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THE EFFECT OF OUTCOMES IN THE TEACHING PRINCIPLES AND METHODS COURSE IN THE PEDAGOGICAL FORMATION PROGRAM ON PROSPECTIVE TEACHERS' SELF-EFFICACY BELIEFS

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Abstract:
The purpose of this research is to reveal the effect of the gains obtained in the *teaching principles and methods* course in the pedagogical training program implemented in education faculties in Turkey on the teacher self-efficacy beliefs of prospective teachers. The research is a descriptive study in *pre-test and post-test* screening model. The study group consisted of 350 prospective teachers studying in the pedagogical formation program of Mehmet Akif Ersoy University, Faculty of Education in the spring semester of 2018-2019 academic year. In obtaining the data for the course of *teaching principles and methods*, the *teaching self-efficacy scale*, which was developed by Kuzu and Demir (2015) together with validity and reliability studies, was used. For the sub-dimensions of the scale, t-test was employed for unrelated samples to determine whether the scores of *pre-test* and *post-test* differed significantly from each other. Two-way variance analysis (ANOVA) was used for repeated measurements to determine whether the differences in the two tests were statistically significant. Kolmogorov-Smirnov (KS) test was used to determine whether the data were normally distributed or not. According to the findings as a result of the analysis, self-efficacy beliefs of the participants increased significantly in all sub-dimensions of the scale. The teaching area where the self-efficacy increased the most was *program development*, while the areas where it increased the least were *explanation in teaching* and *planning* areas. The distribution of self-efficacy beliefs by gender revealed significant differences in favor of female teacher candidates compared to men. It was determined that prospective teachers showed significant differences depending on department variables and did not show significant differences depending on undergraduate education class variable.

Keywords: prospective teachers, self-efficacy belief, professional self-efficacy

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1. Introduction

In today's societies where knowledge is dominant in every field and rapid changes and developments in science and technology are experienced, there is an increasing need for schools that train students with intellectual knowledge and skills. From this point of view, it can be said that the role of teachers is very important in raising the quality of education in schools and the development of people and society. In this context, the teacher is undoubtedly one of the most basic and primary elements of a country's education system. In a rapidly changing world, teachers who take into account and interpret the needs of the society in accordance with contemporary realities are more needed than ever before. There is no substitute for a qualified teacher in education and training. In such an important profession, some knowledge and skills must be acquired as a professional competence before starting the profession. In studies examining teacher competence areas, it can be said that one of the most prominent concepts in recent years is teacher self-efficacy belief.

The concept of self is also regarded as self-esteem, but self-efficacy is more related to the concept of "trust" (Schunk & Pajares, 2002). The conceptual foundations of self-efficacy are based on the *Social Learning Theory* of Bandura (1986; 1989). According to this theory, the concept of self-efficacy can also be explained as a judgment of an individual about his/her confidence in his/her abilities to accomplish a job or a task (Dembo, 2004). Self-efficacy belief is the most important factor affecting human behavior and choices (Schunk, 1985). In this sense, self-efficacy can be thought of as the belief of a person in seeing the power to accomplish within him/herself rather than expressing or revealing what s/he can do. For the self-efficacy, which is an abstract concept, various terms such as "self-efficacy belief", "expectation of competence", "expectation of self-efficacy", and "self-efficacy perception" have been used (Azar, 2010). Today, it is observed that self-efficacy studies are concentrated in different fields of social sciences, particularly in medicine (Luszczynska, Scholz, & Schwarzer, 2005).

Researches in the field of education have been widespread in determining the relationships between the success of prospective teachers and the teachers in the profession in performing professional tasks and self-efficacy belief levels (Akkoyunlu, Orhan & Umay, 2005; Enochs & Riggs, 1990; Ramey-Gassert, Shroyer & Staver, 1996; Rocco, 2005; Tschannen-Moran, Hoy & Hoy, 1998; Yaman, Cansüngü-Koray & Altunçekiç, 2004). It can be said that teacher self-efficacy belief is a frequently used concept in studies examining teacher competencies. Teachers' professional self-efficacy beliefs can affect them in many ways. This is because the individuals' beliefs play an effective and decisive role on their cognitive, emotional, motivational and choice processes (Bandura, 1977). The success of teachers who have a critical impact on the academic and social development of the students and directing the teaching-learning process is directly related to their high self-efficacy beliefs. Teacher self-efficacy is a more comprehensive concept than the concept of competence, which refers to teachers' professional knowledge and skills. According to Gavora (2010), high self-efficacy forms the basis of professional knowledge and skills. Teachers with high self-efficacy can also

use their professional knowledge and skills effectively. According to Ashton & Webb (1986), there is a positive relationship between self-efficacy beliefs and student achievement in teachers' behaviors of maintaining a task, taking risks and using innovations. In the context of such a relationship, it can be thought that a teacher with high self-efficacy beliefs can be a model for his/her students with his/her success motivation, effort and performance, while a teacher with low self-efficacy belief will be inadequate in having students gain the behaviors that will enable the students to learn. Studies encountered in literature (Alemdağ, Öncü & Yılmaz, 2014; Allinder, 1995; Altunçekiç, Yaman & Koray, 2005; Ashton & Webb, 1986; Çapri & Çelikkaleli, 2008; Durdukoca, 2010; Midgely, Feldlaufer & Eccles, 1989; Oguz, 2009; Podell & Soodak, 1993; Ross, 1992; Seferoğlu & Akbıyık, 2005; Numanoğlu & Bayır, 2009; Kaya & Dönmez; 2008; Tabancalı & Çelik, 2013; Tschannen-Moran & Woolfolk Hoy, 1998; Woolfolk Hoy & Spero, 2005) state that teachers' and prospective teachers' self-efficacy beliefs affect the successful fulfillment of their professional responsibilities and the success of their students. All these researches on the subject reveal that student achievement and students' self-efficacy, teachers' perception of competence and common competences of schools interact with each other (Goddard Hoy & Wolfolk-Hoy, 2000; Pajares, 1996).

Determining the self-efficacy of teachers and prospective teachers in general terms may not provide a healthy information about their learning-teaching skills in a specific area (Kuzu & Demir, 2015). Therefore, it is necessary to carry out studies to determine the self-efficacy of teachers and prospective teachers in specific areas. In this context, the teaching *principles and methods* course is considered as a special area for prospective teachers. This course is of great importance in terms of the ability of teachers and prospective teachers, who are future teachers, to carry out the teaching profession in the light of contemporary methods and principles. According to the course definition of Higher Education Institution (YÖK, 2009) the *teaching principles and methods* course should have a content including basic concepts about teaching, learning and teaching principles, the importance and benefits of planned work in teaching, planning of teaching (annual plan by units, daily plan and activity examples), learning and teaching strategies, teaching methods and techniques, their relationship with practice, teaching tools and materials, teacher's duties and responsibilities and teacher competencies in improving the quality of teaching services. In addition, this course is one of the compulsory courses in all curricula of teacher training. Although studies on teacher self-efficacy have increased in the world and Turkey as well in recent years, we see that the *teaching principles and methods* course has not been the subject of further study in general sense in Turkey and abroad and researches related to the course hardly exist. It is believed that this study will contribute to prospective teachers' fulfillment of the teaching profession in the light of contemporary methods and principles.

1.1 Purpose of the Research

The purpose of this research is to reveal the effect of the gains obtained in the *teaching principles and methods* course in the pedagogical training program on the teacher self-

efficacy beliefs of prospective teachers. For this purpose, the hypothesis of the research is formed as follows:

> *"Competencies and gains obtained in the teaching principles and methods course increased the teacher self-efficacy belief scores of the teacher candidates taking pedagogical formation training."*

In line with the hypothesis of the research, answers to the following questions were sought:

Teaching self-efficacy belief,

1) Is there a significant difference between pre-test and post-test scores?
2) Does it differ significantly based on gender variable?
3) Does it differ significantly by department?
4) Does it differ significantly based on class variable?

2. Method

2.1 Research Model

In this study, the scale developed by Kuzu and Demir (2015) was used to determine the effect of the *teaching principles and methods* course on teacher self-efficacy beliefs. In order to determine the difference between teacher self-efficacy beliefs, the scale applied to prospective teachers who attend the pedagogical formation program is a descriptive study in the survey model with *pre-test* and *post-test control group*. The two-group quasi-experimental non-equalized repeated measurements are based on investigating whether there is a significant difference in the behavior of the subjects as a result of two time-dependent single-factor measurements. In the non-equalized control group model, the groups were created randomly instead of equally (Karasar, 2011: 102). The most distinctive feature of this kind of research is that it can be completed in a longer period of time.

2.2 Study Group

The study group consisted of 350 prospective teachers who participated in pedagogical formation program at Mehmet Akif Ersoy University, Faculty of Education in the spring semester of 2018-2019 academic year. However, 33 information forms that were not found suitable for statistical analysis (due to incomplete information on the scale sub-dimensions, coding errors, etc.) were not included in the analysis. 66.3% (N = 232) were female and 33.7% (N = 118) were male prospective teachers who completed the questionnaires included in the statistical analysis. In this study, the numbers identified by Tabachnick & Fidell (2013) for factor analysis were taken into consideration in determining the number of participants. For factor analysis, 300 participants were identified as "good", 500 as "very good" and 1000 participants, as "excellent" ((Tabachnick & Fidell, 2013, Büyüköztürk, 2013; Erkuş, 2012). Demographic data of the participants of the study group are given in Table 1.

Table 1: Demographic Information of the Study Group

		N	%
Gender	Female	232	66.3
	Male	118	33.7
Branch	English-Turkish Language	46	13.1
	Sociology-Philosophy	65	18.6
	Business Administration-Accounting	46	13.1
	Mathematics	68	19.4
	Geography	46	13.1
	Physical Education	58	16.6
	Nursing	21	6.0
Year	Freshman	101	28.9
	2nd year	56	16.0
	3rd year	140	40.0
	Senior	47	13.4
	Graduate	6	1.7

When the distribution in Table 1 was analyzed proportionally, it was observed that there was a significant majority in favor of female (66.3%) compared to males (33.7%). In the distribution by department, a significant majority of the participants consisted of prospective teachers from *mathematics* (19.4%), *philosophy and sociology* (18.6%) and *physical education* (16.6%). The number of prospective teachers from *nursing* (6.0%) *geography* (13.1%), *business management-accounting* (13.1%) and *English-Turkish language* (13.1%) was lower in the total ratio. In the distribution of the participants in undergraduate education years there were 101 prospective teachers (28.9%) in the first year, 56 (16.0%) in the second year and 140 (40.0%) in the third year. While 47 (13.4%) prospective teachers who participated in the study were studying in the fourth year, 6 (1.7%) of them were graduates.

2.3 Course Outline and Research Process

In the first week, which is the beginning of the teaching process, *pre-test* was applied in order to determine the levels of pre-learning teaching self-efficacy. During the 13 weeks of the 14-week period, which is the legal period in teaching, the course included the basic concepts related to education and training, curriculum development, learning and teaching principles, the importance of planning and benefits of planned work in teaching, learning-teaching approaches, strategies, teaching methods and techniques, teaching plans, their relations with practice and the duties and responsibilities of the teacher in increasing the quality of the teaching service and teacher competencies. In the last week of this process, the *post-test* was applied to determine the gains related to the topics covered. Thus, there are two types of data variables, *pre-test* and *post-test*, necessary for the subscales of the research in this teaching set.

2.4 Data Analysis

During the development of the Self-efficacy Scale for The Course of Teaching Principles and Methods, the literature was reviewed in detail by Kuzu and Demir (2015) and the

data were analyzed with Kaiser Mayer Olkin (KMO) coefficient and Barlett Sphericity test in terms of compliance with factor analysis. While the factor structure of the scale was examined by exploratory factor analysis, item-factor relations and interfactor relations were examined by confirmatory factor analysis. The preliminary application form of the scale was prepared with 38 items that provided the content validity of the items written in line with the results obtained by the researchers from the analysis and necessary literature review. As a result of the validity studies, a five-factor structure consisting of 34 items, consisting of self-efficacy, learning-teaching approaches (6 items), teaching principles and methods (11 items) and planning (3 items), was formed (Çolak, Yorulmaz & Altınkurt, 2017). The items of the 5-point Likert scale are scored in the range of (1) I Never Do and (5) I Totally Do.

SPSS 22 package program was used for statistical analysis of application results of *pre-test* and *post-test* in the self-efficacy scale. In the analysis of the statistics, which should be used for descriptive methods, (Abbott, 2011; Kirk, 2008) frequency (f), arithmetic mean ($\bar{x}$), percentage (%) and standard deviation (SD) were used in examining the distribution of the answers by prospective teachers. For the sub-dimensions of the scale, t-test was used for unrelated samples to determine whether the scores of *pre-test* and *post-test* differed significantly from each other. Also, two way variance analysis (ANOVA) with two factors was used for repeated measurements to determine whether the differences observed between the *pre-test* and *post-test* scores were statistically significant.

Kolmogorov-Smirnov (KS) test was used to identify whether the data were normally distributed in order to determine the analysis methods for the sub-problems. Skewness and kurtosis values were examined to reveal the normal distribution of data (Can, 2014). The findings for normality tests are given in Table 2.

Table 2: Normality Assumption Tests

	Pre-test Total Points	**Post-test Total Points**
Arithmetic Mean	80.68	121.90
Median	289.72	333.99
Standard Deviation	17.02	18.27
Minimum	38	2.82
Maximum	119	54
Range	81	160
Skewness	-.216	-.672
Kurtosis	-.540	-.369

As shown in Table 2, according to the values of skewness and kurtosis in the range of (+2.0 -2.0), the data set shows a distribution close to normal (George & Mallery, 2010; McKillup, 2012; Tabachnick & Fidell, 2013). Also, for all original scale, Cronbach Alpha Reliability Coefficient (α) was calculated as 79. The reliability study of the scale was re-conducted by the researcher, and alpha reliability coefficient (α) was found to be .84.

According to these results, it can be said that the scale is reliable. (Kalaycı, 2006**;** Yıldırım & İlhan, 2010).

3. Findings

3.1 Relationship between Pre-Test and Post-Test Scores for Teaching Self-efficacy Belief

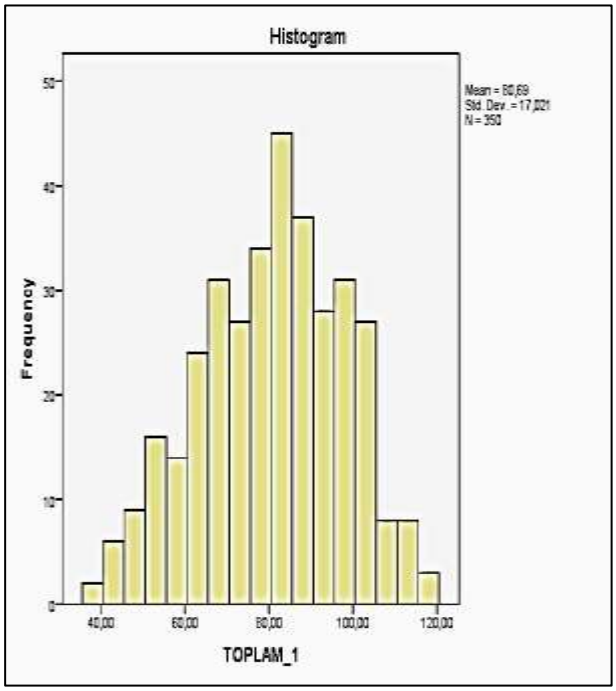
T-test was used for independent groups in order to determine whether self-efficacy scale sub-dimensions and overall total scores differed significantly through the effect of the course of *teaching principles and methods* taken by prospective teachers who participated in pedagogical formation program on teacher self-efficacy beliefs. The results of the analysis were given in Table 3.

Table 3: T-Test Results of Pre-Test and Post-Test Self-efficacy Sub-dimensions and Overall Total Scores

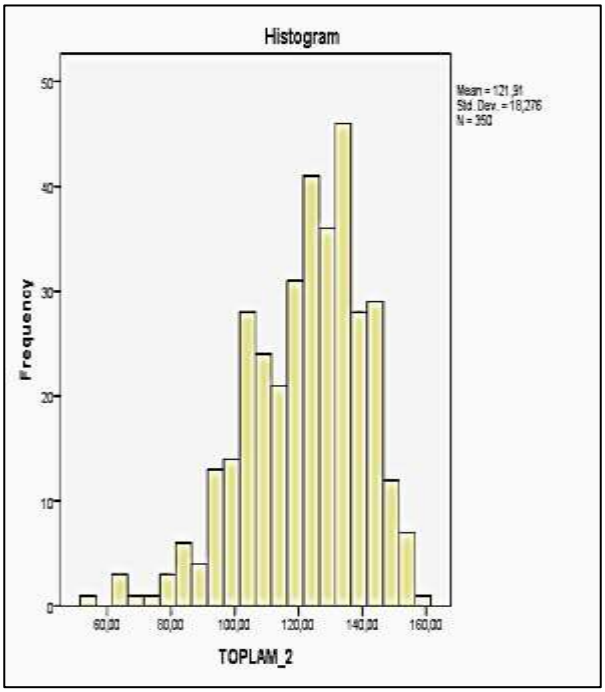
Self-efficacy Sub-dimensions	Measurement	N	$\bar{x}$	S	sd	t	p
Basic Concepts	Pre-test	350	8.11	2.40	349	-35.250	.000*
	Post-test	350	14.64	2.75			
Curriculum Development	Pre-test	350	21.47	5.81	349	-25.699	.000*
	Post-test	350	32.14	6.07			
Learning Teaching	Pre-test	350	15.15	4.43	349	-23.346	.000*
	Post-test	350	22.36	3.97			
Explanation in Teaching	Pre-test	350	12.42	4.28	349	-21.775	.000*
	Post-test	350	18.38	3.32			
Explanation in Teaching	Pre-test	350	15.91	4.92	349	-20.129	.000*
	Post-test	350	22.46	4.10			
Planning	Pre-test	350	7.64	2.47	349	-27.421	.000*
	Post-test	350	11.93	2.04			
Total	**Pre-test**	**350**	**80.69**	**17.02**	**349**	**-33.496**	**.000***
	Post-test	**350**	**121.91**	**18.28**			

*p<.05

According to Table 3, there was a significant difference between the scores of *pre-test* and *post-test* for self-efficacy beliefs of prospective teachers, t(349)=-33.496, p <.05. According to these values, there is a significant change in favor of the values of *post-test* compared to *pre-test* values in prospective teachers' professional self-efficacy beliefs. The highest difference was found in the *curriculum development* sub-dimension of self-efficacy. This dimension is followed respectively by *teaching and learning*, *practice in teaching, basic concepts, explanation* and *planning*. The pre-test and post-test total analysis results are shown in graph 1 and graph 2.



Graphic 1: Teacher Self-Efficacy Pre-Test Results



Graphic 2: Teacher Self-Efficacy Post-Test Results

As can be seen in the graphs 1 and 2, the *pre-test* average ($\bar{x}$) of the pre-service teachers was 80.69 and the final test average ($\bar{x}$) was 121.91. According to these findings, there was a statistically significant increase in self-efficacy belief scores of the prospective teachers in terms of gains from the *teaching principles and methods* course.

3.2 The Relationship between Teacher Self-efficacy Belief and Gender Variable

Two-factor ANOVA test was used for repeated measurements to determine whether teacher candidates' self-efficacy belief scores differed significantly depending on gender. According to the results of this test, the mean and standard deviation values of teaching self-efficacy beliefs are given in Table 4.

Table 4: Teacher Self-Efficacy Belief Mean and Standard Deviation Values

	Pre-test			Post-test		
Gender	**N**	$\bar{x}$	**S**	**N**	$\bar{x}$	**S**
Female	232	80.81	17.05	232	123.83	17.58
Male	118	80.45	17.03	118	118.14	19.08

As can be seen in Table 4, the average score of *pre-test* in female prospective teachers was 80.81, while *post-test* average score was found as 123.83. In male prospective teachers, the average score of *pre-test* was 80.45, the *post-test* score average increased to 118.14 points. Accordingly, there was a significant increase in self-efficacy belief scores of both female and male teachers after taking the *teaching principles and methods* course. However, this increase rate is notably higher in female.

The results of two-factor ANOVA for the repeated measurements of whether the differences observed between the scores of *pre-test* and *post-test* were statistically significant are given in Table 5.

Table 5: ANOVA Results of Teacher Self-Efficacy Pre-Test and Post-Test Scores

Source of the Variance	KT	sd	KO	F	p
Inter-subjects	125191.098	349			
Gender	1432.979	1	1432.979	4.029	.045
Error	123758.119	348	355.627		
Within the subjects	347204.452	350			
Measurement (Pre test - Post test)	254717.422	1	254717.422	970.080	.000
Gender*Measurement	1111.365	1	1111.365	4.233	.040
Error	91375.665	348			
Total	4 72395.550	699			

When the basic effects were examined in Table 5, it was found that the mean scores of self-efficacy beliefs of prospective teachers differed significantly depending on the gender variable F (1.348) = 4.029, p <.05. Accordingly, there was a significant difference between the mean scores of *pre-test* and *post-test of the male and female prospective teachers, and the mean scores of pre-test* and *post-test* in female teachers ($\bar{x}$= 102.32) were higher than in male teachers ($\bar{x}$= 99.29). When the main effect of the measurement was examined, it was seen that, independent of gender variable, there was a significant difference between the scores of *pre-test* and *post-test* of the prospective teachers who participated in the research F (1.348) = 970.080, p <.05. When the common effect of gender variable and repetitive measurements on teacher self-efficacy belief was examined in Table 5, it was found that there was a significant difference between the teaching self-efficacy scores of female and male in the *pre-test* and *the post-test*, F (1.348) = 4.233, p <.05. This finding shows that the gender variable has a statistically significant effect on increasing self-efficacy beliefs of prospective teachers. Accordingly, female teachers' self-efficacy belief levels increased more than male.

3.3 The Relationship between Teacher Self-efficacy Belief and Department Variable

The mean and standard deviation values obtained from the two-factor ANOVA for the repeated measurements of whether the self-efficacy belief scores of prospective teachers differ depending on the department variable are given in Table 6.

Table 6*:* Teaching Self-Efficacy Belief Mean and Standard Deviation Values

	Pre-test			Post-test		
Department	**N**	**$\bar{x}$**	**S**	**N**	**$\bar{x}$**	**S**
English-Turkish Language	46	70.22	14.94	46	108.37	21.28
Sociology-Philosophy	65	83.03	16.39	65	129.57	17.59
Business Administration-Accounting	46	78.78	13.30	46	122.87	14.43
Mathematics	68	86.60	16.20	68	125.79	13.87
Geography	46	86.11	15.52	46	130.93	13.48
Physical Education	58	74.88	19.61	58	115.38	19.33

Nursing	21	85.57	13.84	21	111.43	11.85
Total	350	80.69	17.02	350	121.91	18.28

As shown in Table 6, the self-efficacy mean scores of prospective teachers in *English* and *Turkish language* increased from 70.22 to 108.37; those in *philosophy and sociology*, from 83.03 to 129.57; those in *business administration-accounting* from 78.78 to 122.87; those in *mathematics* from 86.60 to 125.79; those in *geography* from 86.11 to 130.93; those in *physical education* from 74.88 to 115.38 and those in *nursing* from 85.57 to 111.43. When the differences between the mean scores obtained from the *pre-test* and *post-test* were examined, the maximum increase was observed in the prospective teachers in the department of *philosophy and sociology*. This group was followed respectively by *geography*, *business administration-accounting*, *physical education*, *mathematics*, *English* and *Turkish language* departments. The least increase was in the *nursing* department. The results of two-factor ANOVA for the repeated measurements of whether the differences observed between the scores of *pre-test* and *post-test* were statistically significant are given in Table 7.

Table 7: ANOVA Results of Teacher Self-efficacy Pre-Test and Post-Test Scores Depending on the Department Variable

Source of the Variance	KT	sd	KO	F	p
Inter-subjects	125191.099	349			
Department	29340.849	6	4890.141	17.499	.000
Error	95850.250	343	279.447		
Within the subjects	335749.368	350			
Measurement (Pre test-Post test)	243262.338	1	243262.338	945.699	.000
Department*Measurement	4257.062	6	709.510	2.758	.012
Error	88229.968	343			
Total	460940.467	699			

As seen in Table 7, when the basic effect of the department variable was examined, it was found that the mean scores of *pre-test* and *post-test* for the prospective teachers' self-efficacy belief differed significantly depending on the department variable, $F(6.343) = 17.499$, $p < .05$. In other words, the average scores obtained from the scores of prospective teachers' *pre-test* and *post-test* vary depending on the departments.

3.4 The Relationship between Teacher Self-efficacy Belief and Year Variable

The two-factor ANOVA was used to determine whether the prospective teachers' self-efficacy belief scores differed significantly depending on undergraduate year variables. The mean and standard deviation values of teaching self-efficacy beliefs are given in Table 8.

Table 8: Mean and Standard Deviation Values of Teacher Self-efficacy Belief by Year Variable

	Pre-test			Post-test		
Year	**N**	**$\bar{x}$**	**S**	**N**	**$\bar{x}$**	**S**
Freshman	101	79.46	17.48	101	119.27	20.52
Sophomore	56	82.41	17.43	56	126.79	18.04
Junior	140	80.17	17.24	140	122.16	16.98
Senior and Graduate	53	82.58	15.19	53	121.11	16.65

As can be seen in Table 8, there are 101 prospective teachers in the first year, 56 in the second and 140 in the third year in the study. 47 prospective teachers who participated in the research were studying in the fourth year while 6 prospective teachers were graduates. When the average scores of *pre-test* and *post-test* were examined, the *pre-test* average of the prospective teachers in the first year was 79.46, while the *post-test* average increased to 119.27, the *pre-test* average of the prospective teachers in the second year was 82.41, while *the post-test* average went up to 126.79, the *pre-test* average of the prospective teachers in the third year was 80.17, while the *post-test* average rose to 122.16. When the results obtained from the fourth year students and graduates were examined, the average of 82.58 in the *pre-test* increased to 121.11. According to these results, the highest increase was observed in the second-year prospective teachers. This group was followed by third and first-year students respectively. The group with the least amount of increase was the fourth-year students and graduates. The results of two-factor ANOVA applied to see whether the differences observed between the scores of *pre-test* and *post-test* were statistically significant are given in Table 9.

Table 9: ANOVA Results of Teacher Self-Efficacy Pre-Test and Post-Test Scores by Year Variable

Source of the Variance	**KT**	**sd**	**KO**	**F**	**p**
Inter-subjects	125191.074	349			
Year	2014.364	3	671.455	1.886	.132
Error	123176.734	346	356.002		
Within the subjects	344758.614	350			
Measurement (Pre-test- Post-test)	252271.584	1	252271.584	950.058	.000
Year*Measurement	612.654	3	204.218	.769	.512
Error	91874.376	346	265.533		
Total	469949.688	699			

*p<.05

When Table 9 was examined, it was found that the mean scores of self-efficacy beliefs of prospective teachers did not show significant differences depending on year variable, F (3.346) = 1.886, p>.05. Accordingly, there was no significant difference between the mean scores of *pre-test* and *post-test* of the prospective teachers in different years. This result shows that the *pre-test* and *post-test* mean scores of prospective teachers are similar at different year levels.

In Table 9, when the common effect of grade variable and repeated measurements on teacher self-efficacy belief was examined, it was seen that the effect was not significant, F (3.346) = 0.769, p>.05. This finding shows that the year variable does not have a statistically significant effect on increasing self-efficacy beliefs of prospective teachers. In other words, it can be said that studying in different years has similar effects on increasing the belief in teaching self-efficacy.

4. Conclusion, Discussion and Suggestions

Important results were obtained in this study aiming at investigating the effect of gains from the *teaching principles and methods* course in the pedagogical formation program on teacher self-efficacy beliefs. The prospective teachers' self-efficacy beliefs regarding the teaching profession were examined depending on different variables (gender, department and year status). In this context, there were significant differences between the scores of the *pre-test* and *post-test* applied in the teaching self-efficacy scale and its sub-dimension, t (349) = -33.496, p <.05. According to the data obtained from the general scale, the belief score of *pre-test* for the teaching self-efficacy was found to be $\bar{x} = 80.69$ while in the *post-test*, it increased to $\bar{x} = 121.91$. This result represents quite a higher value than the scale average. In addition, it was determined that the scores of the prospective teachers from the scale sub-dimensions were again high. The maximum increase in the sub-dimensions of the scale was seen in *curriculum development* and the minimum increase in *planning*. The results of the study show that the gains from the *teaching principles and methods* course increased significantly teaching self-efficacy belief scores. Although there are no studies in the literature revealing the effect of the *teaching principles and methods* course on teacher self-efficacy, there are numerous studies for other courses in teacher training programs. In the findings of the researches, it was seen that the self-efficacy perceptions of prospective teachers were examined in terms of various variables. Among these studies, in the study conducted by Kurt & Ekici (2013) on the prospective teachers taking the course of *planning and evaluation in teaching*, it was concluded that the course had a positive effect on the development of self-efficacy beliefs in the prospective teachers. Gençtürk and Memiş (2010) also found that there was no significant difference between the teachers' self-efficacy perceptions of graduates of education faculties and teachers who graduated from other faculties and the self-efficacy perceptions of primary school teachers were higher than those of branch teachers.

According to gender distribution, female teacher candidates who participated in the study showed a significant difference in terms of the results of the *pre-test* and *post-test* F (1.348) = 4.233, p <.05. This difference in the gender variable reveals that female teacher candidates' self-efficacy belief levels increased more than those of male teachers. In the literature, it is possible to find evidence that self-efficacy beliefs do not differ in terms of gender or differ in favor of women or in favor of men. This research finding obtained in favor of female prospective teachers in terms of gender is parallel with the studies of Çakır, Erkuş & Kılıç (2004); Deniz & Tican (2017); Shahid and Thompson

(2001); Sugar, Sea & Gorgen (2005); Kalaian & Freeman (1994); Kurt & et al. (2011). In the study conducted by Kalaian and Freeman (1994), it was found that female teacher candidates had stronger self-efficacy beliefs than men. In another study, Yılmaz & et al. (2018) showed that prospective biology teachers had high self-efficacy for the units/subjects included in the secondary school biology curriculum. According to the results of Milner and Woolfolk Hoy's (2002) study comparing the self-efficacy beliefs of high school teachers and primary school teachers, it was found that gender had no effect on self-efficacy results. In another study conducted by Berkant (2017) on pedagogical formation program students, the gender of the prospective teachers did not affect teacher self-efficacy beliefs. However, the findings of Akbaş & Çelikkaleli (2006); Ay & Yurdabakan (2015); Bakaç & Özen (2017); Bleicher (2004); Koç (2013); Üstüner & et al. (2009), Savran & Çakıroğlu (2001), Aypay (2010) differ from the two opinions above. According to the findings of this group of research, male prospective teachers' self-efficacy beliefs were higher than female teachers. Research findings with all these different results point to the necessity of continuing the studies that reveal the magnitude of the effect of the gender variable on the professional self-efficacy beliefs of prospective teachers.

When the results of the study were analyzed on the basis of departments, it was found that teaching self-efficacy belief had an effect on all departments. Prospective teachers' mean scores of the *pre-test* increased from 80.69 to 121.91 *in the post-test*. There were also significant differences between the averages of score increase according to departments. When these differences were examined according to the departments of the participants, the maximum increase was seen in the department of *philosophy and sociology,* and the minimum increase in *nursing.* In the research, Ekici (2006) found that classroom management course was effective in increasing the self-efficacy beliefs of the prospective teachers. Other research findings revealing differences between departments are in line with the research results of Azar & Akıncı, 2009; Çapri & Çelikkaleli (2008); Gürbüztürk & Şad (2009); Yaman, Koray & Altunçekiç (2004). According to the findings of Gürbüztürk and Şad (2009), it was determined that prospective teachers studying in physical education, painting, music and primary school teaching had higher self-efficacy beliefs than those studying in science, mathematics and English teaching departments. In the studies conducted by Morrell & Caroll (2003) and Cantürk G. & Pirgayipoğlu (2004), it was reported that courses for branch teaching taken by prospective teachers in different departments during their undergraduate education increased their self-efficacy beliefs (Akt: Can, Günhan & Erdal). (2005). Bandura's (1995) view that full or mastery experiences increase self-efficacy beliefs supports the holistic importance of both field and formation education of prospective teachers.

When the mean scores of *pre-test* and *post-test* were examined, it was found that students from all years showed a significant increase in the mean scores, but this increase did not lead to a significant difference depending on the year variable F (3. 346) = 1.886, p>.>05. This result shows that *pre-test* and *post-test* mean scores of prospective teachers studying in different years of university are similar. However, in the literature,

there are studies arguing that teacher self-efficacy did not differentiate at the year level (Akdağ & Walter, 2005; Mirzeoğlu, Akdağ & Boşnak, 2007) and studies revealing that it differentiated (Denizoglu, 2008; Taskin & Haciömeroglu, 2010; Varol, 2007). According to Bandura (1977), the belief that self-efficacy is more variable in the first years of learning and also the fact that the experience, feedback and observation can change and increase these people's self-efficacy beliefs support the research findings in this direction.

Eventually, it is expected that all courses in the pedagogical formation program will be conducted in order to educate prospective teachers in a more qualified and competent way and help them gain positive and strong experiences in teaching skills. Further research that indicates the extent of the desired changes in this direction will contribute to the professional self-efficacy of prospective teachers. In the literature, the gender variable is emphasized in the studies conducted on professional self-efficacy of prospective teachers; so, it is believed that it will be useful to investigate the different variables like sociological, cultural etc. affecting the gender variable and highlighting the discussed influence of gender. In addition, qualitative studies as well as quantitative researches aiming to determine the effect of teacher vocational courses on self-efficacy beliefs of prospective teachers in the teaching process will also make more significant contributions to the literature.

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