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Journal of Social Studies Education Research
Sosyal Bilgiler Eğitimi Araştırmaları Dergisi

2011: 2(2), 43-59

Teacher and Student Perceptions about Technology Use in an Elementary School in Ankara

Ankara'da bir İlköğretim Okulunda Teknoloji Kullanımına Dair Öğretmen ve Öğrenci Görüşleri

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Abstract: *In the present study, the perceptions of two important stakeholder groups (teachers and students) were examined at the same time to have an insight about the current state of technology use in an elementary school in Ankara. The participants of this study included 35 elementary school teachers and 81 students, and the data were collected through two different questionnaires for teachers and students. The results of the study indicated that both teachers and students have positive perceptions about the value of technologies in educational settings. Teachers' most frequently used technologies were computer and internet and they used these technologies mostly for class preparation activities. A majority of teachers have low competency levels for computer use and the most important barrier to their technology use was their lack of technology related knowledge and skills. Looking from both teachers' and students' perspectives, the results of this study would provide valuable insights about how to improve technology integration process in educational settings.*

Keywords: *Technology Use, Teacher Perceptions, Student Perceptions, Elementary Schools*

Özet: *Bu çalışmada, okullarda teknoloji entegrasyonu konusunda önemli role sahip olan iki farklı paydaş grubunun (öğretmen ve öğrenci) görüşleri alınarak, Ankara'da bir ilköğretim okulunda teknoloji kullanımının araştırılması amaçlanmaktadır. Bu çalışmanın katılımcıları 35 öğretmen ve 81 öğrenciden oluşmaktadır. Bu çalışmadaki veriler araştırmacı tarafından geliştirilen, öğretmen ve öğrencilere özel iki farklı anket aracılığı ile toplanmıştır. Çalışmanın sonuçları incelendiğinde, öğretmen ve öğrencilerin teknolojinin eğitim ortamlarında kullanımı konusunda olumlu düşüncelere sahip oldukları görülmüştür. Öğretmenlerin en sık kullandığı teknolojilerin bilgisayar ve internet olduğu ve öğretmenlerin teknolojiyi en çok derse hazırlanma sürecinde kullandıkları anlaşılmıştır. Ayrıca, çoğu öğretmenin teknoloji kullanımı konusunda kendisini yetersiz gördüğü ve öğretmenlerin*

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teknoloji kullanımına en önemli engelin, onların teknoloji ile alakalı bilgi ve becerilerinin yetersiz olmasından kaynaklandığı görülmüştür. Okullarda teknoloji entegrasyonu konusunda önemli role sahip olan iki farklı paydaş grubunun (öğretmen ve öğrenci) algılarının araştırıldığı bu çalışma, okullarda teknoloji entegrasyonu sürecinin geliştirilmesi konusunda faydalı bakış açıları sunmaktadır.

Anahtar Kelimeler: *teknoloji kullanımı, öğretmen görüşleri, öğrenci görüşleri, ilköğretim okulları*

Introduction

In this century, teachers are required to integrate technology in ways that "their students achieve success in learning, communications, and life skills, as well as becoming technology literate in the process" (Dias & Atkinson, 2001, p.2). Since the world is technologically oriented, the students need to master new technologies in order to answer the requirements of information age (Li, 2007). Therefore, while setting educational policies in many countries, the policy makers investigate the ways for preparing the students for the current technologically oriented society (Çağıltay, Çakıroğlu, Çağıltay & Çakıroğlu, 2001). Since most policy maker believe that high access to technologies likely to result in major improvements in teaching and learning (Cuban, Kirkpatrick & Peck, 2001), substantial investments have been made in educational technology (Bebell, Russell, & O'Dwyer, 2004). As technologies became more available in schools, educational researchers are challenged to explore the value of technology use in educational environments (Baylor & Ritche, 2002).

According to Yıldırım (2007), the use of technologies in educational settings is related to many social, economic and pedagogical benefits. The author explained that the use of technologies has a great value in "improving communication and collaboration among students and teachers, and in reforming teaching and learning tasks" (p.172). Çağıltay, Çakır, Çağıltay and Çakır (2001) found that Turkish teachers have positive beliefs about technology use as they thought that the use of technologies increases the quality of education. The participant teachers also

expressed that technology use has some positive effects on the students, such as it increases the students' knowledge and skills, their interest and motivation to the lesson. In a current study, Karaca (2011) also found that Turkish teachers have positive beliefs and attitudes towards using technologies and the teachers thought that the use of technologies positively impacts students' achievement in the lessons and it increases their participation, motivation and interests to the lessons. It was emphasized in the literature that when teachers believe that technology is useful and it has a potential to improve teaching and learning, they are more likely to use technologies in a variety of ways (Teo, 2009; Zhao & Frank, 2003).

Although teachers have positive beliefs about technology use and they have more access to technologies both in classrooms and at home, their use of technologies is still low (Doughty, Leu, Spuchec, & Yonai, 1995; Ertmer, 2005; Adıgüzel, 2010). According to Cuban et al. (2001), most teachers and students are occasional to rare users or they are nonusers of technology in classrooms. Furthermore, a snapshot survey conducted in elementary schools in Ankara, showed that most of the elementary teachers are rare users or nonusers of technology (Yüzgeç, 2003). Also, Adıgüzel (2010) found that teachers rarely use computer technologies in their lessons. In the literature, many different studies have been conducted to find out the factors that are responsible for teachers' limited use of technologies. For example, after a huge literature review and research, Ely (1999) found eight conditions that facilitate technology adoption in schools. These were (1) dissatisfaction with status quo, (2) existence of knowledge and skills, (3) availability of resources, (4) availability of time, (5) rewards or incentives exist, (6) participation, (7) commitment, and (8) leadership. In a more recent research, Hew and Brush (2007) made an extensive literature review about previous empirical studies, and they reached six main categories of barriers: (1) resources, (2) knowledge and skills, (3) institution, (4) attitudes and beliefs, (5) assessment, (6) subject culture. Furthermore, Ertmer (1999) made a categorization of barriers including first-order and second-order barriers. The

first order barriers are external to the teachers and included types of resources, such as equipment, time, training and support; and the second order barriers were internal to the teachers and included teachers' beliefs about teaching computers and their willingness to use computers in their lessons.

In addition, Çağıltay et al. (2001) revealed that the most important barriers that Turkish teachers might face while integrating technology were related to lack of availability of technologies and lack of technology training. Also, the teachers stated that the curriculum was not appropriate to integrate technologies. According to Adıgüzel (2010), the most important factors affecting teachers' use of instructional technologies were teachers' lack of technology knowledge and skills, overcrowded classrooms, access to technologies, technical and principal support.

As technology becomes more available in educational settings, it is important to investigate the ways to integrate technologies into the lessons (Dias & Atkinson, 2001). It is emphasized in the literature that all the main stakeholders including researchers, policy makers, and parents should be involved in the technology integration process (Li, 2007) in order to design an educational environment that will best meet the future needs of all the students (Peck & Carr, 1997). Therefore, it is significant to explore the perceptions of these main stakeholders for understanding how to involve them in the technology integration process. For this reason, this study seeks to understand perceptions of two important stakeholder groups in elementary school settings: teachers and students. Since "the decision regarding whether and how to use technology for instruction rests on the shoulders of classroom teachers" (Ertmer, 2005, p. 26), their perceptions are critical to be investigated. Also, the perceptions of the students are important to be examined since they are the mostly affected persons by technology implementation (Li, 2007). Consequently, the perceptions of both teachers and students would provide valuable insights about how to improve technology integration process in educational settings. This study, therefore, explores teachers' and students' perceptions about technology use in an

elementary school in Ankara, Turkey. With respect to the aim of this study, two main research questions were proposed:

1. What are the teachers' and students' perceptions about technology use in an elementary school setting?
    a. What is the current state of technology availability?
    b. How do teachers use technologies in their lessons?
        i. How often do teachers use technologies in their lessons?
        ii. What are the teachers' purposes for technology use?
        iii. What are the teachers' perceived computer competencies?
    c. What are the barriers that influence teachers' technology use in the lessons?
2. What are the teachers' and students' perceptions about the benefits of using technologies in the lessons?

Method

In this study, a descriptive case study was conducted to explore teachers' and students' perceptions about technology use in an elementary school in Ankara, Turkey. In this part, some information was provided about the participants and sampling, data collection and data analysis methods of the present study.

Participants and Sampling

This study was conducted in an elementary school located in the western part of the Ankara, in Turkey. This school has a good deal of technological media and materials, and most teachers were qualified in their field. Nearly all the classes were occupied with computers, internet and projectors and there are some classes for special subject fields including a science and technology class, a technology and design class, a visual arts class, a library and two information technologies classes. There are 35 teachers and 815 students in this school. All the teachers (n= 35) in this school participated to this study. While selecting the participant students, the

researcher decided to include 10% of the students in this school, which involves 81 students in total. The participant students were randomly selected from 6th, 7th and 8th grade students and 27 students from each grade level were participated to this study. The participant students included 54 girls and 27 boys.

In this school, there were 13 classroom teachers, 2 turkish language teachers, 2 social studies teachers, 2 mathematic teachers, 3 science teachers, 3 english language teachers, 4 technology and design teachers, 1 information technologies teacher, 1 religious culture teacher, 1 art, 1 music, 1 physical sciences and 1 pre-school teacher. As explained before, all the teachers in the participant school were included in this study. There were 31 female and 4 male teachers. 13 teachers were over 46 years old, 15 teachers were between 36 and 45 years old, and 5 teachers were between 26 and 35 years old. Most of the teachers (n= 16) were experienced teachers with more than 20 year teaching experience. In addition, 9 teachers had a teaching experience of 16-20 years, 4 teachers had a teaching experience of 11-15 years, and 3 teachers had a teaching experience of 6-10 years, and 3 teachers had a teaching experience of 1-5 years.

Among the teachers, 1 teacher used computers between 6 month and 1 year. Furthermore, 10 teachers had a computer experience of 1 to 2 years, 13 teachers had 2 to 5 years, and 9 teachers had a computer experience of more than 5 years. In addition, most of the teachers (n=18) stated to use computers less than 1 hour in a day. While 10 teachers expressed to use computers 1 to 3 hours in a day, only 4 teachers rated to use computers more than 3 hours in a day. Also, more than half of the participant teachers expressed that they learned how to use computers by having in-service trainings in their school. Also, 20% of teachers explained that they learned about computers by themselves. Only 14% of teachers learned about computers from their colleagues and 9% of teachers learned about computers in their undergraduate education.

Data Collection and Data Analysis Methods

In this study, data were collected through two different questionnaires developed by the researcher. While developing these questionnaires, the researcher benefited from the questionnaires developed by Çağıltay et al. (2001) and Yüzgeç (2003). In order to check the face and content validity of the instruments, the questionnaires were shown to 4 different experts. Depending on the expert comments, necessary revisions were made to the questionnaires. The teacher questionnaire consisted of two parts. The first part of the questionnaire involved some demographics and second part involved some questions about teachers' perceptions about technology use in their school. Second, the student questionnaire consisted of two parts. The first part of this questionnaire included some demographics and the second part involved a scale about students' perceptions of technology use in their school. The student questionnaire involved a likert type scale of 1 to 3 where 1 represents "disagree", 2 represents "partially agree" and 3 represents "agree".

Teacher questionnaires were distributed to all teachers in the school by the researcher and the student questionnaires were distributed to the students by the school administration. After data collection process, the data was analyzed by using descriptive statistics, which involves frequencies, means, percentages and standard deviations.

Results

Below, the findings of the study were given under six headings: current state of technology availability, teachers' technology use in the lessons, teachers' purposes for using technologies, teachers' perceived computer competencies, barriers that influence teachers' technology use, perceptions about the benefits of technologies.

Current state of technology availability

When asked about the adequacy of technologies in their school, a majority of teachers (89%) stated that there were enough computers and internet access in their

school. Also, many teachers expressed that there were sufficient television (86%), projector (77%), video player (66%), and overhead projector (%57), in their school. The least frequently rated technology was smart board.

Also, students were generally agree that the available technologies in their school were sufficient to answer their needs (M=2.02, SD=.76), and they have access to these technologies in their school (M=2.11, SD=.67). The students expressed that they can readily use IT classes whenever they need (M=2.36, SD=.77). Although the students have easy access to computers (M=2.57, SD=.76) in the school, they cannot readily acess to the internet (M=1.87, SD=.65).

Teachers' technology use in the lessons

The teachers were asked to report the frequency of the use of different technologies in the lessons. Most of the teachers use computer (60%), internet (46%) and projectors (43%) in their courses. Also, these technologies were the most frequently used technologies in the lessons. However, only one teacher stated to use Smart Board once a month in her lessons. It was the least frequently used technology in the lessons since 11 teachers rated to never use Smart Board it in their lessons.

On the other hand, students' ratings for teachers' use of computers were low (M=1.68, SD=.65). Their ratings for the use of television (M=1.18, SD=.41), video (M=1.36, SD=.62) and overhead projector (M=1.94, SD=.70) in the lessons were also low.

Teachers' purposes for using technologies

Teachers mostly used technologies for searching information (n=21, 60%) and for entering student grades (n=18, 51%). Also, some teachers reported using technologies for preparing lesson plan (n=13, 37%) and preparing instructional materials (n=13, 37%). Finally, teachers reported using computers least frequently for for presenting lessons (n=9, 25%), and demonstrating examples (n=7, 20%).

Teachers' perceived computer competencies

Teachers were asked to rate their computer competencies. Of the respondents, only one teacher stated to be "very good" in using computers. In addition, 5 teachers stated to be "good", 14 teachers were "avarage", 14 teachers stated to be "poor", and only one teacher stated to be "very poor" in computer use. In addition, the teachers were asked about their use of some common computer applications. Many teachers stated to use MS Office applications including, MS Word (60%), PowerPoint (37%), MS Excel (31%). In addition, most of the teachers (66%) expressed that they use e-mail programs.

Furthermore, the teachers were asked about their in-service training needs about technology use. Though 34% of teachers expressed their need for technology related in-service training, a majority of teachers (60%) stated that they did not need any technology training in-service training. Among the teachers, who expressed their need for technology related in-service training, 17 teachers wanted to have training about the use of MS Office applications. Also, 4 teachers requested training about basic computer use, 4 teachers about web design and only 1 teacher claimed to have training about internet use.

Barriers that influence teachers' technology use

The teachers were asked about the barriers that influence their use of technologies in the lessons. The most important barrier to technology use was related to teachers' insufficient knowledge and skills to use technologies. Furthermore, many teachers expressed that the lesson hours were not adequate to use technology. Furthermore, 11 % of teachers stated that they do not have enough time to prepare instructional materials. Although it was a technology rich school, 18% of teachers thought that there were not enough hardware in their school and 14 % of teachers talked about inadequate instructional materials available to be used in the lessons. A

small portion of teachers talked about the problems of inadequate in-service technology training (11%) and lack of technical support (6 %).

Perceptions about the benefits of technologies

The teachers were asked about the benefits of technology use in the lessons. 80% of the teachers stated that the use of technologies in lessons enhances learning environment. Also, many teachers stated that the use of technologies in the lessons increases permanency of learning (71%), and it makes the content more attractive (69%). Of the participants, 66% of teachers reported that use of technologies eases students' learning and 63% of them stated that it increases students' motivation. Finally, a small portion of teachers felt that use technologies is good for saving time (40%), for disclosing student' interests and abilities (29%), and for individualizing instruction (23%).

The students have also positive beliefs about technology use in the lessons. They thought that they learn better in the technology supported lessons (M=2.71, SD=.62) and so they become more successful in those lessons (M=2.56, SD=.71). Also, the use of technologies increases their motivation (M=2.52, SD=.71) and their participation to the lesson (M=2.57, SD=.67). Furthermore, the students expressed that they can better communicate with their teachers in technology supported lessons (M=2.34, SD=.75). Finally, the students mostly rated that they want to have more information about the latest technologies (M=2.86, SD=.42).

Discussion and Conclusion

In the present study, the perceptions of two important stakeholder groups (teachers and students) were examined at the same time to have an insight about the current state of technology integration in an elementary school in Ankara, Turkey. The findings of the present study indicated that teachers and students have generally similar perceptions about technology use in elementary school settings. Since this

study was conducted in an elementary school, which is well equipped with technological media and materials, all the stakeholders were agree that there were sufficient media and materials in this school.

The findings of this study showed that both teachers and students have positive perceptions about the value of technologies in educational settings. First, the students thought that they learn better and become more successful in the technology supported lessons. Also, they thought that the use of technologies increases their motivation and their participation to the lesson and they can better communicate with their teachers in technology supported lessons. Similarly, Li (2007) found that the students have positive beliefs about the effects of technology use, including increased efficiency, motivation and confidence, preparation for the future and pedagogical benefits. These findings were also supported by Yıldırım (2007) that technologies have a great value in "improving communication and collaboration among students and teachers, and in reforming teaching and learning tasks" (p.172). Furthermore, in the present study, the students were reluctant to have more information about the latest technologies. Similarly, Li (2007) found that the students were enthusiastic for frequent and better use of technologies in the lessons and they want to learn more about technology use in order to prepare themselves for the future workforce. According to the author, students should have positive attitudes and beliefs about technology use since they need to master new technologies in order to answer the requirements of information age.

Also, most participant teachers believed in the benefits of using technologies as they thought that the use of technologies enriches the learning environment, increases permanency of learning, makes the content more attractive, eases learning and increases students' motivation. This finding was supported by Karaca (2011), who revealed that Turkish teachers have positive attitudes and beliefs towards technology use. In the literature, teachers' belief and attitudes about technology use is

one of the most important factors affecting technology integration (Karaca, 2011, Teo, 2009; Van Braak et al., 2004). It is emphasized in the literature that when teachers believe that technology is useful and it has a potential to improve teaching and learning, they are more likely to use technologies in a variety of ways (Teo, 2009; Zhao & Frank, 2003).

This study results indicated that the availability and accessibility of technologies influences teachers' use of technologies in their lessons. Hew and Brush (2007) point to the importance of access to available technologies by saying that in order to integrate technology in to curriculum, technologies should be provided in the locations where teachers and students can use them. Since many classrooms were equipped with computers, projectors and internet in the participant school, these technologies became teachers' most frequently used technologies.

Also, the results showed that participant teachers mostly use technologies for preparation and evaluation activities, such as searching information, preparing lesson plan, preparing exam questions, entering student grades etc. On the other hand, very few teachers used the technologies for in-class activities like presenting lesson, demonstrating examples etc. This finding was supported by many studies that teachers mostly use technologies for class preparation activities, rather than for in-class activities (Karaca, 2011; O'Dwyer et. all, 2004; Yıldırım, 2007). Although the participant school has a good deal of technological media and materials, teachers' use of technologies is still limited to class preparation activities.

In this study, there were some differences between the views of teachers and students about teachers' use of technologies in the lessons. Although the teachers stated that they use computers and internet in their lessons, their use of technologies was still limited to class preparation activities, and they rarely use technologies for in-class activities. Since the students are exact observers of the teachers' performance in the lessons, they complained about that their teachers did not much frequently use

technologies in the lessons. In order to deal with this problem, Selwyn (1999) recommended locating more technologies in the classrooms so that teachers can readily use these technologies whenever they need. For improving teachers' technology use in the classroom environment, Ministry of National Education developed a nationwide project, called as FATIH project (Ministry of National Education, 2011), which aimed to provide Turkish Basic Education schools and classrooms with ICT technologies. However, as our findings indicated, providing access and availability to technologies, does not alone lead to teachers' high level of technology use (Ertmer, 2005). Therefore, using the results of this study, the policy makers should design and develop some strategies about how to support teachers in technology integration process. Considering the barriers found in this study, some professional and technical support facilities should be provided for teachers.

The findings of this study indicated that teachers' one of the most frequently stressed barriers to their technology use was their lack of technology related knowledge and skills. In fact, most of the participant teachers stated to lack the necessary knowledge and skills about technology use. The importance of teachers' having technology competencies was highly emphasized in the literature (Adıgüzel, 2010; Hew& Brush, 2007; Karaca, 2011) and it is one of the common reasons given by teachers for not using technologies (Hew & Brush, 2007). Çağıltay et al. (2001) found that increasing teachers' knowledge and skills about technology use was the most important requirement for integrating technologies to the curriculum. On the other hand, most of the participant teachers expressed that they did not need any technology related in-service training. It can be understood from here that even though teachers lack the necessary skills and knowledge to use technology and the most commonly stated barrier for technology use were their lack of skills and knowledge, they still did not want to have technology related in-service training. These results can be possibly explained by that teachers do not much benefit from these in-service training programs, since they complain about the quality and

effectiveness of these training programs in Turkey (Çağıltay et al., 2001; Yıldırım, 2007). Yıldırım (2007) explained that teachers' specific needs were not considered while designing these programs. Therefore, a need analysis should be conducted for determining teachers' specific technology related in-service training needs. Furthermore, the author explained that these trainings were given in a seminar format and teachers' do not have a chance to apply what they have learned. For this reason, teachers should have a chance to experiment what they have learned in the training sessions. Furthermore, these training sessions should be given in the contracted school year, since teachers are not motivated to have trainings in the summer breaks.

In the early efforts of technology integration, it was thought that when the appropriate conditions were met, technology integration would follow (Ertmer, 1999). On the other hand, even though the conditions for successful integration appear to be in place in this participant school, teachers' technology use is still low. Consequently, technology integration seems not to be just the "availability" issue, and as our results also indicated, some additional barriers may be at work. Therefore, some further research should be conducted to examine the other possible barriers.

In this study, the perceptions of two important stakeholder groups (teachers and students) were examined at the same time to have an insight about the current state of technology integration in a technology rich elementary school in Turkey. Their perceptions would provide valuable insights about how to improve technology integration process in educational settings. In the future, some qualitative studies should also be conducted to have teachers and student perceptions about technology use in depth.

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