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Analysis of Mathematics Teachers' Self-Efficacy Levels Concerning the Teaching Process

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Abstract
The purpose of this study is to identify mathematics teachers' opinions on the teaching process self-efficacy levels; and to examine mathematics teachers' teaching process self-efficacy beliefs with regards to specific variables. The study was conducted in Turkey during the second term of the 2015-2016 academic year. The study sample consisted of 328 mathematics teachers working in secondary and high schools. The "scale for teacher self-efficacy on the teaching process" developed by Korkmaz and Ünsal (2015) was used as the data collection instrument for the study. The scale consists of 23 items and four dimensions. These dimensions are individual difference, planning, method and technique diversity and use of various activities. Arithmetic mean ($\bar{x}$), independent samples t-test and one-way variance analysis were conducted in analyzing the data. In addition, the Lsd test was conducted in cases where a difference was detected in the anova test so as to identify between which groups the difference occurred. According to the study results, it was observed that mathematics teachers stated opinions on having high self-efficacy beliefs concerning the teaching process, that these opinions differed based on the gender, year of service, level of school of profession variables and that these opinions did not differ based on the type of school of graduation, educational background and type of school variables. The results were compared with other study results and were discussed. Suggestions were made based on the results in the final section of the study.
Keywords: self-efficacy, teacher self-efficacy belief, teaching process

INTRODUCTION

The concept of self-efficacy has been defined in various ways. According to Bandura (1995, 1997) self-efficacy is "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments". Liu and Koirala (2009) define self-efficacy as one's belief in successfully fulfilling a given task; according to Aşkar and Umay (2001), it is a self-perception; according to Özlü, Keskin and Gül (2013), self-efficacy is not a belief related to one's skill in accomplishing a task but the self-belief required to achieve the task. According to Zimmerman, Bonner and Kovack (1996), self-efficacy is the self-perception related to successfully execute a specific task. There is a close relationship between teacher self-efficacy perceptions and in displaying a successful performance.

According to Karakuş and Akbulut (2010), Bandura was the pioneer in introducing a concept of social learning based self-efficacy. According to Bandura (1977), self-efficacy is a term which emerged from the studies conducted in the field of cognitive psychology. An individual's sense of self-efficacy is based on four sources. First of these is the success of the performance that one displays. Failure that an individual encounters is not effective if the performance level of the individual is high. If an individual is successful in a task, he will anticipate success in similar situations and this accomplishment will constitute a source of motivation for the individual in future behaviors. Secondly, as a result of indirect experiences, in other words which the individual learns by observing other people's behaviors, the individual gives credit for achieving the same or similar success. Thirdly, the physiological state, which is the emotional and physical state of the individual before approaching a task, affects the possibility of the individual's success. And finally, verbal ability of persuasion, which are suggestions and incentives of other people directed to accomplishing a given task, affect the individual's perception of self-efficacy. Self-efficacy is a crucial concept related to the social-cognitive theory (Lui and Koirala, 2009; Karakuş and Akbulut, 2010; Zimmerman, 2000). Lui and Koirala (2009) who underlined the relationship between self-efficacy and attitude, state that while they are similar terms self-efficacy and attitude are two different concepts. While self-efficacy is one's perception in successfully completing given attainments; attitude is the feelings of difficulty, convenience and importance related to the task. For example, an individual can believe that mathematics is crucial in daily life and enjoy solving problems. Students can enjoy solving problems though they believe that mathematics is not so significant. In short, an individual can have a positive attitude but have low self-efficacy or

vice versa have a self-efficacy for mathematics.

Teacher self-efficacy perception is effective in the positive or negative development of student attitudes towards their schools. Thus, there is a close relationship between teacher self-efficacy beliefs and student attitudes towards their schools. Teacher self-efficacy beliefs is a crucial variable in increasing the quality of education, in classroom management, in increasing student achievement, in the use of method and strategy and in increasing student motivation and success (Woolfolk, Rosoff, Hoy, 1990; Al-Alwan and Mahasneh, 2014; Tschannen-Moran, Woolfolk Hoy, 2002).

According to Pendergast, Garvis and Keogh (2011), who emphasized self-efficacy beliefs of teachers, teacher self-efficacy is a crucial structure which shapes teacher effectiveness in the classroom and motivates them. Teachers with high self-efficacy are more flexible in teaching and have the potential to strive to help all students. It is also stated that there is a lower probability of teachers with low self-efficacy levels to strive to meet the learning needs of all students. According to Garvis and Pendergast (2011)', who examined teacher self-efficacy in early childhood education, there is a positive relationship between high teacher self-efficacy and the quality of the education given to the student. With regards to self-efficacy Aşkar and Umay (2002) underlined that a teacher who lacks background knowledge required for the field will most probably fail to create a convenient classroom atmosphere for the students. For this reason, if a teacher has expertise in mathematics, then he first needs to have a high self-efficacy perception in mathematics discipline.

There is a close relationship between effectively teaching mathematics and the beliefs, perceptions and self-efficacy levels of teachers towards their skills for teaching mathematics (Swars et al., 2007). Teachers, who believe that their self-efficacy beliefs concerning their teaching skills are crucial for promoting an effective teaching process and for student achievement, are more successful than teachers who believe they cannot affect student achievement (Enochs, Smith and Huinker, 2000). In other words, self-judgements made by teachers and preservice teachers concerning their skills and talents play crucial roles in promoting effective learning and in overcoming the problems encountered (Ozdemir, 2008). Self-efficacy beliefs of mathematics and form teachers concerning teaching mathematics for primary and secondary school students are especially significant. Having a high self-efficacy belief is the most important feature expected by a well-trained mathematics teacher (Dede, 2008). Teachers undertake crucial responsibilities in attaining the objectives and promoting effective and permanent learning throughout the process of teaching mathematics. Teachers are required to have specific competences to be able to carry out these responsibilities. The most important competency among these is the self-efficacy belief concerning discipline management.

It has been observed that many studies on teacher self-efficacy have been conducted in various fields but the majority have focused primarily on preservice teachers. It is evident that studies on teacher self-efficacy and self-efficacy beliefs of mathematics teachers are at a limited number in the literature. When the fact that score overages obtained from the mathematics tests in the central exams (TEOG, YGS, LYS) in our country is considered, it can be suggested that self-efficacy levels of mathematics teachers should be examined. This study was conducted to identify mathematics teachers' opinions on their self-efficacy concerning the teaching process; and to examine mathematics teachers' self-efficacy levels on the teaching process with regards to specific variables. Thus, answers for the following questions were sought.

Sub-Problems of the Research

1. What are mathematics teachers' opinions on the sub-dimensions of the teaching process self-efficacy scale?
2. Do self-efficacy levels of mathematics teachers concerning the teaching process differ with regards to;
   a) Gender,
   b) Type of school of graduation,
   c) Educational background,
   d) Professional seniority,
   e) School of profession,
   f) Type of school of profession?

METHOD

Research Design

The descriptive study was designed through the survey model. According to Karasar (2000), the survey model is a research approach aiming at describing the past or current state of a group in its present condition. The aim of this study was to determine whether or not mathematics teachers' opinions on their teaching process self-efficacy levels differed with regards to the gender, school of graduation, educational background, professional seniority, type of school of profession and level of school of profession variables. Thus, the study has a descriptive characteristic.

Population and Sample

The population of the study consisted of mathematics teachers working in the province of Kahramanmaraş. The

study sample consisted of 328 mathematics teachers selected through the random sampling method. The "simple random sampling method" was selected as the sampling method for the study. Each unit in the population has the equal chance of being selected in this method (Balcı, 2001; Karasar, 2012). Personal information about the participants is given on Table 1.

Table 1. Demographic information on the mathematics teachers participating in the study

VARIABLE	LEVEL	N	%
Gender	Female	128	39
	Male	200	61
	Total	**328**	**100**
Type of School of Graduation	Faculty of Education	203	61.9
	Faculty of Arts and Sciences	125	38.1
	Total	**328**	100
Educational Background	Bachelor's Degree	260	79.3
	Master's Degree	68	20.7
	Total	**328**	**100**
Professional Seniority	1-5 years	68	20.7
	6-10 years	79	24.1
	11-15 years	93	28.4
	16-20 years	55	16.8
	20 years and over	33	10.1
	Total	**328**	**100**
Type of School of Profession	Private School	32	9.8
	Official School	296	90.2
	Total	328	100
Level of School of Profession	Secondary School	167	50.9
	Anatolian High School	97	29.6
	Vocational High School	64	19.5
	Total	**328**	**100**

According to Table 1, 39% of the 328 mathematics teachers who participated in the study are female and 61% are male. When the type of schools that the participants graduated from are considered, it is evident that 61.9% graduated from the Faculty of Education and 38.1% graduated from the Faculty of Arts and Sciences. 20.7% of the mathematics teachers have 1-5 years, 24.1% have 6-10 years, 28.4% have 11-15 years, 16.8% have 16-20 years and 10.1% have 20 years and over professional seniority. 9.8% of the mathematics teachers work in private schools and 90.2% work in official schools. With regards to the level of school of profession, 50.9% of the participants are secondary school teachers and 49.1% are high school teachers.

Data Collection Instrument

The "scale for teacher self-efficacy on the teaching process" developed by Korkmaz and Ünsal (2015) was used as the data collection instrument for the study.The first section of the questionnaire that was applied, the "Personal Information Form", consists of 6 questions related to gender, type of school of graduation, current educational background, professional seniority, type of school of profession and level of school of profession. The scale consists of 23 items and four dimensions. These dimensions are, individual difference, planning, method and technique diversity and use of various activities. The reliability coefficients of the scale for this study were; the α reliability coefficient was .86 for the individual difference dimension, .82 for the planning dimension, .74 for the method and technique diversity dimension, .72 for the use of various activities dimension and .92 for the overall scale. Mathematics teachers were asked to state their opinions on the five point Likert type questionnaire items by marking the most suitable options which were given to them as "always, usually, sometimes, rarely, never". The option "always" referred to "I am fully efficient"; the "usually" option referred to "I am rather efficient"; the "sometimes" option referred to "I am moderately efficient"; the "rarely" option referred to "I am partly efficient" and the "never" option referred to "I am not efficient". The options and limits of the scale are given below (Kahyaoğlu, 2007).

Table 2. Limits in evaluating mathematics teachers' opinions on their self-efficacy beliefs concerning the teaching process

Grade	Option	Limits
1	I am not efficient	1.00-1.79
2	I am partly efficient	1.80-2.59
3	I am moderately efficient	2.60-3.39
4	I am rather efficient	3.40-4.19
5	I am fully efficient	4.20-5.00

Data Analysis

340 volunteer teachers, working in the schools within the sample, participated in the study. 12 data were excluded from the study due to lack of data, giving the answers to all questions, not filling in personal information and giving more than one answer to a question. The analyses were carried out on the data collected from 328 participants. The data were processed by being coded to a statistical software.

During the data analysis process, the Kolmogrov Smirnov test was conducted in order to determine whether or not the data collected from the participants showed normal distribution. According to the analysis results; the teaching process self-efficacy level scores of mathematics teachers (Sig.=.08, p>.05) were above p>.05, which indicates a normal distribution. The quantitative data were evaluated through the SPSS 21.0 statistical software. Arithmetic mean ($\bar{x}$), the parametric independent samples t-test and the one-way analysis of variance, the anova statistical technique were conducted in analyzing the data. In addition, the Lsd test was conducted in cases where a difference was detected in the anova test so as to identify between which groups the difference occurred.

FINDINGS

In this section of the study, statistical processes were conducted on the answers that the participants gave for the items according to the order of the sub-problem. The findings are displayed in tables. The first sub-problem of the study was constructed as "What are mathematics teachers' opinions on the sub-dimensions of the teaching process self-efficacy beliefs?" The arithmetic mean and standard deviation values of the answers that the participants gave for this sub-problem are displayed on Table 3.

Table 3. Arithmetic means and standard deviation values of opinions of mathematics teachers concerning the sub-dimensions of their teaching process self-efficacy beliefs

Dimensions	N	$\bar{X}$	ss
Individual Difference	328	4.23	.43
Planning	328	3.96	.59
Method and Technique Diversity	328	3.53	.67
Use of Various Activities	328	3.83	.51

It is evident on Table 3 that mathematics teachers' teaching process self-efficacy beliefs are at fully efficient level for the individual differences dimension ($\bar{X}$ = 4.23) and at rather efficient level for the planning dimension ($\bar{X}$ = 3.96), method and technique diversity dimension ($\bar{X}$ = 3.53) and use of various activities dimension ($\bar{X}$ = 3.83). Mathematics teachers received the highest arithmetic mean ($\bar{X}$ = 4.23-fully efficient) for the individual differences dimension and the lowest arithmetic mean ($\bar{X}$ = 3.53-rather efficient) for the method and technique diversity dimension.

The second sub-problem of the study was constructed as "Do mathematics teachers' opinions on their teaching process self-efficacy levels differ significantly with regards to gender?" Results of the t-test analysis concerning mathematics teachers' opinions on their self-efficacy levels on the teaching process with regards to gender are given on Table 4.

Table 4. Results of the t-test analysis concerning mathematics teachers' self-efficacy levels on the teaching process based on gender

Dimensions	Gender	N	$\bar{X}$	ss	t	p
Individual Difference	Female	128	4.22	.45	-.57	.56
	Male	200	4.25	.42	-.56	.57
Planning	Female	128	3.93	.54	-.72	.47
	male	200	3.98	.62	-.74	.45
Method and Technique Diversity	Female	128	3.47	.68	-1.35	.17
	Male	200	3.57	.66	-1.34	.18
Use of Various Activities	Female	128	3.75	.49	-2.17	.03
	Male	200	3.88	.52	-2.19	.02

It is evident on Table 4 that there is a significant difference in favor of males (Male $\overline{X}$ = 3.88, Female $\overline{X}$ = 3.754) in the use of various activities dimension with regards to mathematics teachers' opinions on the teaching process self-efficacy sub-dimensions based on gender (*p<0.05).* Teacher opinions did not differ for the other dimensions with regards to gender.

Findings concerning mathematics teachers' self-efficacy levels on the teaching process based on the type of school of graduation

The third sub-problem of the study was constructed as "Do mathematics teachers' teaching process self-efficacy levels differ significantly with regards to the type of school of graduation?" Results of the t-test analysis concerning mathematics teachers' opinions on their self-efficacy levels on the teaching process with regards to the type of school they graduated from are given on Table 5.

Table 5.

Results of the t-test analysis concerning mathematics teachers' self-efficacy levels on the teaching process based on the type of school of graduation

Dimensions	Gender	N	$\overline{X}$	ss	t	p
Individual Difference	Faculty of Education	203	4.22	.45	-.75	.45
	Faculty of Arts and Sciences	125	4.26	.41	-.77	.44
Planning	Faculty of Education	203	3.98	.58	1.01	.31
	Faculty of Arts and Sciences	125	3.91	.61	1.00	.31
Method and Technique Diversity	Faculty of Education	203	3.53	.68	-0.5	.95
	Faculty of Arts and Sciences	125	3.54	.65	-0.5	.95
Use of Various Activities	Faculty of Education	203	3.81	.50	-.62	.53
	Faculty of Arts and Sciences	125	3.85	.53	-.61	.53

It is evident on Table 5 that there are no significant differences for the individual difference, planning, method and technique diversity and use of various activities dimensions among mathematics teachers' opinions on their teaching process self-efficacy levels with regards to the type of school of graduation (*p>0.05).*

Findings concerning mathematics teachers' self-efficacy levels on the teaching process based on the educational background dimension

The fourth sub-problem of the study was constructed as "Do mathematics teachers' teaching process self-efficacy levels differ significantly with regards to educational background?" Results of the t-test concerning mathematics teachers' self-efficacy levels on the teaching process based on the educational background dimension are given on Table 6.

Table 6. Results of the t-test analysis concerning mathematics teachers' self-efficacy levels on the teaching process based on educational background

Dimensions	Educational Background	N	$\overline{X}$	ss	t	p
Individual Difference	Bachelor's Degree	260	4.24	.44	.17	.85
	Master's Degree	68	4.23	.41	.18	.85
Planning	Bachelor's Degree	260	3.9	.58	-.14	.88
	Master's Degree	68	3.9	.63	-.14	.88
Method and Technique Diversity	Bachelor's Degree	260	3.5	.65	-1.05	.29
	Master's Degree	68	3.6	.72	-.99	.29
Use of Various Activities	Bachelor's Degree	260	3.8	.50	-.53	.59
	Master's Degree	68	3.8	.54	-.51	.59

It is evident on Table 6 that there are no significant differences for the individual difference (p>.85), planning (p>.88), method and technique diversity (p>.29) and use of various activities (p=.59) dimensions among mathematics teachers' opinions on their teaching process self-efficacy levels with regards to the educational background dimension (*p>0.05).*

Findings concerning mathematics teachers' self-efficacy levels on the teaching process based on professional seniority

The fifth sub-problem of the study was constructed as "Do mathematics teachers' teaching process self-efficacy levels differ significantly with regards to professional seniority?" The one-way variance analysis results concerning mathematics teachers' self-efficacy levels on the teaching process based on professional seniority are given on Table 7. Between which groups the difference occurred was interpreted through the Lsd test.

Table 7. Results of the Anova and Lsd analyses concerning mathematics teachers' self-efficacy perceptions on the teaching process with regards to professional seniority

Dimensions	Professional Seniority	N	$\bar{X}$	S	F	p	LSD
Individual Difference	1-5 years	68	4.14	.42	1.30	.26	
	6-10 years	79	4.24	.43			
	11-15 years	93	4.26	.44			
	16-20 years	55	4.23	.44			
	20 years and over	33	4.34	.45			
Planning	1-5 years	68	4.00	.48	1.51	.19	
	6-10 years	79	4.93	.55			
	11-15 years	93	4.03	.59			
	16-20 years	55	3.80	.61			
	20 years and over	33	3.98	.81			
Method and Technique Diversity	1-5 years	68	3.43	.57	1.95	.10	
	6-10 years	79	3.43	.63			
	11-15 years	93	3.63	.70			
	16-20 years	55	3.53	.69			
	20 years and over	33	3.71	.78			
Use of Various Activities	1-5 years	68	3.77	.46	2.45	.04	e-a
	6-10 years	79	3.73	.48			e-b
	11-15 years	93	3.91	.48			c-b
	16-20 years	55	3.81	.54			
	20 years and over	33	4.00	.64			

It is evident on Table 7 that there is a significant difference in mathematics teachers' opinions for the use of various activities dimension with regards to professional seniority ($p<0.05$). The Lsd test was conducted to detect between which groups the difference occurred. participants with 1-5 years seniority were classified as "a", 6-10 years seniorities as "b", 11-15 years seniority as "c", 16-20 years seniority as "d" and 20 years and over seniority as "e" and their significance were compared. A significant difference was observed for 11-15 years of professional seniority ($\bar{X}$= 3.91) when compared with 6-10 years of professional seniority ($\bar{X}$= 3.73). When compared with 1-5 ($\bar{X}$ =3.77) and 6-10 years of professional seniority ($\bar{X}$= 3.73), a significant difference in favor of mathematics teachers with 20 years and over professional seniority ($\bar{X}$=4.00) was observed. No significant differences were observed among mathematics teachers' opinions concerning the individual difference, planning and method and technique diversity sub-dimensions (p>0.05) of the teaching process self-efficacy scale.

Findings concerning mathematics teachers' self-efficacy levels on the teaching process based on the type of school of profession

The sixth sub-problem of the study was constructed as "Do mathematics teachers' teaching process self-efficacy levels differ significantly with regards to the type of school of profession?". Results of the t-test concerning mathematics teachers' teaching process self-efficacy levels concerning the type of school of profession are given on Table 8

Table 8. Results of the t-test analysis concerning mathematics teachers' self-efficacy levels on the teaching process based on the type of school of profession

Dimensions	Type of School	N	$\bar{X}$	ss	t	p
Individual Difference	Private School	32	4.34	.38	1.47	.14
	Official School	296	4.22	.44	1.64	.10
Planning	Private School	32	4.04	.49	.82	.40
	Official School	296	3.95	.60	.97	.33
Method and Technique Diversity	Private School	32	3.63	.59	.84	.40
	Official School	296	3.52	.68	.94	.35
Use of Various Activities	Private School	32	3.93	.43	1.14	.25
	Official School	296	3.82	.52	1.33	.18

It is evident on Table 8 that, with regards to the type of school, there are no significant among mathematics teachers' opinions concerning the sub-dimensions of the teaching process self-efficacy scale ($p>0.05$).

Findings concerning mathematics teachers' teaching process self-efficacy beliefs based on the level of school of profession

The final sub-problem of the study was constructed as "Do mathematics teachers' teaching process self-efficacy levels differ significantly with regards to the level of school of profession?". Results of the one-way variance analysis are given on Table 9. The Lsd test was conducted to detect between which groups the difference occurred.

Table 9. Results of the Anova and Lsd analysis concerning mathematics teachers' teaching process self-efficacy beliefs with regards to the level of school of profession

Dimensions	Level of School	N	$\bar{X}$	ss	F	p	LSD
Individual Difference	Secondary School	167	4.26	.44	1.80	.16	
	Anatolian High School	97	4.25	.44			
	Vocational High School	64	4.14	.40			
Planning	Secondary School	167	4.04	.58	3.30	.03	a-b
	Anatolian High School	97	3.88	.60			a-c
	Vocational High School	64	3.86	.60			
Method and Technique Diversity	Secondary School	167	3.61	.65	2.51	.08	
	Anatolian High School	97	3.49	.65			
	Vocational High School	64	3.40	.73			
Use of Various Activities	Secondary School	167	3.86	.55	.76	.46	
	Anatolian High School	97	3.81	.47			
	Vocational High School	64	3.77	.48			

It is evident on Table 9 that, with regards to the level of school of profession, while there are no significant differences for the individual difference, method and technique diversity and use of various activities dimensions of the teaching process self-efficacy scale among mathematics teachers' opinions ($p>0.05$), there is a significant difference for the planning sub-dimension ($p<0.05$).The Lsd test was conducted to detect between which groups the difference occurred. Finally,a significant difference in favor of secondary schools was observed among secondary schools-Vocational schools and secondary schools-Anatolian high schools.

Conclusion and Discussion

Conclusions drawn from the evaluations of the study findings and the literature discussion of these results are given in this section. This study was conducted to compare mathematics teachers' opinions on their teaching process self-efficacy levels with regards to various variables. Study results indicate that mathematics teachers' opinions on their teaching process self-efficacy levels are at a high level. According to the analysis of the scale's sub-dimensions; mathematics teachers have high self-efficacy levels in responding to individual differences, planning, method and technique diversity and use of various activities. According to Dede's (2008) study conducted to determine self-efficacy levels of mathematics teachers on teaching, mathematics teachers have high self-efficacy beliefs for teaching. Findings of Dede's (2008) study are in line with the results of this study. The study finding suggesting that self-efficacy beliefs of mathematics teachers concerning the teaching process are high can be considered as a positive outcome (Dede, 2008; Doruk and Kaplan, 2012; Temiz, 2012; Riggs and Enochs, 1990). The reason for this is because high self-efficacy levels of mathematics teachers for the teaching process positively affects the attitudes of the students towards the course, their academic achievement and course performance (Hoy and Woolfolk, 1990; Peterson et al., 1989; Smith, 1996).

Also, teaching process self-efficacy beliefs of mathematics teachers were compared according to the gender, professional seniority, school of graduation, educational background and type of school variables. According to the comparison findings, while there was a significant difference at the use of various activities dimension with regards to gender, no significant differences were observed among the other dimensions.When the related literature is considered, similar with this study, there are studies suggesting that self-efficacy differs with regards to gender. However, there are various findings concerning which gender this difference has occurred in. For example, with regards to the gender variable, some studies suggest that females (Çapri and Çelikkaleli, 2008; Ekici, 2006) and other studies suggest that males (Akbulut, 2006; Şavran and Çakıroğlu, 2003) have higher self-efficacy beliefs. Unlike the study results, Güven and Kuş (2005) emphasized that self-efficacy beliefs of teachers do not differ with regards to gender.

This study indicates that mathematics teachers' opinions on their teaching process self-efficacy beliefs are significantly different with regards to the professional seniority variable. This finding suggests that the seniority variable affects mathematics teachers' opinions on their self-efficacy levels concerning the teaching process. There are also studies which have put forward the relationship between the seniority variable and teacher self-efficacy (Gençtürk, 2008; Koparan, Öztürk and Haşıl Korkmaz, 2011). It is stated that mathematics teachers' teaching process self-efficacy beliefs increase as their professional experiences increase. This result is in line with Fives and Buehl's (2010) finding indicating that self-efficacy belief increases as professional experiences increase. However, according to Sağlam (2007) self-efficacy beliefs of teachers decrease as their professional experiences

increase. Ekici (2006) and Ercan (2007) underlined that self-efficacy beliefs of teachers did not differ based on their years of service. In another study, Üstüner, Demirtaş, Cömert and Özer (2009) stated that self-efficacy beliefs of teachers did not differ throughout their years of service and underlined that, with regards to arithmetic mean values, self-efficacy levels of teachers tend to increase as their professional seniority increase.

A significant difference in favor of secondary schools was detected among secondary-high schools with regards to the level of school of profession. Üstüner et al. (2009) conducted a study and stated that secondary school teachers' self-efficacy beliefs differed significantly with regards to the type of school variable. The difference occurred between the teachers working in Anatolian and Science high schools and between teachers working in General high schools and Vocational-Technical high schools in favor of teachers working in Anatolian and General high schools.

According to the comparisons made between the school of profession, school of graduation and educational background dimensions, no significant differences were observed in favor of the groups. In conclusion; it can be suggested that the type of school, school of graduation and educational background dimensions do not significantly affect the teaching process self-efficacy beliefs of mathematics teachers. This result is in line with Üstüner et al.'s (2009) finding suggesting that self-efficacy beliefs of secondary school teachers are not significantly different with regards to the higher education institution in which one graduated from. The following suggestions can be made based on the study results.

The teaching process self-efficacy levels of teachers throughout the teaching-learning process is a crucial factor which determines their performance and achievements. No matter how much teachers are mastered in the field, they might fail to display the expected success and performance during the courses when their teaching process self-efficacy levels are low. Thus, the number of studies aiming at determining teacher opinions on their teaching process self-efficacy levels should be increased. According to Umay (2001), the education that teachers receive before they begin their profession is one of the crucial factors that shape teacher self-efficacy levels. For this reason, practices which will strengthen self-efficacy levels of teachers concerning the teaching process should be included in the teacher training programs. The study can be conducted on groups of teachers of other branches and the results can be compared based on the branch variable. Quantitative methods were conducted to collect and analyze the data of the study. Various methods and techniques (qualitative methods and techniques, hybrid research methods and techniques etc.) can be used on the same subject to access deeper information and gain various findings. This study can be conducted on different sample groups in various other provinces.

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