Teachers' Views About The Use Of Tablet Computers Distributed In Schools As Part Of The Fatih Project

Ömer Faruk Gökmen [1], İbrahim Duman [2], Özcan Erkan Akgün [3]

http://dx.doi.org/10.17220/mojet.2018.04.002

[1] ofgokmen@sakarya.edu.tr
Faculty of Education, Sakarya University

[2] ibrahimduman@hakkari.edu.tr
Faculty of Education, Hakkari University

[3] ozcan.akgun@medeniyet.edu.tr
Faculty of Educational Sciences, Istanbul Medeniyet University

ABSTRACT

The purpose of this study is to investigate teachers' views about the use of tablet computers distributed as a part of the FATIH (Movement for Enhancing Opportunities and Improving Technology) Project. In this study, the case study method, one of the qualitative research methods, was used. The participants were 20 teachers from various fileds working in secondary schools. Data were collected using a form with semi-structured questions. For analysing the data, content analysis was used. In addition, the frequency of analogical remarks and participants' statements supporting the findings are included. The findings of the study represents that the teachers had not received in-service training on the use of tablet computers and that they rarely used them in education settings. It was also identified that the teachers using tablet computers are very few and that they use these tablets for the purpose of doing exercises or getting learners to watch videos and animations. Several reasons for not using tablet computers were identified as; there is no connection between the tablet and interactive whiteboards (IWBs), tablets cause teachers to encounter classroom management problems, tablets can distract students, and students play games on the tablets while teachers are teaching in the classroom. In addition, the teachers stated that the tablets have restrictions on access to educational contents, they could not access any resources except the Educational Informatics Network (EBA) and the content of EBA is inadequate. Finally, the teachers stated that infrastructure problems (such as network and internet connections) should be solved in order for them to be aided in the education processes. And they stated that teachers should receive in-service training on teaching and learning with tablets.

Keywords: *Educational Technology, Tablet Computers, FATIH Project, Teachers' Views*

INTRODUCTION

The twenty-first century is widely seen as an era of information during which the amount of information and communication technologies is increasing and these rapidly developing technologies are taking a more significant place in daily life (Birgin, Bozkurt, Gürel & Duru, 2014). As well as being used in many fields such as industry, commerce and health, the use of these new technologies has also significantly been increased in the educational sciences field (Karal et al., 2013; Levin & Wadmany, 2005; Ünal, Uzun & Karataş, 2015). The widespread use of technology means that future research will make use of these new technologies in every field of education (Ricoy & Feliz, 2014). Considering the increasing use of technology in all areas of life, it is inevitable that educational systems will undergo a change (Ertmer, 2005; Pamuk et al., 2013). In this respect, the integration of technology into the learning/teaching environment is seen as one of the most significant reforms ever made in the educational sciences (Hew & Brush, 2007; Usluel-Koçak et al., 2007).

Through the integration of technology into education, the transition to an environment of technological education has begun.

In order to provide more effective information and communication technology (ICT) usage in schools in Turkey, between the years 1998 and 2007, the Turkish Ministry of National Education (MoNE) installed ICT laboratories in schools and provided internet access as a part of a Basic Education Development Project (TEGEP) (MoNE Directorate General of Projects Coordination Group, 2007). Computers have become an important part in every level of education by internet access and the labs which have been built. Because of the great influence of the TEGEP, computers have started to be used more effectively in learning environments, and computer usage has changed significantly through the prevalence of internet access (Dündar & Akçayır, 2014). Furthermore, in many countries around the world, there are high-budget projects being carried out with the intention of integrating technology into education. Particularly in the USA, at national and at provincial level, laptop computers are handed out to students to enhance their technology usage, to enable more time to be devoted to teaching and to increase their attention on learning, and to reduce the opportunity gap to the minimum (Gateway, 2004; Ingram, Willcut & Jordan, 2008). In one of these projects, laptop computers are distributed to teachers in two high schools and these teachers are trained professionally in order enhance their knowledge and skill and to combine the syllabus with technology. Once this has been done, laptop computers are handed out to students and lessons are taught with laptop computers by means of a system which enables the teacher to establish control in classroom (Ingram et al., 2008).

The development of technology and the market growth of tablet computers in almost every region of the world in recent years (Statista, 2013) has caused the use of tablets for education to be unavoidable. Tablet computers can have the specifications of both laptop and desktop computers, they are multi-functional and portable, and they can be written on with the aid of a special pen, and all of these features attract the attention of educators as they can be influential tools of education (Derting & Cox, 2008; Weitz et al., 2006). Because of these features, many countries are carrying out projects devoted to the use of tablets having an effect on education. For instance; South Korea aims to hand tablets out to around eight million primary and secondary students by 2015 to fulfil the requirements of the effective use of time, developing understanding and practical skills, and opening up equal opportunities for all students regardless of their socio-economic conditions (Kim & Jung, 2010). In Thailand, tablet computers with internet connection were distributed to students as a part of the 'One Tablet Per Child' project in 2012 (Lesardoises, 2012). A similar project was conducted as a pilot application in France in 2011 by distributing tablet computers to teachers and students (Marcant, 2012).

In Turkey, parallel with projects in other countries, the Movement for Enhancing Opportunities and Developing Technology (FATİH) project was set in progress by the Ministry of National Education in 2011 to provide equal opportunities, to take advantage of advances in technology and to include Information Technology (IT) tools in the teaching/learning process, and the programme is supported by public institutions such as TÜBİTAK, the Ministry of Science, Industry and Technology, and the Ministry of Transport, Maritime affairs and Communications. Knowledge and communication technologies will become an essential tool for the teaching and learning process and both students and teachers will be able to use the technology effectively. This is the aim of the Information Society Strategy introduced by the State Planning Organization and has become the motto of this project. The project consists of five main components (MEB, 2012a):

- Preparing the hardware and software infrastructure;
- Providing and managing educational electronic content;
- Effective usage of ICT in teaching programmes;
- Teachers' in-service training; and
- Providing conscious, secure, controllable and measurable ICT usage.

Installing LCD panel interactive whiteboards (IWB) in all primary and secondary schools, creating an

internet network substructure, distributing tablet computers to every teacher and student, and developing educational e-contents are among the targets of FATİH project (MEB, 2012a). In accordance with the projects introduced in recent years, the distribution of LCD Panel IWBs (MEB, 2012c) and tablet computers (MEB, 2012b) has been continuously proceeding.

Tablet computers contribute to in-class interaction, facilitate access to resources and enrich the learning environment. It has been found that tablet computers enhance attendance at lessons as well as having positive effects on students' performance and their learning skills (Öngöz, 2011; Enriquez, 2010; Sneller, 2007). Alvarez, Brown and Nussbaum (2004) studied twenty students to determine whether netbooks or tablet computers are more suitable for the learning environment and concluded that the large majority of the students preferred tablet computers. Their findings showed that tablet computers establish more physical and oral communication between students, improve collective speaking skills and provide a richer and more natural learning environment.

Ifenthaler and Schweinbenz (2013), in a study of eighteen teachers, concluded that the teachers had different opinions on tablet usage in education and that the majority of them believed that tablet computers do not improve learning. They also emphasized that most teachers need technical support for the use of tablet computers. In Kamacı and Durukan's (2012) study of research assistants, the participants stated that student success will improve with the use of tablet computers, that teachers need to receive in-service training, that interactive applications should be installed in tablet computers, and that technical support should be provided in case of failure.

Vlainic (2013) in his study stated that Croatian educational community introduced a service, which includes an online platform and mobile application for digital textbooks in several Croatian schools. The result of study indicates that most teachers would agree with the usage of e-readers at school and most teachers think that e-readers should be given to students for usage during class.

Pamuk et al.'s (2013) study in the pilot stage of the FATİH project showed that teachers and students were barely using the tablet computers, that there were some technical issues, that teachers needed pedagogical and professional support, that e-contents and e-books were unqualified, that there were technical limitations, and that there was a need for in-service training. Another study concluded that having tablet computers distributed to students in a distance-learning programme increased the flexibility of the teaching process in terms of place and time (Aydemir, Küçük & Karaman, 2012). There have been other studies carried out on lessons taught with tablet computers, and these have examined the effects of tablet computers on the learning process, the advantages of tablet use in the classroom, and the evaluation of computer-based lessons (Anderson et al., 2004; Derting & Cox, 2008; Koile & Singer, 2006; Olivier, 2005; Rawat et al. 2008; Yoon & Sneddon, 2011).

It can be seen that there have been many studies based on the use of tablets in education, on the evaluation of the lessons taught using tablet computers and on students' opinions. In Turkey, after the launch of the FATİH project and the distribution of tablet computers, several research studies into tablet usage in education have been carried out in recent years (Aydemir et al., 2012; Çuhadar, 2014; Dündar & Akçayır, 2014; Pamuk et al., 2013). Even so, it is clear that the number of studies in Turkey which have included teachers' opinions on tablet computer usage which is a crucial part of the current project is insufficient (Kurt et al. 2013; Pamuk et al., 2013). Also, these studies have principally examined the use of the IWBs distributed as part of the FATİH project. So it can be said that investigating the opinions of teachers on tablet use will give better results. It is therefore important to take account of the opinions of the teachers in the schools for integrating tablet computers into education successfully, detecting problems and creating solutions for the problems. The purpose of this current study is therefore to identify the views of teachers on the tablet computers which have been distributed to schools during the application phase of the FATİH project.

In particular, the aim of the study is to find out answers of these questions: What are the expectations of teachers for the use of tablet computers, how can they benefit from tablet computers, what are the intentions of their use, what are the advantages of using tablets, what are the reasons for the non-usage of tablet computers, and what are the problems that tablet computers can cause. Accordingly, the answers to

the following questions were sought.

• Did teachers receive/attend a training course for tablet computer use? If they did, what are their views on the course/training?

• What sort of training do they want to receive for tablet computer usage?

• For what purposes do teachers use tablet computers in educational activities?

• What are the advantages of using tablet computers in education according to teachers?

• What are the reasons for teachers not using tablet computers?

• What are the remarks of teachers on accessing contents using tablet computers and using these contents?

• What are the opinions of teachers on the activities they want to conduct with tablet computers?

• What are the views of teachers on the difficulties they could have when using tablet computers in education?

RESEARCH METHOD

Research Model

This study was conducted using the case study method, which is one of the qualitative research methods. Case studies enable a researcher to examine individuals, events and processes in depth and with an integrated approach (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2014; Creswell, 1999; Yıldırım & Şimşek, 2013). For these reasons, this method was chosen for investigating the views of teachers on the usage of tablet computers distributed as part of the FATİH project. In this study, the effects of tablet computers on education, learning and the classroom within the scope of FATİH project were defined.

Participants

The participants in this study were teachers in two different secondary schools in Kahramanmaraş, a province in the south-eastern region of Turkey in which tablet computers were distributed as a part of the FATİH project initiated by the Ministry of National Education. The participation of the teachers was voluntary by taking their consents. There are totaly 20 participants. 8 of them are female and 12 of them are male. Demographic information on the participants is given in Table 1.

Table 1. Demographics of the Participants

		n
Gender	Male	12
	Female	8
Graduated Faculty	Faculty of Education	14
	Faculty of Arts and Sciences	4
	School of Physical Education and Sports	2

Subject Area	English Language Teaching	4
	Turkish Language and Literature	3
	Mathematics	3
	Biology	2
	Chemistry	2
	Physics	2
	History of Arts	2
	Physical Education and Sports	1
	Geography	1
Experience on teaching	Five years and less	14
	Six years and more	6
Having a smartphone	Yes	13
	No	7
Age	23 - 26	7
	27	5
	28 and over	8

Data Collection Tool

Data were collected from the participants by means of a form consisting of open-ended questions. Open-ended questions are prepared by researchers paying regard to lucidity, non-directiveness and logical arrangement principles (Yıldırım & Şimşek, 2013). The questions devised were presented to six experts who had completed their doctorate in the Computer Education and Instructional Technologies field. After receiving feedback from these experts, the questions were modified as necessary. To achieve clarity in data collection tool, three teachers were interviewed and according to their remarks some of the questions were revised and in this way the final form of the questionnaire was reached.

Collection of Data

Before the data collection tool was used, the teachers were informed about the purpose of the study and asked their consent. After providing them with this information, questionnaires were handed out to the volunteer teachers, and they were asked write their answers on the form.

Data Analysis

The data were analysed using content analysis. Content analysis is carried out by grouping data under specific concepts and themes in a meaningful way and then interpreted them (Yıldırım & Şimşek, 2013). In this study, the data collected were conceptualized, the emerging concepts were arranged in a logical way and then the data describing the themes were identified. Yıldırım and Şimşek (2013) stated that content analysis consists of four phases: (1) coding data, (2) discovering themes, (3) organizing and identifying the data according to the codes and themes, and (4) interpreting the findings. Using this framework, the following steps were taken to analyse the data:

• Meaningful codes formed as a word or a sentence were identified by examining the data gathered during the study and the teachers were coded as T1, T2, … T20.

• Themes describing the general content of the generated codes were identified and these codes were grouped together under specific categories.

• The codes and themes thus identified were defined in a meaningful and logical way.

• The defined findings were supported with appropriate quotations from the participants and were interpreted by the researchers.

Validity and Credibility

Validity in descriptive research refers to the accuracy of the findings in general and can be divided into

two categories: interior and exterior validity (Yıldırım & Şimşek, 2013). To enhance the interior validity of this research, the phases of research, the data collection method, the process of data collection and the phases performed for analysing the data are explained in detail. Yıldırım and Şimşek (2013) stated that findings of research should be generalizable to ensure exterior validity. In fact, the similarity of findings of this study to those of other studies enhances the exterior validity of the research. The other significant issue in descriptive research is credibility. Yıldırım and Şimşek (2013) remarked that credibility can also be divided into interior and exterior credibility. To enhance the interior credibility of this research and to minimalize bias and error margins between the researchers, themes and categories were determined by mutual agreement. Again, to test the accuracy of the findings obtained and to enhance the plausibility of the results, quotations are included. To ensure the exterior credibility of the research, the steps followed in the research, the people who acted as data sources, the data collection and analysis processes, and the association of the results are explained clearly and elaborately.

FINDINGS

The findings of the study were given under the titles of: In-Service Training of Teachers on Tablet Computers, Views on The Scope of an In-Service Training Expected to be given on Tablet Computer Use, Teachers' Intentions of Using Tablet Computers in the Classroom, Tablet-Using Teachers' Positive Opinions on Tablet Computer Use, Teachers' Remarks on the Reasons for Not Using Tablet Computers in the Classroom, Remarks on Finding Content in Tablet Computers, Activities That Teachers Think of Doing on Tablet Computers, and Views on Problems That Could Be Encountered When Using Tablet Computers in Education.

In-Service Training of Teachers on Tablet Computers

In-Service Training Course is another significant issue for the usage of tablet computers. Examination of the in-service training status of the participants shows that none of them had received any in-service training on tablet computer usage (see Table 2).

Table 2. Receiving an In-Service Training Course on the use of Tablet Computers

Categories	Yes/No	n
Received an in-service training course on the use of tablet computers	Yes	0
	No	20

T1 stated "I didn't receive in-service training for using tablet computers. I attended a course but it was about IWB usage". Similarly, T7 declared: "I received four-day training on IWB usage and Starboard software. There wasn't any training about tablet usage", and T10 stated: "I attended a course on IWB usage. But I didn't receive any training about tablet usage". The rest of the teachers answered the question about whether they had received in-service training on tablet use by simply replying "I didn't". This absence of any training or courses for teachers and students in schools on tablet computer usage should be taken into consideration. Accordingly, providing in-service training on tablet computer use is important for the FATİH project to achieve success and for the teachers to be able to use tablets effectively.

Views on The Scope of an In-Service Training Expected to be given on Tablet Computer Use

Table 3 shows the views of the teachers on what in-service training courses on tablet computer use should comprise and how they should be taught.

Table 3. Views about In-Service Training Courses

Categories	Teachers	n
The course should be provided by experts in ICT	T1, T4, T5, T6, T7, T8, T9, T10, T11, T13, T14, T15, T17, T18, T19	15
The content of the course should be about how to use these technologies effectively in learning/teaching activities	T1, T5, T6, T9, T10, T11, T12, T13, T14, T16, T17, T19, T20	13
The course should include practice of tablet computer usage	T1, T3, T4, T6, T8,T9, T11, T12, T13, T14, T17, T18	12
The course should teach how to connect tablet computers to interactive white boards	T1, T3, T4, T7, T9, T10, T11, T15, T19	9
The course should be given at the end of the fall and autumn terms	T4, T7, T9, T10, T13, T16, T19, T20	8
The course should include training about the properties of tablet computers' hardware and software	T6, T8, T12, T15	4
The course should be given during the fall and autumn terms	T1, T3, T7, T11	4
The course should be divided according to the teachers' subject areas	T4, T9, T18	3
No need for training	T2	1

Considering in-service training for tablet computer use, fifteen teachers believed that the training should be provided by an expert in the field, thirteen thought that the training should be focused on the effective use of tablets in educational activities, and nine stated that the training should be about connection of IWBs with tablet computer. For example, T5 commented: "How could it be positively used in class? How could we contribute to students with a tablet computer? Extent of the course should be on these subjects. And the courses should be given by an expert and a trainer in the informatics field". T15 remarked: "We should receive training on establishing the connection of students' tablets with IWB. The training should be dedicated to cooperative usage of students' tablets and IWB. We need real training on the hardware of the tablets because they crash very frequently". In addition, some of the teachers expressed the opinion that the in-service training should be given according to different academic subject areas, and it should be given during the school year and in seminars. For example, on this subject, T3 wrote: "The trainings should be for using tablets' full capacity by specialists in their field. It should be given during the school year". These remarks show that teachers need real training on tablet computer use, on the specifications of tablets and on applications.

Teachers' Intentions of Using Tablet Computers in the Classroom

The data collected show that only four of the teachers stated that they used tablet computers in class. The intentions of these teachers who taught Maths, Physics and History using tablets in the classroom are given in Table 4.

Table 4. Teachers' Intentions of Using Tablet Computers in the Classroom

Categories	Teachers	n
Show videos related to the subjects	T3, T10, T13, T17	4
Educational applications	T1, T13, T17	3
Animations	T13	2
Presentations	T10, T17	2
Quizzes	T3	1

Table 4 shows that the teachers who used tablet computers in the classroom stated that they made presentations, used animations for the specific subject, showed videos and made activities. T10 commented

that: "I occasionally need tablets while teaching. Mostly, I open the presentation with a tablet. After the presentation is done, I show videos relating to the subject. I don't think I use tablets efficiently". T17 described his intention for tablet use as: "I try to use all of the content related to the matter. Sometimes I only use presentation. And sometimes I play extended videos about the subject and give explanations, pausing at intervals". These findings show that the teachers hardly made any use of tablets while teaching, and four of the teachers using tablets could not use the technology efficiently. Based upon these findings, it is recommended that encouraging teachers to use tablet computers in educational activities could lead to a successful conclusion.

Tablet-Using Teachers' Positive Opinions on Tablet Computer Use

The findings of positive remarks made by the same four of the teachers on tablet computer usage are given in Table 5.

Table 5. Teachers' Positive Views on Tablet Computer Usage

Categories	Teachers	n
Appeal to different senses	T1, T10, T13, T17	4
Providing the subject in less time	T1, T13, T17	3
Positive influence on classroom management	T10, T17	2
Allowing the use of different teaching methods	T1, T10	2
Allowing more problems to be solved in the classroom	T17	1
Allowing subjects to be reviewed	T10	1

Table 5 shows the findings on the teachers' remarks on the advantages of tablet computer usage. Analysis of the frequency of the categories in the table shows that there were not many positive remarks made by the teachers on tablet use in educational activities. These findings indicate that there is not much knowledge or experience about the benefits of tablet use in educational activities. Remarks made by some of the teachers on this subject are presented below:

T1: "I can complete my schedule in a short span of time with tablets. I realize that methods like demonstration and catechizing have gained importance with tablet use. Also tablets have a positive effect on success because they offer visual and audial contents."

T10: "It affects my teaching methods and techniques more positively. If teachers keep it under control, it contributes to the learning skills of students."

T13: "It didn't completely change all of my teaching methods but it enriched them a little. It provides permanent learning because notes taken with tablets are supported by images. And I think that it increases success."

Teachers' Remarks on the Reasons for Not Using Tablet Computers in the Classroom

According to the data acquired in this study, sixteen of the teachers (more than 75%) stated that they did not use a tablet computer in the classroom. Findings on the reasons for teachers not using tablet computers in education are given in Table 6.

Table 6. Teachers' Remarks on the Reasons for Not Using Tablet Computers in the Classroom

Categories	Teachers	n
Lack of network connection to the interactive whiteboard	T1, T3, T4, T5, T6, T7, T9, T10, T12, T15, T16, T18, T19	13
Negative effects on classroom management	T2, T3, T5, T7, T9, T12, T14, T16, T18, T20	10
Not knowing how to use tablet PCs	T2, T3, T4, T6, T7, T8, T9, T15, T19	9
Students use these devices as a playing tool	T3, T5, T6, T7, T9, T11, T14, T19	8

Table 6 shows teachers' views on the reasons for not using tablet computers in education. Most of the candidates (thirteen) stated that they did not use tablets in the classroom because there is no connection between the board and tablets, ten thought that it would influence classroom management negatively, nine had no clear sense of how to use a tablet, and eight believed that students use it as a tool for playing games. Some of the teachers' comments on this question are given below:

> T2: "Connection of the board with tablets could not be established and I don't know how to do it, that's why I am not using tablets. I want to use it for some activities, solving questions, and following course books. Just, tablet and the board need to be connected."

> T9: "I don't know how to use tablets. I don't know how to directly transfer my writings onto the board. Besides, I heard stories of my colleagues having trouble using it. That's why I don't lean towards the idea."

> T11: "I don't use it because I have observed that students are playing games with it at home, in school, in break times, and even in classroom. I also think that it could cause game addiction. That's why I am not using it."

Table 6 and the quotations from the teachers given above show clearly that teachers stated that they did not use tablet computers in the classroom because there is no connection established between the board and tablet, they were not aware of how to use tablets, they would have difficulties in classroom management and students would persistently play games on the tablets. One of the most conspicuous points in these findings is that the number of teachers who stated that classroom management will be negatively affected is more than those who remarked the opposite (*see* Table 5). In the light of these findings, it is clear that to increase the teachers' tablet use, a system which establishes control between tablets and the board should be set up, and to take away the biases of teachers, they must be informed about the advantages of using tablet computers in education.

Remarks on Finding Content in Tablet Computers

Qualified content which can be used with tablet computers is another important issue in using tablets. The participants opinions about finding content in tablet computers are given in table 7 below.

Table 7. Opinions about Finding Content in Tablet Computers

Categories	Teachers	n
EBA is limited to be the only the use of the tablets	T1, T3, T4, T6, T7, T8, T9, T10, T11, T13, T14, T17, T19, T20	14
The lack of content in the EBA.	T1, T4, T5, T6, T7, T8, T10,T12, T14, T15, T18	11
Lack of resources outside of the EBA.	T1, T3, T4, T5, T8, T10, T12, T15, T18	9
Lack of appropriate content for each subject	T1, T13, T17	3

Most of the teachers (fourteen) stated that they could only access the EBA, and more than half of them (eleven) said that content of the EBA is insufficient. Nine of the teachers said that there are no resources except the EBA to use in computers, and three pointed out that there are no contents suitable for the subject. Some of the teachers' remarks on content use and access in tablet computers are presented below:

> T14: "I don't have a source for my lecture. Also, access is denied for most of video sites. Teachers' tablets are also the same. As EBA is an ever-developing system, it doesn't hold enough resources for every subject."

> T1: "Some of the web sites have useful content. Even if it is useful, it is not recommended by Board of Education and Discipline. Because of tablet use limitations, we could only benefit from EBA. Also, unfortunately there are no high-grade resources for English language teaching."

> T8: "I have resources. But I could not access every source. The content of EBA is incompatible and highly insufficient."

When the teachers' remarks are taken into consideration, it is clear that there is no access to different sources except the EBA and that the content of the EBA seems insufficient to many teachers. Because access to educational resources is important for the integration of the technology, removing the restrictions on tablet computers may positively change teachers' tablet use in classroom.

Activities That Teachers Think of Doing on Tablet Computers

Teachers' opinions on the activities that they thought of doing with tablet computers and the purposes they wanted to use them for are shown in Table 8.

Table 8. Activities That Teachers Think of Doing on Tablet Computers

Categories		n
Let students use tablet computers outside the school (for homework, reading etc.)	T1, T3, T5, T6, T9, T10, T13, T14, T16, T17, T18, T20	12
Using tablet computers during lectures	T1, T4, T5, T6, T8, T9, T10, T14, T18, T20,	10
Using tablet PCs for assessment (quizzes, exams)	T1, T4, T6, T7, T9, T15, T16, T20	8
Monitoring students personally with tablets and giving them immediate feedback	T1, T6, T8, T12, T16	4
Using tablet applications to communicate with students	T10, T13, T20	3

Twelve participants stated that they wanted to enable students to use tablet computers to do homework and to read or to review out of school, ten wanted to use tablet computers while teaching, eight wanted to carry out assessments and evaluations such as exams and quizzes on tablet computers, and four wanted to use tablet computers for tracking students personally and giving them immediate feedback. Some of the teachers' remarks on this question are presented below:

T16: "I want to monitor students personally and to find mistakes they make in the classroom and correct them. We could give them homework. I want to keep track of their schedule and homework online via a web-site organized according to the professions of the teachers."

T20: "İn case of the connection between the IWB and teachers' tablets, I think of using it for solving questions, following the course-book, and giving lessons. And I want to instruct students about using tablet computers for doing homework out of school."

T9: "When IWBs can be controlled with tablets, I want to use them for applications and animations intended for increasing visualization, imagination and the concretization of lessons. In addition, I want to perform assessments and evaluations on a small scale after teaching."

The teachers' remarks emphasize that tablet computers and IWBs should be connected. Teachers want to use them for teaching, for homework, for reading activities, and for reviewing and performing assessment and evaluation.

Views on Problems That Could Be Encountered When Using Tablet Computers in Education

Teachers' remarks on the problems that could be encountered when using tablet computers are given in Table 9.

Table 9. Views on Problems That Could Be Encountered When Using Tablet Computers in Education

Categories	Teachers	N
Negative impact on classroom management.	T3, T4, T5, T6, T7, T8, T9, T11, T12, T14, T15, T16, T18, T19, T20	15
Students use these devices to play games, chat, surf websites, etc.	T3, T5, T6, T7, T8, T9, T11, T12, T14, T16, T18, T19	12
Reduce the success of students.	T3, T4, T6, T8, T9, T11, T12, T15, T16, T19	10
Distraction of students and reducing their motivation for lessons	T3, T4, T6, T7, T9, T11, T12, T15, T20	9
Game addiction problems	T4, T5, T6, T7, T9, T11, T14	7

Having difficulties managing the classroom during the lessons	T3, T6, T8, T12, T15, T18	6
Causing students to waste their time with tablet computers	T6, T7, T9, T12, T14	5

Almost all of the teachers (fifteen) stated that the use of tablet computers will negatively affect classroom management, and six emphasized the difficulty of controlling students. On this subject, T3 stated: "Without the connection between the board and tablet or when it is not known how to connect them, gaining control of the students will surely be hard. And I think that when I'm teaching, students do whatever they want accept learning with tablets". Twelve of the teachers stated that students will use tablets for playing or accessing social media, ten thought that tablet use will reduce students' success, nine believed that tablets will divert students' attention and prevent them from concentrating, and seven thought that tablets will cause game addiction. Some of the teachers' remarks about the problems which could be encountered are presented below:

> T6: "A tablet will distract students. It will cause them to waste time. When there is no connection between the tablet and the board, I think that it will be difficult to control the tablets in the classroom. Again, I think that while I'm delivering a lecture, tablets make concentration difficult."
>
> T9: "I think that tablets will negatively affect students' success grades. They will mostly play games. And this could cause game addiction in the long term. For this reason, they will show no interest in lessons."
>
> T7: "Tablets will definitely function as an unnecessary object that causes distraction. They will negatively affect classroom management. Students will be distracted. Tablets cause students to waste time by retaining them with unnecessary things."

When Table 9 and the teachers' remarks quoted above are analysed, it can be found that teachers stated that tablet computers would have negative effects on classroom management and student success

DISCUSSION AND CONCLUSION

In this study, teachers' judgments on the use of the tablet computers distributed within the FATİH project are explored. First of all the teachers stated that they had received no in-service training for using tablet computers in education, or searching for contents using a tablet, connecting tablet computers with IWBs. As a result, most of the teachers put emphasis on the necessity of in-service training for tablet computer usage. The teachers pointed out that the in-service training for tablet computers should be given by experts in specific subjects, that tablets should be exploited in educational activities and that the training should be given in seminar periods or during the school year. Keleş and Kefeli's (2011) findings about in-service training for IWB use showed that teachers stated that they had found the course highly effective and that it had enriched their knowledge of IWBs, their point of view was enlarged and it had provided professional help.

When the body of related literature is analysed, it can be seen that research results have shown that the efficiency and productivity of in-service training provided for using IWBs is poor (Günbayı & Yörük, 2014; Pamuk et al., 2013; Yıldız et al., 2013). For example, Pamuk et al. (2013) stated that in-service training does not meet the requirement because it is constituted in a general format and mostly covers technical knowledge and skill. Günbayı and Yörük (2014) emphasized teachers' need for additional training even if they attend in-service training. Yıldız et al. (2013) concluded that when in-service training activities within the FATİH project are analysed and compared according to ISTE standards, in-service training remains superficial and does not make a significant contribution to the technological literacy of teachers. Bearing this in mind, it is undoubtedly important that any in-service training provided on using tablet computers in the classroom should be given by qualified personnel, and that training should be based on practice and should fulfil the intended goal. Kurt et al. (2013) stated that in-service training should be devoted to how to use the e-content, the integrated usage of tablet computers and IWBs, how the connection between IWB and tablets is

established, and improving the qualifications of technology use. Banoğlu et al. (2014) recommended that there should be workshops on the use of tablets, courses should be open to every teacher at every different level, and training on the use of the Android operating system should be included in in-service training programmes. Accordingly, based upon the results of this current study and those of other studies in the literature (Banoğlu et al., 2014; Kurt et al., 2013), it is important that in-service training in the use of the tablets distributed under the FATİH project should meet the needs of teachers and enable the effective use of tablets. By being repeated at certain intervals, these training sessions could be the key factor for success. Furthermore, creating professional on-line learning communities (Maxwell, 2009) for teachers to develop their careers and creating small learning communities (Capraro & Slough, 2013) to share their knowledge and experience of their own field could contribute to the effective use of tablet computers.

Some of the findings of the current study (see Table 6) show that teachers are not eager to use tablet computers in the classroom. They gave their reasons for not using tablet computers in the classroom as that they did not find themselves knowledgeable at using tablet computers, that there is no connection between tablets and IWBs, that tablets affect classroom management negatively, and that students play games on their tablets. The results obtained from focus group interviews and observations in Pamuk et al.'s (2013) study show that among the innovations which the FATİH project has brought, teachers mostly used IWBs compared with other tools such as tablet computers and multi-functional printers and document cameras, but that they hardly ever used tablet computers. In the focus group interviews which Kurt et al. (2013) conducted, the researchers determined that the most frequently used technology by the teachers were IWBs among all the tools provided within the project. Thus previous results (Pamuk et al., 2013; Kurt et al., 2013) and those from this current study show that tablets are barely used or hardly ever used.

When the findings of this current study are analysed (see Table 4), it was found that a few of the teachers used tablet computers to show videos appropriate for the subject, educational activities and animations, and to make presentations. In Aydemir et al.'s (2012) study of distance education students' tablet computer use, they presented videos about how to use tablet computers. As a result of that study, it was found that students did not intentionally use tablet computers within the day, but that they preferred to use them at home. Students used tablet computers mostly for communicating, reading e-books and attending virtual classes. Based on their results, Aydemir et al. (2012) concluded that the flexible learning opportunities that tablet computers offer enhance the potential of the use of distance learning. In the light of this finding, during the FATİH project implementation process, it is considered that the connection of tablets with IWBs and teachers' beliefs about the contribution of tablet computers' use in educational activities will surely increase the potential of using tablets in education. Hence, teachers' request for using tablets during teaching, making assessments and evaluations, and making students do their homework and reviewing out of school promote this recommendation. Consequently, it is thought that providing technical support, giving in-service training devoted to tablet use by teachers, and convincing teachers about the advantages of tablet, as well as the self-sufficiency which can be achieved, would encourage tablet use.

In this current study, teachers who were using tablet computers in the classrooms stated that there are some positive outcomes of using them. Teachers' remarks on advantages of tablet use in educational activities could be summarized as follows: it provides for the use of different teaching methods, it enables lessons to be finished in a shorter time, it has positive effects on learning, it enables subjects to be reviewed, and it increases success. Similarly, Banoğlu et al. (2014) put emphasis on the recommendation that, by means of using tablets, students can prepare reviews whenever or wherever they want, the teaching duration becomes shorter, and lessons supported by visual materials ensure permanent learning. In their studies analysing students' remarks on tablet use, Dündür and Akçayır (2014) stated that tablet use creates a more entertaining classroom environment, that tablets allow teachers to show more examples on a specific subject, and that tablets enable teachers to make their activities more productive. Moreover, students pointed out that using tablets encourages them, tablets are practical and enjoyable tools, and they could do their homework more easily with them, and that tablets attract their interest in the classroom (Dündar & Akçayır, 2014). Aydemir et al.'s (2012) findings on students of distance education led them they to remark that the tablet provides flexible time and space for them to study, it smoothes their distant education process, helps to improve their

study performance and changes their method of study. In the various studies which have been conducted, it can be seen that the use of tablet computers in education has many benefits such as improving learning and increasing the motivation of students by creating an attractive ambiance. Accordingly, when the current problems have been resolved and teachers are trained to use tablet computers in the classroom, it will definitely have positive effects on the teaching methods of teachers and the learning skills of students.

In terms of accessing and using e-contents, half of the teachers surveyed in this current study stated that the content found in the Educational Informatics Network (EBA) to be used for IWBs and tablets is inadequate and because of the limited tablet usage, only the content on EBA could be accessed. Similarly, Pamuk et al. (2013) remarked that the e-content and z-books provided within the FATİH project are unqualified. Banoğlu et al. (2014) also emphasized that the e-content and z-books provided within the FATİH project and electronic versions of MEB books are inadequate, that there is no digital teaching/learning material for every course, and that the video and audio quality of the current e-content is poor. Kurt et al. (2013) identified the biggest problems about the contents that teachers encountered as the scantiness of contents and the absence of main and supplementary resources for every course. As can be seen in the research which has been conducted, the results indicate that the e-contents provided within the application process of the FATİH project are unsatisfactory. In the light of the results of the research studies reported in the literature and in this current research, it is considered that increasing e-contents and providing access for teachers and students to these e-contents during the teaching/learning process will minimize the existing problems.

In addition to the problems of accessing and using e-contents, it can be seen that the teachers held a prejudice about encountering many problems when using tablet computers as part of the educational process. Above all, the teachers commonly expressed the view that tablet use will negatively affect classroom management, students will use tablets for unintended extracurricular purposes such as playing games, tablets will distract students from focusing on the subject, tablets will cause game addiction, and that they will have trouble controlling students in the classroom. On this subject, according to Pamuk et al. (2013), teachers have prejudices about the use of tablets and their benefits because they think that it will cause distraction. Along similar lines, the findings of Çiftçi et al. (2013) support the results of this current study and showed that there is a prejudice about the tablet and IWB use distributed within the FATİH project because it could cause problems such as distraction, computer addiction, time-wasting, and difficulty in controlling the classroom. On the other hand, the problems stated in this study that could be encountered when using tablet (Çiftçi et al., 2013; Pamuk et al., 2013) overlap with the results of other studies in the body of literature in which the effects of tablet use is determined (Banoğlu et al., 2014; Dündar & Akçayır, 2014). For example, Dündar and Akçayır (2014) stressed that students sometimes use tablets for their extracurricular purposes and that tablets cause distraction. Similarly, Banoğlu et al. (2014) concluded that students use tablets for their extracurricular purposes and that tablets cause a loss of time, affecting the management of the course.

Consequently, it can be seen that the participants had not received any training on tablet computer use, and they mentioned positive aspects of tablet computers along with the drawbacks. These results show that the participants have deficiencies in their knowledge, skill and experience and that there are substructure and content issues. Therefore, considering the results of the current study as a whole, for the FATİH project to achieve success and for the current problems to be resolved, there are some suggestions presented below.

Suggestions

- Participants in the FATİH project should gain knowledge, skill and experience in using tablets in education. To transfer this recommendation into practice, the training sessions should be divided according to academic subjects, they should be based on applications, and as well as providing knowledge and experience, they should include activities devoted to improving the self-efficacy of teachers. The training should contain effective and attractive sessions and cover the tools and techniques that contribute to easing classroom management.
- These training sessions should be given by instructors who have knowledge about not only the appropriate technology, but also the field and the profession, teaching how to use the applications

and make activities, and providing opportunities for the teachers to practise. It is suggested that academicians experienced in the field and successful teachers should be assigned for this job.

- One of the prime necessities for using tablets effectively is the application installed and the content. For these applications and content to be shared, with the support of experienced academicians and successful teachers, on-line professional learning groups or local on-line learning groups consisting of teachers of the same subject might be formed. These small communities could take local issues and possibilities into consideration and therefore could share the solutions and applications more effectively. It is also suggested that those who contribute to the system, share applications and develop contents should receive incentive pay.
- Even though the specified date for the resolution of infrastructural issues has expired, the problems have not been resolved. Therefore, while waiting for the solutions to the problems to be found, every endeavour to integrate tablet computers into education should be made using the existing opportunities, and studies which contribute to reducing the negative impacts of tablet computers should be conducted.

REFERENCES

Alvarez, C., Brown, C. & Nussbaum, M. (2011). Comparative study of netbooks and tablet pcs for fostering face-to-face collaborative learning. Computers in Human Behavior, 27, 834-844. doi:10.1016/j.chb.2010.11.008.

Anderson, R., Anderson, R. Simon, B. Wolfman, S.A., Vandegrift, T. & Yasuhara, K. (2004). Experiences with a tablet pc based lecture presentation system in computer science courses. In Proceedings of SIGCSE '04, Norfolk, Virginia.

Aydemir, M., Küçük, S. & Karaman, S. (2012). Uzaktan eğitimde tablet bilgisayar kullanımına yönelik öğrenci görüşlerinin incelenmesi. Eğitim ve Öğretim Araştırmaları Dergisi,1(4), 153-159. ISSN: 2146-9199.

Banoğlu, K., Madenoğlu, C., Uysal, Ş. & Dede, A. (2014) FATİH Projesine Yönelik Öğretmen Görüşlerinin İncelenmesi (Eskişehir İli Örneği). Eğitim Bilimleri Araştırmaları Dergisi, 4(1), 39-58.

Birgin, O., Bozkurt, E., Gürel, R. & Duru, A. (2015). The Effect of Computer-Assisted Instruction on 7th Grade Students' Achievement and Attitudes toward Mathematics: The Case of the Topic "Vertical Circular Cylinder". Croatian Journal of Education, 17 (3), 783-813.

Büyüköztürk, Ş., Kılıç-Çakmak, E., Akgün, Ö.E., Karadeniz, Ş. & Demirel, F. (2014). Bilimsel araştırma yöntemleri (18. Baskı). Ankara: Pegem Akademi

Capraro, R. M. & Slough, S. W. (2013). Why PBL? Why STEM? Why now? An introduction to STEM project-based learning: An integrated science, technology, engineering, and mathematics approach. In R. M. Capraro, M. M. Capraro & J. R. Morgan (Eds.), STEM Project Based Learning: An integrated science, technology, engineering, and mathematics (STEM) approach (2nd Edition) (pp. 1-5). Rotterdam, The Netherlands: Sense.

Çiftçi, S., Taşkaya, S. M. & Alemdar, M. (2013). The opinions of classroom teachers about fatih project. Elementary education online, 12(1), 227-240.

Çuhadar, C. (2014). Information technologies pre-service teachers' acceptance of tablet pcs as an innovative learning tool. Educational Sciences: Theory & Practice, 14(2), 741-753, DOI: 10.12738/estp.2014.2.2038.

Derting, T. L. & Cox, J. R. (2008). Using a tablet pc to enhance student engagement and learning in an introductory organic chemistry course. Journal of Chemical Education, 12(85). 1638-1643.

Dündar, H. & Akçayır, M. (2014). Implementing tablet pcs in schools: students' attitudes and opinions. Computers in Human Behaviour, 32, 40-46. http://dx.doi.org/10.1016/j.chb.2013.11.020.

Enriquez, A. G. (2009). Using tablet pcs to enhance student performance in an ıntroductory circuits course. 2009 American Society for Engineering Education Pacific Southwest Regional Conference Proceedings Book, 19-20 March 2009, National University, San Diego, California.

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? Educational Technology Research and Development, 53(4), 25–39.

Gateway. (2004). One-to-one laptop initiatives: providing tools for 21 century learners. folsom, CA: Center for Digital Education.

Günbayı, İ. & Yörük, T. (2014). Yönetici ve öğretmenlerin eğitimde fatih projesinin uygulanma düzeyine ilişkin görüşleri (Antalya ili Muratpaşa ilçesi örneği). Eğitim Bilimleri Araştırmaları Dergisi, 4(1), 189-211. http://ebad-jesr.com/

Hew, K.F. & Brush, T. (2007) Integrating technology into k 12 teaching and learning: Current knowledge gaps and recommendations for future research. Education Technology Research and Development, 55, 223-252

Ifenthaler, D. & Schweinbenz, V. (2013). The acceptance of tablet-pcs in classroom instruction: the teachers' perspectives. Computers in Human Behavior, 29, 525-534. http://dx.doi.org/10.1016/j.chb.2012.11.004.

Ingram, D., Willcutt, J. & Jordan, K. (2008). Laptop initiative evaluation report. University of Minnesota: Center for Applied Research and Educational Improvement.

Kamacı, E. & Durukan, E. (2012). Araştırma görevlilerinin eğitimde tablet bilgisayar kullanımına ilişkin görüşleri üzerine nitel bir araştırma (Trabzon örneği). Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi, 1(3), 203-215.

Karal, H., Aktaş, İ., Turgut, Y.E., Gökoğlu, S., Aksoy, N. & Çakır. Ö. (2013). Fatih projesine yönelik görüşleri değerlendirme ölçeği: Güvenirlik ve geçerlilik çalışması. Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD), 14(2), 325,348.

Keleş, E. & Kefeli, P. (2011, Mayıs). İlköğretimde akıllı tahta kullanımına yönelik düzenlenen bir hizmet içi kursunun değerlendirilmesi, International Educational Technology Conference'ta sunulan bildiri, İstanbul, Turkey.

Kim, J. H-Y. & Jung, H-Y. (2010). South korean digital textbook project. Computers in the Schools, 27(3-4), 247-265. doi: 10.1080/07380569.2010.523887

Koile, K. & Singer, D. (2006). Development of a tablet-pc-based system to increase instructor-student classroom interactions and student learning. Retrieved on 12th February 2015 from http://projects.csail.mit.edu/clp/publications/documents/

KoileSinger06.pdf

Kurt, A.A., Kuzu, A., Dursun, Ö.Ö., Güllüpınar, F. & Gültekin, M. (2013). Fatih projesinin pilot uygulama sürecinin değerlendirilmesi: Öğretmen görüşleri. Journal of Instructional Technologies & Teacher Education, 1(2), 1-23.

Lesardoises. (2012). Les tablettes dans l'éducation la Thaïlande. Retrieved on 22th May 2015 from http://lesardoises.com/11123/les-tablettes-dans-leducation-la-thailande-franchit-lepas-pour-328-millions-de-dollars.html

Levin, T. & Wadmany, R. (2005). Changes in Educational Beliefs and Classroom Practices of Teachers and Students in Rich Technology-based Classrooms. Technology, Pedagogy and Education, 14 (3), 281-308.

Marcant, A. (2012).Expérimentation d'usage pédagogique de tablettes numériques sur l'académie de Nice, Nice: CTICE

Maxwell, G. M. (2009). One veteran educator's experience with professional learning communities. In R. M. Capraro, & S. W. Slough (Eds.), Project Based Learning: An integrated science, technology, engineering, and mathematics (STEM) approach (pp. 103-115). Rotterdam, The Netherlands: Sense.

Milli Eğitim Bakanlığı. (2012a). Retrieved on 22th March 2015 from http://fatihprojesi.meb.gov.tr/tr/icerikincele.php?id=6

Milli Eğitim Bakanlığı. (2012b). 22th March 2015 from http://fatihprojesi.meb.gov.tr/tr/duyuruincele.php?id=47

Milli Eğitim Bakanlığı. (2012c). 22th March 2015 from http://fatihprojesi.meb.gov.tr/upload/fatih_tahta.pdf

Milli Eğitim Bakanlığı Projeler Koordinasyon Merkezi Başkanlığı. (2007). 14th March 2015 from Temel eğitim projesi II. fazı: BT entegrasyonu temel araştırması. http://ocw.metu.edu.tr/pluginfile.php/3298/course/section/1180/BT%20Entegrasyonu.pdf

Olivier, W. (2005, November). Teaching mathematics: tablet pc technology adds a new dimension. Reform, Revolution and Paradigm Shifts in Mathematics Education Conference, 25 November-1 December 2005, Johor Bahru, Malaysia.

Öngöz, S. (2011, Eylül). Bir öğrenme-öğretme aracı olarak elektronik kitap. 5th. International Computer & Instructional Technologies Symposium Proceedings Book, Fırat Üniversitesi, Elazığ.

Pamuk, S., Çakır, R., Ergun, M., Yılmaz, H.B. & Ayas, C. (2013). Öğretmen ve öğrenci bakış açısıyla tablet pc ve etkileşimli tahta kullanımı: fatih projesi değerlendirmesi. Kuram ve Uygulamada Eğitim Bilimleri, 13(3), 1799-1822.

Rawat, K.S., Elahi, M. & Massiha, G.H. (2008, November). A pilot project in evaluating the use of tablet-pcs and supporting technologies in sophomore electronic technology courses. Proceedings of the 2008 IAJC-IJME International Conference, Nashville, TN, USA.

Ricoy, M-C. & Feliz, T. (2014). Ubiquitous Laptop Use Patterns Exhibited by Higher Education Students. Croatian Journal of Education, 17 (4), 1071-1101. doi: 10.15516/cje.v17i4.1350

Sneller, J. (2007, October). The tablet pc classroom: erasing borders, stimulating activity, enhancing communication. 37th Annual ASEE/IEEE Frontiers in Education Conference Prooceeding Book, Milwaukee, Wisconsin.

Statista (2013). Tablet PC sales from 2011 to 2015. 20th March 2015 from http://www.statista.com/statistics/272599/sales-forecast-for-tablet-pcs-by-region.

Ünal, E., Uzun, A.M. & Karataş, S. (2015). An Examination of School Administrators' Technology Leadership Self-Efficacy. Croatian Journal of Education, 17 (1), 195-215. doi: 10.15516/cje.v17i1.968

Usluel-Koçak, Y., Kuşkaya-Mumcu, F. ve Demiraslan, Y. (2007). Öğrenme-öğretme sürecinde bilgi ve iletişim teknolojileri: öğretmenlerin entegrasyon süreci ve engelleriyle ilgili görüşleri. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 32, 164-178.

Vlainic, M. (2013). Attitudes of Secondary School Teachers Regarding Electronic Readers and their Possible Usage in Mass Education. Media Research : Croatian journal for journalism and the media, 19 (1), 61-83.

Weitz, R. R., Wachsmuth, B. & Mirliss, D. (2006). The tablet pc for faculty: A pilot project. Educational Technology & Society, 9 (2), 68-83.

Yıldırım, A. ve Şimşek, H. (2013). Sosyal bilimlerde nitel araştırma yöntemleri. (9. Baskı) Ankara: Seçkin Yayınevi.

Yıldız, H., Sarıtepeci, M. & Seferoğlu, S. S. (2013). Fatih projesi kapsamında düzenlenen hizmet-içi eğitim etkinliklerinin öğretmenlerin mesleki gelişimine katkılarının ISTE öğretmen standartları açısından incelenmesi. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi [Hacettepe University Journal of Education], Özel sayı (1), 375-392.

Yoon, C. & Sneddon, J. (2011) Student perceptions of effective use of tablet pc recorded lectures in undergraduate mathematics courses. International Journal of Mathematical Education in Science and Technology, 4(42), 425-445. doi: 10.1080/0020739X.2010.543165.