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## A case study: Analysis of teacher self-efficacy of teacher candidates

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### Abstract

The purpose of this study is to analyze the teacher self-efficacy beliefs of the teacher candidates by some variables such as gender and general academic achievement. Twenty nine students participated to this study. Teacher self-efficacy scale and educational software development self-efficacy scale were used as instruments. No significant difference was found between teacher self-efficacy perceptions of teacher candidates according to their gender. There was weak relationship between teacher self-efficacy perception of teacher candidates and their general academic achievement. Also there was a high positive relationship between teacher self-efficacy perception and educational software development self-efficacy.

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*Keywords:* Teacher self-efficacy; self-efficacy perception; computer education and instructional technologies.

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### 1. Introduction

The concept of self-efficacy is based on the social cognitive theory. Bandura (1986) defines it as “the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations. Perception of one’s own self-efficacy may not reflect his or her real capability. However, perceived self-efficacy has an important role in arranging one’s behaviors (Senemoğlu, 2001). Self-efficacy perceptions affect goals which people identify for themselves, amount of effort which they are to spend to reach these goals, duration of exposure to difficulties, and reactions they show against failure (Bıkmaz, 2004; Alabay, 2006).

As for teacher self-efficacy, it is defined as the belief a teacher has regarding his or her capability to exhibit necessary behaviors to execute teaching successfully (Atıcı, 2000). Starting from these definitions, it can be claimed that there is a relation between teachers’ executing their job effectively and their perceptions of self-efficacy. In fact, it is stated in many resources that this perception of teachers’ is likely to influence their attitudes and behaviors positively or negatively (Tschannen-Moran, Hoy and Hoy, 1998; Henson, Stephens & Grant 1999; Önen and Öztuna, 2005; Palmer, 2006).

Chambers and Hardy (2005) determined that students of teachers with high self-efficacy perception levels had higher academic achievement levels than students of teachers with lower self-efficacy perception levels.

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But, according to Good and Brophy (2003), teachers with high self-efficacy perception levels maintain student participation at a higher level through spending more time keeping track of their students, supervising their works during a lesson, and providing them with group works and collaborative tasks.

There are also studies mentioning about the presence of a reciprocal relationship between a teacher's self-efficacy perception level and the academic achievement levels of his or her students (Ross, 1994; Kaufman and Sawyer, 2004). According to those studies, a teacher starts to feel more efficacious as his or her students become successful, and as a teacher feels efficacious, students become successful.

As seen, a teacher's self-efficacy perception appears to be an important variable having influence on such matters as classroom management, method and strategy use, increasing student motivation and success. A teacher lacking a sense of self-efficacy is not expected to become efficient in his or her lessons. For this reason, it becomes important to spend effort on determining and developing self-efficacy perception levels of teacher candidates, who are to get teacherhood as a profession in the future. In this respect, the purpose of this study is to identify the self-efficacy perception levels of the teacher candidates studying at the department of Computer Education and Instructional Technologies (CEIT) with regard to being a teacher. In order to achieve this purpose, research questions were constructed as follows:

1. 1- Is there a significant difference between teacher self-efficacy beliefs of the teacher candidates according to their gender?
2. 2- Is there a relationship between teacher self-efficacy beliefs of teacher candidates and their general academic achievement?
3. 3- Is there a relationship between teacher self-efficacy beliefs and educational software development self-efficacy beliefs of teacher candidates?

## **2. Method**

The study was conducted during the spring semester of 2008-2009 academic year. This section includes participants, research model and data analysis procedure.

### *2.1. Participants*

Twenty nine students (12 females, 17 males) in fourth grade from Uludag University Faculty of Education CEIT Department participated to this study.

### *2.2. Research model*

Descriptive research model was used in this study. One sample Kolmogorov-Smirnov test, independent samples t-test and correlation analysis was used to analyze the data collected from the teacher candidates.

### *2.3. Procedure*

Teacher candidates in fourth grade were asked to complete the scale sending a web link to them via email. Data was collected through this web site. The return rate was 75%.

### *2.4. Instrument*

One of the instruments used in this study was "The Teacher Sense of Efficacy Scale" developed by Tschannen-Moran and Hoy (2001). The scale was translated into Turkish by Çapa Aydın, Çakıroğlu, & Sarıkaya (2004) and for the whole scale, the reliability of efficacy scores was calculated as .93. All items were contributing to the reliability with high item-total correlations. Another instrument was "Education Software Development Self-Efficacy Perception Scale" developed by Aşkar & Dönmez (2004). It is a five-point Likert-type scale and includes 22 items. The obtained score for each item ranged from 0 (I never trust) to 100 (I trust very much). The reliability coefficient of the scale was calculated as .92.

### 3. Results

In order to select the statistical analysis method, distribution of the data was examined by One Sample Kolmogorov-Smirnov test.

Table 1. One Sample Kolmogorov-Smirnov test results of average self-efficacy scores of teacher candidates

n	Mean	sd	Z	P
29	161	19.66	0.713	.690

The test results shown in Table 1 indicate that the data distribution is normal ( $p > .05$ ). Therefore it was decided to use parametric test in order to analyze the data collected from teacher candidates.

#### 3.1. Findings regarding first research question

First research question was “Is there a significant difference between teacher self-efficacy beliefs of the teacher candidates according to their gender?” In order to answer this question independent samples t-test was used to compare teacher self efficacy scores of male and female teacher candidates.

Table 2. Comparison of average self-efficacy scores of male and female teacher candidates

Groups	N	Mean	Sd	T	p
Female	12	156.17	19.56	-1.117	.274
Male	17	164.41	19.58		

According to the test results shown in Table 2, there was no significant difference between male and female teacher candidates in term of self-efficacy beliefs.

#### 3.2. Findings regarding second research question

Second research question was “Is there a relationship between teacher self-efficacy beliefs of teacher candidates and their general academic achievement?” In order to answer this question Pearson correlation coefficient was calculated and it was found as 0.283 for those variables.

#### 3.3. Findings regarding third research question

Third research question was “Is there a relationship between teacher self-efficacy beliefs and educational software development self-efficacy beliefs of teacher candidates?” In order to answer this question Pearson correlation coefficient was calculated and it was found as 0.743 for those variables.

### 4. Discussion

In this study the teacher self-efficacy beliefs of the teacher candidates at the CEIT department were investigated according to their gender and the correlation between students’ teacher self-efficacies and their general academic achievement was analyzed. In addition, correlation between teacher self-efficacy beliefs and educational software development self-efficacy beliefs of the teacher candidates were investigated.

The findings showed that there was no significant difference among teacher candidates according to gender and there was a weak relationship between teacher self-efficacy perception and their general academic achievement. These findings cannot be generalized because of the limited number of participants from just one department.

The finding of the third research question showed that there was a high positive correlation between teacher self-efficacy beliefs and educational software development self-efficacy beliefs of the teacher candidates at CEIT department ( $r=0.743$ ). As stated by Pajares (2009), researches about the self-efficacy beliefs pointed out correlation

with other motivation constructs, problem solving, self-regulation, other self-beliefs and expectancy constructs. To state the matter differently, it was observed that beliefs of teacher candidates at CEIT department regarding being a teacher is parallel to their beliefs of educational software development that is the main part of the skills in their branch.

In order to make some predictions for future performances of teacher candidates and to improve teacher education programs, further research should be done by focusing on the effects of self-efficacy beliefs on instructional practices and the way of developing self-efficacy beliefs of teacher candidates.

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