Determining candidate teachers' tendency to the use of technology

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Abstract

This study aimed to determine candidate teachers' tendency to the use of technology. A total of 293 candidate teachers participated in this study in which a quantitative method was used. The findings obtained from the research indicated that the candidate teachers' tendency to the use of technology was high. Another finding in a different research revealed that sex and the departments the candidate teachers studying in did not indicate any significant difference related to the use of technology. However, their level of age showed a significant difference in their behavioral tendency to the use of technology.

Keywords: Candidate teachers, technology, higher education.

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1. Introduction

Since the existence of mankind, technology, a part of the human and the environment they live in, is explained, in the simplest way, as a method used in the application of technical science and theoretical information (Yigit, Cengelci & Karaduman, 2013; Sayan, 2016; Soykan & Ozdamli, 2017). Today, the rapidly expanding knowledge brings along technological developments. Simsek and Yildirim (2016) emphasized that, parallel to the rapid development in technology, education cannot be stable. Askar (2003) on the other hand, pointed out that rapid development in technological innovations as important factors in economy; the use of technology has become compulsory in education. Askar (2003) added that the use of technology, as a product in schools, was inadequate, and stressed that it was important for teachers, students, and families to use it to respond to their aims.

Dargut and Celik (2014) stated that effective use of technology in education facilitated learning and provided outstanding outcomes. They also emphasized the fact that, in today's developing information communities, teachers' basic duties are to continuously follow innovations, interpret the data through a critical point of view, and transfer the correct current information to their students. Dargut and Celik (2014) pointed to another important issue saying that teachers should make use of technology effectively in education as well as in their professional development. Similarly, Oksuz, Ak and Uca (2009) stressed that, in today's education, in order to adapt complicated adequacies, teachers needed to use technology and develop themselves. In the process of teaching-learning, teacher and technology are referred to as two very important factors. In education teachers should use technology and explain to the students how to use it for learning (Alpar, Batdal & Avci, 2007; Ozdamli & Tavukcu, 2016). In this respect, it is assumed that universities should take the lead in using and improving the use of technology in education (Cagiltay et al., 2007). Turan, Kucuk and Gundogdu (2013) drew attention to the need for educating teachers to be more professional in integrating technology in teaching and following the requirements of the century. Davis (2010) looked into the issue through a different angle and emphasized that technology should be integrated into teacher-training for three basic aims; training teachers according to their standards and capabilities, to use Information Technologies effectively in education, to train them in the scope of Information Technologies and assure them of the need to use technology in education. Heitink et al., (2016) drew attention to the developments in the application of technology and added that the use of technology could not be ignored in learning and teaching. They also admitted that using technology in education was not an easy task for many teachers. In this respect, teacher-training programs to educate teachers to use technology effectively are of utmost important. When literature is examined, several studies have been conducted by candidate teachers trained in technology.

Fidan (2014) in a study to determine candidate teachers' capability of technology and social- webs through metaphors, found out that the candidate teachers developed 82 different metaphors related to their perception of technology and 108 different metaphors related to social- web perceptions. In their study, Yigit, Cengelci and Karaduman (2013) aimed to define candidate teachers' views about the reflection of technology to values. Yilmaz, Uredi and Akbasli (2015) conducted a research to evaluate candidate teachers' attitudes and adequacies towards technology through different variables and found out that the candidate teachers grouped themselves in an average adequacy level. The researchers (2015) also stated that the candidate teachers had a sufficient level of adequacy in the use of technology in education. As it can be understood from the literature, the use of technology is demanded more in education, and it has become a must for the teachers to use technology effectively in education. In this respect, teacher training programs have become more important, and teachers' knowledge in the use of technology, skills and attitudes need to be determined. In this study, it is aimed to determine candidate teachers' tendency to the use of technology and the following questions were asked to find answers to the subject question:

1. What are the tendencies of candidate teachers to the use of technology?

2. Is there a significant difference in candidate teachers' tendency to the use of technology with regards to their;

- Sex
- age levels
- the departments they are studying in?

2. Method

The candidate teachers' tendency to the use of technology was investigated through a quantitative method in this research.

2.1. Research Participants

A total of 293 students studying at a private University in North Cyprus participated in this study. The demographic characteristics of the volunteer participants are given in Table 1.

Table 1. Frequency distribution of demographic characteristics of the candidate teachers

Demographic characteristics		f	%
Sex	Female	160	54.6
	Male	133	45.5
Age	18-21	183	62.5
	22-26	110	37.5
Department	Special Education Department	79	27
	Psychological Guidance and Counseling	81	27.6
	Classroom Teaching	55	18.8
	Pre-School Teaching Department	78	26.6
Total		293	

As it can be seen in Table 1, 160 (54.6%) of the participants were female, and 133 (45.5%) were male, mostly between the ages of 18-21 (62.5%). A total of 79 (27%) of them are studying in Special Education department, 81 (27.6%) in Psychological Guidance and Counseling department, 55 (18.8%) in Classroom Teaching, and 78 (26.6%) in Pre-school Teaching department.

2.2. Data Collection and the Procedure

This study aimed to determine candidate teachers' tendency to the use of technology. In order to attain this aim, "Tendency Scale Related to Technology Use in Class", developed by Gunuc and Kuzu (2014), was used. The scale consisted of 16 statements and two dimensions; perceptive and behavioral. In the 5 item Likert-type scale, the scoring is calculated as "Strongly Agree" corresponds to 5 points while "Strongly Disagree" corresponds to 1 point. Throughout the scale in this research the Cronbach alpha value was calculated as (0.954). Gunuc and Kuzu (2014) stated that, as the scores in the scale increased, the use of technology in class was preferred more.

On receiving the required consent to apply the scale, it was conducted with the students of a private university in the boundaries of North Cyprus. The scale was conducted only with the volunteering candidate teachers. Before applying the scale, the participant candidate teachers were briefed on the aims of the research and the scale for ten minutes, then the scale was conducted and it took about 10-15 minutes.

2.3. Data analysis

In the analysis of the quantitative data obtained from the candidate teachers' tendency to the use of technology, the frequency, percentage, mean, standard deviation, independent samples t-test, and one way ANOVA analysis was used. The values obtained from the research were interpreted with 0.05 significance level.

3. Results

The findings responding to the aims of this research are discussed in this section.

3.1. Candidate teachers' tendency to the use of technology

The findings determining candidate teachers' tendency to the use of technology in class are shown in Table 2.

Table 2. The tendency scores of candidate teachers to the use of technology

Dimension	N	Min	Max	Mean	SD
Emotional Tendency	293	1	5	3.56	.963
Behavioral Tendency	293	1	5	3.37	1.07
General score	293	1	5	3.50	.940

When the results of the analysis carried out to determine candidate teachers' tendency to the use of technology was examined, it was noted that they had a positive tendency (M=3.50, sd=94) to the subject matter. Furthermore, their level of emotional tendency to the use of technology was revealed as positive (M=3.56, sd=.963). However, their behavioral tendency to the subject matter was noted as "undecided" (M=3.37, sd=1.07). In this respect, the candidate teachers had a positive approach towards the use of technology in class, but they exhibited an indecisive behavioral tendency.

3.2. Candidate teachers' tendency in terms of gender to the use of technology

An independent sample t-test analysis was conducted to specify candidate teachers' tendency to the use of technology in class with regards to their sex.. The distribution of the scores related to the subject matter above is provided in Table 3.

Table 3. The distribution of the scores of candidate teachers' and their tendency to the use of technology with regards to their sex

Dimension	Sex	N	Mean	SD	df	t	p
Emotional Tendency	Female	160	3.54	.852	291	-.473	.637
	Male	133	3.59	1.08			
Behavioral Tendency	Female	160	3.34	1.01	291	-.574	.566
	Male	133	3.41	1.15			
General score	Female	160	3.48	.826	291	-.539	.590
	Male	133	3.54	1.06			

As it can be seen in Table 3, the candidate teachers' sex did not make a significant difference in their emotional tendency to the use of technology. The findings obtained from this research did not indicate a significant difference between the emotional tendency of female candidate teachers (M=3.54, sd=.852) and the candidate male teachers (M=3.59, sd=1.08) (t=-.473, p<0.05). It was determined that both the female and male teachers had high emotional tendency to the use of technology.

When the candidate teachers' behavioral tendency to the use of technology is overviewed, a significant difference was not observed between female teachers' (M=3.34, sd=1.01) and male teachers' (M=3.41, sd=1.15) behavioral tendency to the use of technology (t=.574, p>0.05). However, when the average scores of the candidate teachers were overviewed, female candidate teachers' behavioral tendency to the use of technology mainly was as "I'm indecisive", whereas male teachers'

tendency was as "I agree". At this point, it is seen that male candidate teachers' behavioral tendency to the use of technology is higher than that of female candidate teachers'.

3.3. Candidate teachers' tendency to the use of technology with regards to their age

The independent samples t-test analysis method was used in order to specify candidate teachers' tendency to the use of technology with regards to their age levels. The distribution of their average scores is as shown in Table 4.

Table 4. The distribution of the average scores of candidate teachers' tendency to the use of technology with regards to their age

Dimension	Age	N	Mean	SD	df	t	p
Emotional Tendency	18-21	183	3.51	.934	291	-1.303	.194
	22-25	110	3.66	1.00			
Behavioral Tendency	18-21	183	3.26	1.05	291	-2.224	.027
	22-25	110	3.55	1.10			
General score	18-21	183	3.43	.916	291	-1.714	.088
	22-25	110	3.62	.972			

As shown in Table 4, there is not a significant difference in the average scores (M=3.66, sd=1.00) in the emotional tendency of the candidate teachers between the ages of 18-21 (M=3.51, sd=.934) and the ones between the ages of 22-25 (t=1.303, p>0.05). However, there is a significant difference in the average scores (M=3.55, sd=1.10) in behavioral tendency was observed in favor of the candidate teachers between the ages of 22-25 compared to the average scores (M=3.26, sd=1.05) of the candidate teachers between the ages of 18-21 (t=2.224, p<0.05). This indicates that the behavioral tendency of the candidate teachers between the ages of 18-21 is lower than the ones between the ages of 22-25. In this respect, it is assumed that the candidate teachers in the higher age level have a positive behavioral tendency to the use of technology in class.

When the tendency of candidate teachers, in general, to the use of technology is overviewed, it is observed that the tendency of the ones between the ages of 18-21 (M=3.43, sd=.916) and the tendency of the ones between the ages of 22-25 (M=3.62, sd=.972) is at high levels. In this case, it is assumed that candidate teachers have a positive tendency to the use of technology in class.

3.4. Candidate teachers' tendency to the use of technology with regards to their departments

A one-way ANOVA analysis method was used to determine any significant differences related to the use of technology in class in terms of their departments. The distributions related to their departments are shown in Table 5.

Table 5. The distribution of the average scores of the candidate teachers' tendency to the use of technology with regards to their departments

Dimension	Departments	N	Mean	SD
Emotional Tendency	Special Education Department	79	3.61	1.00
	Psychological Guidance and Counseling	81	3.66	.953
	Classroom Teaching	55	3.42	.869
	Pre-School Teaching Department	78	3.52	1.00
Behavioral Tendency	Special Education Department	79	3.46	1.12
	Psychological Guidance and Counseling	81	3.39	1.05
	Classroom Teaching	55	3.38	.897
	Pre-School Teaching Department	78	3.25	1.17
General score	Special Education Department	79	3.56	1.00
	Psychological Guidance and Counseling	81	3.57	.927
	Classroom Teaching	55	3.41	.808
	Pre-School Teaching Department	78	3.43	.977

Table 5 shows the average scores in emotional tendency (M=3.61, sd= 1.00) of the candidate teachers in Special Education, in Psychological Counseling and Guidance (M=3.66, sd=.953), in Classroom Teaching (M=3.42, sd=.869) and in Pre-school Teaching departments (M=3.52, sd=1.00) to the use of technology. The findings obtained indicate that candidate teachers studying in different departments have a high emotional tendency to the use of technology.

When the candidate teachers' studying in different departments behavioral tendency to the use of technology in class is overviewed, it is seen that the average scores of the teachers in Special Education are (M=3.46, sd= 1.12), and the average scores of the ones in Psychological Counseling and Guidance department are (M=3.39, sd=1.05). Similarly, the behavioral tendency of the candidate teachers studying in Classroom Teaching department to the use of technology was calculated as (M=3.25, sd=1.17). The findings obtained reveal that behavioral tendency of the candidate teachers studying in Special Education, to the use of technology is higher than the ones studying in other departments.

When the overall tendency of candidate teachers to the use of technology in class is examined, the average scores of the candidate teachers in the Special Education department are (M=3.56, sd=1.00), the average scores of the ones studying in Psychological Counseling and Guidance department are (M=3.57, sd=.927), the average scores of the ones in Classroom Teaching department are (M=3.41, sd=.808), and the average scores of the ones studying in Pre-school Teaching department are(M=3.43, sd=.977). This indicates that candidate teachers studying in different departments generally have a high tendency to the use of technology in class. The one-way ANOVA analysis results for the determination of any significant differences between the departments of the candidate teachers and their tendency to the use of technology are shown in Table 6.

Table 6. Candidate teachers' tendency to the use of technology with regards to their departments

Dimension	Source of Variance	Sum of Squares	df	Mean Square	F	p
Emotional Tendency	Between Groups	2.096	3	.699	.751	.523
Within Groups	268.960	289	.931			
Total	271.056	292				
Behavioral Tendency	Between Groups	1.884	3	.628	.537	.657
Within Groups	338.038	289	1.170			
Total	339.922	292				
General score	Between Groups	1.534	3	.511	.575	.632
Within Groups	256.913	289	.889			
Total	258.447	292				

As is shown in Table 6, a significant difference was not noted in the candidate teachers' emotional tendency (F $_{(3;289)}$=.751, p>0.05) to the use of technology in class, their behavioral tendency F$_{(3;289)}$=.537, p>0.05), and their tendency to technology, in general, (F$_{(3;289)}$=.575, p>0.05). In this respect, the candidate teachers' tendency to the use of technology in class with regards to the departments they study did not indicate a significant difference.

4. Discussion and Conclusion

This study aimed to determine candidate teachers' tendency to the use of technology in class. The findings indicate that the teachers, in general, have a high tendency to the use of technology in class. Furthermore, their emotional tendency to the use of technology in class is positive. Gunuc and Kuzu (2014) stated that high scores received in the tendency scale indicate a high tendency to the use of technology in class. In this respect, it is observed that the candidate teachers have a high tendency to the use of technology in class. Similarly, Cagıltay et al., (2007) stressed in their study that the students, too, had a positive approach to the use of technology in class. In a research on candidate classroom teachers, Can and Kaymakci (2016) found out that the candidate teachers had a negative attitude towards the use of technology in education. Besides, in this research it also was found out that the candidate teachers had an average behavioral tendency to the use of technology in class. At

this point, it is important that plans should be made to increase candidate teachers' behavioral tendency to the use of technology in education.

Another finding reached in this research showed that sex did not make a significant difference in both emotional and behavioral tendency of candidate teachers to the use of technology in class. Similarly, in a study conducted by Can and Kaymakci (2016) it was found out that the sex of candidate teachers did not make any significant difference in their attitudes towards the use of technology in education. In a study conducted by Sad and Nalcacı (2015), in which candidate teachers'' capacity perceptions related to their overall knowledge and communication technologies as requirements of the teaching profession was examined, it was found out that sex factor did not make any difference in their capacity perceptions. The findings in these mentioned researches seem to support the results obtained in this research.

In this study, it was found out that age levels of the candidate teachers do not have any significant difference in their general and emotional tendency to the use of technology in class. However, their age levels make a difference in their behavioral tendency to the use of technology in class. The results obtained indicate that elder candidate teachers have a higher behavioral tendency to the use of technology in class. At this point, it can be assumed that experience develops a positive tendency to the use of technology in class. Another finding reached in this research is that the departments the candidate teachers study in do not have any significant difference in their tendency to the use of technology in class. This finding indicates that even in different departments, candidate teachers' tendency to the use of technology remain the same. This is assumed to be due to the similarity of professional knowledge and skills of the teachers even from different branches.

It is suggested that, in future researches, not only candidate teachers, but also teachers in different branches can be examined to determine their tendency to the use of technology in class. Even more, it is suggested that researchers carry out studies with different variables affecting teachers and candidate teachers' tendency to the use of technology.

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