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Procedia Computer Science 3 (2011) 343–351

Procedia Computer Science

www.elsevier.com/locate/procedia

WCIT 2010

Computer use attitudes, knowledge and skills, habits and methods of preschool teachers

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Abstract

This study aims to examine the computer use attitudes, knowledge-skills, habits and methods of preschool teachers with respect to several variables. Participants were 127 teachers who were working at 24 state and private schools in 8 different districts of Istanbul in 2009. The measurement tool used in the study was developed from an instrument by Qui Chen and Chang (2003). When teachers' computer use attitudes, knowledge-skills, habits and methods were studied with respect to their institution, a significant difference was found in the knowledge-skills and habits subdimensions. When they were studied in relation to teachers' years in the profession, a significant difference was found in the attitude subdimension; and when they were studied in relation to providing half or full day instruction, a significant difference was found in the habit and method subdimensions. ($p<0,05$)

Keywords: Preschool teacher, Computer use

1. INTRODUCTION

Computers are indispensible in today's world, where science and technology are advancing ever so rapidly. They achieved this prominent role thanks to their speed, ease of use, ability to store information at high capacity, easy access to information sources via the Internet, fast communication with all corners of the world, ease of sound and visual communication, and the increasing number and diversity of resources used in the expanding program and software sector (Sancak, 2003).

Leh (1998) lists the responsibilities of educators during the formation process of an information society as follows: "Practicing teachers and teacher candidates at universities need to acquire the knowledge and skills of new technologies. Teachers, who are given the task of preparing themselves and their students for the "information society", should also adopt the technology-assisted school culture of information societies immediately." (Tor and Erden, 2004).

Computer use in preschools happens through classroom activities planned by preschool teachers to be performed on class computers or as reinforcement by using certain software or by watching cartoon animations in the classroom. On the other hand, some institutions include computers as a course in preschool education. In these institutions, there is a computer room for this course.

Preschool children's computer use should start under the guidance of a teacher. Even though children may be allowed to use the computer on their own in future stages, teachers should guide them continuously (Demiriz, Karadağ and Ulutaş, 2003).

1877-0509 © 2010 Published by Elsevier Ltd.
doi:10.1016/j.procs.2010.12.058

When used in appropriate circumstances and using proper software, computers enrich the educational environment and contribute to children's development areas (Gacal, 2005). Preschool teachers cannot comfortably and successfully use the computer without training (Sexton and King, 1999). Therefore, teachers also need training and support in how to use computers effectively and how to integrate computers in the classroom learning environment (Haugland, 1999 and Sandberg, 2002).

The skills emphasized in these training programs for teachers should focus more on the sufficiency of the programs available in their subject areas, how they will benefit students and how computers can be used for student assessment and guidance, rather than how computers work, what they can do or how they are programmed (Simsek, 1999).

Teachers who use computers for education are also important for children. If their teachers are seen to be using a computer, children would make more of an effort to learn how to use it. Using a computer for group education or for preparing class schemes and signs would be a model for children. Preschool teachers who use computers have observed that a positive atmosphere and cooperation is achieved in the classroom when children work on the computer. Children establish positive relations as they solve problems on the computer (Sandberg, 2002).

Educators should understand that computers are useful in enabling children to solve problems and in cooperating with them. Acting as a guide for children and turning them into active participants at their own level, computers also help educators to transform their role into a special one (Arı and Bayhan, 2002).

Ketterer (1995) found in a study that, thanks to multimedia educational materials designed by teachers, a student-centered, teacher-led and encouraging cooperative learning and teaching environment can be established. This suggests that teachers do focus on material production in line with new technologies and they do not underestimate the need for mutual interaction with their colleagues. It is also necessary to educate teachers to use C

computer labs or train them through in-service training programs. Such endeavors would help computer assisted instruction flourish even further (Tor and Erden, 2004).

For computers to assume the importance they deserve at schools and become used effectively, attitudes towards its use must be known first. This is because the negative attitudes of users such as teachers and students or those of decision-makers such as administrators are among the biggest barriers before the adoption of a novelty at schools (Deniz, 2005). The results of previous research have shown that teachers may not make use of or even reject to use computers even in schools that possess an adequate number of computers (Marcinkiewicz, 1993; Dusick, 1998). Uçar (1999) confirms that the majority of teachers are not equipped with adequate knowledge and skills concerning instructional technologies during their preservice education and they thus have deficiencies regarding the use of such technologies in their instruction. Hızal (1989) showed in his study that teachers are willing to use technology in general and computers in particular; however, they do not use them due to various reasons. İşman (2002) also reported that teachers did not use new technologies in their instructional processes. Owing to these reasons, the problem statement of this study involves the gap in our knowledge about the computer use knowledge, behavior and practices of preschool teachers working as part of elementary education, and certain variables that may be relevant (such as gender, age, seniority in the profession).

Identifying the positive and negative attitudes of preservice teachers towards technology and taking precautions against negative ones would contribute to the effective incorporation of computers and other relevant technologies into education, and more rational planning and implementation. A study conducted byYavuz (2005) found that preservice chemistry teachers' attitudes towards developing technologies could be grouped under five headings: using and not using technological tools in the field of education, the teaching and assessment of computer use, and the effects of technology on educational life (Yavuz, 2005).

2. METHOD

This study aimed to identify the computer use knowledge, behavior and practices of preschool teachers by taking certain variables as a basis, and used the general survey model.

2.1. Sample

Participants were preschool teachers who were working at 24 different kindergartens affiliated with public and private elementary schools as well as independent preschools which were selected from 8 different districts of Istanbul during 2009. The random sampling method was used for sample selection.

2.2. Descriptive Findings

Sixty-nine (54,3%) of the preschool teachers in the sample were working at independent preschools, while 58 (45,7%) were employed by kindergartens of elementary schools. Of all these teachers, 23 (18,1%) were two-year college graduates, and 80 (63%) were 4-year university graduates. Fourteen (11%) held MA degrees and 10 (7,9%) held doctoral degrees. Concerning their years in the profession, 56 (44,1%) had been working for 1-5 years, 32 (25,2%) for 6-10 years, 19 (15%) for 11-15 years, and 17 (13,4%) for 16 years or more.

As for age distribution of the teachers in the sample, 7 (5,5%) teachers were aged 20 or younger, 31 (24,4%) were aged between 21-25, 43 (33,9%) between 26-30, 22 (17,3%) between 31-35, 10 (7,9%) between 36-40, and 14 (11%) were aged 40 or more. Of all the teachers, 90 (70,9%) were working in full-day institutions and 36 (29,1%) in half-day institutions. In these schools, 10 preschool teachers (7,9%) taught 3-year-old children, 10 (7,9%) taught 4-year-old children, 28 (22%) taught 5-year-old children, and 74 (58,3%) taught 6-year-old children. The bigger number of 5 and 6-year-old children was attributed to the fact that students at the kindergartens of elementary schools were in these age groups.

Of the preschool teachers in the sample, 115 (90,6%) had a computer at home and 12 (9,4%) did not. A total of 102 preschool teachers (80,3%) had an Internet connection, 13 (10,2%) did not, and 12 (9,4%) did not know if they had an Internet connection.

Of all the teachers, 47 (37%) had computers in their classrooms and 80 (63%) did not. Forty teachers (35%) had an Internet connection on the computer in their classrooms, and 57 (65%) did not. Sixty-seven teachers (53%) had a separate computer room in their school that they visited with their students, while 60 (47%) did not. The number of preschool teachers who had an Internet connection in the separate computer room of their school was 117 (92,11%), and the number of those who did not have a connection in the separate computer room was 10 (7,9%).

2.3. Data Collection Instrument

The scale used in this study in order to identify the computer use knowledge, behavior, attitude and methods of preschool teachers was developed with the Turkish adaptation of Landerholm's (1995) scale items which were revised by Qui Chen and Chang at the Ericsson Institute in the USA. These items fall into four subcategories: Attitude, Knowledge-Skills, Habits, Method. Of these, the attitude and knowledge-skills subdimensions are measured by questions scored between 1 and 4 as "totally disagree", "disagree", "agree", and "totally agree". The habit and method subdimensions, on the other hand, are scored between 1 and 5 as "never, rarely, sometimes, often, always".

In addition to these, certain questions about the personal knowledge of teachers were also asked at the beginning of the scale in order to be associated with their computer use knowledge, behavior and practices.

2.4. Data Analysis

The data collection instruments used in the study were implemented on the preschool teachers in the sample in their school environments. Each implementation lasted approximately 10 minutes and happened with the participation of volunteering teachers.

The data obtained were analyzed on SPSS package program. Data analyses included f, %, independent groups t test, and one way analysis of variance (ANAOVA). Meaningfulness levels were set at 0,05 and 0,01.

3. FINDINGS

Table 1. One Way Analysis of Variance for the Variable of the Institution of Employment

		f, , ss Değerleri				Anova değerleri				
Puan	**Sınıf**	**N**	**X**	**SS**	**Var.K**	**KT**	**Sd**	**KO**	**F**	**p**
Attitudes	private preschools	68	22,78	6,689	Betwen Grourps	15,547	2	7,774	,219	,804
	kindergartens of elementary schools	59	23,47	4,974	Groups within	4408,122	124	35,549		
	Total	127	23,10	5,925	Total	4423,669	126			
Knowled ge-skills	private preschools	68	11,72	3,578	Betwen Grourps	63,271	2	31,635	3,526	,032
	kindergartens of elementary schools	59	13,14	2,115	Groups within	1112,588	124	8,972		
	Total	127	12,38	3,055	Total	1175,858	126			
Computer habits	private preschools	68	12,68	9,634	Betwen Grourps	2302,422	2	1151,211	15,767	,000
	kindergartens of elementary schools	59	20,74	7,053	Groups within	9054,003	124	73,016		
	Total	127	16,26	9,494	Total	11356,425	126			
Methods	private preschools	68	6,57	8,686	Betwen Grourps	392,454	2	196,227	2,603	,078
	kindergartens of elementary schools	59	9,81	8,678	Groups within	9347,546	124	75,383		
	Total	127	8,00	8,792	Total	9740,000	126			

In this study which was conducted to determine preschool teachers' computer use attitudes, knowledge-skills, habits and methods, One way analysis of variance (Anova) was used to reveal whether there was a differentiation between teachers employed by different types of institutions. The difference between the arithmetic means of the groups was meaningful in the Knowledge-skills ($p<0,05$) and Habits subdimensions ($p<0,01$). The difference was in favor of the teachers who were employed by the kindergartens of elementary schools. Their mean scores were higher than teachers working in independent private preschools.

Table 2. One way analysis of variance for the variable of the school attended

		f, , ss Değerleri				Anova değerleri				
Puan	**Mezun Olunan Okul**	**N**	**X**	**SS**	**Var.K**	**KT**	**Sd**	**KO**	**F**	**p**
Attitudes	High School	3	20,33	1,528	Betwen Grourps	182,187	4	45,547	1,310	,270
	Associate Degree	20	22,50	3,914						
	Üniversity	80	23,89	9,321	Groups within	4241,483	122	34,766		
	Master Degree	14	20,43	4,999						
	PhD. Degree	10	22,60	9,675	Total	4423,669	126			
	Total	127	23,10	5,925						
Knowledge-skills	High School	3	11,33	3,215	Betwen Grourps	73,104	4	18,276	2,022	,096
	Associate Degree	20	12,60	2,234						
	Üniversity	80	10,50	4,895	Groups within	1102,754	122	9,039		
	Master Degree	14	12,79	2,494						
	PhD. Degree	10	11,60	4,526	Total	1175,858	126			
	Total	127	12,38	3,055						
Computer habits	High School	3	6,33	6,028	Betwen Grourps	1290,707	4	322,677	3,911	,005
	Associate Degree	20	14,45	9,747						
	Üniversity	80	10,14	9,363	Groups within	10065,718	122	82,506		
	Master Degree	14	17,49	8,859						
	PhD. Degree	10	21,60	9,709	Total	11356,425	126			
	Total	127	16,26	9,494						
Methods	High School	3	,33	,577	Betwen Grourps	364,089	4	91,022	1,184	,321
	Associate Degree	20	9,00	8,627						
	Üniversity	80	6,21	8,220	Groups within	9375,911	122	76,852		
	Master Degree	14	7,91	9,093						
	PhD. Degree	10	11,50	7,821	Total	9740,000	126			
	Total	127	8,00	8,792						

As shown in Table 2, the scores obtained from the scale were subjected to One way analysis of variance (Anova) to establish whether they varied with respect to the school where the teachers graduated from. The results showed that there was a meaningful difference between the arithmetic means of the groups in the Habits subdimension ($p<0,05$).

Table 3. One way analysis of variance for the variable of years in the profession

	f, , ss Değerleri					Anova değerleri				
Puan	**Çalışma Yılı**	**N**	**X**	**SS**	**Var.K**	**KT**	**Sd**	**KO**	**F**	**p**
Attitudes	1-5 Years	56	24,77	3,889	Betwen Grourps	409,061	5	81,812	2,466	,036
	6-10 Years	32	23,16	4,833						
	11-15 Years	19	20,89	6,983	Groups within	4014,608	121	33,179		
	16 years and over	17	20,41	9,900						
	Total	127	23,10	5,925	Total	4423,669	126			
Knowledge-skills	1-5 Years	56	12,79	1,970	Betwen Grourps	60,213	5	12,043	1,306	,266
	6-10 Years	32	12,50	2,527						
	11-15 Years	19	12,21	3,750	Groups within	1115,645	121	9,220		
	16 years and over	17	10,76	5,298						
	Total	127	12,38	3,055	Total	1175,858	126			
Computer habits	1-5 Years	56	17,79	8,455	Betwen Grourps	764,148	5	152,830	1,746	,129
	6-10 Years	32	16,88	9,724						
	11-15 Years	19	12,89	11,747	Groups within	10592,277	121	87,539		
	16 years and over	17	12,76	8,807						
	Total	127	16,26	9,494	Total	11356,425	126			
Methods	1-5 Years	56	7,75	8,801	Betwen Grourps	244,362	5	48,872	,623	,683
	6-10 Years	32	8,91	9,198						
	11-15 Years	19	6,26	8,116	Groups within	9495,638	121	78,476		
	16 years and over	17	9,47	9,428						
	Total	127	8,00	8,792	Total	9740,000	126			

Table 3 presents that the scores from the scale, which was used to identify the computer use attitude, knowledge-skills, habits and methods of preschool teachers, were subjected to One way analysis of variance (Anova) to reveal whether the scores varied with respect to the number of years spent in the profession. The results showed that a meaningful difference existed between the arithmetic means of the groups in the Attitude subdimension ($p<0,05$).

Table 4. One way analysis of variance for the variable of half or full-day instruction

	f, , ss Değerleri					Anova değerleri				
Puan	**Kurumun Çalışma Şekli**	**N**	**X**	**SS**	**Var.K**	**KT**	**Sd**	**KO**	**F**	**p**
Attitudes	Full Day	90	23,38	5,029	Betwen Grourps	59,771	3	19,924		
	Half Day	35	22,51	7,883	Groups within	4363,898	123	35,479	,562	,641
	Total	127	23,10	5,925	Total	4423,669	126			
Knowledge-skills	Full Day	90	12,76	2,501	Betwen Grourps	49,065	3	16,355		
	Half Day	35	11,37	4,095	Groups within	1126,794	123	9,161	1,785	,153
	Total	127	12,38	3,055	Total	1175,858	126			
Computer habits	Full Day	90	17,60	8,933	Betwen Grourps	909,282	3	303,094		
	Half Day	35	12,31	9,920	Groups within	10447,143	123	84,936	3,568	,016
	Total	127	16,26	9,494	Total	11356,425	126			
Methods	Full Day	90	9,39	8,620	Betwen Grourps	705,868	3	235,289		
	Half Day	35	4,49	8,438	Groups within	9034,132	123	73,448	3,203	,026
					Total	9740,000	126			

	Computer in the classroom,	N	X	ss	t	sd	p
	Total	127	8,00	8,792			

A meaningful difference was found between the computer habits and methods of the preschool teachers with respect to the working hours of their institutions ($p<0,05$). Table 4 shows that the arithmetic means of teachers who were working at full-day institutions were higher in both habits and method subdimensions.

Table 5. T-test results showing the difference between the preschool teachers who did and did not have computers in their classrooms

Attitudes	YES	43	25,05	3,817	2,561	121	,05
	NO	80	22,28	6,512			
Knowledge-skills	YES	43	13,47	1,777	2,778	121	,05
	NO	80	11,90	3,452			
Computer habits	YES	43	20,47	7,778	3,699	121	,01
	NO	80	14,23	9,473			
Methods	YES	43	11,60	8,429	3,486	121	,01
	NO	80	6,05	8,425			

The independent groups t-test, which was conducted to reveal whether teachers' computer use attitudes, knowledge-skills, computer habits and methods varied with respect to having or not having a computer in the classroom, showed that a statistically meaningful difference existed in the attitude ($t=2,561$; $p<0,05$) and knowledge-skills subdimensions ($t=2,778$; $p<0,05$). A meaningful difference was also found in the habits ($t=3,699$; $p<0,01$) and method ($t=3,486$; $p<0,01$) subdimensions. The differences were in favor of teachers who had a computer in their classrooms.

4. DISCUSSION

This study explored the computer use attitudes, knowledge-skills, habits and methods of preschool teachers with respect to variables such as the school that they graduated from, the type of their institution of employment, their years in the profession, age, the age group they were working with, whether they had a computer at home, and whether they had an Internet connection at home or in the classroom, and found the following results.

When preschool teachers' computer use attitudes, knowledge-skills, habits and methods were studied with respect to the institution they were working at, a meaningful difference was found between the arithmetic means in the knowledge-skills ($p<0,05$) and habits ($p<0,01$) subdimensions. The mean scores showed that the difference was in favor of the teachers working in the kindergartens of elementary schools. The reason behind this may have been that teachers working at independent preschools may neglect computer use as they have a rather intensive program to follow in the classroom in order to achieve parent satisfaction. As there were no similar studies, it was not possible to make a comparison regarding this.

When the institutions that the preschool teachers graduated from were examined as a variable in their computer use attitudes, knowledge-skills, habits and methods, a meaningful difference was found between the arithmetic means of groups in the habits subdimension ($p<0,05$). As there was a meaningful difference in the scores of the teachers who held an MA or doctoral degree, it may be concluded that holders of these advanced degrees tend to use computers more, are more knowledgeable about computers, and have adopted computer use as a behavior.

With respect to the preschool teachers' years in the profession, a meaningful difference was found between the groups in the Attitude subdimension ($p<0,05$). Considering mean scores, the difference was in favor of those who had been working for 1-5 years. In a similar study by Deniz (2005), teachers who had been working for 21 years or longer and for 10 years or shorter were compared, and the results were in favor of those who had been working 10 years or less.

Differences were studied with respect to the preschool teachers' ages as well and no meaningful difference was found between any of the groups. This may be attributed to the fact that the age groups were close to each other.

As for the working times of the institutions where the preschool teachers were working, a meaningful difference was found between the groups in the habits and methods subdimensions ($p<0,05$). The mean scores showed that in both subdimensions, the difference was in favor of the teachers working at full-day institutions.

Finally, the computer use knowledge, behavior and practice of preschool teachers were studied with respect to the age group they were teaching, and it was found that a meaningful difference did not exist in any of the subdimensions or between any of the groups.

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