



Teachers and Parents' Perception About Learning Difficulties in Mathematics: A Case Study

Research Article

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ABSTRACT

In this study, a description of the situation for elementary school 4th grade students who have difficulty in learning mathematics was made. The research was designed as a case study. For this purpose, semi-structured interviews with the teachers of students with learning difficulties in mathematics were made and they were asked to fill out a checklist involving expressions about their students learning difficulty in mathematics. Semi-structured interviews were also held with the families of these students. Content analysis was used to analyze the data obtained from the interviews. While the checklist was being analyzed, the frequency of marking of items by teachers was checked. According to the findings obtained, it was seen that elementary school teachers described mathematics learning difficulty as general problems in perception, learning and processing. Teachers also stated that the parents of these students are unconcerned, their communication with the teacher is weak and they ignore the problems with their children. Parents also stated that their children have difficulty in mathematics subjects such as operations, problem solving, mind calculation and multiplication table, the fact that they do not understand what they are told and they try to learn by memorizing. As a result of the research, it was seen that elementary school teachers are aware of mathematics learning difficulty but they struggle in detailed diagnosis of the difficulties of the students and need support in designing the learning process of these students. Moreover, it was understood that parents cannot describe their children's difficulties in detail and they are inadequate to support these students.

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Keywords:

Mathematics learning difficulty, elementary school 4th grade students, elementary school teacher, parent

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Introduction

Today, depending on the rapidly developing technology, information is differentiated and developed in quantity and quality. Therefore, it becomes increasingly important for individuals to use their mathematical understandings and mathematical skills in everyday life (Ministry of National Education [MEB], 2009), because mathematics helps individuals solve problems they encounter in everyday life and analyze events. In this regard, mathematics is a part of real life. Individuals' inadequacies in mathematical knowledge and skills mean that they will encounter various difficulties in their daily lives; besides, even as individuals acquire basic mathematical skills, they face various difficulties that occur owing to various reasons one of which is that the individual has mathematics learning difficulty. Mathematics learning difficulty is the arithmetic skills and numerical competence disorder that occur in children with normal intelligence (Temple, 1992). This difficulty may be due to language difficulties interfering with children's learning skills (Kavale & Forness, 1995) or cognitive factors (Ginsburg, 1997).

Children who are diagnosed with learning disabilities experience deficiencies in various areas of mathematics (Babbitt & Miller, 1996; Bender, 2016). These children are weaker than their peers in terms of verbal short-term memory, phonological memory, and mathematical information access performance (Geary, Hamson, & Hoard, 2000; Geary & Hoard, 2001; Hecht, Torgesen, Wagner, & Rashotte, 2001). They experience problems while performing arithmetic operations, learning or remembering arithmetic information they possess (Geary, Hoard, Byrd-Craven, & DeSoto, 2004; Jordan & Hanich, 2003; Landerl, Bevan, & Butterworth, 2004). In these children, there are insufficiencies in comprehending mathematical relations, calculating and using and writing numerical symbols (Butterworth, 2003). They are more dependent on undeveloped strategies such as doing finger calculations while solving problems (Butterworth, 1999; Ostad, 1999). They cannot gain the basic concepts that support their ability to perform mathematical operations (Hannell, 2013).

Some children with mathematics learning difficulties have difficulties in visual-spatial perception, which negatively affects children's ability to deal with the graphical nature of mathematics (Geary, 2004; Rourke, 1998). For example, these children find it difficult to distinguish between 6 and 9.

Children with mathematics learning difficulties have different forms of numerical and arithmetic deficiencies. Nearly half of the differences in these students' mathematical achievements can be explained by individual differences in basic counting, calculation, arithmetic skills and functioning memory (Geary, Hoard, & Hamson, 1999). Furthermore, other factors affecting mathematics learning difficulty involve language difficulties, ability to understand verbal problems, following instruction from the teacher and gaining automaticity in basic mathematics rules (Hanich, Jordan, Kaplan, & Dick, 2001).

The inadequacies that are commonly seen in children who have mathematics learning difficulties involve lagging in learning numbers, confusion in digits of numbers, problem solving when the problem is explained verbally but not when it is read by the student himself, wrong stepping in four operation skills, forgetting steps in the process, not being able to gain automaticity in four operations with simple numbers at higher grades, not being able to learn time concept, using simple strategies when calculating, using fingers intensively or needing concrete objects, struggling in understanding mathematical language and forgetting the basic concepts of mathematics (Chinn, 2004; Courtade, Test & Cook, 2015). It can be said that these inadequacies that emerge can be clearly observed when the students are compared to their peers.

Weakness can be seen in children with mathematics learning difficulties in long-term memory, short-term memory, functioning memory, feeling of number, and in learning words and numbers. Feeling of number involves the awareness of relationships and patterns between numbers. Students with learning difficulty struggle while gaining this awareness. Students with weak long-term memory have difficulty remembering. Especially verbal coded learning is hard to keep in their long-term memory. They need concrete demonstrations to bear them in mind. Students with weak short-term memory have difficulty remembering

the question before reaching an answer. Very little learning including reviewing is recorded in long-term memory with extra practice and regular intervals. These students need to record their thoughts on paper. Children with poor functioning memory have difficulty choosing the right strategy to solve the problem. They cannot remember or follow the steps to make calculations. They slow down because they lose track of what they are doing when they do something. Again, besides struggling in the calculation and counting process, it can be said that these children are also weak in following the rules in the process (Emerson & Babbie, 2010).

Most researchers agree that approximately 5-7% of children show signs of mathematics learning difficulty (Butterworth, 2005). This means that at least one student in a 30-person class has symptoms of mathematics learning difficulty (Hannell, 2013).

When many adults and children perceive that they will result in possible failure, they may quit learning mathematics by withdrawing themselves and this may turn into a common behavior. The withdrawal of the student is especially evident when he is judged and feels helpless. Most of the mathematical learning expectancies that feed into failure, anxiety and helplessness are based largely on beliefs rather than academic necessity (Chinn, 2012). When teachers adopt mathematical presentations by taking the expectations and characteristics of their students into account, real potential of each child emerges and then the teachers may have high expectations from their students (Morin & Franks, 2010). Helping students with mathematics inadequacy to be successful should be the priority of educators. Individual mistakes of these students can be corrected within the learning environment by explaining the difficulties they face in mathematics and the nature of mathematics (Dowker, 2008). Such an approach can provide students with the mathematical skills they can use in everyday life. In this respect, it can be said that awareness of the teachers and the parents about learning difficulties in mathematics is important. In this research, the main goal is to reveal the difficulties of the students with mathematics learning difficulty and perspectives of teachers and parents about these difficulties and their reasons.

Method

Research Design

The objective of this research was to do case description for elementary school 4th grade students who have difficulty in learning mathematics. In this context, the research was designed as a case study which is one of the qualitative research methods. In case studies an answer is searched for what, how, and why questions for a specific case. For this purpose, multiple sources of information like observations, interviews, documents, etc. are used to reveal the case (Yin, 2003). Thus, a topic or a problem can be best understood (Stake, 1995). Through a behavior checklist and semi-structured interviews, it was tried to reveal what kind of difficulties elementary school 4th grade students experience in learning mathematics.

Study Group

The study group was determined according to criterion sampling of purposeful sampling methods. Person, object, event or cases that are compatible with the specified criteria are included in criterion sampling (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2012). Accordingly, the study group was comprised of elementary school 4th grade teachers who had one or more students with difficulties in mathematics learning process and the parents of these students. Within this scope, the study group consisted of 14 elementary school teachers and seven parents. Seven of the teachers were those who filled out the checklist prepared for the students that they think had mathematics learning difficulty in their class. These teachers worked in the same school and formed the 4th grade classroom group. The other teachers were those participating voluntarily in the study and responding to questions on the form but not completing the mathematics learning difficulty behavior checklist. There were 11 elementary school 4th grade students about whom a checklist was filled in. All of these students were studying at the same school; two were of them in class 4A, one was in class 4B, one was in class 4C, one was in class 4D, one was in class 4E, two were in class

4F and three were in class 4G. There were an average of 30 students in each class. Elementary school teachers filled out forms on a voluntary basis for their students that they thought had difficulty in learning mathematics. There was no study done with the students but the parents of these students participated in the study voluntarily.

Data Collection Tools

Mathematics learning difficulty behavior checklist. There are 33 items in mathematics learning difficulty behavior checklist containing expressions about learning difficulty for students. These items were written by researchers as a result of literature (Bartelet, Ansari, Vaessen, & Blomert, 2014; Bryant, Bryant, & Hammill, 2000; Emerson & Babbie, 2010; Mazzocco, 2001; Murphy, Mazzocco, Hanich, & Early, 2007) review. The checklist was prepared in a format in which each item in the list related to the students could be marked with a cross mark (X). The prepared checklist was examined by two field experts and one elementary school teacher. As a result, the items thought to contain the same meaning were combined and expressed as a single item. No item was removed from the form, but some items were rearranged in terms of language and expression.

The checklist is filled in by elementary school teachers for their students with mathematics learning difficulties in their classroom. The statements on the checklist were thought to help elementary school teachers to express ideas about mathematics learning difficulty concretely rather than assessing the students. It was also aimed to reveal via the checklist how elementary school teachers identify the source of the distress experienced by their students during the learning process. Some of the items in the mathematics learning difficulty behavior checklist are shown below.

- S/he struggles while learning numbers.
- S/he uses her/his fingers during operation rather than using a strategy.
- S/he struggles not only in mathematics but also in other subjects.
- S/he has a level difference in learning mathematics when compared to peers.
- S/he struggles while explaining the operations s/he is doing and the problems she is solving.
- While responding to a question asked, s/he hesitates or rushes.
- S/he has an active character.
- S/he makes repetitive mistakes. (e.g., s/he continues to repeat the same mistake despite warnings)
- S/he needs concrete materials in the learning process.
- S/he needs visuals in the learning process. (S/he struggles a lot in problem solving without visuals)
- S/he struggles in keeping in mind. (e.g., s/he struggles when asked to repeat any numbers said)
- Her/his anxiety level rises in mathematics lesson.
- S/he struggles in learning digit value concept.
- S/he gets confused with digits while doing an operation. (e.g., writing a number to be written in units digit to tens digit, ...)

Semi-structured teacher interview form. The questions on the form were prepared in such a way as to reveal the thoughts of the elementary school teachers towards the students with mathematics learning difficulty. The draft form prepared for this purpose was examined by an elementary school teacher and a field expert for expert opinion. After the expert approval, questions in the draft form were directed to three elementary school teachers for pilot implementation and interviews were conducted. As a result of the pilot application, one of the questions in the draft form (tell us the points that are challenging about your students who you think are experiencing mathematics learning difficulty) was removed from the form because it turned out to be difficult for the elementary school teachers to answer. There are six open ended questions in the final form. The questions on the form are as follows:

- 1) What is mathematics learning difficulty in your opinion? Please explain.

- 2) Describe the characteristics of your students that you think have mathematics learning difficulty.
- 3) Do your students with mathematics learning difficulty also have difficulties in other subjects? Please exemplify.
- 4) Please describe the behaviors of students that you think have mathematics learning difficulty.
- 5) Please provide details of your experiences to foster learning processes of your students that have mathematics learning difficulty.
- 6) Please portray your remarks on parents of your students that have mathematics learning difficulty with regards to their relation to the student, teacher and institution.

Semi-structured parent interview form. The purpose of the preparation and use of the form is to provide a detailed description of the parents' views on the difficulties experienced by their children during the mathematics learning process and to strengthen the analysis of the data obtained through the teacher interview form. The questions in the form were prepared in such a way as to reveal the thoughts of the parents about the children with mathematics learning difficulty. The draft form prepared for this purpose was examined by an elementary school teacher and a field expert for expert opinion. After the expert approval, two parents were interviewed for pilot implementation. As a result of the pilot application, it was seen that the questions in the draft form were functional and no questions were removed from the form. There were four open ended questions in the final form as follows:

- 1) Does your child have any courses that you think s/he has difficulty in learning? If yes, which one? Why?
- 2) Does your child have difficulty in learning mathematics? Which topics are most difficult to learn?
- 3) Can you support your child in subjects s/he struggles in mathematics? How?
- 4) What do you think about the teacher's approach to your child during the mathematics learning process?

Data Collection

The data were collected via mathematics learning difficulty behavior checklist, semi-structured teacher interview form and semi-structured parent interview form developed by researchers.

The mathematics learning difficulty behavior checklist was filled out voluntarily by seven elementary school teachers who were teaching elementary school 4th grade with one or more students in the class who had mathematics learning difficulty.

Face-to-face interviews were held with 14 elementary school teachers based on voluntary participation. An appointment was made with the elementary school teachers for the interview. Interviews were held at the time when elementary school teachers were free at school. Interviews were conducted in the form of "a teacher-a researcher". During the interview, teachers were asked open-ended questions in the semi-structured teacher interview form and their answers were recorded in writing.

Face-to-face interviews were also held with the parents of students with mathematics learning difficulty. An appointment was made with the parents depending on voluntary participation and seven parents were interviewed face to face. Interviews were held in the form of "a parent-a researcher" at the school where the children of the parents were educated. During the interview, parents were asked open-ended questions in the semi-structured parent interview form and their answers were recorded in writing.

Data Analysis

Content analysis technique was used in the analysis of the data obtained from semi-structured interview forms in the study. Similar data are collected via content analysis and presented within specific categories and themes (Yıldırım & Şimşek, 2011). Data obtained through semi-structured teacher interview form and semi-structured parent interview form in the study were analyzed by three researchers. During the analysis, the

teachers were coded T1, T2, ... and the parents were coded P1, P2, ... Researchers created categories in different places and independently from each other. Then, three researchers came together to discuss and came to a consensus on the categories they created. For this purpose, the interrater reliability formula proposed by Miles and Huberman (1994) was used [reliability=number of agreements/(total number of agreements+disagreements)]. If the calculated value is over 70%, it is considered reliable. In this study, the value calculated in the analysis of the semi-structured teacher interview form was 83% and the value calculated in the analysis of the semi-structured parent interview form was 90%. Based on this, the coding was considered reliable.

While the checklist was being analyzed, the frequency of marking of items by teachers was checked. The data obtained from the checklist were correlated with interviews with elementary school teachers and parents. Analysis of the values resulting from marking the items on the checklist provided an important source in describing of how elementary school teachers identified the source of the difficulties experienced by their students during the learning process.

Findings

Findings From the Semi-Structured Teacher Interview Form

Table 1 shows the findings obtained from the answers of the elementary school teachers to the question “What is mathematics learning difficulty? Please explain.”

Table 1. Mathematics learning difficulty based on teachers’ opinion

Category	Sub-category	Sample expression
Difficulty	Expression (T1)	“Such cases as being confused with numbers, having difficulty in learning numbers and doing operations, doing a lot of finger calculation are learning difficulties” (T3)
	Perception (T1,T9,T10,T11)	
	Learning (T1,T2,T6,T7)	
	Processing (T3,T11,T12)	
	System (T8,T13)	
	Focusing (T11)	
Lagging	Association (T11)	“These difficulties are due to verbatim approaches loading excessive redundant information one after another before the child can focus on a particular point” (T13)
	Class level (T1,T4,T5,T10)	
	Finger calculation (T3)	
Comparison		“It is a difficulty in expressing mathematical thoughts when mathematical thinking hasn’t developed sufficiently. Difficulty in perceiving and learning number systems” (T1)
	Number (T3)	
Perspective		“S/he experiences a perception problem arising especially from prejudices against mathematics lesson” (T10)
	Prejudice (T10,T14)	

According to Table 1, the answers given by elementary school teachers to the question were gathered in four categories; difficulty, lagging, comparison and perspective. The category of difficulty involves subcategories of expression, perception, learning, processing, system, focusing and association and the category of lagging involves subcategories of class level and finger calculation while the category of comparison includes the number subcategory and the perspective category includes the prejudice

subcategory. Given the expressions in the categories, elementary school teachers generally describe mathematics learning difficulty as difficulty in perception, learning, and processing.

Table 2 shows the findings obtained from the answers of the elementary school teachers to the question “Describe the characteristics of your students that you think have mathematics learning difficulty.”

Table 2. Characteristics of students with mathematics learning difficulty based on teachers’ opinion

Category	Sub-category	Sample expression
Interest	Uninterested (T2)	<i>“Children who are uninterested in lessons, dislike them, don’t become sad when they fail, don’t experience failure anxiety or failure fear but well-behaved and don’t cause discipline problems”</i> (T2)
	Reserved (T11)	
Behavior	Quiet (T2,T9)	<i>“They struggle in doing operations, are timid, need visual material and mistake operation order”</i> (T3)
	Timid (T3,T4)	
	Excited (T4)	
	Aggressive (T9)	
Emotion	Untidy (T11)	<i>“They don’t participate in the lesson very much and become easily distracted”</i> (T4)
	Dislike (T2,T10,T11)	
	Fear (T2,T10)	
	Sadness (T2)	
Difficulty	Failure (T9)	<i>“Feeling of failure makes the student either quiet or aggressive and turns her/him into mischievous student as said colloquially”</i> (T9)
	Operation (T3,T7,T9,T10,T12,T13)	
	Problem solving (T3,T5,T10)	
	Attention (T4,T11,T12)	
	Reading-Comprehension (T5,T11)	
	Interpretation (T5,T8)	
	Learning (T6)	
	Number (T10)	
	Perception (T10)	
	Time arrangement (T11)	
Need	Visual material (T3,T13)	<i>“It is normal for a student struggling in reading to struggle in mathematics”</i> (T5)
	Help (T11)	
		<i>“S/he can’t do interpretation”</i> (T5)
		<i>“S/he doesn’t do interpretation, acts without thinking and adopts parrot fashion”</i> (T8)
		<i>“I have observed that these students perceive later than those who love mathematics”</i> (T10)
		<i>“They don’t want to do the activity, lag behind, are untidy, get bored quickly and always want to get help”</i> (T11)
		<i>“I have two students who can do simple adding and subtraction but can’t do multiplication or dividing”</i> (T12)

According to Table 2, the elementary school teachers described their students with mathematics learning difficulty using descriptions expressing uninterested and reserved subcategories in interest category; quiet, timid, excited, aggressive and untidy subcategories in behavior category; dislike, fear, sadness and failure subcategories in the emotion category; operation, problem solving, attention, reading comprehension, interpretation, learning, number, perception and time arrangement subcategories in difficulty category; and visual material and help subcategories in need category. Elementary school teachers stated that their students with mathematics learning difficulty do not like mathematics and that they are afraid of mathematics and have trouble with doing operation and attention.

Table 3 shows the findings obtained from the answers of the elementary school teachers to the question “Do your students with mathematics learning difficulty also have difficulties in other subjects? Describe by example.”

Table 3. Other subjects that students have difficulty in understanding based on teachers' opinion

Category	Sub-category	Sample expression
Difficulty	All courses (T1,T2,T10,T3,T4,T5,T6,T8, T9,T12,T11,T13,T14) Listening (T3) Reading-Comprehension (T5,T11) Verbal courses (T7)	<i>"It is the same in all courses" (T2)</i>
		<i>"They have difficulty in all courses and only show success in drama and play" (T4)</i>
		<i>"They especially struggle in reading and comprehension" (T5)</i>
		<i>"They normally don't struggle in verbal courses because there is no rote learning but they struggle in computational courses because they can't do operations or grasp concepts by heart without understanding their root" (T7)</i>
		<i>"They don't struggle in other courses as much as in mathematics" (T8)</i>
		<i>"They learn literacy hard and then they don't like reading. They also fail in other courses in tasks requiring focusing" (T11)</i>
		<i>"They do struggle. What is important in Turkish? Comprehension. A student who can't understand what s/he reads can't comprehend mathematics and struggle" (T12)</i>
		<i>"A student successful in mathematics is also successful in all courses as well as socially. The child is unsuccessful in mathematics but there is a general distress" (T13)</i>
		<i>"Mathematics is life. Those who struggle in understanding life struggle in everything" (T14)</i>

According to Table 3, all the answers given by elementary school teachers to the question were accumulated in listening, reading comprehension and verbal lessons sub-categories of difficulty category. The elementary school teachers stated that students with mathematics learning difficulty were experiencing difficulties in all courses. They also stated that these students also had problems in listening, reading and comprehension skills.

Table 4 shows the findings obtained from the answers of the elementary school teachers to the question "How are your students that you think have mathematics learning difficulty behaving in the class? Please explain."

Table 4. Behaviors of students with mathematics learning difficulty in the class based on teachers' opinion

Category	Sub-category	Sample expression
Characteristic and Behavior Oriented	Disturbing lesson (T3,T9,T11)	<i>"S/he listens to the lesson, doesn't talk during the lesson and never disrespects"</i> (T2)
	Active (T4)	<i>"One makes a paper plane and flies it in class disturbing the lesson. Another finds himself other occupations and is absorbed in them"</i> (T3)
	Prejudiced (T5)	
	Reserved (T5,T7,T9,T12)	<i>"She is an active, mischievous girl and quiet"</i> (T4)
	Maladaptive (T11,T12)	
	Untidy (T11)	<i>"S/he also talks shouting"</i> (T6)
	Time management (T11)	<i>"They also don't try to understand mathematics because they create a perception that they can't do mathematics"</i> (T7)
	Quiet (T2,T4,T9,T10)	
	Extracurricular occupation (T3,T5,T14)	<i>"These students even think that "I do not understand math. anyway, so it is better for me to keep silent and not feel degraded by teacher and other students"</i> (T9)
	Shouting (T6)	
	Self-confidence (T7,T13)	<i>"S/he is late, untidy and incompatible with her/his friends. S/he always walks around the class"</i> (T11)
		<i>"Children with lower self-confidence are generally have mathematics learning difficulty like this"</i> (T13)

According to Table 4, the answers given by elementary school teachers to the question were collected in one category as characteristic and behavior oriented. Characteristic and behavior oriented category includes sub-categories of disturbing lesson, active, prejudiced, reserved, maladaptive, untidy and time management, quiet, extracurricular occupation, shouting and self-confidence sub-categories. Elementary school teachers expressed that students with mathematics learning difficulty disturbed the lesson, were bored during the lesson and got interested in other things or kept quiet.

Table 5 shows the findings obtained from the answers of the elementary school teachers to the question "What are you doing to improve the learning process of your students that you think have mathematics learning difficulty? Please explain."

Table 5. Teachers' implementations to improve the learning process of students with mathematics learning difficulty

Category	Sub-category	Sample expression
Method	Individual education (T2,T4,T6,T10,T11,T12)	<i>"I used many techniques like one-to-one teaching, simplification, modelling and drama, but I still failed"</i> (T2)
	Simplification (T2,T11)	
	Drama-Play (T2,T12)	<i>"I make them watch videos and slides with visual expression on smart board"</i> (T3)
	From easy to difficult (T3,T5,T9,T12)	
	Giving an opportunity (T4,T5,T8)	<i>"By calling them to the chalkboard, making them solving a problem"</i> (T4)
	Rewarding (T7)	
	Realistic teaching (T13)	
Renewal (T14)		

Concretization	Modelling (T2,T6,T12)	<i>"I try to provide self-confidence by giving an opportunity to talk in easy questions" (T5)</i>
	Smart board (T3)	<i>"I reward them for easy operations in simple problems they do in the lesson" (T7)</i>
	Visual material (T4,T6,T9,T10,T13,T14)	<i>"For example, everyone brings a certain amount of money and I say Let's go to the market and spend our money properly" (T13)</i>
		<i>"I mean, for example, let's say I explain a unit but they don't understand. I stop and tell some other things. I tell a story for instance. Then I switch to mathematics again and I provide a fresh start and it works" (T14)</i>

According to Table 5, the answers given by elementary school teachers to the question were collected in two categories as method and concretization. Method category includes sub-categories of individual education, simplification, drama-play, from easy to difficult, giving an opportunity, rewarding, realistic teaching and renewal while concretization category includes modelling, smart board and visual material sub-categories. The elementary school teachers stated that they gave individual education to students who were experiencing difficulties in learning mathematics, designed a "from easy to difficult" teaching process and included models.

Table 6 shows the findings obtained from the answers of the elementary school teachers to the question "What are your findings about the parents of your students that you think have mathematics learning difficulty? (e.g., their relation to and interest in your student, relation to teachers and school)."

Table 6. Teachers' findings about the parents of students with mathematics learning difficulty

Category	Sub-category	Sample expression
Daily Life	Intensive working (T1)	<i>"She has a busy schedule. An aggressive mother. Not very interested in her child. The child is hungry materially and spiritually" (T1)</i>
	Teacher meeting (T2,T4)	<i>"They don't go to school or meet the teacher. They don't care enough about the child" (T3)</i>
	Follow-up (T7)	
Behavior	Aggressive (T1,T9)	<i>"Parents don't come to school very often. Their education level is generally low" (T4)</i>
	Interest (T2,T5,T7,T10,T12,T14)	<i>"The child does his homework because education level is low. She has a successful approach" (T6)</i>
	Ignoring (T7,T9)	<i>"They don't follow the student enough. They pull off saying She is a failure anyway" (T7)</i>
Education Level		<i>"They accept the situation with almost no relation with the teacher. They are aggressive. They try to bill the failure on the teacher" (T9)</i>
	Low (T4,T6,T8,T12,T13)	<i>"Sometimes with excessive interest the child succeeds if her mathematics is good, but otherwise, it is a wrong approach" (T11)</i>
		<i>"Parents are poor in mathematical operations, no support at home. The child can't succeed" (T12)</i>
		<i>"In educated families, learning encompasses the whole life. The child continues learning by living at home" (T13)</i>

According to Table 6, the answers given by elementary school teachers to the question were collected in three categories as daily life, behavior and education level. Daily life category includes sub-categories of intensive working, teacher meeting and follow-up, while behavior category includes aggressive, interest and ignoring sub-categories and education level category includes low sub-category. The elementary school teachers stated that the education levels of parents of students with mathematics learning difficulty were generally low and they were uninterested.

Findings from Mathematics Learning Difficulty Behavior Checklist

Table 7 shows findings obtained from mathematics learning difficulty behavior checklist.

Table 7. Mathematics learning difficulty behavior checklist and markings of elementary school teachers

Behavior Expressions	Student										
	1	2	3	4	5	6	7	8	9	10	11
S/he struggles while learning numbers.			X	X				X			X
S/he uses her/his fingers while doing an operation instead of using a strategy.	X	X	X	X	X	X	X			X	
S/he also struggles in all other lessons besides mathematics.	X		X	X	X	X	X	X	X	X	
Compared with her/his peers, there is a level difference in learning mathematics.	X	X	X	X	X	X	X	X	X	X	X
S/he struggles in explaining the operations s/he is doing and the problems s/he is solving.	X	X	X	X	X	X	X	X	X	X	X
S/he behaves timid while answering a question or rushes.	X		X	X		X	X	X	X		X
S/he has an active character.			X						X	X	
S/he does repetitive mistakes. (e.g., repeating the same mistake despite warnings)	X	X	X		X	X	X	X	X	X	X
S/he needs concrete materials in the learning process.	X		X	X	X	X	X	X	X		
S/he needs visuals in the learning process. (S/he struggles in solving a problem without visuals.)	X		X	X	X	X	X	X	X		
S/he struggles in keeping something in mind. (e.g., s/he struggles when asked to repeat the numbers said.)	X		X		X		X	X			X
Her/his anxiety level increases in mathematics course.				X			X	X	X	X	X
S/he struggles in learning digit value.	X		X	X	X		X	X			X
S/he gets confused with digits while doing an operation. (e.g., writing a number to be written in units digit to tens digit, ...)	X		X	X		X					X
S/he struggles in using mathematical symbols. (+, x, <, > etc.)		X	X	X		X		X	X		X
S/he struggles in using mathematical terms and abbreviations. (unit, fraction, development, kg, cm, m, etc.)	X		X	X	X	X	X			X	X
S/he struggles in rhythmic counting. (s/he can count 10 -20- 30 but struggles in counting 9-19-29.)	X		X	X	X			X	X		
S/he struggles in counting down.	X		X	X	X	X		X			
S/he struggles in reading and learning time.	X		X	X			X				
Her/his prediction skill is poor in operations.	X	X	X		X	X	X	X	X	X	X

S/he struggles in reaching a result in long operations. (Computation gets poor when the places of numbers are changed.)	X	X	X	X	X	X	X	X	X	
S/he is incompetent in understanding and solving verbal mathematical problems.	X	X	X		X	X	X	X	X	X
S/he struggles in writing mathematical expressions in her/his notebook. (Her/his mathematics notebook is untidy; order and appearance of the operations are bad etc.)	X	X	X	X	X	X	X		X	X
S/he struggles in reading multi-digit numbers.							X	X		X
S/he writes multi-digit numbers wrong.	X						X	X	X	X
S/he starts computation from the wrong digit in operations. (e.g., starting from the units digit while dividing)	X		X			X	X			
S/he ignores decimals in decimal numbers.							X			
S/he writes the numbers illegibly.	X									X
S/he doesn't follow directions.	X		X					X	X	X
S/he doesn't copy numbers and operations accurately. (e.g., copying the operations from the board to the notebook)	X						X		X	X
S/he struggles in multi-step problems.	X	X	X		X	X	X	X	X	X
S/he is inadequate in learning multiplication table.	X		X			X	X	X	X	X

When the table is examined, it is seen that the two items were marked all teachers. Accordingly, it can be said that the “level difference” and “the mathematical expression skill being weakest” criteria are the most prominent among the criteria that the elementary school teachers consider when describing mathematics learning difficulty. On the other hand, the majority of the teachers marked the items "S/he does repetitive mistakes. (e.g., repeating the same mistake despite warnings)", "Her/his prediction skill is poor in operations", "S/he struggles in multi-step problems", "S/he struggles in reaching a result in long operations (Computation gets poor when the places of numbers are changed)", "S/he also struggles in all other lessons besides mathematics", “S/he is incompetent in understanding and solving verbal mathematical problems” and "S/he struggles in writing mathematical expressions in her/his notebook. (Her/his mathematics notebook is untidy; order and appearance of the operations are bad etc." These expressions therefore reveal the criteria that elementary school teachers consider when describing mathematics learning difficulty.

Findings From Semi-Structured Parent Interview Form

Table 8 shows the findings obtained from the answers of the parents to the question “Does your child have any courses that you think s/he has difficulty in learning? If yes, which one? Why?”

Table 8. Courses that children have difficulty in learning based on parents' opinion

Category	Sub-category	Sample expression
Incompetence	Turkish (P1,P2,P4,P5,P7)	“Reading and writing. Letters were given to us instantly. The teacher gave them all. The teacher was hasty” (P1)
		“She struggles in Turkish. She has difficulty in understanding idioms. She reads when she is free; if she remembers” (P2)
		“She had a bad mark at Religion and Ethics, her English is bad, Turkish is bad, but Science and Social are fine” (P4)
		“She struggles in Turkish and Mathematics” (P5)

	<i>"All. She doesn't want to study Turkish and Social" (P7)</i>
	<i>"She gets confused in mathematics. She can't do operations; adding, subtraction, etc. She gets confused at digits" (P3)</i>
	<i>"While learning mathematics, she can't do progressive operations. Mum explains but she can't understand and at the end she copies the operations to her notebook" (P4)</i>
	<i>"She struggles in Turkish and Mathematics" (P5)</i>
Mathematics (P3,P4,P5,P6,P7)	<i>"The teacher gives very little homework. He told his teacher he doesn't like mathematics. Homework is generally given from the verbal lessons. In the last two months, she will not give any homework to my child. I'd rather homework be given especially in mathematics. He studies very little at home" (P6)</i>
	<i>"None wants to study Turkish and Social. He generally memorizes. He can do mathematics if he wants. He struggles; wants to do finger calculation and can't do mental calculus. He is careless. He can't decide whether adding or subtracting is required in the problem. He only does what he likes. He can do multiplies of 10, easy fraction adding; he can do if there is a rule. It is okay when he picks it up. We haven't been able to teach times table yet" (P7)</i>
Religion and Ethics (P4)	<i>"She had a low grade at Religion and Ethics" (P4)</i>
English (P4)	<i>"English is bad" (P4)</i>
Social Studies (P7)	<i>"None wants to study Turkish and Social" (P7)</i>

According to Table 8, the answers given by parents to the question were collected in Turkish, Mathematics, Religion and Ethics, English and Social Studies sub-categories under incompetence category. While the parents were revealing the lessons that their children had difficulty learning, they mostly mentioned Turkish and Mathematics lessons. They said that their children had difficulty understanding these lessons, used fingers in calculations, depended on memorizing while doing operations and struggled while deciding.

Table 9 shows the findings obtained from the answers of the parents to the question "Does your child have difficulty in learning mathematics? Which topics are most difficult to learn?"

Table 9. Topics that children have difficulty in learning mathematics based on parents' opinion

Category	Sub-category	Sample expression
Difficulty	Operations (P1,P3,P5)	<i>"While dividing triple, quadruple. While multiplying, he forgets the carried number. The calculation turns out wrong and then his motivation goes down" (P1)</i>
		<i>"Dad explains adding and subtraction. He gets confused with the operations. While saying the carried number, he says 5 carried in 15" (P3)</i>
		<i>"His brother gives a hand in four operations" (P5)</i>
	Mental Calculation (P2,P7)	<i>"He struggles doing operation mentally. Mental calculation is hard without writing" (P2)</i>
		<i>"He can't do mental calculation" (P7)</i>
Geometry (P2)	<i>"We have problems in angle" (P2)</i>	
Problem solving (P4,P5)	<i>"He has great difficulty in problem solving. He thinks progressively and finds the solution if there is a rule. When no rule, he can't solve it. He can't proceed with terms like 2 times 3 minus. He multiplies or adds the numbers he sees in</i>	

	<i>the problem without putting them in their right places. For example, if he sees "times" in the problem, he jumps multiplying right away" (P4)</i>
	<i>"He can't decide whether to add or subtract in the problem, he does what he likes in the problem: multiplies of 10 and adding easy fractions. He can do if there is a rule. It is okay when he picks it up" (P5)</i>
Times Table (P5,P6,P7)	<i>"He struggles in times table" (P5)</i>
	<i>"Yes, times table especially. Counting" (P6)</i>
	<i>"We haven't been able to teach times table yet" (P7)</i>

According to Table 9, the answers given by parents to the question were collected in operations, mental calculation, geometry, problem solving and times table sub-categories under difficulty category. Parents indicated that their children were especially challenged in doing operation and learning operation processes while learning mathematics. They stated that they needed a rule when they were solving problems, they could not solve the problem if they did not know the rule, they had difficulty learning the multiplication table, or even some could not learn.

Table 10 shows the findings obtained from the answers of the parents to the question "Can you support your child in subjects s/he struggles in mathematics? How?"

Table 10. Supports of the parents in subjects that their children struggle in mathematics

Category	Sub-category	Sample expression
Family support	Insufficient Support (P1,P4,P5,P6,P7)	<i>"Mostly his elder sister. She is 7th grade. Father is of little help. Father is more patient, I get angry easily. I generally compare her success with her sister" (P1)</i>
		<i>"Mother helps, but solves the problem more like in high school. x, y. she explains according to the child's level" (P4)</i>
		<i>"Mostly his elder brother supports her at home. Father also helps, but mostly elder brother" (P5)</i>
	Difficulty in Supporting (P2,P3,P4,P7)	<i>"Father is university graduate. Father and elder brother help but mother doesn't get involved very much. Father generally gives support and says I did my homework" (P6)</i>
		<i>"Father gets interested but is of little help. He doesn't want to do it. I explain. Father can explain verbal as well as the teacher. His memory is good, but mother can't do it" (P7)</i>
		<i>"Mother-father can help. It happens when I struggle. In geometry, problems, time problems. It doesn't work when my daughter is careful. She doesn't want to read. She reads by skipping" (P2)</i>
		<i>"Father explains from the book by looking at examples when he has difficulty" (P3)</i>
		<i>"He asks and only mother supports. Father doesn't know. If he doesn't do, he tells him to mark it and ask the teacher" (P4)</i>
		<i>"While father is explaining, my son is preoccupied with some other things. I had difficulty teaching in every subject" (P7)</i>

External Support (P3,P4,P5,P6)	<i>"There is a computer and the internet. He searches there too. Father helps generally while searching on the computer" (P3)</i>
	<i>"She explains. Mother asks over WhatsApp group" (P4)</i>
	<i>"We have internet at home. They search there" (P5)</i>
	<i>"The student searches himself over the computer or cell phone" (P6)</i>

According to Table 10, the answers given by parents to the question were collected in incompetent, difficulty and external sub-categories under family support category. Parents stated that they had difficulty in supporting their children where they struggled in mathematics and they felt inadequate and added that even if they tried to support, they couldn't go down to the level of the child. They said that they received help from books, the internet and other individuals.

Table 11 shows the findings obtained from the answers of the parents to the question "What do you think about the teacher's approach to your child during the mathematics learning process?"

Table 11. Opinions of the parents about teacher's approach to their children during the mathematics learning process

Teacher Approach	Satisfied (P2,P3,P4,P5,P7)	<i>"We are satisfied with our teacher. We are pleased with his teaching. He is enthusiastic as a private teacher" (P2)</i>
		<i>"The teacher is good, he gives homework but the child can't comprehend it. Mother generally meets the teacher but sometimes they even don't attend the meetings. The teacher is good, but the child can't comprehend it. The child is distracted easily and gets bored quickly. When he is bored, he cries and makes mistakes" (P3)</i>
		<i>"The teacher is very good, the class is good at mathematics. Mother explains and he doesn't understand, but he understands very well when he goes to school. The teacher opened the child up especially in mathematics. Kindergarten teacher said everybody was distressed. The family repressed a lot. His mathematics was very bad at 1st grade. Now a bit fine. He is very persevering, but he can't solve it" (P4)</i>
		<i>"The teacher is very good and very helpful. Mother comes to school often and meets the teacher. The teacher is very good now. He has changed four teachers since he came to this school" (P5)</i>
		<i>"Our teacher is affectionate and tries hard. We even had a private teacher. Our teacher wanted it. It didn't work. He gave homework but didn't check it. The child didn't want to continue. He behaved passively. The child felt incompetent. He is withdrawn but in fact he holds back. Pular is next to him. He makes himself loved" (P7)</i>
	Not Satisfied (P1,P6)	<i>"The teacher emphasizes mathematics a lot. I wish he emphasized Turkish more then there would be no problem. He struggles because he can't read. He gets frustrated" (P1)</i>
		<i>"The teacher seems to give more importance to other lessons, social lessons generally. I wish he gave homework in mathematics because my child doesn't study mathematics as the teacher said he wouldn't give any homework in mathematics. He isn't open up to mathematics; not as interested as other lessons" (P6)</i>

According to Table 11, the answers given by parents to the question were collected in satisfied and not satisfied sub-categories under teacher approach category. While the majority of the parents indicated that they

were satisfied with the approach of the teachers, the two parents stated that they were not satisfied. Satisfied parents expressed their satisfaction as "the teacher gives a lot of homework" or "the teacher opened the child up". Unsatisfied parents said that the teacher either puts too much emphasis on mathematics or does not allow enough for mathematics lesson.

Conclusion, Discussion & Suggestions

In this research, it was tried to find out the difficulties of the students with mathematics learning difficulties, the perspectives and evaluations of the teachers and the parents about these difficulties and their reasons. For this purpose, interviews were held with teachers and parents. In addition, the elementary school teachers assessed their students through a checklist and thus their thoughts about mathematics learning difficulty were tried to be determined.

Children with mathematics learning difficulties need more help from their parents, teachers, siblings and friends. These children need more time in the learning process, need to practice more, and need to face a structured approach more (Desoete, 2012). When interviews with teachers are examined, it appears that elementary school teachers generally describe mathematics learning difficulty as the difficulties in perceiving, learning and doing operation. Elementary school teachers describe students who are experiencing difficulties in learning mathematics as uninterested, reserved, quiet, timid, excited, aggressive, untidy, dislike of class, anxious and afraid in mathematics class. They state that these students have difficulties in doing operation, problem solving and attention. They add that students who they think are experiencing difficulties in mathematics learning disturb the lesson, are prejudiced against mathematics, reserved, maladaptive, untidy and inadequate in time management while some are quiet, preoccupied with extracurricular activities and have difficulty in self-confidence.

Elementary school teachers point out that they provide individualized education for students with mathematics learning difficulties and they think it is useful, and that their students are more successful when they design an education process that reflects real life from concrete to abstract supported by concrete tools and models. In activities that will be applied to students with mathematics learning difficulties, the order and application range of the activity is important (e.g., from easy to difficult, from concrete to abstract). Mathematical concepts are built on one another and there are important relationships between mathematical ideas. Ignoring the order and range of activities and examples used in teaching and their being poor may limit the ability of students to relate past knowledge and mathematical concepts, and students may not learn how to apply mathematical concepts and skills in real life situations (Wu, 2006). In this respect, it can be said that teaching process the elementary school teachers who participated in the research stated that they used for students with mathematics learning difficulty had a positive effect on the students.

Elementary school teachers indicated that parents of the children with mathematics learning difficulties did not follow up their children, were uninterested, ignored the problems with their children, and their communication with the teacher was weak, so the difficulties that children experienced were related to these.

When the findings from the checklist filled by the elementary school teachers and interviews with the teachers were examined, it was seen that there was a similarity between the findings. In both findings, it similar issues as follows were seen to be emphasized: students with mathematics learning difficulties experienced difficulties in the process of problem-solving and doing operation, experienced difficulties in other lessons, needed concretization and had prejudices to mathematics lesson. This both gave teachers the opportunity to associate their awareness and opinions about student behaviors and revealed the difficulties that students experienced in the mathematics learning process. Teachers did not express many items existed in the control list during the interview like difficulties in rhythmic counting up and down, time reading, digit concept and decimal numbers. It can be deduced from this fact that either the pupils about whom checklists

were filled in didn't experience any problems in these matters or that the awareness of the elementary school teachers in this regard was low. It is seen in the findings obtained as a result of interviews with the teachers that the teachers had a general opinion and they especially emphasized the counting and doing operation. However, while telling about their children, parents stated that their children had difficulties in such matters as the time concept, using and learning multiplication table and children. Accordingly, it can be said that there is a low awareness of elementary school teachers about mathematics learning difficulty and they need training in special education because teachers may not be aware of exceptional situations that are met when they are not trained in difficulties of the gifted or special learning difficulties. Teacher training or in-service training will provide teachers with the ability to make better decisions about the gifted or learning difficulties. At the same time, teacher-family communication and cooperation are also important. For example, a family's judgment on a child may strengthen the teacher's observation of the child's cognitive characteristics and behavior. Teachers' proficiency in teaching is very important because the availability of teaching competence is necessary for the formation of diagnostic competences (Al-Hroub and Whitebread, 2008).

Analysis of the findings from the interviews with the parents show that the parents stressed that their children had the most difficulty in Turkish and Mathematics lessons, couldn't understand what was told and tried to memorize it. They also added that their children struggled in mathematics subjects such as doing operation, problem solving, mind calculation and multiplication table. Some parents stated that their children had difficulty in understanding and explaining. In the expressions of the parents about their children experiencing difficulties in the mathematics learning process, difficulty that their children experienced in language skills is noteworthy. Vukovic and Lesaux (2013) emphasized the relation between verbal analogies and the counting ability of phonological encoding, and between arithmetic skills and arithmetic word problems. They also stressed that language skills are directly and indirectly influential on arithmetic knowledge. The parents indicated that they were inadequate and struggled to support their children. Many parents added that they were happy with teacher support and the teacher was very interested, but their children did not understand and so they could not benefit enough from this interest. Accordingly, it can be said that elementary school teachers tried to support the learning process but this was not enough. Lambert and Spinath (2014) emphasized that children with mathematics learning difficulties need special programs, but these programs need to differ from traditional special education programs. They pointed out that traditional special training programs try to get results in a short time; however, just as in their program (VIP) they used in their own work, long-term programs could be more successful. In this program, the use of the tools that appeal to their reasoning skills was very important in the education of the students with mathematics learning difficulty. As a result of the study, it is found that the students with mathematics learning difficulty improved significantly and their academic achievements reached a normal level. Again, this study also focused on the existence of such factors as high anxiety in the low achievement of children with mathematics learning difficulty. In other words, it can be said that children with mathematics learning difficulty can demonstrate academic improvement through a well-prepared learning-teaching process.

In this research, the level of awareness of elementary school teachers and parents about the difficulties of students with mathematics learning difficulties emerged. It can be said that in the research, elementary school teachers are aware of the difficulties their students experience in mathematics learning process, but they have difficulty in diagnosis, and they need support in designing these students' learning process. On the other hand, it was seen that parents were inadequate to support these students and could not describe in detail the difficulties their children experienced. Accordingly, the research revealed the necessity of in-service training on individual education for elementary school teachers and the importance of studies on the role of the parents in the learning and teaching process and supporting the parents. It was tried in this study to reveal awareness of mathematics learning difficulties based on parent and teacher views. In future studies, how to

improve teacher and parent awareness and the effect of this awareness on the subjects and processes in which students experience difficulties can be examined.

It was tried to reveal the importance of the awareness level of elementary school teachers and parents on the difficulties experienced by students with mathematics learning difficulties. As a result, it can be said that elementary school teachers are aware of the difficulties their students experience in mathematics learning process, but they have difficulty in diagnosis, and they need support in designing these students' learning process.

GENİŞLETİLMİŞ ÖZET

Araştırmanın Amacı

Günümüzde hızla gelişen teknolojiye bağlı olarak bilgi nicelik ve nitelik bakımından farklılaşım gelişmektedir. Bu nedenle bireylerin matematiği anlamalarının ve matematiksel becerileri günlük hayatta kullanabilmelerinin önemi de giderek artmaktadır (Milli Eğitim Bakanlığı [MEB], 2009). Çünkü matematik bireylerin günlük hayatta karşılaştıkları problemleri çözmelerine ve olayları analiz etmelerine yardımcı olur. Bu bakımdan matematik gerçek yaşamın bir parçasıdır. Bireylerin matematiksel bilgi ve beceriler açısından yetersizlikleri günlük hayatlarında çeşitli güçlüklerle karşılaşacakları anlamına gelmektedir. Fakat bireyler temel düzeyde matematik becerileri edinirken çeşitli güçlüklerle karşılaşmaktadırlar. Bu güçlükler farklı sebeplerle ortaya çıkmaktadır. Bunlardan biri de bireyin matematik öğrenme güçlüğüne sahip olmasıdır. Matematikte öğrenme güçlüğü, normal zekâya sahip çocuklarda ortaya çıkan aritmetik beceri ve sayısal yetkinlik bozukluğudur (Temple, 1992). Bu güçlük, çocukların öğrenme becerilerine müdahale eden dil ile ilgili zorluklardan (Kavale ve Forness, 1995) ya da bilişsel faktörlerden (Ginsburg, 1997) kaynaklanabilmektedir.

Çoğu araştırmacı, çocukların yaklaşık olarak %5-7'sinin matematik öğrenme güçlüğü belirtileri gösterdiği düşüncesinde birleşmektedirler (Butterworth, 2005). Bu durum 30 kişilik bir sınıfta en az bir öğrencinin matematik öğrenme güçlüğü belirtileri taşıdığı anlamına gelmektedir (Hannell, 2013). Matematik yetersizliği olan öğrencilere başarılı olmaları için yardımcı olmak eğitimcilerin önceliği olmalıdır. Bu öğrencilere matematikte karşılaşılan zorluklar ve matematiğin doğası anlatılarak bireysel olarak yaptıkları hatalar öğrenme ortamında düzeltilir (Dowker, 2008). Bu şekildeki yaklaşım öğrencilere günlük hayatta kullanabilecekleri matematiksel becerileri kazandırabilir. Bunun için özellikle sınıf öğretmenlerinin ve ailelerin matematik öğrenme güçlüğü konusunda farkındalıklarının önemli olduğu söylenebilir. Bu araştırmada matematik öğrenmede güçlük yaşayan öğrencilerin yaşadıkları güçlükler, öğretmen ve velilerin bu güçlükler ve nedenlerine bakış açılarını ortaya çıkarılmaya çalışılmıştır.

Yöntem

Bu araştırmanın amacı, matematik öğrenmede güçlük yaşayan ilkökul 4. sınıf öğrencilerine yönelik bir durum betimlemesi yapmaktır. Bu kapsamda araştırma nitel araştırma yöntemlerinden biri olan durum çalışması şeklinde tasarlanmıştır. Durum çalışmalarında araştırılan durumla ilgili ne, nasıl ve niçin soruları yöneltilir. Bu amaçla gözlemler, görüşmeler, dokümanlar vb. çoklu bilgi kaynakları kullanılarak durum temaları ortaya konulur (Yin, 2003). Böylece bir konu ya da problem en iyi şekilde anlaşılabilir (Stake, 1995). Bu araştırmada davranış kontrol listesi ve yarı yapılandırılmış görüşmeler aracılığıyla ilkökul 4. sınıf öğrencilerinin matematik öğrenmede ne tür güçlükler yaşadıkları ortaya çıkarılmaya çalışılmıştır.

Sonuç, Tartışma ve Öneriler

Araştırma sonucunda sınıf öğretmenlerinin matematik öğrenme güçlüğünü genel olarak algılama, öğrenme ve işlem yapmada yaşanan sıkıntılar olarak tanımladıkları görülmektedir. Sınıf öğretmenleri matematik öğrenme güçlüğü yaşayan öğrencilerini ilgisiz, sıkılgan, sessiz, çekingen, heyecanlı, agresif, düzensiz, dersi sevmeyen, matematik dersinde üzgün, dersten korkan şeklinde betimlemektedirler. Bu öğrencilerin işlem, problem çözme ve dikkat konularında zorluklara sahip olduklarını belirtmektedirler. Matematik öğrenme güçlüğü yaşadığını düşündükleri öğrencilerinin dersi bozdukları, derse karşı önyargılı oldukları sıkılgan, uyumsuz, dağınık, zaman yönetiminde yetersiz, bazılarının ise sessiz, ders dışı uğraşlarla ilgilendikleri ve kendine güven konusunda sıkıntılar yaşadıklarını ifade etmektedirler.

Elde edilen bulgulara göre sınıf öğretmenleri matematikte öğrenme güçlüğü yaşayan öğrencilerin velilerinin ilgisiz olduklarını, öğretmenle iletişimlerinin zayıf olduğunu ve çocuklarıyla ilgili problemleri

görmezden geldiklerini ifade etmişlerdir. Veliler de çocuklarının işlem yapma, problem çözme, zihinden hesaplama, çarpım tablosu gibi matematik konularında zorlandıklarını, anlatılanları anlamadıklarını ve ezber yaparak öğrenmeye çalıştıklarını belirtmişlerdir. Araştırma sonucunda sınıf öğretmenlerinin matematikte öğrenme güçlüğü konusunda farkındalıklarının olduğu fakat öğrencilerinin yaşadıkları sıkıntıları ayrıntılı olarak teşhis konusunda zorlandıkları ve bu öğrencilerin öğrenme sürecinin tasarlanması konusunda desteğe ihtiyaçlarının olduğu görülmüştür. Velilerin ise çocuklarının yaşadıkları zorlukları ayrıntılı olarak betimleyemedikleri görülmüş ve bu öğrencilere destek olmakta yetersiz kaldıkları anlaşılmıştır. Buna dayanarak sınıf öğretmenlerine yönelik bireysel eğitim konusunda hizmet içi eğitimlerin gerekliliği, velilerin öğrenme ve öğretme sürecindeki rolü ve desteklenmesi konusunda yapılacak çalışmaların önemi ortaya çıkmaktadır. Bu çalışmada veli ve öğretmen görüşlerine dayalı matematik öğrenme güçlüğüne yönelik farkındalıkları ortaya çıkarılmaya çalışılmıştır. Bundan sonra yapılacak çalışmalarda öğretmen ve veli farkındalığının geliştirilmesi ve geliştirilen bu farkındalığın öğrencilerin sıkıntı yaşadıkları konu ve süreçler üzerindeki etkisi incelenebilir.

REFERENCES

- Al-Hroub, A., & Whitebread, D. (2008). Teacher nomination of 'mathematically gifted children with specific learning difficulties' at three state schools in Jordan. *British Journal of Special Education*, 35(3), 152-164.
- Babbitt, B. C., & Miller, S. P. (1996). Using hypermedia to improve the mathematics problem-solving skills of students with learning disabilities. *Journal of Learning Disabilities*, 29(4), 391-401.
- Bartelet, D., Ansari, D., Vaessen, A., & Blomert, L. (2014). Cognitive subtypes of mathematics learning difficulties in primary education. *Research in Developmental Disabilities*, 35(3), 657-670.
- Bender, W. N. (2016). *Öğrenme güçlüğü olan bireyler ve eğitimleri. Özellikleri, tanılama ve öğretim stratejileri* (Çev. H. Sarı). Ankara: Nobel Akademik Yayıncılık.
- Bryant, D. P., Bryant, B. R., & Hammill, D. D. (2000). Characteristic Behaviors of Students with LD Who Have Teacher-Identified Math Weaknesses. *Journal of Learning Disabilities*, 33(2), 168-177.
- Butterworth, B. (1999). *The mathematical brain*. London: Macmillan.
- Butterworth, B. (2003). *Dyscalculia screener: Highlighting pupils with specific learning difficulties in Maths*. London, UK: nferNelson Publishing Company
- Butterworth, B. (2005). Developmental Dyscalculia. In J. I. D. Campbell (Ed.), *Handbook of Mathematical Cognition* (pp. 455-467). Hove: Psychology Pres.
- Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö., Karadeniz, Ş. ve Demirel, F. (2012). *Bilimsel araştırma yöntemleri*. Ankara: Pegem Akademi.
- Chinn, S. (2004). *The trouble with maths: A practical guide to helping learners with numeracy difficulties*. London: Routledge.
- Chinn, S. (2012). Beliefs, anxiety, and avoiding failure in mathematics. *Child Development Research*, 1-8.
- Courtade, G. R., Test, D. W., & Cook, B. G. (2015). Evidence-based practices for learners with severe intellectual disability. *Research and Practice for Persons with Severe Disabilities*, 39(4), 305-318.
- Desoete A. (2012). How to support children with mathematical learning disabilities learning to play an instrument? *Education Research International*, 1-7.
- Dowker, A. (Ed.). (2008). *Mathematical difficulties: Psychology and education*. London: Elsevier.
- Emerson, J., & Babbie, P. (2010). *The dyscalculia assessment*. London: Continuum International Publishing Group.
- Geary, D. C. (2004). Mathematics and learning disabilities. *Journal of Learning Disabilities*, 37(1), 4-15.
- Geary, D. C., Hamson, C. O., & Hoard, M. K. (2000). Numerical and arithmetical cognition: A longitudinal study of process and concept deficits in children with learning disability. *Journal of Experimental Child Psychology*, 77(3), 236-263.
- Geary, D. C., Hoard, M. K., & Hamson, C. O. (1999). Numerical and arithmetical cognition: Patterns of functions and deficits in children at risk for a mathematical disability. *Journal of Experimental Child Psychology*, 74(3), 213-239.
- Geary, D. C., & Hoard, M. K. (2001). Numerical and arithmetical deficits in learning disabled children: Relation to dyscalculia and dyslexia. *Aphasiology*, 15(7), 635-647.

- Geary, D. C., Hoard, M. K., Byrd-Craven, J., & DeSoto, M. C. (2004). Strategy choices in simple and complex addition: Contributions of working memory and counting knowledge for children with mathematical disability. *Journal of Experimental Child Psychology*, 88(2), 121-151.
- Ginsburg, H. P. (1997). Mathematics learning disabilities: A view from developmental psychology. *Journal of Learning Disabilities*, 30(1), 20-33.
- Hanich, L. B., Jordan, N. C., Kaplan, D., & Dick, J. (2001). Performance across different areas of mathematical cognition in children with learning difficulties. *Journal of Educational Psychology*, 93(3), 615-626.
- Hannell, G. (2013). *Dyscalculia: Action plans for successful learning in mathematics*. Abingdon, Oxon: Routledge.
- Hecht, S. A., Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (2001). The relations between phonological processing abilities and emerging individual differences in mathematical computation skills: A longitudinal study from second to fifth grades. *Journal of Experimental Child Psychology*, 79(2), 192-227.
- Jordan, N. C., & Hanich, L. B. (2003). Characteristics of children with moderate mathematics deficiencies: A longitudinal perspective. *Learning Disabilities Research and Practice*, 18(4), 213-221.
- Kavale, K. A., & Forness, S. R. (1995). *The nature of learning disabilities. Critical elements of diagnosis and classification*. Hillsdale, NJ: Erlbaum.
- Lambert, K., & Spinath, B. (2014). Do we need a special intervention program for children with mathematical learning disabilities or is private tutoring sufficient? *Journal for Educational Research online*, 6(1), 68-93.
- Landerl, K., Bevan, A., & Butterworth, B. (2004). Developmental dyscalculia and basic numerical capacities: A study of 8- to 9-year-old students. *Cognition*, 93(2), 99-125.
- Mazzocco, M. M. M. (2001). Math learning disability and math LD subtypes: Evidence from studies of Turner syndrome, Fragile X syndrome, and neurofibromatosis type 1. *Journal of Learning Disabilities*, 34(6), 520-533.
- Milli Eğitim Bakanlığı, (2009). *İlköğretim matematik dersi 1-5. sınıflar öğretim programı*. Ankara: MEB Talim ve Terbiye Kurulu Başkanlığı.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage Publications.
- Morin, J. E., & Franks, D. J. (2010). Why do some children have difficulty learning mathematics? Looking at language for answers. *Preventing School Failure*, 54(2), 111-118.
- Murphy, M. M. M., Mazzocco, M. M., Hanich, L. B., & Early, M. C. (2007). Cognitive characteristics of children with mathematics learning disability (MLD) vary as a function of the cutoff criterion used to define MLD. *Journal of Learning Disabilities*, 40(5), 458-478.
- Ostad, S. E. (1999). Developmental progression of subtraction studies: A comparison of mathematically normal and mathematically disabled children. *European Journal of Special Needs Education*, 14(1), 21- 36.
- Rourke, B. P. (1998). Significance of verbal-performance discrepancies for subtypes of children with learning disabilities: Opportunities for the WISC-III. In A. Prifitera, L. G. Weiss & D. H. Saklofske (Eds.), *WISC-III clinical use and interpretation* (pp. 139-156). San Diego, CA: Academic Press.
- Stake, R. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Temple, C. M. (1992). Developmental dyscalculia. In S. J. Segalowitz & I. Rapin (Eds.), *Handbook of neuropsychology: Vol. 7, Child Neuropsychology* (pp. 211-222). New York: Elsevier.

- Vukovic, R. K., & Lesaux, N. K. (2013). The relationship between linguistic skills and arithmetic knowledge." *Learning and Individual Differences, 23*, 87-91.
- Wu, H. (2006). *Professional development: The hard work of learning mathematics*. Presented at the special session of the Mathematical Education of Teachers at the Fall Southern Section Meeting of the American Mathematical Society, 16 October, Tennessee, USA.
- Yıldırım, A. ve Şimşek, H. (2011). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. Ankara: Seçkin Yayıncılık.
- Yin, R. K. (2003). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.