SAFT1)

In addition, the Computer Teacher (C2_SAFT1) of the second case school specified that there were a few teachers refusing to use SCT in their lessons. She said that they were pleased with the previous situation and they never use any SCT in their courses.

Adequate Time

Some teachers (N=6) stated that they did not have enough time in order to prepare e-content about the subjects to use these technologies in their courses. Also, although some teachers declared that they could not use these technologies in their lessons because of the limited time and intense curriculum, a few teachers emphasized that smart board and e-contents helped them use the time effectively during their lessons. Related with time issue, one teacher from high school said that;

If I use them in my lessons, I have to prepare my e-contents before the lessons. Nevertheless, I do have enough time neither at school nor at home. Because, I am responsible from my housework and my baby while I am at home. For that reason, even if I want to use them initially, I would prefer to teach with traditional ways in my courses. (C2_G2)

Moreover, school administrators at second case school stated that if the teachers stayed at school after their lessons finished, they could plan their lessons and prepare e-contents in order to use and integrate ICTs into their courses. As a consequence, having enough time for using the SCT in their courses was declared by 14 participants in two case schools as one of the main factors affecting integration of the SCT into educational environments.

Resources

While project coordinators declared that they provided more e-contents in EBA (Eğitim Bilişim Ağı - Education Information Network) and they finalized the arrangements with the private publishers to add their contents to EBA, teachers stated that e-contents at EBA were not enough both in quantity and quality. One Biology teacher from second case school said that;

E-contents in EBA are inadequate. For example, I can reach only digital copy of the Biology book, and this book is prepared for the hard copy. At the beginning I tried to use this digital book in my lessons, but I could not take advantage of this book as I expected. For that reason, I gave up using this digital book, and I do not prefer to use smart board again in my course, because I could not find other type of e-contents other than only digital form of regular books. (C2_B1)

On the other hand, a History teacher stated that;

There are lots of map for the History courses in EBA, and I use them frequently. By this means, I do not have to carry the History maps from one classroom to another anymore. Furthermore, there are too many e-contents about History in EBA, however classifications of these e-contents, especially for History maps, were not made properly. For that reason, I could not find the map I want to use sometimes. (C2_H1)

At this point, most of the teachers emphasized that having enough e-content for using the SCT was one of the important factors for the integration of the SCT into educational environments. The teacher (C1_PT10) assigned by school administration of first case school for dealing with the technological problems in the school stated that provision of durable and adequate infrastructure and SCT to teachers was effective for efficient usage of these technologies in the schools.

Knowledge and Skills

Almost all of the teachers and school administrators in both case schools stated that knowledge and skill required for using these technologies were the important factor at integration of ICT into schools. In regard to this issue, most of the teachers (N=20) stated that they did not have

enough knowledge and skills to integrate the new technology. In this point, project coordinators said that they were providing in-service trainings to teachers in order to help teachers with needed skills and knowledge. However, some teachers (participated to the in-service trainings of FATİH Project) in the second case school declared that the in-service trainings were deficient and they could not use ICT because of these inadequate trainings. For example, one teacher said that;

In-service training was only one shot and for one hour. It did not have enough practice applications. I think they may provide us additional repeated trainings throughout the year and some of these trainings may be specific to the subject area. That is, they may arrange some training for Chemistry teachers about the special usage of them in the Chemistry lessons. (C2_C1)

Also, all teachers in the first case school stated that they did not attend any specific in-service training and they joined only one day training given by smart board technicians about how these boards worked. Consequently, having satisfactory knowledge and skills about the usage of the SCT was declared as essential factor by the participants and they emphasized that in-service trainings organized by YEGITEK should provide enough knowledge and skills about practical usage of SCT to the users in the educational environments.

Rewards and Incentives

In regard to rewards and incentives, there were differences between teachers' viewpoints in two case schools. The teachers in the second case school emphasized the importance of material incentives for teachers to integrate these technologies into education, whereas most of the teachers at first case school stated that inner (moral) incentives could be more efficient than material incentives. Opinions of some teachers were:

Moral rewards may be more efficient for the teachers. For example, Provincial Directorate of National Education may give plate rewards to teachers who are using these technologies successfully in their lessons. Also, these rewards may be presented in a ceremony. (C1_E3)

Moral rewards do not make a sense for me and most of the teachers in this country. Salaries of teachers are low. For that reason, most of the teachers do not prefer to use these technologies without getting additional payment for using them. That is, if project coordinators want me to use them, they have to pay extra fee to me. (C2_C2)

In addition, a teacher in the second case school said that *"If YEGITEK give me the aforementioned laptop or tablet computer in the project, it may encourage me to use these technologies in my courses"* (C2_M2).

Also, project coordinators indicated that, in future, usage rates of teachers might be evaluated, and an evaluation and material reward system could be created.

On the other hand, there was another opinion of the teachers in the both of two case schools that inner or material incentives could not be effective for further usage of the SCT in the schools. 5 teachers asserted that if the other needs (like e-contents, trainings, technical support) of the teachers were provided by YEGITEK, no more incentives would be necessary for the usage of the SCT by the teachers. Additionally, a teacher (C1_PT8) in the first case school stated that willingness of the teachers for using the SCT was necessary factor and this factor could not be changed by other easily. He emphasized that users should want to use them and they should need to use them instead of the incentives of out sources.

As a result, unlike the previous factors, there were different opinions among the teachers in the both of the two case schools. The possible reasons of these differences will be mentioned in the discussion.

Participation

Approximately half of the teachers (N=16) in the both case schools of the study declared that project coordinators at YEĞİTEK did not respond to most of their opinions and requests at any stage of the project (before the establishment, during the establishment and during the usage

stages). Additionally, they stated that they did not consider themselves as a part of the FATİH Project, and they did not prefer to use these technologies in the school because of not able to convey their ideas to YEGITEK. For example, one teacher said;

> *Administrators at YEGITEK did not ask any opinion of us and they determine everything not according to us but among themselves. They said that we were establishing these technologies in your school and you must use them. That's all.* (C1_M2)

There are differences between opinions of administrators of two case schools about the participation point. While the administrator of the first case school stated that the project coordinators were taking into considerations their opinions about the project, administrators of the second school indicated that they did not take their views in all phases. However, it was emphasized that teachers might use the technologies.

Commitment

Most of the teachers and school administrators (N=22) at both two case schools declared that they should use these technologies because they thought that using them was the requirement of being a teacher at this era. A teacher explained that

> *In the age of technology, we as teachers should utilize these new technologies in our lessons. I mean, teachers should know how to use these technologies and we should use these technologies while we are teaching. Moreover, we should teach students how to use them. Therefore, I can say that using new technological tools is one of the most important necessities for teachers.* (C1_E2)

On the other hand, a teacher (C1_M1) in the second case school specified that financial problems could prevent their professional commitment for being teachers and some teachers would not want to use these technologies for decline at the professional commitments of the teachers.

In addition, approximately half of the teachers in the both of the case schools stated that they did not have adequate commitment with project coordinators or administrators at MoNE. They expressed that upper level administrators did not consider their thoughts about the project and they did not want to use them because of this. A teacher stated that;

> *Directors at MoNE have been conducting this project in order to be able to say we established new technologies to our classrooms. They were not aware of our problems and demands about these technologies. For that reason, I do not want to use these technologies.* (C2_T2)

Furthermore, teachers in the second case school and the School Principal specified that some teachers did not perceive themselves as the important part of the FATİH Project and these teachers refused to use these technologies in their classrooms. To sum up, professional commitments of teachers were shown as factor for the integration of the SCT into schools.

Leadership

Most of the teachers, school administrators and project coordinators (N=24) emphasized that school administrators as leaders at schools had very important roles in the technology integration processes in educational institutions. Also, 10 out of 16 teachers in the first case school declared that approaches of school administration affected their technology usage rate positively, although 4 teachers in the second case school expressed that attempts of school administrators did not affect their usage of the SCT in their lessons. Some teachers (N=14) in the second case school stated that one or two teachers at each school were the role models for other teachers in the integration processes of ICT into school.

DISCUSSION AND CONCLUSION

In this study, the opinions and perceptions of the teachers, school administrators in two FATİH Project pilot schools, and YEGITEK administrators (as project coordinators) about what might affect the successful usage and integration of these technologies in the FATİH Project were

investigated in regard to the framework of Ely's (1990) eight conditions. Since this study includes only two pilot schools of the project, the findings of this study may not be generalized. Even though the findings of this study may not be generalized to the other project schools, the teachers, school administrators and coordinators may benefit from some of the findings in the process of technology integration into education.

The findings of the study indicated that the eight conditions examined in this study were perceived by participants of the study as efficient factors for the integration of ICT into education. In the literature, these factors were stated as important determinants for diffusion of the instructional innovations in educational environments (Bauder, 1993; Ravitz, 1999; Ensminger, Surry, Porter & Wright 2004; Turcotte & Hamel, 2008; Baert, 2012). In addition, Uluyol (2013) also emphasized that Ely's eight conditions for successful technology integration to educational worlds should be taken into consideration by the administrators of the educational institutions and especially by the administrators of the FATİH Project at YEGITEK/MoNE. Therefore, the findings of this study indicated important points in regard to the conditions and teachers, school administrators and project coordinators' opinions.

Firstly, most of the young and middle age teachers were not pleased with the current situation of classrooms, curriculum and traditional teaching techniques. That is, they wanted to teach with new techniques and technologies in order to motivate students towards the lessons. Also, they did not think that they could prepare their students for this technological age with the traditional ways in the current classroom conditions. However, older teachers were satisfied with the current situation and they do not want to change their ways of teaching. School administrators and project coordinator were aware of this issue, but they did not have any solution for this resistance coming from the older teachers. That is, age of the teachers or duration of professional experience might be another conditions for the integration of ICT into school as indicated in the study of Belland (2009). Additionally, not being part in the project might be the reason for this attitude. In terms of adequate time, teachers reported the limited amount of time for preparing e-content for their courses. To overcome this problem, project coordinators have been providing them various e-content in EBA portal. However, these e-contents are not suitable and flexible to use in current curriculum and teaching methods especially on the interactive white boards as indicated by the teachers. For that reason, teachers' expectation about the curriculum change may solve these time and resource restrictions. Similarly, enough time and resources conditions were emphasized by the most of the researchers in the literature (Burkman, 1987; Pajo & Wallace, 2001; Ebersole & Vornddam, 2003).

Having knowledge and skills about ICT was stated in most of the related literature as an important factor in the integration process (Kotter, 1996, Okumus, 2001; Ensminger, Surry, Porter & Wright, 2004). In the FATİH Project, YEGITEK designed an in-service training for teachers in order to provide them with necessary knowledge and skills in using the interactive white board effectively in the schools. In the study, teachers at the second case school had attended this in-service training, while the teachers at the first case school did not. However, teachers at both schools stated that they did not have required knowledge and skills for using the related technology, and they requested more qualified and frequent trainings, even if they participated in this training. Therefore, YEGITEK might review the related training programs and plan additional in-service training according to opinions of teachers and school administrators.

When we look at the results from the rewards and incentives viewpoint, there are two types of rewards (intrinsic or extrinsic) as indicated by the teachers and the school administrators. Rogers (1995) stated different incentive types and discussed the role of them in their context. In this study, researchers reached the results similar to Roger's incentives. While teachers in the first case school preferred intrinsic or moral incentives, teachers in the second case school wanted extrinsic or material incentives. The reason of this difference may be opinions of teachers about professional idealism. That is, most of the teachers in the first case school were young and they were in the early years of their profession; however teachers in the

second case school were generally older and they were more experienced. This age differences of teachers at two case schools may cause the differences of the teachers' opinions about the teaching profession. Therefore, they might want different incentives from the YEGITEK according to their socio-economic context. For that reason, project coordinators may work on various incentives plans in corporation with teachers and school administrators.

Teachers at both schools did not think that they were the part of the project, and they did not have the sense of ownership of these technologies. In addition, they stated that YEGITEK administrators were not interested in their demands and problems about ICT in the schools. These findings were related with the participation and commitment conditions of Ely (1990). Lastly, for leadership conditions, there were again differences between teachers at two case schools. Teachers of second case school said that school administrators were not interested with their problems and they communicated with mentor teachers of the school in order to solve these problems. On the other hand, teachers of the first case school declared that school administrators were interested with their problems. This situation caused the difference at expectations of teachers from the school administration, and some of them decided not to use these technologies in their courses because of authoritative attitudes of school administrators. The findings indicated that, school administrators and some teachers in the schools might have a critical role as change leaders for the integration of ICT into schools.

Consequently, in this study, teachers, school administrators in two case schools and project coordinators' opinions about Ely's eight conditions for integration of ICT into schools were investigated, and what the situations are about these eight conditions in FATİH Project were presented. Ensminger, Surry, Porter and Wright (2004) emphasized that these eight conditions should be taken into consideration by the project coordinators of ICT integration projects in educational environments. In addition, it was indicated that school administrators should be interested in teachers' opinions about these conditions and they should solve problems related with these eight factors in order to successful technology integration into schools (Akbaba-Altun, 2006). Therefore, administrators of ICT integration projects need to consider the opinions of the teachers and school administrators' opinions in the scope of abovementioned conditions, and they may modify the project accordingly to for effective ICT integration into education.

Especially, in-service trainings for the FATİH Project may be arranged more than once and more practice-based according to needs of the teachers. The continuous in-service trainings may be prepared and these trainings may be updated according to technological developments and views of users. Furthermore, MoNE and Higher Educational Council (HEC) may collaborate to prepare pre-service teachers for using SCT effectively and efficiently in the schools. At this point, pedagogical aspects of SCT usage may be supplied in the faculties of education. In addition, the important point is that the e-contents should be prepared for the SCT in the schools according to usage of teachers. According to results of the current study, moral and material incentives could be effective for teachers to use SCT in the schools. Furthermore, some teachers stated that they wanted to use the SCT, however there was no difference between teachers using them and teachers not using. For that reason, they might give up to use the SCT because of lack of incentives to them. At this point, necessary legislative regulations for the providing material and moral incentives to teachers using SCT in their courses may be made by MoNE. A tracking and reward system may be developed by YEGITEK after the legislative changes. Lastly, YEGITEK/MoNE may take into consideration the role of the school administrators as leaders in the schools for efficient and effective usage of SCT in the schools. School administrators should be supported to overcoming needs about the usage of SCT and they should be trained for the diffusion of SCT into schools. Moreover, administrators at YEGITEK/MoNE may emphasize to school administrators that they have important role for the usage of the SCT by teachers in the schools.

The further researches should be conducted in different locations and in the other part of Turkey in order to analyze the issues investigated in this study. Moreover, these researches may be conducted with quantitative reaching larger sample sizes. In addition, usage and integration

of process of these SCT may be explored in point of students in these schools. Furthermore, the impacts of the SCT established in the schools on the academic success of students may be investigated by the researchers.

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