

# Information Technologies in Teacher Education: Teacher Candidates' Perceived Computer Self-Efficacy

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## *Abstract:*

The purpose of this study was to examine the perceptions of students in the faculty of education regarding their self-efficacy in relation to computer use. The participants consisted of 54 students at a university in Ankara, Turkey. Data collection was done through a survey questionnaire and the "Computer Self Efficacy" scale. According to the results students' level of self efficacy was found to be high. Results also indicate that participants' gender is significantly related with their computer self-efficacy in relation to some specific aspects. However, it was concluded that for effective use of IT it is essential that necessary conditions are provided. In this respect institutional support should be made available.

## **1 Introduction and Problem**

Computers are becoming more commonplace and what they can offer the user more sophisticated and more complex. Information technologies (IT) have enormous effects on the way information is shared. Information can be accessed much more easily than it used to be 15-20 years ago and this has changed the way societies work. Nowadays, companies are looking for people who renew themselves personally and professionally. Therefore, use of computers in educational settings attracts more attention. Definition of computer literacy on the other hand, continues to change. It now

means having more than basic computer skills.

Schools are given the responsibility to equip people with IT skills. In fact not only students, the teachers who are training students need to have those skills as well. In other words, the qualities teachers have in using computers as medium of instruction are very important.

The diffusion of technology will effects teaching-learning processes no matter how the traditional educational institutions react. Many institutions and experts believe that information technologies have positive potential on the improvements of teaching-learning situations. However, there is no consensus on how IT can be used to be productive. On the other hand, all discussions have one common theme: use of IT in education is a must.

Teachers are in a key position in using information technologies effectively in educational settings. Hence, most of the arguments on the possible potentials of IT are about teachers' technological competencies (Massy & Zemsky, 2005).

Literature frequently points the followings on the relative advantages of IT (Massy & Zemsky, 2005; Rogers, 2003; Bennett & Bennett, 2003)

- Accessing richer content much more easily, and in much shorter time,
- Better communication

- Individualization
- Easiness in evaluation
- Fruitful professional interaction

However, it is believed that education students' (prospective teachers') self-efficacy in relation to computer use has roles on competencies about IT use.

Research indicates that in order for people to use computers successfully, they need to have self-confidence. If they don't feel comfortable in using computer as a tool, they can't be successful in their teaching. Therefore, it is important that people who will use IT have self-confidence. Some studies have identified lack of confidence for teaching with computers as a factor influencing the levels of use of computers by student and teachers.

Perceived self-efficacy which is one of the important variables of the Social Cognitive Theory is commonly defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 1997a; Cassidy & Eachus, 1995). Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Computer self-efficacy, people's beliefs about their capabilities to use computers, is considered an adaptation of self-efficacy. Individuals with high self-efficacy approach difficult tasks as challenges to be mastered rather than as threats to be avoided. With this respect self-efficacy perception is an important human characteristic that should be studied in educational settings (Aşkar, Umay 2001).

Perceived computer self-efficacy of teachers will have influence both on learning experiences created for students and on students' perception of their own self-efficacy. Because of their roles as guides, teachers should feel secure regarding computer usage. Research on computer self-

efficacy shows that people with high computer self-efficacy are eager to attend computer related activities and have higher expectations.

Self-efficacy beliefs have been shown to influence behavior in a wide variety of contexts. This paper is primarily concerned with self-efficacy in the context of computer use.

## 2 Method

The aim of this study was to examine the perceptions of students (prospective teachers) in the faculty of education regarding their self-efficacy in relation to computer use, their field of study, and the computer programs they use. The study group consisted of 54 students at a university, in Ankara, Turkey. Data collection was done through a survey questionnaire developed by the researcher and the "Computer Self Efficacy" scale developed by Aşkar and Umay (2001). The 17-item Likert-type scale's validity coefficient is 0.70.

## 3 Results

According to the results, 70% of the participants is male and 30% is female. While 76% of those participants have their own computers in their homes or dormitories, 9% of them have access to computers only at college. On the other hand, only 33% has Internet connections at their home computers.

For Internet connections students use college laboratories (43%) and Internet cafes (48%). In terms of computer usage the results indicate that 57% of the participant students have been using computers for 5 years and more, 30% of them 4-5 years, and 13% for 2-3 years.

Results also show that most of the students (78%) are using computers every day for a couple of hours. However, in terms of using Internet services “every day for a couple of hours” options is selected by only 32% of the participants while “a couple of hours” 20%, and “a couple of days” in a week” option is chosen by 46% of the participants.

Results show that students learn to use computers mostly through formal (through a course offered in their school) ways. When students are asked how they learned to use computers, a small number of them (15%) reported that they used books. According to their answers they also learned it by trial and error (28%), through courses offered in high school (44%), and through courses offered in college (57%). Interestingly only 17% of them said that they learned it from their friends.

Another result indicate that participant use computers mostly for e-mailing, searching on the web, and preparing course projects.

#### Computer self-efficacy

	Mean	Std. Deviation
I believe that I have a special talent for using computers	3,44	1,192
I am talented in using computers	3,65	,974
<b>If I spend enough time I can solve computer related problems</b>	<b>4,33</b>	<b>,673</b>
I know what to do when I encounter a new situation on a computer	3,67	,911
<b>It is easy for me to do any kind of word processing on computers</b>	<b>4,09</b>	<b>,896</b>

<b>I have fear of doing something wrong or pressing a wrong key while using computers</b>	<b>4,74</b>	<b>,620</b>
I have always believed that it is impossible for me to be in full control of computers	3,96	1,081
<b>I get nervous while working on computers</b>	<b>4,07</b>	<b>,866</b>
Computers fail in the middle of a work	3,91	,759
Quick solutions are good enough for me when I face a problem while working on a computer	3,11	,883
I believe that I am in full command of computer terminology and concepts	3,54	1,041
I feel as if computers were part of me	2,96	1,258
I use computers to plan my day/time	2,19	1,029
While working on computers, I play with it and discover new things	3,57	,815
I think I use computers effectively	3,76	1,063
<b>I get nervous when I face a sudden problem on computers</b>	<b>4,22</b>	<b>,861</b>
<b>I think most of the time I spend on computers is a waste of time</b>	<b>4,48</b>	<b>,926</b>
	<b>3,74</b>	<b>,93</b>

The “Computer Self Efficacy” scale has 17 items. Participants were asked to report their opinions on a 5 point Likert scale “never, occasionally, sometimes, mostly, always”. In analyzing the results, “never” is rated as 1 while “always” is rated as 5. The answers given to the negative statements were reversed. The results indicate that students’ level of computer self-efficacy is high (3,74) which falls on the “mostly” option.

As seen in Table 1, some statements got high rankings. Those are:

I have fear of doing something wrong or pressing a wrong key while using computers

4,74

I think most of the time I spend on computers is a waste of time

4,48

If I spend enough time I can solve computer related problems

4,33

I get nervous when I face a sudden problem on computers

4,22

It is easy for me to do any kind of word processing on computers

4,09

I get nervous while working on computers

4,07

Participants have no fear about doing something wrong while using computers, and the time spent on using computers is not waste of time at all. They also believe in themselves that they don’t get nervous when having a computer problem while working on computers and can solve those problems if they have enough time. It was interesting

to see that the statement about planning (I use computers to plan my day/time) has the lowest (2,19) mean together with the statement “I feel as if computers were part of me”.

Some demographic characteristics were cross tabulated with self-efficacy statements. It was found that the participants’ gender is significantly related with their computer self-efficacy in relation to some specific aspects such as “being talented in using computers”, “being in full command of computer terminology and concepts”, and “using computers effectively”.

#### 4 Conclusions

The participants of this study will join to the teaching force soon. In this respect this study has provided some insights about prospective teachers’ computer self-efficacy.

Knowing how to use computers does not necessarily mean that one can use it successfully. Therefore, it can be said that courses on how computers can be integrated into teaching can be offered to make computers more effective in educational settings.

It was interesting to see that only 2% reported that they attended a computer workshop offered by the university. According to Hammond et al (1992) individuals who do not have enough information and experience on information technologies, cannot use those technologies effectively. Therefore, it can also be concluded that for effective use of computers it is essential that necessary conditions and institutional support are provided.

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