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The Math Teachers' Self-Efficacy Beliefs about Classroom Management (A Case Study of Elementary Schools in Diyarbakir) *

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Abstract: This study aims to evaluate elementary school math teachers' self-efficacy beliefs about classroom management. With the aim of investigating elementary school math teachers' self-efficacy beliefs about classroom management, a classroom management self-efficacy scale was developed. The 5 point likert scale is composed of 46 items. The scale was applied to 142 math teachers working at elementary schools in Diyarbakir central district. Data were analyzed in terms of gender, seniority, classroom population and weekly course load. To analyze the data, t-test, one way variance analysis (ANOVA), Scheffe and LSD tests were used. The results showed that the math teachers have a positive self-efficacy belief of classroom management and that male teachers are better at maintaining discipline in class. In addition, the research shows that teachers with more experience are better at course design and classroom management and that classroom population has an effect on math teachers' self-efficacy beliefs about classroom management.

Keywords: *Math teachers, classroom management, self-efficacy belief.*

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Introduction

The concept of self-efficacy attracted the attention of many researchers in the educational field (Berkant and Ekici, 2007; Ozdemir, 2008). Bandura (1986) first coined the term in his *Social Learning Theory* (Bulut and Oral 2011). Bandura (1994) defines self-efficacy as individuals' belief of their skills necessary for accomplishing a task expected of them. Bandura (1977) suggests that these beliefs have an effect on behavior as well.

Bandura (1997) puts forward that self-efficacy consists of four main sources; mastery experience, vicarious experience of observing others, social persuasions and emotional physiological states.

Mastery Experience: It is based directly on an individual's own personal experience. Bandura (1997) posits that mastery experience is the most effective way of forming strong self-efficacy beliefs. Accomplishing a difficult task or overcoming an obstacle can develop a strong belief of self-efficacy (Cited in Usher and Pajares, 1997). An individual's display of success or achievement in a certain field proves that s/he can achieve success in similar tasks. As a result, repeated success does not only help a learner develop a stronger belief of self-efficacy, but also reduces the negative effects of possible failure (Bandura, 1994).

Vicarious Experience of Observing Others: Much of the desired behavior arises from other individuals' experiences. Individuals measure their competence by comparing their behavior and performance with that of their peers (Usher and Pajares, 2009). Hence, individuals focusing on their target by observing the behavior of their peers will reach success (Bandura, 1994).

Social Persuasions: Social persuasions are commonly used for the purpose of behavioral change. Being encouraged and inspired to perform well lead to a strong expectation of self-efficacy (Bandura, 1994). Students who are encouraged or given positive feedback by their parents, teachers and peers develop high self-confidence (Ahn, Bong and Kim, 2017). On the other hand, negative feedback causes self-efficacy to beliefs to weaken. For this reason, positive reinforcement in the process of learning increases students' willingness to be successful (Bandura, 1997).

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Emotional and Physiological States: Bandura (1997) points out that emotional and physiological factors such as anxiety, stress, exhaustion and emotional state have a significant impact on an individual's self-efficacy. Therefore, individuals' emotional and physiological states influence their belief of their behavior (Bandura, 1994). According to Bandura (1997) emotional and physiological states also give hints regarding an individual's prospective success or failure (Cited in Usher and Pajares, 2009). In other words, while an individual's belief that s/he can achieve a certain performance brings about positive feelings of joy and enjoyment, the thought of failure leads to negative feelings such as stress and anxiety. Thus, it can be said that emotions and thoughts play a major role in achievement (Ozdemir, 2008). As a result, a person facing hardships should not be overly anxious and should try to increase his/her belief of self-efficacy by decreasing the level of anxiety (Bandura, 1994). By this way in the classroom management, teacher should decrease his/her anxiety and should focus on increasing self-efficiency.

Research (Bandura, 1994; Denise and O'Neil, 1997; Pajares and Miller, 1994; Usher and Pajares, 2009) shows that a high self-efficacy belief has a favorable effect on individuals' academic achievement. Gibson & Dembo (1984) suggest that self-efficacy is an important factor in achieving success in different fields. In short, because individuals with a high belief of self-efficacy think they can display expected behavior (Bandura, 1977), it can be said that they desire to take part in activities about which they feel competent, that they work harder to achieve their goal, that they show more effort when faced with an unexpected difficulty (Bandura, 1977; Stipek, 2002; Zimmerman, 2000) and that they are more determined to achieve their goal (Bandura, 1977; Bandura, 1994). Individuals with a low belief of self-efficacy, on the other hand, refrain from participating in activities about which they feel negative (Palmer, 2011).

Results of the studies in the literature show that teachers' self-efficacy beliefs affect the quality of instruction (Gibson & Dembo, 1984; Pintrich & Schunk 1996) and student success (Abdi, 2017; Allinder, 1995; Bruce, Esmonde, Ross, Dookie and Beatty, 2010; Caprara, Barbaranelli, Steca, Malone, 2006; Chang, 2012; Guo, Piasta, Justice and Kaderavek, 2010; Tschannen-Moran and Hoy, 2001). In addition, Onosko (1991) has found research data that teachers with a high self-efficacy belief are more successful compared to those with a low belief of self-efficacy. Teachers' beliefs about their self-efficacy are influencing both the performances of children and their performances within the classroom (Berman, McLaughlin, Bass, Pauly & Zellman, 1977). In the light of this, it can be said that teachers with a high belief of self-efficacy have more confidence in their abilities, focus more on academic studies and are more persistent compared to teachers with a low belief of self-efficacy, who have less confidence in their abilities and are not persistent in their academic studies (Gibson & Dembo, 1984). In this regard, it is significant that teachers are aware of their self efficacy (Karakus, Akman and Ergene, 2018).

There is a close connection between teachers' self-efficacy beliefs, their practices in class, strategies they use, and techniques and methods they use to motivate students (Azar, 2010). Research shows that teachers with a high self-efficacy belief prefer student-centered education (Dilekli and Tezci, 2016), support learner autonomy and encourage learners (Gibson & Dembo, 1984), facilitate active student participation (Wang, Hall and Rahimi, 2015) and use teaching strategies effectively (Chacon, 2005). Stephens and Crawley (1994) defined five categories of teacher qualities. These are teachers' knowledge of the subject, ability to teach the subject, classroom management skills, assessment and following student progress, and professional development.

According to Stephens and Crawley (1994), classroom management is one of the essential sources of teaching, which determine the quality of instruction. Gibson & Dembo (1984) and Pajares (1992) suggest that teachers' self-efficacy beliefs have a significant impact on classroom management. There is also a direct relationship between classroom management skill and teacher self-efficacy beliefs. For example; teachers who do not trust themselves in classroom management skills encounter many situations that are insufficient during the day. This shows that self- efficiency is very important in achieving both educational goals and in demonstrating good performance within the classroom (Brouwers and Tomic, 2000). Furthermore, research (Fidler, 2002; Gage, Scott, Hirn & MacSuga-Gage, 2017) shows that teachers' classroom management skills have an impact on students' academic achievement. This shows that one of the important variables -perhaps the most important- of students' academic achievement is classroom management (Yalcinkaya and Tonbul, 2002). However, researches (Akin, 2006; Akkaya Celik, 2006; Altinkurt, 2003; Atici, 2000; Cubukcu and Girmen, 2008; Guven and Akdag, 2002; Terzi, 2001; Turnuklu and Yildiz, 2002) also demonstrate that teachers are inadequate in different aspects of classroom management despite its importance.

This study investigates math teachers' self-efficacy beliefs about classroom management. Because it is believed that determining math teachers' self-efficacy beliefs in terms of classroom's physical arrangement, planning, communication skills, setting and implementing classroom rules, controlling student behavior, time management, classroom organization and student motivation is essential for effective math instruction.

Methodology

Research Goal

The goal of this research is to determine elementary school math teachers' self-efficacy beliefs about classroom management. Sub aims determined in this regard are; (i) how are elementary school math teachers' self-efficacy beliefs about classroom management? (II) is there a significant difference between elementary school math teachers' self-

efficacy beliefs about classroom management in terms of gender, seniority, classroom population and weekly course load?

The Research Design

This research uses survey model from descriptive design. Survey research aims to describe or demonstrate a phenomenon at present or in the past as is. In survey research, the researcher cannot alter or manipulate the research (Eroglu, 2006).

Sample and Data Collection

The population of this study consists of math teachers working at public elementary schools in Diyarbakir central district in 2012-2013 school year. The population is made up of 370 math teachers; however, as it is not possible to apply the scale to the whole population, simple random sampling has been done on the population. In simple random sampling, an impartial selection is made by relying on the equal possibility of selection for every participant in the population (Balci, 2004). The sample is comprised of 142 math teachers (95 male, 47 female) working at 40 different elementary schools in Diyarbakir central district. Roscoe (1975) puts forward that having a sample bigger than 30 and smaller than 500 is sufficient for many studies in terms of sample size (Cited in Buyukozturk, Kilic Cakmak, Akgun, Karadeniz and Demirel, 2017). Balci (2004), on the other hand, draws attention to the proportion of the population to the sample and suggests that a sample size of 3 to 5% of the whole population is estimative. In this study, the proportion of the sample to the population is 38.37%, which shows that the sample represents the population.

While developing the data collection instrument, researchers first reviewed the literature and analyzed the documents related to the subject. Subsequently, researchers collected beliefs and suggestions regarding the classroom management skills of math teachers working at public elementary schools in Diyarbakir central district. In the light of these beliefs and suggestions, a 61 item *Classroom Management Self-Efficacy Scale (CMSES)* was devised. The draft of the scale was first evaluated by 5 teachers working at elementary schools. After necessary revisions were made based on those 5 teachers' suggestions and beliefs, the scale was evaluated by academics at Dicle University, Faculty of Education, Department of Educational Sciences. The draft of the scale was re-revised based on those academics' suggestions and finalized. There were 61 items in this 5 point likert type draft scale.

The data collection instrument was applied to 96 math teachers working at public elementary schools in Diyarbakir central district for evaluation of their validity and reliability. According to preliminary analysis data, Kaiser-Meyer-Olkin (KMO) coefficient was determined as .75 and Bartlett test value was calculated as 2829.831. In addition, the result of the Bartlett test was .05 (p=.000) and significant. Buyukozturk (2011) suggests that suitability of data for factor analysis is determined by KMO coefficient. The KMO coefficient of the scale was calculated to be over .60 and the result of the Bartlett test also turned out to be significant. These results show a factor analysis can be made. After the factor analysis, it was determined that the items in the scale cluster at only one factor and this factor's variance is 42.289%. Buyukozturk (2011) puts forward that a variance over 30% is sufficient for one factor scales.

Buyukozturk (2011) posits that selecting items with over .35 factor loading is an appropriate criterion. Hence, factor loading values in the analysis were set at .35 or above. In the factor analysis of the 61 items in the draft scale, it was found out that factor loading values of 15 items were below .35 and these items were removed from the scale. As seen in the Table 1 all of the remaining 46 items were found to be functional and their factor loading values were between .354 and .732 The scale's Cronbach Alpha reliability coefficient was calculated at .94. This demonstrates high reliability of the CMSES.

Table 1. The Factor Loadings of the Items

Items	Factor loadings	Items	Factor loadings
1	.609	24	.678
2	.692	25	.600
3	.506	26	.597
4	.363	27	.478
5	.401	28	.672
6	.519	29	.497
7	.569	30	.368
8	.477	31	.641
9	.505	32	.354
10	.404	33	.527
11	.489	34	.453
12	.404	35	.402
13	.456	36	.608
14	.381	37	.715
15	.457	38	.588
16	.550	39	.732
17	.551	40	.692
18	.544	41	.496
19	.639	42	.664
20	.476	43	.581
21	.618	44	.682
22	.495	45	.449
23	.667	46	.506

CMSES is made up of two sections. The first section includes personal information and the second section includes CMSES. In the personal information section, there are items about teachers' gender, seniority, classroom population and weekly course load. The second section includes CMSES, which was separated into 5 subcategories by the researcher. These subcategories are; (i) practices related to the physical arrangement of the classroom environment, (ii) planning, (iii) time management, (iv) behavior regulation and (v) arrangement relationships in the classroom (Agaoglu, 2008; Basar, 2005). The scale includes 5 points and these are; 1= Highly disagree I can --------5= Highly I can. All the statements in the scale are positive.

Data collection instrument was distributed to and collected from the math teachers by the researcher in person.

Analyzing of Data

While determining math teachers' beliefs of every statement in all 5 subcategories of the scale, standard deviation and arithmetic mean was used. In order to investigate if there is any significant difference between mean scores in terms of gender, an independent samples t-test was carried out. In order to investigate if there is any significant difference between mean scores in terms of seniority, classroom population and weekly course load, a one way ANOVA was used. In the case of significant differences, LSD and Scheffe tests were done to determine between which groups the difference was 5 points: 1= Highly disagree I can --------- 5= Highly I can.

Findings / Results

Research findings were presented in line with the sub aims of the study. The first aim of the research is examining the elementary school math teachers' self-efficacy beliefs about classroom management.

Teachers' Self-Efficacy Beliefs about Classroom Management

Findings about Physical Arrangement of the Classroom

Table 2 demonstrates the findings about math teachers' self-efficacy beliefs about physical arrangement of the classroom.

Table 2. Findings about Math Teachers' Self-Efficacy Beliefs about The Physical Arrangement of The Classroom

Physical Arrangement of the Classroom	$\overline{X}$	SD
1. I physically arrange the classroom in the most suitable way	3.73	.906
2. I physically arrange the classroom in a way students can be comfortable	3.76	.852
3. I physically arrange the classroom in a way that will increase student motivation	3.73	.866
4. I physically arrange the classroom in a way that will make learning easier	3.82	.912
5. I physically arrange the classroom in a way that I can see the students	4.05	.917
6. I physically arrange the classroom in a way that I can control the students	4.01	.956
7. I physically arrange the classroom in a way that will allow maintaining eye	3.99	.915
8. I physically arrange the classroom in a way that students can act comfortably	3.64	1.087
9. I physically arrange the classroom in a way that takes individual differences into account	3.65	.984
10. I pay attention to the fact that the classroom is clean	4.16	.813

When math teachers' self-efficacy beliefs about physical arrangement of the classroom were examined (max: 5, min: 1), the item "I physically arrange the classroom in a way that students can act comfortably" had the lowest mean score ($\overline{X}$ =3.64) and the item "I pay attention to the fact that the classroom is clean" had the highest mean score ($\overline{X}$ =4.16). It can be seen that the teachers also opted for the other 8 items (1, 2, 3, 4, 5, 6, 7 and 9) between the mean of 3.41-4.20. The mean score for all the items regarding classroom's physical arrangement is 3.86. These findings show that math teachers had positive self-efficacy beliefs about the physical arrangement of the classroom.

Findings about Planning

Table 3 demonstrates the findings about math teachers' self-efficacy beliefs about planning.

Table 3. Findings about Math Teachers' Self-Efficacy Beliefs about Planning

Planning	$\overline{X}$	SD
11. I adjust the pace and progression of a lesson according to students' level of learning	4.27	.654
12. I prepare my yearly plans in accordance with their purpose	4.06	.815
13. I prepare the learning plan in alignment with the expected outcomes in the curriculum	4.15	.753
14. I choose instructional tools suitable for students' age and readiness	3.96	.789
15. I include alternative assessment methods in my planning	3.83	.781
16. I include modern learning approaches (multiple intelligences, cooperative learning etc.) in my planning	3.62	.865
17. I include future directions in my planning	3.82	.872
18. I include teaching tools suitable for students' abilities and level of learning in my planning	3.84	.813

When math teachers' self-efficacy beliefs about planning were examined (max: 5, min: 1), the item "I include modern learning approaches (multiple intelligences, cooperative learning etc.) in my planning" had the lowest mean score ($\overline{X}$ =3.62) and the item "I adjust the pace and progression of a lesson according to students' level of learning" had the highest mean score ($\overline{X}$ =4.27). It can be seen that the teachers also opted for the other 6 items (12, 13, 14, 15, 17 and 18) between the mean of 3.41-4.20. The mean score for all the items regarding planning is 3.94. These findings show that math teachers had positive self-efficacy beliefs about planning.

Findings about Time Management

Table 4 demonstrates the findings about math teachers' self-efficacy beliefs about time management.

Table 4. Findings about Math Teachers' Self-Efficacy Beliefs about Time Management

Time Management	$\overline{X}$	SD
19. I use class time effectively	4.27	.570
20. I make detailed plans about activities outlined in the curriculum according to time constraints	3.82	.828
21. I manage the class time actively and efficiently in alignment with the learning outcomes	4.10	.708
22. I use time effectively while helping students	4.04	.693
23. I distinguish between my professional and personal time	4.16	.731
24. I effectively manage my professional time	4.46	.408
25. I manage the time students spend transitioning from one activity to the other well	3.91	.752

When math teachers' self-efficacy beliefs about time management were examined (max: 5, min: 1), the item "I make detailed plans about activities outlined in the curriculum according to time constraints" had the lowest mean score ($\overline{X}$ =3.82) and the item "I effectively manage my professional time" had the highest mean score ($\overline{X}$ =4.46). It can be seen that the teachers agreed with the item "I use class time effectively" while the other 4 items (21, 22, 23 and 25) are between the mean of 3.41-4.20. The mean score for all the items regarding time management was 4.11. These findings show that math teachers had positive self-efficacy beliefs about time management.

Findings about Behavior Regulation

Table 5 demonstrates the findings about math teachers' self-efficacy beliefs about behavior regulation.

Table 5. Findings about Math Teachers' Self-Efficacy Beliefs about Behavior Regulation

Behavior Regulation	$\overline{X}$	SD
26. I can deal with undesirable student behavior	4.08	.719
27. I can keep undesirable behavior under control	4.09	.673
28. I develop strategies (eye contact, touching etc.) to deal with undesirable behavior	4.30	.682
29. I promptly intervene in undesirable behavior	4.30	.692
30. I collaborate with my colleagues in preventing undesirable behavior	3.99	.842
31. I help students take responsibility by increasing their confidence and belief in themselves	4.14	.669
32. I identify students who need pedagogical guidance	3.82	.888
33. I create an environment where students feel safe	4.14	.759
34. I take preventive measures against undesirable behavior	4.17	.684
35. I do not incorporate culture of fear in class	3.99	.926

When math teachers' self-efficacy beliefs about behavior regulation were examined (max: 5, min: 1), the item "I identify students who need pedagogical guidance" had the lowest mean score ($\overline{X}$ =3.82) and the teachers agreed with that item while the items "I develop strategies (eye contact, touching etc.) to deal with undesirable behavior" and "I promptly intervene in undesirable behavior" had the highest mean scores ($\overline{X}$ =4.30). It can be seen that the teachers opted for the other 7 items (26, 27, 30, 31, 33, 34 and 35) at a mean of "3.41-4.20". The mean score for all the items regarding behavior regulation is 4.10. These findings show that math teachers had a positive belief of self-efficacy about behavior regulation.

Findings about Arrangement of Classroom Relationships

Table 6 demonstrates the findings about math teachers' self-efficacy beliefs about arrangement of classroom relationships.

Table 6. Findings on Math Teachers' Self-Efficacy Beliefs about Arrangement of Classroom Relationships

Arrangement of Classroom Relationships	$\overline{X}$	SD
36. I value my students	4.73	.504
37. I behave trustably and responsibly in class	4.44	.613
38. I incorporate the whole class in the process of setting classroom rules	4.11	.817
39. I set classroom rules in accordance with their purpose	4.24	.662
40. I respect students' personal rights	4.49	.692
41. I care about students' thoughts and beliefs	4.51	.638
42. I care about students' thoughts	4.54	.659
43. I try to understand my students	4.51	.580
44. I interact with students during classroom activities	4.22	.675
45. I support learner autonomy	4.25	.818
46. I care about students' friendship	4.46	.670

When math teachers' self-efficacy beliefs about arrangement of classroom relationships were examined (max: 5, min: 1), the item "I incorporate the whole class in the process of setting classroom rules" had the lowest mean score ($\overline{X}$ =4.11) and the item "I value my students" had the highest mean score ($\overline{X}$ =4.73). It can be seen that the teachers also opted for the other 8 items (37, 39, 40, 41, 42, 43, 44, 45 and 46) between the mean of 4.21-5.00. The mean score for all the 11 items regarding arrangement of classroom relationships is 4.40. These findings show that math teachers had a positive belief of self-efficacy about arrangement of classroom relationships.

Findings about Teachers' Beliefs In Terms of Some Variables

The second sub aim of the research is investigating the teachers' beliefs in terms of gender, seniority, classroom population and weekly course load. Table 7 demonstrates findings about teachers' beliefs on the scale in terms of gender t-test.

Table 7. Findings about Teachers' Beliefs on the Scale In terms of Gender Variable

Gender	n	$\overline{X}$	SD	t	p
Male	95	4.13	.384	1.608	.110
Female	47	4.02	.453		

p>.05

An analysis of Table 7 shows that there is no difference in terms of gender in teachers' beliefs on the scale in general [$t_{(140)}$=1.608, p>.05]. Regardless of gender, teachers had highly positive beliefs about the scale. Table 8 demonstrates findings about teachers' beliefs on the scale in terms of seniority variance analysis.

Table 8. Findings about Teachers' Beliefs on the Scale In terms of Seniority

Seniority	n	$\overline{X}$	SD	Source of Variance	Sum of Squares	sd	Mean Squares	F	p
1-5 years	15	4.07	.191	Between Groups	2.091	4	.523	3.308	.013
6-10 years	64	4.02	.424						
11-15 years	38	4.08	.422	In Group	21.648	137	.158		
16-20 years	20	4.28	.388						
21 and high	5	4.54	.318	Total	23.738	141			

*p<.05

An analysis of Table 8 shows that teachers' beliefs on the scale varies by seniority [$F_{(4-137)}$=3.308, p<.05]. Scheffe test was used to determine which groups the difference arose from. According to the result of the test, the significant difference between 1-15 seniority group and 16 years and above seniority group was in favor of the 16 years and above group. These results show that seniority has an effect on math teachers' self-efficacy beliefs. From the arithmetic mean, it can be concluded that the higher the seniority, the higher the self-efficacy beliefs of math teachers. Table 9 demonstrates the findings about math teachers' beliefs on the scale in terms of classroom population variance analysis.

Table 9. Findings about Teachers' Beliefs on the Scale In Terms of Classroom Population

Classroom Population	n	$\overline{X}$	SD	Source of Variance	Sum of Squares	sd	Mean Squares	F	p
21-30 students	19	4.21	.317	Between Groups	1.352	3	.451	2.779	.044
31-40 students	47	4.18	.365	In Group	22.386	138	.162		
41-50 students	60	3.98	.439	Total	23.738	141			
51 and high	16	4.13	.455						

*p<.05

An analysis of Table 9 shows that math teachers' beliefs on the scale varies by classroom population [$F_{(3-138)}$=2.779, p<.05]. According to the LSD test, it was identified that the difference was between teachers teaching a population of 21-30 students and 41-50 students. It can also be seen in table 9 that the lowest mean score came from teachers teaching a population of 41-50 students ($\overline{X}$=3.98) while the highest mean came from between teachers teaching a population of 21-30 students ($\overline{X}$=4.21). These results show that classroom population has an effect on math teachers' self-efficacy beliefs. From the arithmetic mean, it can be said that as the classroom population decreases, the self-efficacy beliefs of math teachers increases.

Table 10 demonstrates the findings about math teachers' beliefs on the scale in terms of weekly course load variance analysis.

Table 10. Findings about Teachers' Beliefs on the Scale in terms of Weekly Course Load

Weekly Course Load	n	$\overline{X}$	SD	Source of Variance	Sum of Squares	sd	Mean Squares	F	p
15-20 hours	43	4.07	.424	Between Groups	.045	2	.023	.133	.876
21-25 hours	70	4.10	.411	In Group	23.693	139	.170		
26-30 hours	29	4.12	.402	Total	23.738	141			

p>.05

An analysis of Table 10 shows that there is no significant difference in terms of weekly course load in math teachers' beliefs on the scale in general [$F_{(2-139)}$=.133, p>.05].

Discussion and Conclusion

What is common among different aspects of classroom management in the literature is that physical conditions of the classroom must be arranged in the most suitable way (Sahin Sak, Sak, and Tuncer, 2013). Physical conditions of a classroom include population, light, temperature, colors, noise, hygiene, aesthetics and seating arrangement. Seating arrangement affects the interaction between the teacher and the students. There is a lot of research demonstrating that basic physical conditions of a classroom (air quality, temparature, light, noise, etc.) has an impact on an individual's learning (As quoted by Sensoy and Sagsoz, 2015 from Edwards, 2006; Earthman, 2011; Hunter, 2006; Lackney, 1999; Lyons, 2010; McGregor, 2004). In addition, there is research suggesting that there is a relationship between physical conditions and student achievement (Sensoy and Sagsoz, 2015) and that the physical arrangement of the classroom affects student success (Kucukoglu and Kose, 2008). Sensoy and Sagsoz (2015) identified a significant relationship between the level of satisfaction about seating arrangment facilitating learning and student achievement. Based on these findings, physical arrangement of a classroom can be said to have an effect on the learning process.

In this research, it was found that the math teachers had positive self-efficacy beliefs of the physical arrangement of the classroom. In a study conducted by Helvaci and Ozer (2008), it was concluded that teachers' self-efficacy beliefs about physical arrangement of the classroom was at moderate level. Coksak (2006) also found in his study that teachers were qualified to prepare a good physical environment. Hence, the findings of this research support previous findings by Helvaci and Ozer (2008) and Coksak (2006).

Ryan, Kuusinen and Bedoya-Skoog (2015) suggest that teachers' self-efficacy beliefs play an important role in the classroom environment. In this study, it was found that math teachers arrange the classroom in a way that students can act comfortably. Results of a study by Kiziloglu and Konyalioglu (2002) show that more than half of math teachers (54%) prepare a suitable environment for the lesson beforehand. Furthermore, more than half the participants (63%) in a study by Ustun, Nural and Deger (2005) positively responded to the item "I arrange the classroom as a teaching environment" In another study by Coksak (2006), it was identified that middle school teachers responded positively to the item "I make a seating arrangement according to students' physical features". Briefly, it can be said that the findings of this research support the findings by Kiziloglu and Konyalioglu (2002), Ustun, et al. (2005) and Coksak (2006).

Karacali (2006) asserts that classroom, windows, desks, chairs and walls being clean makes the classroom a more attractive environment. The findings of his research also put forward that math teachers care about having a clean classroom. Coksak (2006) found in his research that middle school teachers responded positively to the item "I ask the janitors for help to keep the classroom clean". In a different study by Ardic (2010), it was found that 45% of elementary school teachers considered the hygiene of the classrooms "adequate". The findings of this research show similarities with those of Ardic (2010) and Coksak (2006).

Hull, Booker & Näslund-Hadley (2016) suggest that teachers' self-efficacy beliefs are related to their planning. Also, Price and Nelson (2010) put forward that students' ability to internalize a subject is affected by a teachers' planning and his/her style of presenting the subject. For this reason, teachers should take individual differences into account and provide a rich learning experience while planning (Arsal and Ozen, 2007). This study found that math teachers' self-efficacy beliefs about planning are positive. In the study by Helvaci and Ozer (2008), it was found that teachers' self-efficacy beliefs about planning were at moderate level and were positive. Additionally, Coksak (2006) found in his study that teachers considered themselves competent in terms of planning. Studies by Helvaci and Ozer (2008) and Coksak (2006) support the findings of this research.

This study also show that math teachers adjust the pace and progression of a lesson according to students' level of learning and use instructional tools suitable for students' age and readiness. Ustun, et al. (2005) found in their study that 60% of high school teachers positively responded to an item about planning by taking student differences into account. In a different study by Turker (2008), 53.9% of the elementary school teachers positively responded to "planning by taking into account students' different learning styles". In a study by Helvaci and Ozer (2008), it was found that the teachers positively responded to an item regarding "determining students' level of interest and teaching in accordance with it". In short, the findings of this research support the findings by Ustun, et al. (2005), Turker (2008) and Helvaci and Ozer (2008).

Cubukcu and Girmen (2008) suggest that effective time management in the learning process encourages effective participation of students. The findings of this study show that math teachers have positive self-efficacy beliefs about time management.

According to Celikten, Sanal and Yeni (2005), teachers must use time effectively, and start and finish lessons on time. This study shows that math teachers use time effectively at all times. In a study by Ustun, et al. (2005), it was found that 84% of the teachers used time effectively. In another study by Kocabas and Erdem (2003), they reached findings that teachers had positive attitudes and behavior towards time management. The findings of this study; therefore, support the findings by Ustun, et al. (2005) and Kocabas and Erdem (2003).

A positive classroom atmosphere is only possible with a good rapport between the teacher and the students. If a good rapport is established between the teacher and the students, psychological support needed by the students for safety, autonomy, competence and relatedness is provided. Moreover, students can meet teachers' expectations and actively participate in the lessons. However, if the teacher fails to establish a good rapport, student motivation and their academic achievement will decrease (Money, 2015). On the other hand, the fact that a teacher likes and enjoys math positively contributes to students' performance, confidence, interest and their understanding of the importance of math. Also, this decreases students' math anxiety (Hull et al., 2016). Studies (Cited in Skaalvik, Federici & Klassen, 2015) show that students who receive emotional support from their teachers display higher intrinsic motivation (Skaalvik & Skaalvik 2012a,b; Wentzel, 1994), better concentration on learning (Patrick et al., 2011), more academic initiative (Danielsen, Wiium, Wilhelmsen & Wold, 2010) and more educational effort (Goodenow & Grady, 1993; Wentzel, 1994). The findings of this study show that math teachers had positive self-efficacy beliefs about behavior regulation. It was also found that the teachers identify students who need pedagogical assistance, and help them feel safe and encourage them to take responsibility. Ryan, et al. (2015) found in their study that teachers created a positive classroom atmosphere to create a better learning environment for the students, dealt with social problems regarding students and developed friendly relationships with them. The findings of this study are compatible with those of Ryan et al. (2015).

According to Fuson, Kalchman & Bransford (2005), a teacher having a good rapport with the students helps them understand the subject and helps them with mathematical thinking. The results of this study show that math teachers established communication with the students and this positively contributes to conducting the classroom activities successfully.

The findings of this study show that the teachers promptly intervened in undesirable behavior from the students. In a study on this subject, Helvaci and Ozer (2008) put forward that teachers' perceived competence of "maintaining discipline" in class was at moderate level. Also, in a study conducted by Nazli (2008), it was suggested that 91% of the teachers took care of problematic students. Hence, the findings of this study support the findings of Helvaci and Ozer (2008) and Nazli (2008). The findings of this study also show that the teachers always used some strategies such as maintaining eye contact and touching to deal with undesirable student behavior. Gulec and Alkis (2004) also identified maintaining eye contacy as strategies that the teachers always used. According to Cetin (2013) the strategies to deal with undesirable student behavior are understanding the problem, ignoring it, establishing eye contact, warning, changing environmental factors, giving responsibility, asking questions, talking to the students and finally contacting the school management, the family and the school counselor. In fact, dealing with undesirable student behavior is linked to a good organization of the classroom environment.

Because long term observation is an effective way of getting the students to adopt desirable behavior in education, it is highly important that all the staff- teachers in particular- be a "stable model" for the students. This is because students learn some behaviors by observing their teachers (Akpinar and Ozdas, 2013). For this reason, teachers themselves should first display the behaviors that they expect to get their students to take up. Teachers should value and care about their students (Kasapoglu, 2013). The findings of this study demonstrate that math teachers care about their students, value them and care about their thoughts and beliefs and incorporated them in the decision making process while setting classroom rules. Yalcin-Durmus and Demirtas (2009) also found that high school teachers cared about their students and incorporated them in the decision making process for decisions concerning the whole class. Also, Helvaci and Ozer (2008) concluded that the teachers in their study responded to the item *"setting classroom rules with the students at the beginning of the school year"* at high level. Unlu, Sunbul and Aydost (2009) also found that students and teachers made decisions related to classroom organization together. As a result, it can be said that the findings of this study support those of Yalcin-Durmus and Demirtas (2009), Helvaci and Ozer (2008), Unlu et al. (2009).

This study shows that gender variable has no effect on math teachers' self-efficacy beliefs about classroom management. Studies by Akuzum and Altunhan (2017), Azar (2010), Bedir (2011), Celik (2011), Cubukcu and Girmen (2008), Dogan Burc (2006), Ilhan (2011), Sahan and Zog (2017) and Zengin Bagci (2010) also show that teachers' self-efficacy beliefs about classroom management does not vary by gender.

This study shows that math teachers' self-efficacy beliefs about classroom management vary by teaching experience. As the teaching experience increases, so does the math teachers' self-efficacy beliefs about classroom management. In studies by Celik (2011) and Say (2005), it was found that seniority increases with teaching experience and this has a positive effect. As a result, it can be said that the findings of this study support the findings of Celik (2011) and Say (2005).

This study shows that math teachers' self-efficacy beliefs about classroom management vary by classroom population. It was found that teachers teaching a population between 20-30 students had stronger self-efficacy beliefs about their classroom management skills compared to teachers who teach more than 30 students. Yalcinkaya and Tonbul (2002) also found in their study that there is a difference in teachers' self-efficacy beliefs about classroom management between teachers who teach 25-30 and 30-35 students and more than 35 students. Therefore, this study supports the findings by Yalcinkaya and Tonbul (2002).

Another important finding of this study is that math teachers' self-efficacy beliefs about classroom management do not vary significantly by weekly course load. Judging by the results of this study, it can be asserted that math teachers have positive self-efficacy beliefs regarding classroom management. As a natural consequence of this, it would be expected from students to have a similar success in their math achievement. However, it can be seen that the math scores of the students in Turkey are below average (Dede, 2008) in international tests (PISA, TIMSS, etc.). Therefore, although math teachers have positive self-efficacy beliefs about their classroom management skills, the fact that students' math achievement scores are quite low can be explained by the difference between teachers' perceived and actual competence (Galla and Woord, 2011).

On the other hand, for teachers to be able to effectively manage the classroom, classroom population should be decreased to an optimum. Educational environment should be made suitable in terms of physical conditions such as ligthing, hygiene and temperature. For math lessons, applied labs must be created and the teachers and the students should be enabled to use tools in the lab effectively. The teachers should give educational responsibilities on the students for more effective learning in the classroom. The math teachers should be given in-service seminars related to experiences that will enhance their teaching efficiency.

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