

Pedagogical Problems Encountered by Teachers and Students in Technology-Enhanced Learning Environments: A Case of FATİH Project

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Abstract

The aim of this study was to investigate pedagogical problems encountered by teachers and students, who participated in pilot implementation of the Increasing Opportunities Improving Technology Movement (FATİH) project, from the perspective of teachers, students and schools school principals. To support schools with educational benefits of information and communication technologies Turkish government launched the project across Turkey. The sample of the study consisted of 167 teachers, 667 students and 31 schools school principals, who participated in the project from four cities on the east region of the Turkey. The data were collected through Likert scale surveys and group interviews. The questionnaires were applied online to the teachers, students and school administrators. After the quantitative data collected, focused group interviews were conducted with the identified students, teachers and school administrators. While quantitative data were subjected to descriptive analyzes, qualitative data were subjected to content analysis. Although quantitative and qualitative results show some differences, both qualitative and quantitative findings show that teachers having difficulty in classroom management, they lost their leader role, communication and interaction with their students after integration of information and communication technologies. Regarding problems encountered by students, it was found that, these technologies cause many pedagogical challenges such as new classroom technologies' distracting students' attention, leading students' spending most of their time with them, causing students to become passive learners and use these technologies for gaming only.

Keywords: FATİH project, Pedagogical problems, ICT

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Teknoloji Destekli Öğrenme Ortamlarında Öğretmenler ve Öğrencilerin Karşılaştığı Pedagojik Problemler: FATİH Projesi Örneği

Öz

Bu çalışmanın amacı, Fırsatları Arttırma ve Teknolojiyi İyileştirme Hareketi Projesinin (FATİH) pilot uygulamasına katılan öğretmen ve öğrencilerin; öğretmenler, öğrenciler ve okul müdürlerinin bakış açısından karşılaştıkları pedagojik sorunları araştırmaktır. Türkiye Cumhuriyeti Hükümeti, okulların eğitimde Bilgi ve İletişim Teknolojilerinden yararlanmaları için FATİH projesini Türkiye çapında başlatmıştır. Araştırmanın örneklemini; Türkiye'nin doğusunda yer alan dört il merkezinde projenin pilot uygulamasına katılan 167 öğretmen, 667 öğrenci ve 31 okul müdürü oluşturmaktadır. Veriler likert ölçeği anketleri ve grup görüşmeleri ile toplanmıştır. Anketler projede yer alan okullardaki öğretmenlere, öğrencilere ve okul yöneticilere online ortamda uygulanmıştır. Toplanan nicel veriler analiz edildikten sonra belirlenen öğrenci, öğretmen ve okul idarecileri ile odak grup görüşmeleri yapılmıştır. Nicel veriler betimsel analizlere tabi tutulurken, nitel veriler içerik analizine tabi tutulmuştur. İçerik analizinin güvenilirliğini sağlamak için veriler iki araştırmacı tarafından analiz edilerek tutarlılık katsayısı hesaplanmıştır. Nicel ve nitel sonuçlar bazı farklılıklar göstermesine rağmen bulgular öğretmenlerin sınıf yönetiminde zorluk çektiklerini, sınıftaki lider rollerini kaybettiklerini, bilgi ve iletişim teknolojilerinin entegrasyonu ile birlikte öğrencileriyle olan iletişim ve etkileşimlerini kaybettiklerini göstermektedir. Öğrenciler açısından ise; yeni teknolojilerin öğrencilerde dikkat dağınıklığına yol açtığı, öğrencilerin zamanlarının çoğunu bu teknolojilerle oynayarak geçirmelerine neden olduğu ve öğrencilerin pasif hale gelmesine neden olmak gibi birçok pedagojik soruna yol açtığı ve öğrencilerin bu teknolojileri sadece oyun oynamak için kullandıkları öğretmenler, öğrenciler ve okul müdürleri tarafından dile getirilmiştir.

Anahtar Sözcükler: FATİH projesi, pedagojik problemler, BİT

Introduction

It is widely accepted that the most effective way of preparing people for the information era is integrate information and communication technologies (ICTs) into education. Thus, much is invested in people so that they can utilize such technologies and educational institutions are equipped with ICTs to ensure more effective education (Pelgrum, 2001; Watson, 2001). Although policy makers believe that integrating ICTs would lead to major improvements in education (Cuban, Kirkpatrick & Peck 2001), this is not the case. There are a number of factors such as economic, social and psychological caused by innovations affect the success of integration of ICTs into educational environment. In order to understand the extent at which the integration is successful, it is important to deal carefully with mentioned factors that hinder the integration (Butler & Sellbom, 2002; Watson, 2001).

In the literature, factors challenging integration of ICTs in educational environment are divided in different categories. Some studies placed those factors in four categories as resources (1), institutional and administrative support (2), training and experience (3), and attitudinal or personality (4) (Brinkerhoff, 2006). Other studies categorized them as teacher-related, school-related and system-related factors (Balanskat, Blamire, & Kefala, 2006). Still other studies classified as intrinsic and extrinsic factors (Ertmer, 1999). In these studies, it is evident that mostly pedagogical impacts of ICTs are being neglected and more attention is being paid to technical challenges encountered by teachers, students and administrators in the process (Pelgrum, 2001; McCormick & Scrimshaw, 2001; Goktas, Gedik, & Baydas, 2013). However, more emphasis should be placed on to pedagogical factors for the sake of success (Lipponen, 1999) because even in famous debate about media vs. method in instructional technology field both Kozma (1994) and Clark (1994) agree, “it is the selection of [instructional] method, not he medium, that is practical importance for learning” (Kozma, 1994, p. 16) When we looked at the definition of pedagogy, it is defined as art or science of teaching; instructional method. Therefore since pedagogy or instructional method plays a key role in the learning, it is necessary to give more emphasis on pedagogy. While investigating pedagogical effects of ICTs, it must be understood well that pedagogy contains interrelated variables such as learning outcomes, perceptions concerning learning and knowledge, learning and measurement activities, learners’ roles and relations as well as teacher-student interaction and classroom atmosphere (McCormick & Scrimshaw, 2001).

In addition to giving more emphasis on technical challenges, the studies about effects of ICTs on learning mostly investigate positive effects. They deal with how innovations affect students’ motivation, learning, self-confidence and studying habits (Balanskat, Blamire, & Kefala, 2006). However, ICTs have negative effects besides positive ones. Negative effects, for example, include using of computers for playing games instead of learning, losing conventional skills and using knowledge roughly (Jagdish, 2006). In this sense, the aspects, which obstruct learning or pedagogical problems arising from innovations, should be dealt with carefully so that innovations can be used more effectively in teaching and learning process.

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Deaney, Ruthven, & Hennessy, (2003), in a study investigating secondary school students' views about ICTs, found that the students state most of the benefits of ICTs but they are concerned that such technologies might hinder effective and efficient instruction. Some of the students think that ICTs will probably hinder understanding of maths and applied science at conceptual level, decrease teachers' interaction with students and teachers' role can be weaker as they accept assistance from students. In another study, the factors such as difficulty of integrating ICTs into teaching; teachers lacking knowledge and skills; incompliance of software and curriculum, students' ability of using the technology better than teachers and difference between program language and teaching language were found to hinder integration of ICT (Pelgrum, 2001).

Webb and Cox (2004) in a review study, made some recommendations to develop a pedagogical model for integration of ICTs into education. It is given that teachers should use the instruments relevant to learner characteristics as well as content knowledge for effective teaching. It is underlined that students' attitude, views and skills regarding ICTs should be considered for effective teaching. It is recommended that concepts of cooperation with students in learning and monitoring should be managed well by teachers. Within the context of this model, it is also suggested for teachers to develop strategies for involving students in the lesson while controlling them at the same time.

Another factor hindering integration of the technologies is related with production processes of these technologies. During the development of information and communication technologies in education, much attention is not being paid on how they will be used in education and what kind of possible changes they will lead in educational setting. Special emphasis is placed onto taking into consideration of dealing with and discussing learning and instruction conditions diligently to gain more educational benefits from these technologies (Laurillard, 2009; Pelgrum, 2001; Watson, 2001).

To support schools with educational benefits of ICTs Turkish government launched the Increasing Opportunities Improving Technology Movement (FATIH) project across Turkey (Ministry of National Education (MoNE), 2013). With this project, it is planned to equip 42.000 schools and 570.000 classes with the latest ICTs (MONE, 2013). The aim of the project is to enable equal opportunities in education and improving teaching and learning process with the help of these ICT tools. In this context, this study investigates pedagogical problems caused by introduction of ICTs in schools on the FATIH project. Following research questions were investigated within the scope of this study:

- What are the pedagogical problems encountered by teachers in the technology-enhanced learning environment?
- What are the pedagogical problems encountered by students in the technology-enhanced learning environment?

Method

Context

This study is carried out in the scope of pilot implementation of FATİH project, which is a nationwide project started during 2012 spring semester. The pilot implementation included 49 secondary and 3 elementary schools in 17 cities representing all regions of Turkey. On the project, tablet computers were distributed to 3 or 4 of the 9th grade classes including teachers for each pilot school, and an interactive whiteboard specifically designed and developed for this project was installed in the classrooms where those students take lessons. Moreover, each pilot school was provided with document cameras and a multi-function printer. As seen in Picture 1 interactive whiteboard has three parts; the electronic part, white board and chalkboard. Electronic part, which was like a large tablet PC, has functions like a computer. A teacher can use the electronic part and the white board simultaneously. To use the chalkboard part, on the other hand, the white part should slide in front of the electronic part.

Figure 1

Interactive Whiteboard



Tablet computers have Android operation system and they can be connected to Internet near the electronic board. Students are not allowed to access Internet via tablet PCs at home. They could not use any external storage tools as well. This means there is no transfer of information between electronic board and tablets PCs at the time of investigation. The teachers who teach in pilot classes also took tablet PC with the same properties as the students' tablet PC. Students could take lecture notes and download course materials from Education Informatics Network (EBA) by using the tablet PCs. Thus, while the teacher shows a course material on the electronic board, students could open the same materials on their tablet PC.

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In this study, evaluation data were gathered from 4 cities and 8 pilot schools in the Eastern Anatolia Region of Turkey. During the project evaluation, three types of data collection methods were administered. Firstly, comprehensive questionnaires were administered to understand the perspectives of administrators, teachers, students and parents. Secondly, each school was visited and at least three lectures were observed in a classroom equipped with the technology. Lastly, formal group interviews were conducted with administrators, teachers, students and parents. Because pedagogical problems about learning environment are mostly concerned with teachers, students and school principals, results obtained from parents were not presented in this study.

Instruments

Pedagogical problems faced by teachers and students were in the scope of this study. The teachers, students and school principals took questionnaire and they were interviewed to determine pedagogical problems related to the project.

The teachers' questionnaire includes 11 questions, students' questionnaire includes 12 questions and school principals' questionnaire includes 6 questions related to possible pedagogical problems the teachers and students are likely to confront during the project. Questions were Likert type with 5 scales.

There were four teams in the project evaluation, which conducted evaluation in different regions of Turkey. Two of the teams developed the questionnaires used in this study. There were five researchers in both teams. Other teams were responsible for reviewing the questionnaires. For the teachers' questionnaire, other 6 experts also reviewed the questionnaire and 2 cognitive interviews were conducted with teachers. After the main implementation, a reliability analysis was conducted for each dimension of questionnaire for teachers and reliability ranges were found between Cronbach's alpha 0.83–0.95.

Field Formal Group Interviews

Data was collected from unnatural group interviews. They were not natural group interviews because all of the participants know each other, the number of participants in each interview is less than five most of the time, and interviewees rarely talked to each other (Gall & Gall, 2003; Marshall & Rossman, 1999). Researchers investigated more than one field; therefore, each field was considered as an individual entity (Gall, et. al, 2003). Interviews were not conducted individually because a social desirability issue might be faced in this kind of study. In most schools, teachers already felt that they are inquired about their technology use although researchers explained that they are not exposed to evaluation in this study. Thus, teachers might have felt anxious in individual interviews and give dishonest answers. Therefore, group interviews were preferred for the teachers and students.

Data Collection Procedure

The teachers and school principals were notified about questionnaire implementation process at least two days before. MoNE had already informed schools about evaluation process. Questionnaires were published online and printed

by the researchers in case of any problem with Internet access. The teachers, students and school principals answered the questions at school time. Questionnaire implemented to the teachers, students and school principals as seen in Table 1.

Table 1

Number of Participants Filled out the Questionnaires

<i>City</i>	<i>The number of teachers</i>	<i>The number of students</i>	<i>The number of school principals</i>
Erzurum	44	183	8
Rize	44	248	11
Erzincan	33	89	2
Bingol	46	147	10
Total	167	667	31

Interviews were conducted one month after the implementation of questionnaire. On interview day, the teachers, students and school principals were interviewed in schools' meeting rooms. Teachers, students and school principals in 8 pilot schools participated in the study. Teachers and students, who participated in interviews, were using interactive whiteboards and they were distributed tablet computers. As indicated before, only 9th grade high school students were given tablet PCs and interactive whiteboards were established in those classrooms. The research team invited those teachers, students and school principals to the interview; there was no one who did not want to participate in interviews. Interviews took about one hour for each session. At least two researchers took part in interviews. The interviews were taped electronically and transcribed. One interview group of teachers, students and school principals was formed in each pilot school. There were 3-5 teachers, 7-8 students and 1-2 school principals in each interview group. There were both male and female participants in the groups.

Data Analysis

Firstly quantitative data were analysed. Then interview questions were constructed to reveal the important results of the questionnaire. A descriptive approach was used to show the results and more explanation were given by using interview transcribes. Questionnaire data were analysed with SPSS 20. Transcribed interviews were analysed with Nvivo 7. To provide reliability in interview analyses two researchers constructed the main themes together and then an inter-rater reliability was conducted. According to Miles & Huberman (1994) reliability analysis, two researchers coded several pages of interview transcriptions separately and reliability score was calculated as 0,85. To resolve conflict two researchers got together and conflicts were removed.

Results

Pedagogical Problems Encountered by Teachers

According to Table 2, many participant teachers agree that students’ attention on the course decreased due to immense interaction with tablets (38%), classroom management got more difficult due to the students’ interest in the tablets (35%) and ICT increased their workload outside the classroom (35%). On the other hand, more than half of the teachers disagree with statements such as; the course content was not applicable for using information technologies, ICT challenges their leadership role in the class, their previous teaching methods and techniques are not satisfactory enough, dependence on interactive board makes difficult to manage classroom and in-class communication and interaction with students decreased.

Table 2

Pedagogical Problems Encountered by Teachers: Results of the Quantitative Data

Pedagogical problems: Please express your opinion about problems listed below regarding FATİH project.	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
Students’ attention on the course decreased due to immense interaction with tablets.	149	f 13 % 9	36 24	31 21	38 26	18 12	3.15	1.19
Classroom management got more difficult due to the students’ interest in the tablets.	148	f 12 % 8	38 26	35 24	34 23	18 12	3.12	1.17
It increased my workload outside the classroom.	149	f 13 % 9	42 28	32 21	34 23	18 12	3.07	1.19
I can use body language and eye contact less now.	149	f 12 % 8	43 29	36 24	39 26	8 5	2.99	1.08
In-class communication and interaction with students decreased.	149	f 17 % 11	61 41	30 20	27 18	8 5	2.68	1.10
The project was not compatible enough with the curriculum.	147	f 15 % 10	63 43	33 22	18 12	8 5	2.66	1.07
Teaching methods and techniques I used previously were not sufficient.	148	f 20 % 14	54 36	37 25	23 16	4 3	2.63	1.05
My dependence on the interactive board challenge my classroom management	145	f 18 % 12	58 40	38 26	21 14	3 2	2.58	1.00
It challenges my leadership role in class.	149	f 28 % 19	57 38	35 23	18 12	6 4	2.47	1.08
Position of the interactive board affected the seating arrangement negatively.	149	f 26 % 17	65 44	29 19	12 8	6 4	2.44	1.07
The content of my course was not applicable for using information technologies.	149	f 41 % 28	65 44	17 11	15 10	7 5	2.22	1.17

According to interviews, there were six main problems that teachers encountered. Although it is not a certain aspect of pedagogical problems, most of the teachers mentioned about lack of technical skills. Table 3 shows the themes and frequencies revealed in interviews.

Table 3

Pedagogical Problems Encountered by Teachers: Results of the Qualitative Data

Codes obtained from analysis	Groups of Citation				
	Number of Groups	Number of Citation	Number of Student Groups	Number of Teacher Groups	Number of School Principal Groups
To use the technologies lacking of skills was felt	10	21	3	3	4
Workload increased	8	10	1	4	3
Classroom management got more difficult	8	15	6	1	1
Teachers receiving assistance from students	5	7	2	2	1
Teachers' eye contact with the class decreased	3	5	1	2	
Teachers' motivation decreased	1	1		1	

All interview groups state that teachers felt lacking of skills to use the technologies effectively. Some citations supporting this theme are given below in this context:

“I know some colleagues are trying to use them and get efficiency at highest extent, but some of them cannot manage it. They use them just as an overhead projector...” (School principal)

“Teachers need training, as I said. We are used to it thanks to the pilot scheme; but others don’t have required skills to use technology. There should be a guiding program or smart people. In my opinion, the biggest problem with the board is the lack of that connection in general...” (Student)

“Maybe it is because I am not an expert, but I spend even more time now. Still, I don’t know many things...” (Teacher)

“But I need training first. It could be 4 times totalling 1 hour a day. We need a qualified computer teacher rather than a teacher with little knowledge and expertise. They can give courses for 5 or 6 people for a while, not for a crowded group at one time, like 30 ...” (Teacher)

It is understood from interviews that although it isn’t a direct pedagogical problem, mostly it was indicated that with the project workload of the teachers increased. Most of the teachers pointed out that they spend a lot of time outside classroom to learn those technologies in order to be able to use them effectively. They say that they need extra time for preparing materials and good content to use the technology. Other interview groups, too, indicate that teachers’ workload increased. A few examples quotes draw attention to the issues are presented below:

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“I said before that we already suffer from heavy workload. We have to cope with regular courses, examination anxiety for students and we are rushing to work. Now there is another task in hand! This time we have to consult others, which is challenging for us. I said yesterday too, I could not keep up with the curriculum in the 9th grade for the first time. It accelerated us. ...” (Teacher)

“They are even more interested. They are struggling more and solving more problems than before. Also teachers are complaining that we are spoiled by tablets and we do not study hard any longer.” (Student)

“It is all over Turkey, but it needs much time as every teacher is not able to do that satisfactorily...” (School principal)

Some of the teachers complain about the fact that they cannot make enough eye contact with students due to using these technologies in the classroom. Students point out the same.

“We lose eye contact with the teacher...” (Student)

“Am I turning too little for eye contact? Is failure because of this? Actually I am turning back to ask if they need clarification. But not as efficient as before...” (Teacher)

“Tablets lose eye contact...” (Teacher)

Another pedagogical problem stated by the interview groups was related to classroom management. It was stated that classroom management gets more difficult as a consequence of the innovations introduced. Interview groups emphasized that because students use their tablets and teachers focus on using the technologies in class classroom management became harder. Relevant excerpts are as follows:

“Students sometimes concentrate on irrelevant content in their tablets while teachers are teaching the lesson...” (School principal)

“Some friends in the classroom are not listening to the teacher when s/he is teaching the lesson. They are dealing with their tablets. When the teacher tells them off, there is disagreement in the classroom. Then when we ask, our friends just repeat our questions. They do not follow what we say...” (Student)

“They are playing games during the lesson. Although the teacher warns them, they continue playing...” (Student)

“I have seen many times. While I am teaching the lesson, some students open their tablets without showing me the monitor. I cannot control what they're doing then, so I want to close it...” (Teacher)

“I caught my students playing basketball or racing game in tablets three or four times. The teacher is obliged to check them one by one without touching the board, but you cannot do anything on the board then ...” (Teacher)

Pedagogical Problems Encountered by Students

Table 4

Pedagogical Problems Encountered by Students: Results of the Quantitative Data

	N		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
They face problems while doing homework requiring research.	626	f	113	134	81	101	197	3.27	1.51
		%	18	21	13	16	31		
They cannot do their homework on tablets.	628	f	153	179	107	93	96	3.22	1.52
		%	24	29	17	15	15		
Lack of eye contact between teacher and students; focus on tablets, and following the lesson with heads down decrease interaction with teacher.	630	f	166	192	116	75	81	3.02	1.38
		%	26	30	18	12	13		
Students face difficulty in taking notes during lessons because of using tablets.	631	f	119	127	122	148	115	2.96	1.45
		%	19	20	19	23	18		
Students face difficulty in following the lesson because of using tablets.	625	f	133	136	101	128	127	2.69	1.39
		%	21	22	16	20	20		
They don't know how they should study on tablets.	625	f	121	98	81	141	184	2.65	1.43
		%	19	16	13	23	29		
Attention and concentration on the lesson decrease.	631	f	190	155	122	86	78	2.46	1.32
		%	30	25	19	14	12		
Sense of failure increases.	637	f	189	179	126	70	73	2.38	1.29
		%	30	28	20	11	11		
Using of tablets and interactive boards in class hinders attending in lesson.	633	f	200	179	131	60	63	2.28	1.24
		%	32	28	21	9	10		
Feeling bored due to the slow pace of lesson.	636	f	254	218	84	39	41	2.25	1.30
		%	40	34	13	6	6		
Distracted from using technology in lessons.	633	f	210	195	127	46	55	2.05	1.17
		%	33	31	20	7	9		

As seen in Table 4, majority of the students disagree that information technologies affect learning negatively. More than half of the students disagree on the statements such as concentration and attention on the lesson decreased, sense of failure increased, and attendance in lesson decreased, learning is not permanent and interaction with teachers decreased. It is worth noting that 52 % of the students indicate that they do not know how to use informational technologies for studying.

Qualitative analysis as seen in Table 5 showed eleven main themes related the pedagogical problems encountered by students.

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Table 5

Pedagogical Problems Encountered by Students: Results of the Qualitative Data

Codes obtained from analysis	Groups of Citation				
	Number of Groups	Number of Citation	Number of Student Groups	Number of Teacher Groups	Number of School Principal Groups
Attention on the lesson is distracted.	12	28	8	2	2
Students spend their time outside class with these technologies.	11	18	4	5	2
Student became passive.	6	17	5		1
Students play games on tablets.	7	19	3	2	2
Academic achievement decreased.	6	11	3	3	
Students' hands are getting lazier.	4	6		4	
Students are not listening to the lesson.	2	4	1	1	
We cannot take notes because teachers teach the lesson at a fast pace.	3	3	3		
Interaction among students decreased.	2	3	2		
Lasting learning is not achieved.	1	1		1	
It affected our imagination negatively.	1	1	1		

The results demonstrate that all of the interview groups complain about the fact that students become distracted during lessons as a result of the innovations introduced.

“Some friends in the classroom are not listening to the teacher when she/he is teaching the lesson. They are dealing with their tablets. When the teacher warns them, tension happens in the classroom. Then when we ask, our friends just repeat our questions. They do not follow what we say....” (Student).

“I caught my students playing basketball or racing game in tablets three or four times. The teacher is obliged to check them one by one without touching the board, but you cannot do anything on the board then ...” (Teacher)

“Students sometimes concentrate on irrelevant content in their tablets while teachers are teaching the lesson...” (School principal)

“They might go into games secretly during the lesson only if they can manage. They can do it outside the lesson and stay distracted from the lesson...” (Trainer Teacher)

All of the interview groups also point out that the innovations brought by the F@TİH project have a negative influence on students. They complain that students spend most of their free time engaged in technology, they even do not go out during break time and they are mostly busy with the interactive whiteboard or tablets. These complaints are also evident in the quote provided below:

“I haven’t seen any changes. There were crowds of students in the school yard before. But nobody goes out after the tablets. Everybody is playing games on their tablets...” (Students).

“For example I do not see any students going out during break hours any longer...” (Teacher)

“The students were playing a video clip on the interactive whiteboard. Of course we are not against it but they are at school and they shouldn’t do it in class....” (School principal)

“You know, they are more knowledgeable than us. Once I found in a class that students opened music files all over the board. Imagine!...” (Trainer Teacher)

Another pedagogical problem of the technologies on students is that the technologies turn students into passive learners. Sample excerpts related to these complaints are as the follows:

“Yes, we cannot take notes either because we do not listen to the lesson. Success level decreases in this case because it is more lasting when you take notes...” (Student)

“Students prefer one-by-one interaction with the teacher. In the past, it used to be a surprise when the teacher draws a question on the board. But it is not a surprise for students anymore! They can look and see the question all of a sudden. Their mind is almost blocked. The magic disappeared. Students are not curious about what the teacher draws on the question. They are in a hard situation now because creative thinking way and curiosity was lost, ...” (Teacher)

“We need to note that there is a traditional education understanding. You read and take notes or underline, etc. At what extent did children use to have those habits? At what extent did they lose them? In what way are they affected from them?” (School principal)

Discussion and Conclusions

This study investigates pedagogical problems that were encountered by students and teachers upon launching of the nation-wide technology integration project. Both qualitative and quantitative findings show that teachers felt that they do not have enough ability to use the technologies effectively, they have difficulty in classroom management, they lost their leader role in the class, and they lost their communication and interaction ability with their students.

Students disagreed with teachers on that technology has negative effects on their academic achievement, technology does not provide permanent learning, it restricts student-to-student interaction and communication and that it restricts their imagination. However, according to the qualitative data, it was found that these technologies cause many pedagogical challenges such as new classroom

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technologies' distracting students' attention, leading students' spending most of their time with them, causing students to become passive learners and use these technologies for gaming only.

Teachers believe that as learning becomes individualized, it is disturbed by the implementation of the project. The underlying idea is that students pay much attention to these new technologies and disconnect from the learning context. Results of several studies support that using mobile devices in classroom causes distraction in learning (Kraushaar & David, 2010; Sana, Tina, & Nicholas, 2013; Wood, Zivcakova, Gentile, Archer, De Pasquale, & Nosko, 2012). According to the "attention theory", quality and quantity of the information processed is affected from the degree of attention towards the task (Sana, Tina, & Nicholas, 2013). Since tablet computers have not been used effectively but they also carry many different activities that attract students' attention, students' learning might have been influenced negatively as teachers stated.

In most of the cases, time to learn new technologies causes some problems in technology integration (Butler & Sellbom, 2002). In this study, teachers have not stated such a problem but they complained about lack of knowledge to integrate them into their teaching, similar to the results found in literature (Ghavifekr, Kunjappan, Ramasamy, and Anthony, 2016 & Gil-Flores, Rodríguez-Santero, & Torres-Gordillo, 2017). In fact, the new technologies mentioned are not so different from the technologies that they used before. Interactive whiteboards were like a large tablet computer, which has a Pardus or Windows operating system, thus teachers using computers, has no problem with using them. This situation made teachers keep using the new technologies that are similar to the one they often used in the past (Butler & Sellbom, 2002). Thus, teachers did not have difficulty in using them in teaching as long as they found beneficial resources to show on interactive whiteboards. In fact the difficulty for the teachers was that to prepare course materials to be used on interactive whiteboard not to use technologies in technical meaning.

Teachers' belief about the benefits of innovations has a significant effect on their decisions to use educational technologies (Mumtaz, 2000; Ertmer, 2005; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010). In parallel with this belief, in this study, teachers have not reported a significant problem with using interactive whiteboards since they have used them at least to show presentation slides. However, they expressed many negative issues related with tablet computers. As Ottenbreit-Leftwich et al (2010) stated, if teachers observe a positive relationship between technology and learning engagement of students, their value beliefs associated with their students increase. However, present study revealed that since there are not enough course resources integrating interactive whiteboard and tablet PCs, they were not used effectively and they cause distraction on students' attention in the class. Therefore, to avoid students' using tablet PCs for out-class tasks, some technical solutions might be developed like locking tablet PCs during the class. Also more interactive programs should be developed to provide interactive whiteboard – tablet PC integration. Contrary to teachers, students stated very few pedagogical problems related with tablet computers. One reason might be that they were not aware of how

technology can be used effectively for pedagogical purposes. Another reason might be that students have already used tablet PC's for different purposes and they were pleased with doing so.

This study is conducted in the eastern part of Turkey. Students in that region have lower socioeconomic status comparing with the other regions. Therefore, this project has more value for them in terms of meeting new technologies for the first time. Therefore, students' reactions towards new technologies might be called as novice effect. Many technical problems were reported by teachers since the project is in its first year for both interactive whiteboards and tablet PC's. This might influence the perspectives of teachers. These two issues might be assumed as limitations in this study. In the first implementation, there are not many resources and course materials available in interactive whiteboards and tablet PCs. However, these materials have been developed for each course and tablet PC's might be used effectively after new resources and materials are added.

In accordance with the results, researchers recommend that the extent at which technical problems cause pedagogical problems should be investigated. To do this, time series measurement should be taken since technical problems are solved gradually. Similarly, after the establishment of new resources and course materials, new measurements should be taken. Effective use should not be associated only with the technology itself. Teachers' beliefs and other external factors should be investigated too.

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