INVESTIGATION OF PROSPECTIVE SCIENCE TEACHERS' ATTITUDES TOWARDS COMPUTERS IN TERMS OF DIFFERENT VARIABLES

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Abstract

The purpose of this study is to investigate prospective science teachers' attitudes towards computers in terms of gender, general academic achievement and grade level. This is a descriptive field survey. The study group of the research comprised of totally 226 students attending the Science Teaching Department of Education Faculty, Kırşehir Ahi Evran University. "Attitude Scale towards Computers" and "Demographic Information Form" were used as data collection tools. In the analysis of the data, descriptive statistics, independent t-test, one-way ANOVA and Pearson correlation coefficient were used. At the end of the study, teachers' attitudes towards computers were determined as in medium level. On the other hand, it was found out that prospective teachers' points of attitudes towards computers differed significantly according to gender and grade level. In addition, it was determined that the teachers' points of attitudes towards computers didn't differ significantly according to general academic achievement. It was revealed that there were high and medium-level positive relationships between prospective teachers' points of attitudes towards computers and gender, grade level and academic achievement.

Key words: Attitudes towards computers, prospective science teachers, gender, grade level, general academic achievement

INTRODUCTION

Using technology in education enables growing up individuals who are familiar with technology and who make use of it by improving the quality of education. Thanks to the rapid developments in technology, everyday some new devices are added to the ones that are already in use in the

education-instruction process. The most important of these technological devices that are used at present is considered as computers (Akkoyunlu, 1998). One of the most important factors that affect the success of the implementation of computer-assisted instruction, which has such an important field of use in the education-instruction process, is teachers' and prospective teachers' attitudes towards computer-assisted instruction (Kutluca and Ekici, 2010). Attitudes constitute one of the most crucial factors in terms of raising prospective teachers' awareness and their being successful in their job in the subject of computer-assisted instruction, as in all other subjects in their lives (Shashaani, 1993).

Attitudes towards computers act as a key that affects students' seeing the computer as a learning tool and that determines the possibility of computers being used in the future for learning or study (Teo, 2008). It is seen that research studies in literature in which attitudes towards computers were investigated centre mostly upon teachers and prospective teachers (Ng and Gunstone, 2003; Çekbaş, Savran and Durkan, 2003; Bindak and Çelik, 2006). In the study results that were examined, it was detected that working with computers developed positive attitudes towards computers (Güler and Sağlam, 2002; Yenice, 2003; Çepni, Taş and Köse, 2006). In this context, it is striking that the number of studies aiming to determine prospective science teachers' attitudes towards computers is of limited number. Consequently, that prospective teachers develop positive attitudes towards computers may serve as a prerequisite in order for them to be able to use computers in their instructional activities. This study was prepared with the purpose of investigating prospective science teachers' attitudes towards computers in terms of variables that are gender, general academic achievement and grade level.

METHOD

This is a descriptive study in the survey model. Survey model is suitable for studies that aim at describing a past or present situation as it exists (Karasar, 2000).

Study Group

The study group of the research comprised of totally 226 prospective teachers attending the Science Teaching Department of Education Faculty, Kırşehir Ahi Evran University. Of the prospective teachers who took part in the study, %35.8 were (81) male while %64.2 were (145) female. As for the grade point averages, it was determined that %20.8 of prospective teachers had 1.00-1.99 success averages while %67.7 of them had 2.00-2.99 and %11.5 had 3.00-4.00. On the other hand, it was found out that %16.4 of them (37) were enrolled in the first grade while %16.4 (37) were in the second grade, %55.8 of them (126) in the third grade and %11.5 of them (26) were in the fourth grade.

Data Collection Tools

In collecting data for the study, "Attitude Scale towards Computers" developed by Ekici and Bahçeci (2006) and demographic information form were used. The scale being a likert-type one, items in the scale are as in "I definitely agree, I agree, I neither agree nor disagree, I disagree, I definitely disagree". Cronbach Alpha value for the whole scale was found to be .91. In the context

of this study, recalculated Cronbach alpha value of the scale was determined as .90. As for the demographic information form, it was prepared by the researchers and in line with expert opinions.

Data Analysis

In analyzing the collected data, SPSS 15.0 (Statistical Package for Social Sciences) programme was used. While analyzing data, depending on the variables, descriptive statistics, independent t-test, one-way ANOVA and Pearson correlation coefficient analyses were used.

FINDINGS

1. Prospective Teachers' Points of Attitudes towards Computers

Table 1. Prospective Teachers' Points of Attitudes towards Computers

Dimensions of the scale	X	SD	Minimum	Maximum
Points of attitudes towards computers	54.26	7.57	33,00	93,00
Usefulness	9.00	2.50	3.00	19.00
Trust	18.04	4.51	6.00	33.00
Liking	11.92	4.39	4.00	20.00
Worries	15.30	5.71	5.00	25.00

As can be seen in Table 1, the average of prospective teachers' points of attitudes towards computers (X=54.26) is higher than that of the scale (X=45.00). This finding suggests that computer-related attitude points of teachers who took part in the study group are in medium level. They also got medium-level points in the usefulness (X=9.00), trust (X=18.04), liking (X=11.92) and worries (X=15.30) dimensions of the scale.

2. Distribution of Prospective Teachers' points of Attitudes towards Computers according to Gender

Table 2. t-test results of Prospective Teachers' points of Attitudes towards Computers according to Gender

	Gender	N	X	SD	t	p
Computer-related general attitude point average**	Male	81	54.82	8.39	0.825	.002
	Female	145	53.95	7.09		

*p<0.05

**No differences in attitudes were detected in usefulness, trust, liking and worries dimensions according to grade level.

As can be seen in Table 2, female prospective teachers' average point for the whole scale was found to be X=53.95 while for male teachers it was X=54.82. According to the t-test results, a significant difference in favor of male teachers was determined between gender and computer-related attitude points at statistically p<0.05 level.

3. Distribution of Prospective Teachers' points of Attitudes towards Computers according to Grade Level

Table 3. ANOVA results of Prospective Teachers' points of Attitudes towards Computers according to Grade Level

	Grade level	N	X	SD	F	p	Tukey Test
Computer-related general attitude point average**	1	37	56.16	9.09	4.593	.004	1 and 2 2 and 4
	2	37	51.32	8.06			
	3	126	53.89	6.42			
	4	26	57.57	8.21			

*p<0.05

** No differences in attitudes were detected in usefulness, trust, liking and worries dimensions according to grade level.

As shown in Table 3, it was found out that prospective teachers registered at the 4th grade had the highest level of computer-related attitude points whereas prospective teachers that were registered at the 2nd grade had the lowest level of computer-related attitude points. As a result of the variance analysis (ANOVA) performed, it was revealed that prospective teachers' computer-related attitude points showed a statistically significant difference according to their grade levels. As a result of the Tukey post hoc test that was carried out to determine between which classes this difference occurred, a significant difference was detected between the 1st and the 2nd grades; and the 2nd and the 4th grades.

4. Distribution of Prospective Teachers' points of Attitudes towards Computers according to General Academic Achievement

Table 4. ANOVA results of Prospective Teachers' points of Attitudes towards Computers according to General Academic Achievement

	General Academic Achievement	N	X	SD	F	p
Computer-related general attitude point average **	1.00–1.99	47	53.02	9.73	3.217	.062
	2.00–2.99	153	54.09	6.54		
	3.00–4.00	26	57.57	8.21		

*p<0.05

** No differences in attitudes were detected in usefulness, trust, liking and worries dimensions according to grade level.

As can be seen in Table 4, it was revealed that prospective teachers' computer-related attitude points got higher as the level of general academic achievement increased. As a result of the variance analysis (ANOVA) performed in order to understand whether this increase was significant or not, it was determined that prospective teachers' computer-related attitude points did not show a statistically significant difference according to their general academic achievement.

5. Relationship between Prospective Teachers' Computer-related Attitude Points and Gender, Grade Level and General Academic Achievement

Table 5. Pearson Correlation Coefficient Results between Prospective Teachers' Computer-related Attitude Points and Gender, Grade Level and General Academic Achievement

		Gender	Grade Level	General Academic Achievement
Computer-related general attitude point average	r	.648(**)	.436(**)	.728(**)
	p	.438	.438	.438
	N	226	226	226

** .01

As shown in Table 5, it was revealed that there was a medium-level, positive and significant relationship between gender and computer-related attitude point (r=0.648. p<0.01). There was also a medium-level, positive and significant relationship between general academic achievement and computer-related attitude point (r=0.436. p<0.01). In addition, it was found out that there was a high-level, positive and significant relationship between grade level and computer-related attitude point (r=0.733. p<0.01).

DISCUSSION

In this study, the aim was to investigate prospective science teachers' attitudes towards computers in terms of different variables. As a result of analyzing the obtained data, it was determined that the average of prospective teachers' points of attitudes towards computers was higher than that of the scale (>45.00). This result indicates that computer-related attitude points of prospective teachers who participated in the study are at a medium-level. Kutluca and Ekici (2010)' studies support this finding. Female prospective teachers average points for the whole of the scale was found to be lower than that of male prospective teachers. According to the results of the t-test that was performed, a statistically significant difference in favor of female prospective teachers was detected between gender and computer-related attitude point. This finding shows a paralellism with the studies of Deniz (2005), Sadık (2006) and Kutluca and Ekici (2010). It was also revealed that prospective teachers' grade levels improved attitudes towards computers and that their computer-related attitude points according to their grade level showed a statistically significant difference. The results also showed that prospective teachers registered at the 4th grade had the highest level of computer-related attitude points whereas prospective teachers that were registered at the 2nd grade had the lowest level of computer-related attitude points. This finding is supported by Berkan and Efendioğlu' studies (2010). It was found out that prospective teachers' computer-related attitude points got higher as the general academic achievement level increased. It was also stated that prospective teachers' computer-related attitude points did not show a significant difference according to general academic achievement.

CONCLUSION

By analyzing the study data, general results below were reached:

Computer-related attitude points of prospective teachers who took part in the study were in medium-level. Prospective teachers' computer-related attitude points show a significant difference according to gender. Data gathered indicate that male prospective teachers have developed more positive attitudes towards computers compared to the female prospective teachers. In addition, it was determined that prospective teachers' computer-related attitude points showed a significant difference according to grade level. This result can be considered as a sign that computer courses provided to prospective teachers at school and their use of computers in their presentations have a positive effect. Moreover, it was found out that prospective teachers' computer-related attitude points did not show a significant difference according to their general academic achievement. It was revealed that there was a medium-level, positive and significant relationship between gender and computer-related attitude point. There was also a medium-level, positive and significant relationship between general academic achievement and computer-related attitude point. In addition, it was found out that there was a high-level, positive and significant relationship between grade level and computer-related attitude point. Considering the results that were reached, different variables affect prospective science teachers' attitudes towards computers. It can be said that teachers' developing positive attitudes towards computers could be effective in facilitating learning and increasing student success in the education system.

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