

FAMILY INVOLVEMENT IN MATHEMATICS EDUCATION

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ABSTRACT

In this study, it has been aimed at investigating the parent involvement in mathematics education. This study is a quantitative study designed as a survey method in order to determine the family involvement in mathematics education. The sample of the study included the parents of 209 students selected by simple random sampling method in the 2018-2019 school year. "Personal Information Form" and "The Questionnaire of Parents' Involvement in Mathematics Education" were used as data collection tools. Necessary statistical analyses were performed by using SPSS 16.0. The percentage-frequency were used for the assessment of data. In this study, it was achieved to the conclusion that the attitudes, interests and involvement of parents in mathematics are positive when examining the involvement of families in mathematics education.

Keywords: Mathematics, Mathematics Education, Family Involvement

AİLELERİN MATEMATİK ÖĞRETİMİNE KATILIMLARI

ÖZ

Bu çalışmada velilerinin matematik öğretimine katılımlarını incelemek amaçlanmıştır. Bu araştırma ailelerin matematik öğretimlerine katılımlarını belirlemeye yönelik olarak gerçekleştirilmiş olan tarama modelinde nicel bir araştırmadır. Araştırmanın örneklemini 2018-2019 Eğitim-Öğretim yılında basit rastgele örnekleme yöntemi ile seçilen toplam 209 öğrenci velisi oluşturmaktadır. Araştırmada ölçme araçları olarak "Kişisel Bilgi Formu" ve "Velilerinin Matematik Öğretimine Katılımları Anketi" kullanılmıştır ve gerekli istatistiksel çözümleri SPSS 16.0 kullanılarak yapılmıştır. Elde edilen verilerin değerlendirilmesinde ise yüzde-frekans kullanılmıştır. Ailelerin matematik öğretimine katılımlarının incelendiğinde bu araştırmada, velilerin matematiğe karşı tutumları, ilgileri ve katılımlarının olumlu olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Matematik, Matematik Eğitimi, Aile Katılımı

Introduction

Families should involve in the education of their children since they are one of the most important elements of the education and training process (Hacısalihoglu-Karadeniz, Aksu & Topal, 2012). The family involvement aiming at increasing the success of the children includes gaining many abilities from families' learning the abilities special to the subject to developing suitable relationships within family (Keceli-Kaysili, 2008). Families are responsible for ensuring their children's becoming more successful in mathematics as they are in other courses. Their showing positive attitude towards mathematics is the leading one of these responsibilities. This positive attitude of the families also affects the attitudes of their children to this course positively (Yenilmez, 2006). Children are introduced to mathematics in a very early period and since the child's having mathematical concepts and skills directly begins with the informal education that s/he

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receives in the family, the rising of child's success rate of mathematics in advancing training and education process is directly proportional to the awareness level of the family. In this regard, it has been achieved as a result by many researches that there is a strong and positive relationship between the family involvement in education and the mathematics achievement of their children (Ayril, et. al., 2012; Akay, 2012; Cai, Moyer, & Wang, 1999; Dinç, 2017; Erbay, 2013; Peressini, 1998).

When examining the related literature, it is seen that many investigations have been carried out in terms of family involvement in mathematics education (Akay, 2012; Ayril, et. al, 2012; Cai, Moyer, & Wang, 1999; Cai, 2003; Erbay, 2013; Karaca ve Gür, 2004; Kutluca & Aydın, 2010; Nyabuto & Njoroge, 2014; Peressini, 1998; Şahin-Doğruer, 2014; Yenilmez, 2006; Yenilmez, Özer, & Yıldız, 2006). However, none of these researches consisted of talented students and students with normal intelligence level as their samples. Based on this gap in the field, this study aimed to examine the participation of parents with children in primary and middle school in mathematics teaching. Following questions have been sought answer within the context of this purpose:

1. What are the attitudes, interests and involvement status of families in the mathematics education process according to the grade of their children?
2. What are the attitudes, interests and involvement status of families in the mathematics education process according to whether their children are identified as talented?
3. What are the attitudes, interests and involvement status of parents in the mathematics education process according to their being mother and father?

Method

This study is a quantitative study designed as a survey method in order to determine the family involvement in mathematics education. The survey method aims at “describing any case as it is that occurred in the past or is still exist” as stated by Karasar (2005).

Sample

The sample of the study included the parents of 209 students selected by simple random sampling method in the 2018-2019 school year. The sample consisted of the parents of students receiving education in two state schools in Istanbul. One group of these students were in normal intelligence level while the other group of students were taking education in a Centre for the Arts & Sciences. Centre for the Arts & Sciences are located in Turkey and the special education programs are implemented in these places and they are prepared towards targeted goals in accordance with developmental characteristics, needs for education and performances of talented individuals by basing on the program followed by them and include the support education services to be given to these individuals. Identification of students to be enrolled in Centre for the Arts & Sciences is done as individual and group scans. Students are diagnosed as skilled in the areas of general mental ability and visual arts and music talent through tests (Directives of Centre for the Arts & Sciences, 2016). The distribution of parents in the study group is given below.

Table 1. The distribution of parents

	Primary School	Middle School	Total
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	n	%	n	%	n	%
Normal	90	69.8	39	30.2	129	61.7
Talented	58	72.5	22	27.5	80	38.3
Total	148	70.8	61	29.2	209	100.0

The sample consists of totally 209 students' parents of which 129 (61,7%) have children with normal intelligence level and 80 (38.3%) have talented children. While the children of 148 (70.8%) parents are primary school students, the children of 61 (29.2%) parents are enrolled in middle school. In addition, 124 (%59.3) of these parents are mother and the rest that is 85 (40.7%) of these parents are father.

Data Collection Tools

“Personal Information Form” and “The Questionnaire of Parents' Involvement in Mathematics Education” were used as data collection tools. The first of these data collection tools is the “Personal Information Form” developed by the researcher. This form involves the information about the grades in which children receive education and whether they are children with normal intelligence level or talented children and whether the parents, who participated in this study, are mother or father. The second data collection tool used in this study is “The Questionnaire of Parents' Involvement in Mathematics Education” developed by Karaca and Gur (2004). This questionnaire contains totally 27 items of which 13 are negative and 14 are positive and students' parents express ‘their interests, attitudes and expectations in terms of involving in the process of mathematics education’. While the items of 1, 3, 4, 6 and 7 assess the attitudes of parents towards mathematics, the items of 5, 8, 12, 19, 21, 23, 25 and 26 provide information about their interests concerning mathematics and finally 2nd, 9th, 10th, 11th, 13th, 14th, 15th, 16th, 17th, 18th, 20th, 23rd, 24th and 27th items give insight about their wish to involve in the course of mathematics. In the research, the expectations, attitudes and attitudes of parents who have questionnaire about the participation in mathematics education process were handled separately according to the research questions.

Data Analysis

The data entry of forms filled out by parents in order to determine the involvement of families in mathematics education was made in line with the general purpose of the research and necessary statistical analyses were performed by using SPSS 16.0. The percentage-frequency were used for the assessment of data.

Findings

Findings are given below, taking into consideration the expectations, attitudes of parents of the questionnaire, which are questionnaire sections, and their participation in mathematics education process, according to the research questions. The findings obtained in line with the variables regarding the involvement of parents in mathematics education are provided below. The findings related to the first sub-problem are given in Table 2, 3 and 4.

Table 2. The Attitudes of Parents towards Mathematics in accordance with the Grades

Expressions of Attitudes	I Agree		Neutral		I do not Agree	
	Primary School	Middle School	Primary School	Middle School	Primary School	Middle School
	%	%	%	%	%	%
Mathematics is a difficult lesson to learn	32.4	29.5	10.8	21.3	56.8	49.2
I didn't like math lesson	31.8	19.7	9.5	8.2	58.8	72.1
Mathematics is an important lesson for my child to learn.	77.0	88.5	0.7	1.6	22.3	9.8
Mathematics lesson is one of the lessons I have difficulty.	34.5	26.2	18.2	23.0	47.3	50.8
I enjoy dealing with math related questions.	58.1	55.7	15.5	24.6	26.4	19.7

When looking at the percentages of parents to participate in the survey statements, primary school parents said that 'mathematics is an easy lesson to learn' (56.8%; 49.2%) and 'they enjoy tackling mathematics questions' (58.1%; 55.7%). When the answers of the middle school parents are examined; They were more likely than primary school parents to say that they liked 'mathematics lesson' (58.8%; 72.1%), 'that their children are an important lesson to learn' (77%; 88.5%) and 'that they do not have difficulty in mathematics lesson' (47.3%; 50.8%).

Table 3. The Interests of Parents towards Mathematics in accordance with the Grades that Their Children are Enrolled

Expressions of Interests	I Agree		Neutral		I do not Agree	
	Primary School	Middle School	Primary School	Middle School	Primary School	Middle School
	%	%	%	%	%	%
I can't help the child because I don't know enough about	24.3	14.8	14.9	19.7	60.8	65.6

her/his homework on mathematics.						
I have a hard time answering questions on some topics in math class.	38.5	19.7	22.3	37.7	39.2	42.6
It is enough for me that my child has a passing grade in mathematics.	24.3	14.8	12.2	11.5	63.5	73.8
I am satisfied with my child's math teacher.	48.0	49.2	25.7	32.8	26.4	18.0
I get frequent information about my child's condition by talking with the math teacher	51.4	39.3	15.5	21.3	33.1	39.3
I find it difficult to find different resources (test book, supplementary textbook, exam booklets, etc.) for my child apart from the textbook.	25.7	14.8	9.5	11.5	64.9	73.8
In case of problems we cannot solve, I consult your teacher.	50.7	52.5	14.2	23.0	35.1	24.6
I don't find the homework given by the teacher enough.	24.3	24.6	23.0	32.8	52.7	42.6

When looking at the percentages of parents' participation in the survey statements, primary school parents said that they had a higher rate of 'getting information about their children' (51.4%; 39.3%) and 'teachers found their homework sufficient' (52.7%; 42.6%). The statements that middle school students' parents attend at a higher rate than primary school students' parents are as follows in Table 3: 'They can help their children with their math homework' (60.8%; 65.6%), 'they do not have difficulty in answering the questions' (39.2%; 42.6%), 'their children are not satisfied with passing grades' (63.5%; 73.8%), 'It is observed that they are' (48%; 49.2%), 'they have no problem finding different resources for their children' (64.9%; 73.8%), 'they consult teachers in problems they cannot solve' (50.7%; 52.5%).

Table 4. The Involvement of Parents in Mathematics Education in accordance with the Grades that Their Children are Enrolled

Interest Expressions	I Agree		Neutral		I do not Agree	
	Primary School	Middle School	Primary School	Middle School	Primary School	Middle
	%	%	%	%	%	%
My child does not have difficulty learning math	55.4	59.0	20.3	19.7	24.3	21.3

We repeat the topic he/she saw in mathematics class with my child day by day	43.9	18.0	27.7	42.6	28.4	39.3
I find the teacher to teach enough.	39.2	27.9	34.5	37.7	26.4	34.4
I can't answer my child's questions because I'm tired, she does it herself/himself	26.4	21.3	19.6	21.3	54.1	57.4
My child has a problem (s) in mathematics.	45.9	54.1	18.9	24.6	35.1	21.3
My child does not need to ask me about the problems he/she had in mathematics	18.2	19.7	17.6	18.0	64.2	62.3
I find it difficult to solve the questions in my child's textbooks.	24.3	11.5	13.5	23.0	62.2	65.6
I have a hard time explaining my child how to solve math problems.	23.6	9.8	23.0	39.3	53.4	50.8
My child consults with someone who is interested in math for their homework.	38.5	55.7	12.2	11.5	49.3	32.8
He/she does her math homework with her friends.	27.0	23.0	14.2	24.6	58.8	52.5
There are resources to use at home, no need to ask me	23.0	18.0	23.0	18.0	54.1	63.9
Apart from the problems they solve at school, I also make them solve problems from different sources at home.	60.8	67.2	13.5	23.0	25.7	9.8
I'm willing to help my child but I don't know how to help	27.7	9.8	19.6	34.4	52.7	55.7
I don't have time to work with my child.	18.2	18.0	20.9	21.3	60.8	60.7

According to their participation in mathematics education, primary school parents had a higher rate of 'asking their children about the problems they had in mathematics' (64.2%; 62.3%), 'having difficulty in explaining the solutions of the problems' (53.4%; 50.8%), 'homework was not done with their friends' (%58.8; 52.5%) and finally 'they had time to work with their children' (60.8%; 60.7%). The statements that middle school parents attend at a higher rate than primary school parents are as follows: 'Their children do not have difficulty in learning mathematics' (55.4%; 59%), 'even though they are tired, their children can answer their questions' (54.1%; 57.4%), 'their children have difficulties' (45.9%; 54.1%), 'they did not have difficulty in solving the questions' (62.2%; 65.5%), 'they were asked about their knowledge in homework' (54.1%; 63.9%), 'the problems were solved from different sources' (60.8%; 67.2%) and 'they know how to help their

children' (52.7% 55.7%). When the examinations are made according to the highest percentages in the percentages, it is seen that the parents of primary school students (42.9%) are unstable in this regard as in Table 4, while the parents of the primary school students participate in their 'daily repetitions with their children' (43.9%). Again, while elementary school parents say that they 'find what teachers teach enough' (39.2%), middle school parents (37.7%) are also undecided. While middle school parents stated that 'someone was consulted for their math homework' (55.7%), primary school parents did not agree (49.3%).

The findings related to the second sub-problem are provided in Tables 5, 6 and 7

Table 5. The Attitudes of Parents towards Mathematics According to the Intelligence Level of Their Children

Expressions of Attitudes	I Agree		Neutral		I do not Agree	
	Normal Intelligence	Talented Children	Normal Intelligence	Talented Children	Normal Intelligence	Talented Children
	%	%	%	%	%	%
Mathematics is a difficult lesson to learn	34.9	26.3	14.7	12.5	50.4	61.3
I didn't like math lesson	32.6	21.3	7.8	11.3	59.7	67.5
Mathematics is an important lesson for my child to learn.	72.9	92.5	0.8	1.3	26.4	6.3
Mathematics lesson is one of the lessons I have difficulty.	31.8	32.5	21.7	16.3	46.5	51.3
I enjoy dealing with math related questions.	55.0	61.3	20.2	15.0	24.8	23.8

When parents' responses to attitude expressions towards mathematics are examined, parents of talented children have a higher percentage of participation in all expressions than parents of children with normal intelligence. Accordingly, parents of talented children stated that 'mathematics is an easy lesson to learn' (50.4%; 61.3%), 'they love mathematics lessons' (59.7%; 67.5%), 'an important lesson for their children to learn' (72.9%; 92.5) stated that 'they did not have difficulty in mathematics lessons' (46.5%; 51.3%) and that 'they enjoyed dealing with questions related to mathematics' (55%; 61.3%), as seen in Table 5.

Table 6. The Interests of Parents towards Mathematics According to the Intelligence Level of Their Children

Expressions of Interests	I Agree	Neutral	I do not Agree
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Their Interest Towards Mathematics Course	Normal Intelligence	Talented Children	Normal Intelligence	Talented Children	Normal Intelligence	Talented Children
	%	%	%	%	%	%
I can't help the child because I don't know enough about her/his homework on mathematics.	25.6	15.0	15.5	17.5	58.9	67.5
I have a hard time answering questions on some topics in math class.	31.0	36.3	26.4	27.5	42.6	36.3
It is enough for me that my child has a passing grade in mathematics.	23.3	18.8	11.6	12.5	65.1	68.8
I am satisfied with my child's math teacher.	46.5	51.3	27.9	27.5	25.6	21.3
I get frequent information about my child's condition by talking with the math teacher	40.3	60.0	17.1	17.5	42.6	22.5
I find it difficult to find different resources (test book, supplementary textbook, exam booklets, etc.) for my child apart from the textbook.	25.6	17.5	11.6	7.5	62.8	75.0
In case of problems we cannot solve, I consult your teacher.	55.0	45.0	16.3	17.5	28.7	37.5
I don't find the homework given by the teacher enough.	27.1	20.0	26.4	25.0	46.5	55.0

When the interests of parents of talented children and normal intelligence levels of parents were examined; parents of talented children 'can help their children with their math homework' (58.9%; 67.5%), 'it is not enough for their children to get a passing grade' (65.1%; 68.8%), 'their children are satisfied with their mathematics teachers' (46.5%; 51.3%), As seen in Table 6, they agree with the statements that 'they do not have difficulty in finding different resources for their children' (62.8%; 75%) and 'teachers find their homework sufficient' (46.5%; 55%), as seen in Table 6. On the other hand, parents with normal intelligence level participated in the statements that 'they did not have difficulty in answering the questions' (42.6%; 36.3%) and 'they consult the teachers in the problems they could not solve' (55%; 45%) than the parents of talented children. Parents of talented children stated that 'they get continuous information about their children' (60%) whereas parents with normal intelligence stated that 'they do not always get information about their children' (42.6%).

Table 7. The Involvement of Parents in Mathematics Education According to Intelligence Levels of Their Children

Interest Expressions	I Agree		Neutral		I do not Agree	
	Normal Intelligence	Talented Children	Normal Intelligence	Talented Children	Normal Intelligence	Talented Children
	%	%	%	%	%	%
My child does not have difficulty learning math	51.2	65.0	22.5	16.3	26.4	18.8
We repeat the topic he/she saw in mathematics class with my child day by day	40.3	30.0	33.3	30.0	26.4	40.0
I find the teacher to teach enough.	41.9	26.3	38.8	30.0	19.4	43.8
I can't answer my child's questions because I'm tired, she does it herself/himself	24.0	26.3	22.5	16.3	53.5	57.5
My child has a problem (s) in mathematics.	50.4	45.0	20.2	21.3	29.5	33.8
My child does not need to ask me about the problems he/she had in mathematics	22.5	12.5	15.5	21.3	62.0	66.3
I find it difficult to solve the questions in my child's textbooks.	20.2	21.3	15.5	17.5	64.3	61.3
I have a hard time explaining my child how to solve math problems.	15.5	26.3	28.7	26.3	55.8	47.5
My child consults with someone who is interested in math for their homework.	51.2	31.3	10.1	15.0	38.8	53.8
He/she does her math homework with her friends.	35.7	10.0	16.3	18.8	48.1	71.3
There are resources to use at home, no need to ask me	20.2	23.8	23.3	18.8	56.6	57.5
Apart from the problems they solve at school, I also make them solve problems from different sources at home.	59.7	67.5	17.8	13.8	22.5	18.8
I'm willing to help my child but I don't know how to help	24.8	18.8	20.9	28.8	54.3	52.5

I don't have time to work with my child.	24.0	8.8	20.2	22.5	55.8	68.8
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When the participation of parents of talented children and normal intelligence levels in mathematics education is examined; parents of children with normal intelligence level participated in higher rates than those of parents of talented children: parents of talented children 'their children do not have difficulty in learning mathematics' (51.2%; 65%), 'they can answer their children's questions even if they are tired' (53.5%; 57.5%), where their children ask about the problems they have difficulty in mathematics' (62%; 66.3%), 'mathematics no one was consulted for their homework' (38.8%; 53.8%), 'Homework is not done with friends' (48.1%; 71.3%), 'Asking for knowledge in homework' (56.6%; 57.5%), 'Problems are solved from different sources' (59.7%; 67.5%) and 'that they have time to work with their children' (55.8%; 68.8%) are higher participants than the parents' answers of the children with normal intelligence level. On the other hand, parents of children with normal intelligence level participated in higher rates than those of parents of talented children: 'Their children have difficulties' (50.4%; 45%), 'their children do not have difficulty in solving the questions in their textbooks' (64.3%; 61.3%), 'they do not have difficulty in explaining the solutions of the problems' (55.8%; 47.5%) and 'they know how to help their children'. (54.3%; 52.5%). Parents of talented children 'normal repetitions with their children' (40.0%) and 'parents who do not find what they teach enough' (43.8%) parents of children with normal intelligence level 'parents have done daily with their children' (40.3%) and 'teachers find it sufficient' (41.9%) is given in Table 7.

The findings related to the third sub-problem are provided in Table 8, 9 and 10.

Table 8. The Attitudes of Parents towards Mathematics According to Their Being Mother and Father

Expressions of Attitudes	I Agree		Neutral		I do not Agree	
	Mother	Father	Mother	Father	Mother	Father
	%	%	%	%	%	%
Mathematics is a difficult lesson to learn	31.5	31.8	13.7	14.1	54.8	54.1
I didn't like math lesson	27.4	29.4	9.7	8.2	62.9	62.4
Mathematics is an important lesson for my child to learn.	79.8	81.2	0	2.4	20.2	16.5
Mathematics lesson is one of the lessons I have difficulty.	30.6	34.1	21.8	16.5	47.6	49.4
I enjoy dealing with math related questions.	54.8	61.2	21.8	12.9	23.4	25.9

When the attitudes of mothers and fathers towards mathematics are examined; mothers stated that ‘mathematics is an easy lesson to learn’ (54.8%; 54.1%) and ‘they love mathematics lesson’ (62.9%; 62.4%) compared to fathers. Fathers, on the other hand, are more ‘an important lesson for their children to learn’ than mothers (79.8%; 81.2%), ‘they did not have difficulty in mathematics’ (47.6%; 49.4%) and ‘they enjoyed dealing with math-related questions’ (54.8%; 61.2%) as stated in Table 8, they expressed with high participation.

Table 9. The Interests of Parents towards Mathematics According to Their Being Mother and Father

Expressions of Interests	I Agree		Neutral		I do not Agree	
	Mother	Father	Mother	Father	Mother	Father
	%	%	%	%	%	%
My child does not have difficulty learning math	21.8	21.2	16.9	15.3	61.3	63.5
We repeat the topic he/she saw in mathematics class with my child day by day	32.3	34.1	25.0	29.4	42.7	36.5
I find the teacher to teach enough.	20.2	23.5	12.9	10.6	66.9	65.9
I can’t answer my child’s questions because I’m tired, she does it herself/himself	53.2	41.2	23.4	34.1	23.4	24.7
My child has a problem (s) in mathematics.	46.8	49.4	14.5	21.2	38.7	29.4
My child does not need to ask me about the problems he/she had in mathematics	19.4	27.1	8.1	12.9	72.6	60.0
I find it difficult to solve the questions in my child’s textbooks.	54.8	45.9	18.5	14.1	26.6	40.0
I have a hard time explaining my child how to solve math problems.	23.4	25.9	25.0	27.1	51.6	47.1

When the interests of mothers and fathers towards mathematics are examined; mothers agree with the following statements more than fathers: ‘They do not have difficulty in answering the questions’ (42.7%; 36.5%), ‘it is not enough for their children to get a passing grades’ (66.9%; 65.9%), ‘their children are satisfied with their math teachers’ (53.2%; 41.2%), ‘different sources for their children they had no problem finding’ (72.6%; 60%), ‘they consulted teachers for problems they couldn’t solve’ (54.8%; 45.9%) and ‘teachers found their homework sufficient’ (51.6%; 47.1%). The fathers also expressed that ‘they can help their children with their math homework’ (61.3%; 63.5%),

and that they receive ‘continuous information about their children’ (46.8%; 49.4%) by participating in a higher rate than the mothers.

Table 10. The Involvement of Parents in Mathematics Education According to Their Being Mother and Father

Interest Expressions	I Agree		Neutral		I do not Agree	
	Mother	Father	Mother	Father	Mother	Father
	%	%	%	%	%	%
My child does not have difficulty learning math	59.7	51.8	20.2	20.0	20.2	28.2
We repeat the topic he/she saw in mathematics class with my child day by day	37.9	34.1	30.6	34.1	31.5	31.8
I find the teacher to teach enough.	39.5	30.6	37.9	31.8	22.6	37.6
I can't answer my child's questions because I'm tired, she does it herself/himself	28.2	20.0	17.7	23.5	54.0	56.5
My child has a problem (s) in mathematics.	48.4	48.2	21.8	18.8	29.8	32.9
My child does not need to ask me about the problems he/she had in mathematics	19.4	17.6	15.3	21.2	65.3	61.2
I find it difficult to solve the questions in my child's textbooks.	16.1	27.1	16.9	15.3	66.9	57.6
I have a hard time explaining my child how to solve math problems.	14.5	27.1	27.4	28.2	58.1	44.7
My child consults with someone who is interested in math for their homework.	45.2	41.2	10.5	14.1	44.4	44.7
He/she does her math homework with her friends.	25.8	25.9	12.9	23.5	61.3	50.6
There are resources to use at home, no need to ask me	22.6	20.0	21.8	21.2	55.6	58.8
Apart from the problems they solve at school, I also make them solve problems from different sources at home.	62.1	63.5	16.9	15.3	21.0	21.2
I'm willing to help my child	22.6	22.4	25.0	22.4	52.4	55.3

but I don't know how to help						
I don't have time to work with my child.	16.9	20.0	19.4	23.5	63.7	56.5

When the participation of parents in mathematics education is examined; mothers said I would agree with the following statements at a higher rate than fathers: 'Their children did not have difficulty in learning mathematics' (59.7%; 51.8%), 'they did it daily with their children' (37.9%; 34.1%), 'their children had difficulties' (48.4%; 48.2%), 'they asked their child's problems in mathematics' (65.3%; 61.2%), 'their children do not have difficulty in solving the questions in the textbooks' (66.9%; 57.6%), 'they do not have difficulty in explaining the solution of the problems' (58.1%; 44.7%), 'homework is not done with their friends' (61.3%; 50.6%) and finally 'that they have time to work with their children' (63.7%; 56.5%). Statements that fathers agree with are higher than mothers are: 'Although they are tired, their children can answer their questions' (54%; 56.5%), 'they are asked about their knowledge in homework' (55.6%; 58.8%), 'problems are solved from different sources' (62.1%; 63.5%) and 'they know how to help their children' (52.4%; 55.3%). While mothers 'find teachers 'teaching sufficient' (39.5%), fathers' do not find teachers 'teaching enough' (37.6%). Again, mothers say that 'someone was consulted for their math homework' (45.2%) and 'fathers were not' (44.7%).

4. Discussion and Conclusion

Parents' participation in mathematics teaching in this research; parents' attitudes towards mathematics have been examined as their interests and participation. The levels in which the children are located are examined separately according to the normal intelligence level and talented of the children and the parental status of the participants. When examinations are made according to the first question of the research; primary school parents 'mathematics is an easy lesson to learn' than middle school parents, 'they enjoy dealing with mathematics questions', 'they constantly learn about their children', 'they find the homework given by teachers' enough, 'they ask their children about the problems they have in mathematics', 'they explained that they had no difficulty in explaining', 'homework was not done with their friends' and finally 'they had time to work with their children'. Middle school parents; 'they love mathematics lesson', 'it is an important lesson for their children to learn' and 'they do not have difficulty in mathematics lesson', 'they can help their children with their math homework', 'they do not have difficulty in answering questions', 'it is not enough for their children to get a passing grade', 'they are satisfied', 'they have no problem finding different resources for their children', 'they consult teachers for problems they cannot solve', 'their children have difficulty in learning mathematics', 'they are able to answer their children's questions even if they are tired', 'their children have difficulties', 'they solve the questions in their children's textbooks. They were more likely than primary school parents to say that they did not have difficulty, 'were asked about their knowledge in homework', 'problems were solved from different sources' and 'they know how to help their children'. It is the first result of the research that especially the parents' attitudes to the statements involving the attitudes of the families are higher than the middle school parents. On the other hand, middle school students' parents also participated in expressions of interest in mathematics at a higher

rate. In the expressions of participation in mathematics education, which is the last part of the questionnaire, which is the data collection tool, they said “I agree” to the statements about middle school students’ parents, and especially about their children’s mathematics education. Another noteworthy finding is that while the elementary school parents agree with the ‘daily repetitions with their children’, the middle school parents are unstable on this issue. While elementary school parents say that they ‘find what teachers teach enough’, middle school parents are also undecided. While middle school parents stated that ‘someone was consulted for their math homework’, primary school parents did not agree with it. Nyabuto and Njoroge (2014) urged that the primary school students’ mathematics performance is affected by the factors of parenthood in Kenya and families have duties such as providing the materials for learning mathematics, helping their children to do their homework, following their studies related to school and participating in school meetings and functions. What is more, Ozcan (2016) argues in his study investigating the belief and involvement of parents in the process of their children’s learning mathematics that most of the families considered the mathematics course more important than other courses and this rate increased in the level of middle school as it is found out in the present study. It is also seen that while awareness, involvement, support and positive attitudes of parents have generally been found to be lower in the level of middle school, following the success level is carried out more frequently. Yenilmez (2006) argued contrary to this study that while the in-class involvement level of parents with students in lower grades is higher, it is lower for the families having children in higher grades.

According to the second question of the research, the answers of the parents were divided into two according to their children’s normal intelligence and their talented, and their answers were examined separately according to the 3 parts of the questionnaire. Accordingly, talented children’ parents is ‘an easy lesson to learn’, ‘they like math lesson’, ‘their children are an important lesson to learn’, ‘they do not have difficulty in math lesson’ and ‘they enjoy to deal with math related questions’, ‘although they are tired, they can help with their homework’, ‘their children are not enough to get a passing grade’, ‘their children are satisfied with their math teachers’, ‘they do not have difficulty in finding different resources for their children’ and ‘their children do not have difficulty in learning mathematics’, ‘it is time to work with children, where they can answer their children’s questions’, ‘ask their children about the problems they have difficulty in mathematics’ participation in the expressions they are in is higher than that of parents of students with normal intelligence. Parents with normal intelligence level are more participant in the following items than the parents of talented children: ‘They do not have difficulty in answering the questions’, ‘they consult teachers in the problems they cannot solve’, ‘their children have difficulties’, ‘their children do not have difficulty in solving the questions in the textbooks’, ‘they know how to help their children’ and ‘how they know’. The second result of the study has higher percentage of participation of parents of talented children than parents of children with normal intelligence in all of the attitude items of the survey. Again, in the items of interest and participation in mathematics education, parents of talented children are higher in the parents of children with normal intelligence level. Another result is that families with talented children stated that they ‘get continuous information about their children’ whereas parents with normal intelligence stated that they ‘do not always get information about their children’. Again,

families with talented children express that they do not 'do it daily with their children' and 'parents who do not find what they teach enough' parents of children with normal intelligence level 'parents do what they teach daily' and 'teachers find it sufficient'. Sanders, Epstein, & Conners-Tadros (1999) achieved the conclusion that the families of successful students involve more in the education of their children. It was also detected by Dinc (2017) that there is a significant positive relationship between the family involvement perception of parents and the grade point average dependent course success of students, in other words, as the family involvement of parents increased, the course success of students rose, too. Akay (2012) achieved the conclusion in his experimental master thesis in which he investigated the effect of performance projects with family involvement on the mathematics course success of 5th grade students in primary school that mathematics course success of the students with family involvement in the experimental group increased in the post-test results. In addition, Cai, Moyer, & Wang (1999) concluded in the study conducted with the parents of middle school students that mathematics success and attitudes of students of the parents, who are more supportive and involving more, have been positive. Akbaba-Altun (2009) suggested in their study in which they examined the opinions of parents, teachers and students related to the academic failure of primary education student that not only parents but also students and teachers expressed the indifference of parents as the first reason for the failure of students.

Finally, the participants were examined according to their mother and father status. With mothers and fathers, they find different sources for their children, 'mathematics is an easy lesson to learn', 'they love mathematics lesson', 'they do not have difficulty in answering questions', 'their children are not enough to get a passing grade', 'their children are satisfied with their math teachers', 'they do not have trouble', 'they consult teachers in problems they cannot solve', 'teachers find their homework sufficient', 'their children do not have difficulty in learning mathematics', 'they do it daily with their children', 'they ask their children', 'their children 'they have problems in mathematics their children'. They stated that they did not have difficulty in solving the questions in the textbooks, 'they did not have difficulties while explaining the solution of the problems', 'homework was not done with their friends' and finally 'they had time to work with their children'. According to the mothers, the fathers were tired of 'having an important lesson to be learned from their children', 'they did not have difficulty in mathematics', 'they enjoyed dealing with math related questions', 'they can help their children with their math homework', 'they constantly get information about their children', although they are tired. They expressed with high participation in expressions such as 'they can answer', 'they are asked about their knowledge in homework', 'problems are solved from different sources' and 'they know how to help their children'. Mothers participated in all three parts of the questionnaire (math attitude, interest and mathematics participation) more than fathers. In addition, mothers 'finding enough teachers have taught that' the fathers 'teachers teach what they do not find enough'. Again, mothers say that 'someone was consulted for their math homework' and 'fathers were not consulted'. Shumow and Miller (2001) also found out that fathers' involvement in education is less than the involvement of mothers. Sahin-Dogrue (2014) investigated the involvement in mathematics of three mothers with children in seventh grade and they concluded that the involvement of mothers in education and the success of the students have relationship. As it has been mentioned before, it has been discussed in many studies that the involvement of families

in education is an important factor (Ayrar, et. al., 2012; Cai, 2003; Erbay, 2013; Şahin-Doğruer, 2014; Tsui, 2005; Yenilmez, 2006). To conclude, families should be more sensitive to the involvement in education as their involvement in the education process affects the success of their children.

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