A STUDY ON THE RELATIONSHIP BETWEEN ATTITUDE TOWARDS THE COMPUTER AND LEARNING STRATEGIES IN TERMS OF SOME VARIABLES[1)]

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Abstract. The aim of this study is to investigate the relationship between computer attitudes and learning strategies. Study group of the research consists of 195 candidate teachers (77 male, 118 female) from Education Faculty of Selcuk University. The research data were gathered from Computer Attitude Scale, Cognitive Learning Strategies Scale, Metacognitive Learning Strategies Scale and Personal Data Form. The research findings are: candidate teachers have medium level computer attitudes, a significant correlation between computer attitude, cognitive and metacognitive learning strategies, candidate teachers who have low computer attitude uses more cognitive and metacognitive learning strategies, male candidate teachers have higher level of computer attitudes than female candidate teachers, female candidate teachers use more cognitive learning strategies, a significant difference in cognitive

learning strategies of candidate teachers' according to the type of the high school graduated.

Keywords: computer attitude, cognitive learning strategies, metacognitive learning strategies, prospective teachers

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Introduction

Rapid and intensive developments experienced in information and communication technologies in the 21st century are felt in all areas of our lives. This is so much so that today there are almost no areas where computers have not entered. Therefore, individuals living today need to be able to use computers in order to lead their lives in an efficient way within the society, contribute to social life and continue their personal development. However, individuals develop a reaction against innovations for which they do not possess the skill to use and thus resist change. Prospective teachers, who are to be teachers in the future, must themselves adopt the changes first and become well-informed of the developments in computer technology so that they can apply the changes in institutions of education (Çelik & Bindak, 2005). As the reasons that prospective teachers' attitude towards computers plays a determining role in their use of the computer in educational activities. In this context, it should be ensured that prospective teachers who will educate future generations are able to use the computer in an effective way and develop a positive attitude towards it.

At the same time, prospective teachers should be equipped with the ability to improve themselves and learn by themselves so that they can be successful both during their education process and after their education. In other words they should acquire the proficiency to learn by themselves and monitor their learning in order to develop themselves at this age of information. In this context, it can be stated that prospective teachers' acquiring the proficiency to learn by themselves and monitor their learning is linked to the learning strategies they use. Learning strategies are the techniques, principles or habits that enable can-

didate teachers to fulfill their own learning tasks independently (Sünbül, 1998). Weinstein & Mayer (1986) defined learning strategies as behavior or thoughts in a learning case that are expected to influence the processes of students' acquiring information, encoding it in the memory and retrieve it when necessary, and ways by which students guide themselves in the process of learning and acquire independent learning skills.

There are many studies in the relevant literature about attitudes towards the computer. While some of these studies concern efforts to develop scales of attitude towards the computer (Aşkar & Orçan, 1987; Bindak & Çelik, 2006; Jones & Clarke, 1994; Loyd & Gressard, 1984; Selwyn, 1997; Yeşilyurt & Gül, 2007), others studies include research into attitude towards the computer in terms of different variables. The number of studies that explore the attitude towards the computer and learning strategies together are quite limited (Steele et al., 2002; Tsai & Tsai, 2003). Teachers need to exhibit a positive attitude towards the computer for a successful implementation of the information and communication technologies in learning environments. For a computer activity to succeed, it is important that those, who implement it, to have favorable views regarding the parts that constitute it. In this context, revealing of attitudes may render it possible to predict and control behavior of individuals and take necessary precautions. Besides attitude, how the student processes information is also important. Therefore, it is believed that especially learning strategies that students use in computer-related courses may influence their attitudes towards the computer. Moreover, it can be argued that an investigation into the relationships between the strategies that students with high and low attitudes towards the computer is important to know students better and compensate for their shortcomings by taking the necessary precautions. In this context, the purpose of this study is to investigate the relationship between the attitudes of candidate teachers towards the computer and their learning strategies in terms of certain variables. To this end, answers were sought for the following questions in the study:

(i**)** Is there a relationship between attitudes towards the computer and learning strategies? (ii) Do learning strategies of candidate teachers vary on the basis of their attitudes towards the computer? (iii) Do prospective teachers' attitudes towards the computer and their learning strategies vary according to their gender; type of high school they graduated from; their reasons for choosing teaching as a career; whether they chose the profession of their own volition or not; to what extent the teaching profession is fitting for them - what they feel when they think about the future of their profession?

Method

In this study, which attempted to determine the relationship between prospective teachers' attitudes towards the computer and their learning strategies in terms of certain variables, single and relational survey models were used. While an attempt was made to describe the personal information about the candidate teachers using the single survey model, the relationship between candidate teachers' attitudes towards the computer and their learning strategies was described in terms of certain variables using the relational survey model.

The study group

The study group consisted of a total of 195 students studying at Selcuk University Ahmet Kelesoglu Education Faculty in the 2008-2009 academic years, of whom 77 were male and 118 were female. Of the students in the study group, 61 graduated from General High School, 46 from Anatolian Teachers High School, 55 from Anatolian High Schools, 26 from Super High Schools, 2 from Science High Schools and 5 from other high schools. While 151 of the students had chosen the teaching career of their own volition, 44 of them had chosen this profession of not their own volition. 44 of the students stayed with their families and 42 with their friends while 109 of them stayed in a dormitory.

Data collection tools

Computer Attitude Scale, Cognitive Learning Strategies Scale, Meta-cognitive Learning Strategies Scale and Personal Information Form were used in order to seek answers to the sub-goals in accordance with the purpose of the study.

Computer Attitude Scale: It is a single-dimension Likert-type scale consisting of 22 items developed by Bindak & Çelik (2006) to determine candidate teachers' attitudes towards the computer. The lowest score that can be taken from the scale is 22 whereas the highest score is 110. The internal consistency coefficient of the scale is 0.91.

Cognitive Learning Strategies Scale: It is a four-step Likert-type scale developed by Gürcan (2005) consisting of 36 items. The lowest score that can be taken from the scale is 36 and the highest score is 144. The internal consistency coefficient of the whole scale is 0.89. The scale contains six sub-dimensions, namely application, memory, analysis, summarizing, repetition and description strategies.

Meta Cognitive Learning Strategies: It is a four-step Likert-type scale developed by Namlu (2004) consisting of 21 items. 18 items of the scale are positive while 3 items are negative. The internal consistency coefficient of the whole scale is 0.81. The scale has four sub-dimensions, namely planning, organizing, supervising (checking) and evaluating strategies.

Personal Information Form: It contains survey items such as gender and type of high school they have graduated from that will help learn about candidate teachers in the study group and obtain information that will be related to the attitude towards the computer and learning strategies scales.

Data collection

The data collection tool was prepared by bringing together Computer Attitude Scale, Cognitive Learning Strategies Scale, Meta-cognitive Learning

Strategies Scale and Personal Information Form, which were to be used as data collection tools in the study, and sufficient numbers of their copies were made. The copies of the data collection tools were administered to students who were enrolled in Selcuk University Ahmet Kelesoglu Education Faculty and were in class on the dates of application between April 13 and 17, 2009. During the application process, 205 students completed the data collection tools but 19 data collection tools were excluded from the scope of the study as they were completed inappropriately.

Data analysis

The responses that the candidate teachers gave to the data collection tools were analyzed appropriately in order to answer the questions aimed at the purpose of the study. To this end, correlation analysis was performed to seek an answer to the sub-problem of whether there was a relationship between the attitude towards the computer and the learning strategies, while variance analysis was performed to find an answer to the sub-problem of whether candidate teachers' learning strategies varied according to the levels of their attitudes towards the computer. On the other hand, whether the candidate teachers' attitudes towards the computer and their learning strategies varied according to their gender, whether they have chosen the profession of their own volition or not, and what they felt when they considered the future of the profession was tested using the t-test wheras whether they varied according to the type of the high school they graduated from, their reasons for selecting the profession and whether the teaching profession was fitting for them or not was tested by performing variance analysis. When a difference emerged as a result of the variance analysis, multiple comparison tests were performed in order to determine from which group or groups this difference emerged.

Findings

Before seeking answers to the sub-goals of the study, the level of the candidate teachers' attitudes towards the computer was determined. For this purpose, the values obtained from the defining statistics are given in Table 1.

Table 1. Prospective teachers' attitudes towards the computer

	n	Lowest	Highest	$\overline{X}$	Sd
Attitude towards computers	195	22	110	46.07	12.09

According to the results obtained from the scale, students with a score which is one standard deviation level below the mean score were ranked the low group, students with a score which is one standard deviation level above the mean score were ranked the high group and students with a score between the two groups were ranked the middle group. According the emerging distribution; the low group had scores below 34 (low level), the middle group had scores between 35 and 38 (medium level) and the high group had scores above 59 (high level). According to this distribution, the number of candidate teachers in the low level group was determined to be 33, while the number of candidate teachers in the middle group was 140 and the number of the candidate teachers in the high group was 22. According to this result, it can be argued that the attitude of the candidate teachers towards the computer is at a medium level.

An attempt was made to determine the relationship between candidate teachers' attitudes towards the computer and their cognitive and meta-cognitive learning strategies by performing a correlation analysis. The results that were obtained are shown in Table 2.

Table 2. Relationship between attitude towards the computer and learning strategies

Variables	n	r	p
Attitude-Cognitive Learning Strategies	195	-0.233	0.001*
Attitude-Meta-cognitive Learning Strategies	195	-0.245	0.001*

*p<0.01

As can be seen from the table, there is a low level and reverse relationship between students' attitudes towards the computer and their cognitive learning strategies and meta-cognitive learning strategies and this relationship is significant (p<.05). Therefore, as students' attitudes towards the computer increase, then the learning strategies they use decrease.

Whether candidate teachers' learning strategies varied according to the levels of their attitudes towards the computer or not were tested by performing variance analysis and if a difference was observed among the groups Tukey test was conducted to determine which group or groups this difference emerged from. Results of the analysis are given in Table 3.

Table 3. Results of the variance analysis on levels of candidate teachers' attitudes towards the computer and their learning strategies

Variables	Source of Variance	Total of Squares	Degree of Freedom	Mean of Squares	F	p	Difference
Cognitive Learning Strategies	Intragroup	975.653	2	487.827	3.213	.042	Low-High
	Intergroup	29154.326	192	151.845			
	Total	30129.979	194				
Meta Cognitive Learning Strategies	Intergroup	529.353	2	264.677	4.318	.015	Low-High
	Intragroup	11769.293	192	61.298			
	Total	12298.646	194				

As is seen in Table 3, there is a significant difference between the levels of candidate teachers' attitudes towards the computer and their cognitive learning strategies ($F_{(2\text{-}192)}$= 3.213; p<.05). This difference arises from students with a low level of attitude towards the computer and students with a high level of

attitude towards the computer. In other words, candidate teachers' cognitive learning strategies vary according to the levels of their attitudes towards the computer. Students with a lower level of computer attitude use more cognitive learning strategies. Likewise, there is a significant difference between the levels of candidate teachers' attitudes towards the computer and their meta-cognitive learning strategies ($F_{(2\text{-}192)}$= 4.318; p<.05). This difference arises from students with low levels of computer attitudes and students with high levels of computer attitudes. In other words, candidate teachers' meta-cognitive learning strategies vary according to the levels of their attitude towards the computer. Students with lower levels of computer attitudes use more meta-cognitive learning strategies.

Whether candidate teachers' attitudes towards the computer and their learning strategies vary according to their gender was tested using the t-test. Results of the analysis are given in Table 4.

Table 4. T-test results of candidate teachers' attitudes towards the computer and their learning strategies according to their gender

Variable	Groups	n	$\overline{X}$	Sd	df	t	P
Attitude Towards the Computer	Girl	118	43.73	12.82	193	-2.21	0.03
	Boy	77	47.60	11.40			
Cognitive Learning Strategies	Girl	118	94.25	11.78	193	-2.02	0.05
	Boy	77	90.60	13.22			
Meta Cognitive Learning Strategies	Girl	118	56.09	7.79	193	-1.34	0.19
	Boy	77	54.53	8.18			

As a result of the t-test that was performed, a difference of 3.34 points was found between male and female candidate teachers' scores on attitude towards the computer in favor of male candidate teachers (t= -2.21; p<.05). In other words, male candidate teachers' scores regarding their attitude towards the computer are higher in comparison to those of the female candidate teach-

ers. According to this result, it can be suggested that male candidate teachers have a more positive attitude towards the computer than female candidate teachers. However, a difference of 3.65 points was found between male and female candidate teachers' cognitive learning strategy scores, the difference being in favor of female candidate teachers ($t= -2.02$; $p<.05$). To put it in another way, female candidate teachers' scores on cognitive learning strategies are higher in comparison to those of male candidate teachers. According to this result, it can be proposed that female candidate teachers use cognitive learning strategies more than male candidate teachers. However, there was no significant difference between male and female candidate teachers' meta-cognitive learning strategies ($t= -1.34$; $p>.05$). In other words, meta-cognitive learning strategies of male and female candidate teachers are similar.

Whether candidate teachers' attitudes towards the computer and their learning strategies varied according to the type of high school they graduated from was tested by performing variance analysis, and if a difference arose between the groups, then Tukey test was conducted to determine from which group or groups this difference arose. Results of the analyses are given in Table 5.

As is seen from Table 5, there is no significant difference between the types of high school which candidate teachers graduated from and the levels of their attitudes towards the computer ($F_{(5-189)}=1.10$; $p>.05$). In other words, candidate teachers' attitudes towards the computer are similar in terms of the types of high schools they graduated from. There is a significant difference between the types of high schools that students graduated from and their cognitive learning strategies ($F_{(5-189)}=4.87$; $p<.05$). This difference arises from students from General High Schools ($\overline{X} = 95.13$) and students from Anatolian Teachers' High School ($\overline{X} = 85.63$); students from Anatolian Teachers' High School ($\overline{X} = 85.63$) and students from Anatolian High Schools ($\overline{X} = 94.18$); and students

from Super High Schools ($\overline{X}$ = 97.65) and students from Anatolian Teachers' High School ($\overline{X}$ = 85.63). In other words, students from Anatolian Teachers' High School use fewer cognitive learning strategies than students from General High Schools, Anatolian High Schools and Super High Schools. However, no significant difference was found between the types of high schools that candidate teachers graduated from and their metacognitive learning strategies ($F_{(5-189)}$= 2.17; p>05). In other words, metacognitive learning strategies that candidate teachers use are similar in terms of the types of high schools they graduated from.

Table 5. Results of the variance analysis regarding prospective teachers' attitudes towards the computer and their learning strategies according to the type of high school they graduated from

Variables	Source of Variance	Total of Squares	Degree of Freedom	Mean of Squares	F	p	Difference
Attitude Towards the Computer	Intergroup	802.44	5	160.49	1.10	.362	
	Intragroup	27574.55	189	145.90			
	Total	28376.99	194				
Cognitive Learning Strategies	Intergroup	3436.95	5	687.39	4.87	.001*	GHS-ATHS
	Intragroup	26693.04	189	141.23			ATHS- AHS
	Total	30129.98	194				ATHS-SHS
Metacognitive Learning Strategies	Intergroup	668.75	5	133.75	2.17	.059	
	Intragroup	11629.89	189	61.53			
	Total	12298.65	194				

GHS: General High Schools
ATHS: Anatolian Teachers' High School
AHS: Anatolian High Schools
SHS: Super High Schools

Whether candidate teachers' attitudes towards the computer and their learning strategies varied according to their reasons for choosing the teaching profession was tested by performing variance analysis, and if a difference arose among the groups, Tukey test was conducted to determine from which group or groups this difference arose. Results of the analyses are given in Table 6.

Table 6. Results of the variance analysis on prospective teachers' reasons for choosing the teaching profession and their attitudes towards the computer and their learning strategies

Variables	Source of Variance	Total of Squares	Degree of Freedom	Mean of Squares	F	p	Difference
Attitude Towards the Computer	Intergroup	764.25	4	191.06	1.32	.266	
	Intragroup	27612.75	190	145.33			
	Total	28376.99	194				
Cognitive Learning Strategies	Intergroup	2496.03	4	624.01	4.29	.002	ILP-MyScore ILP-Other
	Intragroup	27633.96	190	145.44			
	Total	30129.98	194				
Metacognitive Learning Strategies	Intergroup	935.684	4	233.921	3.91	.004	ILP-MyScore ILP-Other
	Intragroup	11362.96	190	59.81			
	Total	12298.65	194				

ILP : "I love the profession"
MyScore: "my score was enough only for this department"

As is seen from Table 6, there is no significant difference between candidate teachers' reasons for choosing the teaching profession and the levels of their attitudes towards the computer ($F_{(4-190)}$=1.31; p>.05). In other words, candidate teachers' attitudes towards the computer are similar in terms of their reasons for choosing the profession. There is a significant difference between candidate teachers' reasons for choosing the profession and their cognitive learning strategies ($F_{(4-190)}$= 4.29; p<.05). This difference arises from students who stated "I love the profession" ($\overline{X}$ = 96.15) and who stated "my score was enough only for this department" ($\overline{X}$ = 89.31), and those who stated "I love the profession" ($\overline{X}$ = 96.15) and those who stated "other" ($\overline{X}$ = 87.60). A similar situation also holds true for metacognitive learning strategies. In other words, there is a significant difference between candidate teachers' reasons for choosing the profession and their metacognitive learning strategies ($F_{(4-190)}$= 3.91; p<.05). This difference arises from students who stated "I love the profession" ($\overline{X}$ = 57.25) and those who stated "my score was enough only for this department ($\overline{X}$ = 53.06),

and students who stated “I love the profession” ($\overline{X}$ = 57.25) and those who stated “other” ($\overline{X}$ = 52.39).

Whether candidate teachers’ attitudes towards the computer and their learning strategies varied according to their choosing the profession of their own volition or not was tested using the t-test. Results of the analysis are shown in Table 7.

Table 7. T-test results regarding prospective teachers’ attitudes towards the computer and their learning strategies according to whether they chose the profession of their own volition or not

Variable	Group	n	$\overline{X}$	Sd	Df	t	p
Attitude Towards the Computer	Yes	151	45.11	10.66	193	-1.68	.09
	No	44	49.36	15.79			
Cognitive Learning Strategies	Yes	151	94.50	11.91	193	3,61	.00
	No	44	87.02	12.72			
Metacognitive Learning Strategies	Yes	151	56.28	7.82	193	2,64	.01
	No	44	52.73	7.90			

As a result of the t-test that was performed, no difference was found between the scores of candidate teachers regarding their attitudes towards the computer whether they chose the profession of their own volition or not (t= -1.68; p>.05). In other words, scores of candidate teachers regarding their attitudes towards the computer are similar no matter whether they chose the profession of their own volition or not. There was a difference of 7.47 points between the cognitive learning strategy scores of candidate teachers who chose the profession of their own volition and those who did not, the difference being in favor of candidate teachers who chose the profession of their own volition (t= 3.61; p<.05). In other words, cognitive learning strategy scores of candidate teachers who chose the profession of their own volition are higher in comparison to those who did not choose the profession of their own volition. According to this result, it can be stated that candidate teachers who chose the profession of their own volition use cognitive learning strategies more than those who did

not choose the profession of their own volition. A similar situation also holds true for metacognitive learning strategies. There was a significant difference of 3.55 points between the metacognitive learning strategy scores of candidate teachers who chose the profession of their own volition and those who did not, the difference being in favor of candidate teachers who chose the profession of their own volition ($t= 2.64$; $p<.05$). To put it in another way, metacognitive learning strategy scores of candidate teachers who chose the profession of their own volition are higher than those of the candidate teachers who did not choose the profession of their own volition. According to this result, it can be stated that candidate teachers who chose the profession of their own volition use metacognitive learning strategies more than candidate teachers who did not choose the profession of their own volition.

Whether candidate teachers' attitudes towards the computer and their learning strategies varied according to the extent to which the teaching profession was fitting for them was tested by performing variance analysis, and if a difference arose among the groups, Tukey test was conducted to determine from which group or groups this difference arose. Results of the analysis are given in Table 8.

As is seen in Table 8, there is no significant difference between how fitting the teaching profession is for candidate teachers and their attitudes towards the computer ($F_{(2-192)}= 2.57$; $p>.05$). In other words, candidate teachers' attitudes towards the computer are similar in terms of whether the teaching profession is fitting for them or not. There is no significant difference between how fitting the teaching profession is for candidate teachers and their cognitive learning strategies ($F_{(2-192)}= 7.62$; $p<.05$). This difference arises from students who consider the profession fitting for them ($\overline{X}$ = 95.26) and those who consider it partially fitting for them ($\overline{X}$ = 84.16). A similar situation also holds true for metacognitive learning strategies. In other words, there is a significant difference between how fitting the profession is for candidate teachers and their met-

acognitive learning strategies ($F_{(2-192)}$ = 6.96; p<.05). This difference arises from students who consider the profession fitting for them ($\overline{X}$ = 56.94) and those who consider it partially fitting for them ($\overline{X}$ = 49.33).

Table 8. Results of variance analysis regarding how fitting the teaching profession is for students and their attitudes towards the computer and their learning strategies

Variables	Source of Variance	Total of Squares	Degree of Freedom	Mean of Squares	F	p	Difference
Attitude Towards the Computer	Intergroup	739.46	2	369.73	2.57	.08	
	Intragroup	27637.53	192	143.95			
	Total	28376.99	194				
Cognitive Learning Strategies	Intergroup	2215.75	2	1107.87	7.62	.01	Fitting-Partially Fitting
	Intragroup	27914.23	192	145.39			
	Total	30129.98	194				
Metacognitive Learning Strategies	Intergroup	830.96	2	415.48	6.96	.01	Fitting-Partially Fitting
	Intragroup	11467.70	192	59.73			
	Total	12298.65	194				

Whether candidate teachers' attitudes towards the computer and their learning strategies varied according to how they felt when they considered the future of their profession was tested using the t-test. Results of the analysis are given in Table 9.

As a result of the t-test, a difference of 5.46 points was found between the candidate teachers who felt themselves optimistic and those who felt pessimistic in terms of their scores regarding their attitudes towards the computer, the difference being in favor of the candidate teachers who felt themselves pessimistic (t= -2.20; p<.05). In other words, scores of candidate teachers who felt themselves pessimistic were higher than those of candidate teachers who felt themselves optimistic in terms of their attitudes towards the computer. According to this result, it can be stated that candidate teachers who felt themselves pessimistic had a more positive attitude towards the computer than teachers

who felt themselves optimistic. However, a difference of 6.57 points was found between the cognitive learning strategy scores of candidate teachers who felt themselves optimistic and those who felt pessimistic (t= 2.58; p<.05) and a difference of 3.99 points between their metacognitive learning strategy scores (t= 2.45; p<.05), both in favor of candidate teachers who felt themselves optimistic. In other words, cognitive and metacognitive strategy scores of candidate teachers who felt themselves optimistic are higher than those candidate teachers who felt themselves pessimistic. According to this result, it can be suggested that candidate teachers who felt themselves optimistic use cognitive and metacognitive learning strategies more than candidate teachers who felt themselves pessimistic.

Table 9. T-test results regarding students' attitudes towards the computer and their learning strategies according to what they felt when they considered the future of their profession

Variables	Group	n	$\overline{X}$	Sd	Df	t	p
Attitude Towards the Computer	Optimistic	168	45.32	11.76	193	-2.20	.03
	Pessimistic	27	50.78	13.28			
Cognitive Learning Strategies	Optimistic	168	93.72	12.14	193	2,58	.01
	Pessimistic	27	87.15	13.20			
Metacognitive Learning Strategies	Optimistic	168	56.03	7.87	193	2,45	.02
	Pessimistic	27	52.04	7.80			

Discussion

The present study, which aimed at determining the relationship between prospective teachers' attitudes towards the computer and their learning strategies, found that students' attitudes towards the computer were at a medium level. A similar finding was also reached in a study which was conducted by Gerçek et al. (2006). According to this result, it can be suggested that various activities need to be implemented in order to raise the attitudes of prospective teachers who will educate future generations and set examples regarding infor-

mation and communication technologies towards the computer. The study found a significant but reverse relationship between attitude towards the computer and cognitive and metacognitive learning strategies. It was determined that students' cognitive and metacognitive learning strategies varied according to their attitudes towards the computer; in other words, prospective teachers with a lower level of attitude towards the computer used more cognitive and metacognitive learning strategies. It can be suggested that one reason why such a result emerged was that students who had little interest in the computer attached more importance to other courses that were not related to the computer and therefore used more learning strategies.

When students' attitudes towards the computer were investigated in terms of their gender, it was observed that male candidate teachers had a higher level of attitude than female candidate teachers. This finding of the present study is also supported by some studies in the relevant literature (Colley et al, 1994; Loyd & Gressard, 1984; Roussos, 2002; Whitley, 1997). However, a large majority of the studies in the literature[2-4)] (Çekbaş et al., 2003; Çelik & Bindak, 2005; Güler & Sağlam, 2002) do not support this finding. This result can be attributed to the difference in the numbers of participants by gender or students' experiences with the computer in the past. In this context, it can be proposed that different studies need to be implemented in order to reveal the causes of this difference. It was found that candidate teachers' attitudes towards the computer did not vary according to the type of high school that they graduated from. This finding of the study is also supported by a study conducted by Gerçek et al. (2006). This result can be attributed to the computer courses that students took before their undergraduate studies began.

The study also found that students' cognitive learning strategies varied according to the type of the high school that they graduated from. Interestingly enough, students from Anatolian Teachers' High School, in particular, used fewer cognitive learning strategies than students who graduated from other high

schools. This result can be attributed to the pedagogical courses that students who graduated from Anatolian Teachers' High School received before they became candidate teachers. In this context, experimental activities can be organized concerning cognitive learning strategies of students from Anatolian Teachers' High School. Moreover, qualitative studies can be designed to determine the factors that caused such a result to emerge.

The study found no significant difference between the reasons why prospective teachers chose the teaching profession and their attitudinal levels towards the computer. This result can be attributed to the fact that information and communication technologies affect all areas today and that it is impossible to achieve success in any job without having computer skills no matter what profession one chooses. However, a totally opposite situation arose in the case of the cognitive and metacognitive learning strategies that candidate teachers used. This result can be attributed to the fact that students chose the profession not because their score were sufficient for this department but because they chose it of their own volition, they believed that they could perform this profession successfully in the future, have their heart in the profession and hence make use of cognitive and metacognitive learning strategies in courses required for the teaching profession. A similar situation also holds true for candidate students who consider the teaching profession fitting for themselves. In other words, students who consider the profession fitting for themselves use more cognitive and metacognitive learning strategies.

Another finding of the study is that while the attitudes towards the computer of prospective teachers who felt themselves pessimistic when they considered the future of their profession were higher, they used fewer cognitive and metacognitive learning strategies. This result can be attributed to the fact that candidate teachers who feel themselves pessimistic are aware that perhaps they will not be in the teaching profession in the future but that they can't be successful in another job without computer skills. In this context, more detailed

studies need to be implemented regarding the reasons for whether candidate teachers choose the profession of their own volition or not, whether they consider the profession is fitting for themselves or not and how these affect individual differences.

NOTES

1. Short version of this research (in Turkish) was presented at the International Balkan Education and Science Congress in Edirne, October 2009.

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