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Reflections on the Use of Technology in Classroom: The case of FATİH Project

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Abstract

Educational environments that previously only made use of a blackboard and chalk have now been replaced by student-centric ones, rich with materials and supported by technology. This evolution will inevitably lead to a number of differences in the educational environment. The objective of the present study is to reflect on learning environments enhanced with interactive boards and tablet computers within the scope of Fatih project. The changes in the teacher's class preparation and in the behaviors of both the students and the teacher in the classroom were examined, as well as the differences in teaching practices. Furthermore, the problems occurring during the implementation phase of the project were established. Action research (researcher teacher) method was used in this study and data was gathered from video recordings (each teaching practice was video-recorded), the researcher's journal and observations. The students' communication with the teachers, as well as among themselves, was improved and it was also observed that some students, who did not participate in class in the conventional learning environment, showed more active participation. Technological problems encountered by students in the classroom, as well as the activity based problems, caused students to move around the classroom, thus creating new levels of communication even among the students who previously had not interacted that much. A limited and slow internet connection, together with a lack of sufficient learning content, are some of the main problems that limited tablet computer use for some of the students. Such problems hindered the motivation of both the teacher and the students, causing the students to lose concentration and focus on non-class-related activities.

Key words: technology enhanced teaching, student and teacher behaviors, fatih project.

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Introduction

Computers are used for communication, research, engineering, and entertainment purposes, among others, and their use for education purposes is also gaining in importance. To keep pace with this evolution, Turkey has been implementing one of the most extensive technology and education projects in the world, namely the Fatih Project. The project aims at providing interactive boards and internet infrastructure to all schools from primary to secondary level and providing tablet computers to all lower- and upper-secondary students and teachers.

Technology use encourages students to focus on the learning process. Thereby students' motivation and self-confidence increase, resulting in better cognitive skills as well (Heafner, 2004). This is why curricula in Turkey and in other countries express the need for using technology in classrooms, and require teachers to make use of technology in their classes (MEB, 2013).

To achieve real transformation in education, technology enhanced teaching should be accompanied by active interaction. Although there is no clear guidance on how to achieve this transformation, creating change is ultimately the job of teachers, supported by school administrations. Utilization of learning environments is key to improve teaching.

Significance of the Study

In a recent study, Altın (2014) examined Fatih Project on the basis of the views of students, teachers, administrators and parents. In this study, teachers said tablet computers were not used for education purposes, and parents said tablet computers made students lazy and decreased student achievement. The study is important in terms of understanding reasons for not using tablet computers in education, and their effects on the class environment when used.

The study is expected to reflect changes in the learning environment as a result of tablet technology. Studies on use of this technology in the classroom would contribute to the development of appropriate strategies for more effective use of the technology and to ensuring that expected benefits from investments are obtained (Türel, 2012). Identifying consequences of integrating technology into math classes is very important in terms of the steps to be taken in this process.

The overall finding of a study conducted in the UK on the use of interactive boards is that it changed learning processes, but had no measurable impact on achievement. Studies conducted fail to provide adequate guidance to teachers on what to do to translate the effects of interactive boards on class discussions and pedagogy into a similar and positive effect on learning (Higgins et al., 2007)

Research Questions

The objective of the present study is to reflect on learning environments enhanced with interactive boards and tablet computers within the scope of Fatih Project. The changes in

the teacher's class preparation and in the behaviors of both students and teacher in classroom were examined, as well as the differences in teaching practices.

To this end, answers are sought to the following research questions:

- (1) How does the teacher's class preparation change when designing technology-rich learning activities?
- (2) How do teaching practices differ in learning environments enriched by interactive boards and tablet technology?
- (3) How do class interaction and teacher/student behaviors differ in learning environments enriched by interactive boards and tablet technology?
- (4) What are the problems encountered in the implementation of the project?

Methods

The research method used for this study was action research (researcher teacher). The study was conducted by the researcher in the 2015-2016 academic year in a high school that participated in the Fatih Project. Data were collected from video recordings, the researcher's journal and the researcher's observations. To this end, each teaching session was video-recorded and the records were then analyzed.

Findings and Results

In the process of class preparation for ordinary learning environments, textbooks and ancillary sources are consulted frequently, whereas the internet is only used to find sample questions for practice and assessment purposes. In the case of technology enhanced learning environments, on the other hand, internet makes up an important portion of class preparation. The interactive board was used to display videos to generate attention to the topic during introduction.

The EBA platform of the Ministry of National Education offers a rich variety of games, e-content, e-books, e-journals, videos and audio recordings in one place, but they are not always sufficient for individual courses. Therefore, class preparation usually requires a long process of research. The teacher had difficulty finding computer enhanced activities that are in line with the textbook and learning objectives of the course. The teacher made use of the Geogebra interactive math software for many activities involving geometry and function graphs. The teacher accessed many course materials via the geogebra.org website, or submitted own materials to the site.

The ability to submit assignments in the digital environment removed time and space limitations. Using computers to visualize the topic of parabolas and other geometry topics helped students concretize the concepts. When designing parabola activities for tablet computers, the teacher changed the sequence of the acquisition of gains.

Students conducted activities in class, with the help of the internet, using many sites including geogebra.org and teachmathematics.net. Activities they can easily access over the internet remove many of the computer and connectivity related problems, and results in more effective learning. In addition, students can access the activities in any environment where internet connection is available.



In learning environments enriched by tablet technology, student participation is affected by technology literacy in addition to academic achievement. Students literate in technology make an effort to participate in activities, as long as they are provided with math activities suitable for their levels.

In the class environment enriched by tablet computers, failure of some students to perform the activities on their tablets increased the workload of the teacher. The teacher moved around the classroom more, and paid individual attention to students' issues. However, the teacher had difficulty dealing with all issues encountered by students.

When the limited number of activities prepared for the session were not suitable for a student's level, the teacher was unable to replace the activity with a better one. This is because tablet activities require a significant amount of preparation. When the teacher reverted to the classical learning environment to achieve learning objectives, student motivation declined.

In the classical learning environment, the seating arrangement was fixed, and students had rarely changed places during the three-month period of observation. In the class environment with tablets, however, students were observed to leave their seats without asking for permission, citing connectivity problems and failure to complete an activity. After a while, students found it normal to move around the classroom during the class session. In these movements, students with high levels of academic achievement and technology-literate students came together to solve their problems. Students who never talked to each other in class in the three months spent in the traditional learning environment were observed to sit together.

In activities where two students shared one tablet, interaction between students improved, connection speed increased because the number of tablets in the classroom was smaller, and fewer computer-related problems were experienced.

Activities involving games or contests where the whole class or groups of two compete against each other resulted in increased motivation. Even though they had tablet computers in their hands, students rarely accessed online games or social networks during class. This was also the case in the traditional learning environment.

Lack of a sufficient number of high quality Turkish websites for math education results in the teacher resorting to websites in foreign languages, but this creates linguistic problems for the teacher and the students.

Internet connection provided by schools is slow, preventing students from making effective use of their tablets in class. Because of security features in tablet computers, automatic updates delete not only games installed, but course-related documents and textbooks as well.

Problems such as failure to charge or connect to the internet are common in tablet computers. When students notify the responsible teacher, these computers are sent for repairs. Three students in the class, however, failed to notify the responsible teacher despite experiencing problems with their tablet computers. Tablet computers are not very attractive for students because they limit access to frequently visited sites and social networks. Software installed by students to access these sites slow the computers down.

Conclusion and Recommendations

To improve the effectiveness of the project, a new curriculum should be developed rather than integrating computer supported activities into the existing curriculum.

The slow speed of internet connection in schools results in connectivity problems and prevents the performance of certain activities. Connectivity problems should be solved for more effective instruction.

Tablet computers and the internet connection provided by the Ministry of National Education prevent access to many foreign websites for security reasons. This makes it impossible to access many websites that offer rich educational materials. Measures taken for digital security should be revised. Limited use offered by tablets results in students shunning their use altogether.

Websites that offer content suitable for tablet education require paid membership because preparing the activities and the games is a costly process. To utilize these games and activities in their own tablets during the class session, students need to purchase membership, which adds to the cost of education significantly. Teachers and software experts employed by the Ministry of National Education should work together to develop similar activities and games for the EBA platform.

Because students have their own tablets and work on their own activities, instruction becomes individualized. Using suitable activities, students can be encouraged to play a more important role in the process of education, and a student-centered approach to education can be developed.

Tablet computers offer certain advantages in learning environments compared to desktop and laptop computers because they are easy to carry around and have long battery lives. However, there is a lack of visual, auditory and game-based activities to be used. E-books that contain videos, audio files and activities suitable for tablets should be designed.

Students are expected to take their tablets home and use them for educational purposes outside the school as well, but mechanisms concerning internet access at home (such as secure use of the internet, off-school access, etc.) are still at the design stage.

If tablet computers are not used for a certain period of time, they need to be updated using an activation code to be obtained by the teacher from the EBA system. When students keep their tablets after graduation but are unable to use them, this would result in technological waste.

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