

WCES-2011

The use of technology is gaining importance in the developing world: the problems of primary school teachers encountered about computer technologies and solution suggestions

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Abstract

The purpose of this research is to determine the problems of primary teachers encountered and suggesting some solutions to problems about computer technologies. The data of the study were collected by means of interview method with 5 open-ended questions which were prepared by the researchers. The data were analyzed using descriptive analysis method. The findings indicated that teachers usually preferred not to use technological devices. In light of the findings of the study, it seems that the problems encountered by the teachers in relation to the use of computer technologies result from lack of adequate knowledge, and shortage of technical personnel and hardware.

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Keywords: Science and technology course; computer technologies; teachers' views

1. Introduction

Changes and advances in computer technologies result in many changes in school, house and work environments. And the field of education cannot be isolated from these changes. By learning how to use developing and changing computer technologies, people improve their skill of having access to information and making use of it; on the one hand, and they find the opportunity for actively participating in the process, on the other. Rapidly developing technology increases the number of educational alternatives at schools and accordingly it makes compulsory to make changes in educational programs. According to many researchers, teaching technologies that can be drawn on effectively have the potential of improving the education system (Jonassen & Reeves, 1996; Means, 1994). Therefore, educational objectives of many countries include the integration of computer technologies into educational programs (Plomp, Anderson & Kontogiannopoulou-Polydorides, 1996). For this purpose, educational institutions carry out different applications in an attempt to capitalize on computer technologies. One of the issues that should be emphasized in the field of education is the effective use of technology for educational purposes. A new function is added to the functions of computers every day and these new functions not only affect the learning-teaching processes but also economic and social functions of computers. As in the every field of life, technological

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developments are inevitably affecting the learning-teaching process. Today, what is expected from schools is to train individuals who are equipped with skills necessary to have access to information and use it effectively (Seferoğlu, 2009). To do so, teachers have important roles to assume. Teachers themselves need training about not only how to use the computer but also how to integrate some special computer-related applications into the existing teaching programs (Becker, 1994; Hawkins, 1990; Honey & Henriquez, 1993; OTA, 1988, 1995; Schofield & Verban, 1988; Watt & Watt, 1988). There is a paucity of research looking at which computer technologies teachers use, the problems they encounter while using these technologies and how to solve these problems in Turkey. Hence, this study is believed to make some contributions to teacher training programs of universities. The purpose of the present study is to investigate the state of primary school teachers' use of computer, the problems they encounter while using computers and suggest solutions to the problems detected.

2. Method

2.1. Model of the study

The present study is a qualitative study aiming to elicit the opinions of the primary school first level classroom teachers and secondary level science and technology teachers about the use of computer technologies in their courses. In the present study, interview technique was used.

2.2. Sampling and Universe

The universe of the study consists of science and technology teachers and classroom teachers working at schools in Kocaeli, Turkey in 2010-2011 school year. Sampling of the study consists of 25 science and technology teachers and 25 classroom teachers, in sampling totally there are 50 teachers. Fifty two percent of the classroom teachers participating in the study are females, and forty eight percent of them are males; 56% of the science and technology teachers are females and 44% of them are males. When we look at the educational institutions the classroom teachers graduated from we see that 40% of them complemented their two-year degree education with further two years in Open University, 24% of them are from education institutes, 32% of them are from education faculties and 4% of them are from the faculties of science and letters. On the other hand, 80% of the science and technology teachers have a bachelor degree from the faculties of education and 20% of them graduated from the faculties of science and letters. When we look at the job experience of the teachers, we see that 8% of the classroom teachers have 0-5 years of experience, 4% have 6-10 years of experience, 8% have 11-15 years of experience, 24% have 16-20 years of experience, 28% have 21-25 years of experience and 28% have 26-more years of experience; 52% of science and technology teachers have 0-5 years of experience, 28% have 6-10 years of experience, 12% have 11-15 years of experience, 4% have 16-20 years of experience and 4% have 21-25 years of experience. Frequencies relating to demographic features of the teachers such as gender, education institution graduated, years of tenure, age and subject area are presented in table 1. When we look at the age group of the teachers, we see that 4% of the classroom teachers are in the age group of 20-25, 8% are in the age group of 26-30, 8% are in the age group of 31-35, 4% are in the age group of 36-40, 76% are in the age group of 41 and older; 8% of the science and technology teachers are in the age group of 20-25, 56% are in the age group of 26-30, 16% are in the age group of 36-40, 4% are in the age group of 41 and older.

2.3. Data Collection Tools

The data of the study were collected through semi-structured interview protocol with 5 open-ended questions designed by the researchers. In the designing period of the interview form, pilot interviews were carried out with four teachers. In order to ensure content validity of the interview form, the opinions of a program development expert and a science and technology teacher were sought. In line with these opinions, some corrections were made to the questions and final forms were given to the interview protocol with five open-ended questions.

2.4. Data Analysis

In the analysis of the data, one of the qualitative data analysis techniques, descriptive analysis technique was employed. While conducting descriptive analysis, statements of the teachers interviewed were directly used. The responses of the teachers to each question were classified according to some certain themes and the teachers statements/words were classified into certain themes relating to their computer use, problems they encounter and their opinions on the problems. In the presentation of the findings of the study, some quotations were taken from the teachers' statements.

3. Result and Discussion

In this section, findings and interpretations obtained from the teachers' opinions concerning the use of computer technologies are presented. Based on the characteristics of the data collection tool, the findings of the study are analyzed under the following headings.

3.1. Findings showing which technologies are used by the teachers in their classes

Percentages and frequencies concerning the technological devices used by the teachers in their classroom are presented in table 1.

Table 1. The teachers' opinions about the technological devices used in class

Technological devices used	Classroom teachers		Science and technology teachers	
	f	%	f	%
Projector	25	100	19	76
Computer	25	100	19	76
Sound system	1	4	3	12
Software programs	1	4	1	4
Scanner	2	8	2	8
Printer	3	12	3	12
CD player	1	4	1	4
Internet	5	20	4	16

As can be seen in table 1, the teachers stated that all of them (100%) use the computer and projector in their classes, 20% of them stated that they use internet, 8% of them stated that they use scanner, 4% use sound system, software programs and CD player. In light of these findings, we can claim that computers and projectors are used to a great extent in classrooms. Given that the use of computer technologies have been greatly expanded in Turkey in recent years, these findings have a supportive impact on positive developments.

3.2. Findings concerning whether the teachers have an in-service training about computer technologies

This finding showed that 44% of the teachers had an in-service training about the use of computer technologies but 56% did not have any in-service training about the use of computer technologies. Science and technology teachers stated that 28% of them had an in-service training and 72% did not have an in-service training. The teachers who did not have an in-service training stated that they want to have detailed information about computer technologies, and the teachers who had in-service training stated that they want to participate in seminars to be held at their school to be more informed about computer technologies. The fact that the teachers find in-service training courses inadequate concurs with the findings of Kuşkaya-Mumcu & Koçak-Usluel (2004). It is notable that the percentage of the classroom teachers having an in-service training is higher. It can be argued that the teachers' further participation in training courses may help them to minimize the problems they encounter and find solutions to possible future problems.

3.3. Findings concerning the problems encountered by the teachers while they are using computer technologies

The frequencies and percentages concerning the problems encountered by the teachers while using computer technologies are presented in table 2.

Table 2. Opinions about the problems encountered by the teachers while they are using computer technologies

Problems encountered	Teachers	
	f	%
Lack of hardware	30	60
Fast breakdown of technological devices	6	12
Slow connection speed to internet	27	54
Cost of technical problems	15	30
Long-time use of technologies distract the attention of students	20	40
Shortage of technological resources and materials	5	10
Inadequacy of the course hours in some occasions	20	40
Shortage of technical personnel	42	84

Eight four percent of the participants mentioned problems stemming from the shortage of technical personnel, 60% mentioned problems resulting from lack of hardware, 54% mentioned problems related to slow connection speed to internet, 40% mentioned problems stemming from inadequacy of course hours in some occasions, and 40% mentioned problems concerning the distraction of students' attention due to long-time use of technology. Ten percent of the teachers stated that they do not experience any problems while using computer technologies.

The findings of the study reveal that the teachers sometimes need technical personnel to solve the problems that they cannot deal with on their own. Moreover, many teachers are of the opinion that the hardware is not adequate and connection speed to internet is slow. This result complies with the findings of (Kuşkaya-Mumcu & Koçak-Usluel, 2004).

3.4. Findings concerning the opinions of the teachers about the sources of the problems they encounter

When the teachers' responses concerning the sources of the problems they encounter are examined, it is seen that the teachers experience problems related to internet due to the inadequacy of the internet infrastructure, they cannot have a computer and projector in every classroom because of the inadequate funding, they have some problems due to students' careless use of computers, and technical inadequacies, and they do not have enough training about the use of computer technologies. During the interviews carried out with the science and technology teachers, the teachers stated that greater importance is attached to providing computers and projectors for the classroom in the first level of the primary education. When the responses of the classroom teachers are examined, it is seen that many of the teachers stated that families are requested to make financial contributions. Waite (2004) reported that the teachers can not have enough technological support to use computer technologies in their classes. This finding is similar to opinions expressed in the present study about the inadequacy of school funding. The teachers believe that they have had not enough training about computer technologies and this finding is supported by (Cüre & Özden, 2008; Çakıroğlu, Güven & Akkan, 2008).

3.5. Findings concerning the solutions proposed by the teachers to the problems concerning the use of computer technologies.

The suggestions made by the teachers to solve their problems they encounter while using computer technologies are given in table 3:

Table 3. Suggestions made by the teachers to solve the problems they encounter while using computer technologies

Suggestions	f	%
Enough support from the Ministry of National Education	15	30
Sufficient technological infrastructure	20	40
Support personnel for technical issues	42	84
Giving a computer to each teacher	25	50
In-service training courses to improve teachers' computer competency	50	100
Teacher-family cooperation	33	66
Enough time to integrate technology into courses	18	36
Expansion of the use of smart board	20	40
Informing students about the use of technology	24	48

The data presented in table 3 reveal that in general the teachers think that organizing more in-service training courses (100%), provision of the support personnel for the use of technology (84%), setting up adequate technological infrastructure (40%) may be important solutions to their problems. The teachers stated that mostly they themselves try to solve their own technology-related problems, when they cannot do on their own, they seek help from the computer teachers.

When the problems encountered by the teachers while using computer technologies and their suggestions to find solutions to these problems and their expectations are considered, it seems to be obvious that the school should have the adequate technological infrastructure and personnel and in-service training courses should be organized for teacher to make better use of technology. Findings concerning the suggestions for solutions are supported by the findings of Gür, Özoğlu & Başer, 2010.

4. Conclusion and Suggestions

As a result, when the problems encountered by the teachers while using computer technologies and their suggestions to find solutions to these problems and their expectations are investigated, it is seen that the teachers make use of technological devices such as computer, projector, internet, scanner, printer, sound system, software program, and CD player. While using these technologies, the teachers experience problems stemming from sources such as lack of hardware, low speed of internet connection, fast breakdown of the devices, shortage of technological resources and materials, lack of information about the use of technologies, lack of technical personnel, distraction of students' attention due to long-time use of technology, high cost of technical problems, students' careless use of computers, inadequate financial support from school and families, inadequacy of class time in some occasions. Suggestions made by the teachers indicate that provision of adequate infrastructure and technical personnel, in-service training courses to improve teachers' technology knowledge, and establishment of teacher-family cooperation may be important solutions to problems. Effective use of technology is of great importance for technology to be useful in teaching-learning process. In every primary school, effective technological planning should be done and teachers should be enabled to use technologies effectively in their classes. The use of internet in class should be expanded and teachers should be helped to use educational software. Seminar should be organized to inform teachers about the use and development of computer technologies and the teachers should be encouraged to participate in in-service training courses.

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