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Analysis of Student Difficulties in Learning Mathematics in Elementary School Lower Grades

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Abstract

One of the subjects that students must master is mathematics. This study aims to determine the difficulties experienced by students, especially in low grades, during the teaching and learning process of mathematics subjects. The method used in this research is the descriptive-qualitative method. Based on interviews that have been conducted, information has been obtained that some students tend to have some difficulties with basic skills such as subtraction, multiplication, and fractions. The causes of the obstacles experienced by students are that math subjects are considered scary lessons, there is a lack of use of learning media, and students are used to routine problems. Efforts made by teachers to overcome the obstacles that occur include using various learning media, peer tutors, additional support for students who need it, selecting strategies, approaches, methods and techniques to support learning to be more effective

Keywords: Learning Difficulties, Math, Low Grade

Abstrak

Salah satu mata pelajaran yang harus dikuasai oleh siswa diantaranya matematika. Penelitian ini bertujuan untuk mengetahui kesulitan yang dialami oleh siswa khususnya di kelas rendah saat melakukan proses belajar mengajar mata pelajaran matematika. Adapun metode yang digunakan dalam penelitian ini yaitu metode kualitatif deskriptif. Berdasarkan wawancara yang telah dilakukan doiperoleh informasi bahwa beberapa siswa cenderung memiliki beberapa kesulitan dalam kemampuan dasar seperti pengurangan, perkalian dan pecahan. Adapun penyebab kendala yang dialami oleh siswa yaitu mata pelajaran matematika dianggap pelajaran yang menakutkan, kurangnya penggunaan media pelajaran, dan siswa sudah terbiasa dengan soal rutin. Upaya yang dilakukan oleh guru untuk mengatasi kendala yang terjadi yaitu dengan menggunakan berbagai media pembelajaran, tutor dengan teman sebaya, dukungan tambahan bagi siswa yang membutuhkan, pemilihan strategi, pendekatan, metode dan teknik untuk menunjang pembelajaran agar lebih efektif.

Kata Kunci: Kesulitan Belajar, Matematika, Kelas Rendah

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INTRODUCTION

Education is one of the most important factors in achieving the goals that a person wants to achieve. In addition, the barometer of a country's progress is education. Education is able to improve the quality of human resources both in terms of intelligence, ability, and spirituality. Elementary school is the first level of education in Indonesia and has several objectives, including instilling basic skills in reading, writing, mathematics, and other subjects.

Mathematics is a compulsory subject taught in elementary school. The purpose of learning mathematics is to improve students' ability to apply solutions to everyday problems related to mathematics. The skills needed in problem solving are the ability to count, collect, process, present, and interpret data. Thus, some daily problems require careful and meticulous problem solving related to subjects, especially mathematics (Hidayat et al., 2020). This is in line with the research of Nasem et al., (2019), which states that mathematics has several benefits, including developing a mindset and being one of the main gates to learning the next science. Therefore, in Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System, Article 37 stipulates that students at the primary and secondary education levels must be taught mathematics subjects, realizing the importance of mathematics lessons.

Elementary school students are divided into two types, including low-grade students consisting of first, second, and third grade levels. While high school consists of the fourth, fifth, and sixth grades. Low-grade students who are in the age range of six to nine years belong to the group of early students that needs special attention. Dimensions of intelligence, including intelligence quotient, emotional qoutient, and spiritual quotient, develop at that age. This is in line with research conducted Sumarhati et al., (2017) that currently, the ability of every child needs to be developed in order to develop optimally. This period is very short time but it is a very important time for everyone's life. The next research was conducted by (Wijayanti & Suswandari, 2022). Lower grade students are in a transitional period where they are more inclined to understand concrete concepts as opposed to abstract ones. Therefore, in abstract mathematics learning requires more attention. Mathematical concepts must be taught easily so that students can understand and accept the material that has been taught. Mathematics is a provision that makes it easy for students to learn other material. Therefore, teachers must be able to design teaching and learning processes that are able to motivate and encourage students to learn.

But the reality in the field is that there are many low-grade students who have difficulty learning mathematics. This difficulty is due to mathematics subjects belonging to abstract disciplines. This is contrary to the fact that elementary school students fall into the category of concrete operational phases, where they cannot yet think abstractly. Research conducted by (Sepriyanti & Julisra, 2019) mathematics is an abstract science. Thus displaying the problem into a mathematical model by showing the abstraction done when students think. Some students consider metamatics to be a difficult, scary, and unpleasant subject. This is because students still have difficulty solving math problems. The difficulties experienced by students occur because the learning process is still abstract so students have difficulty understanding learning concepts.

If the difficulties experienced by students in learning mathematics are not immediately overcome, it will have a bad impact on students making them less interested in learning mathematics. Which causes the subject of mathematics will continue to be a subject avoided by students. This is in line with the opinion of Nurluthfiana et al., (2023), If students experience learning difficulties and cannot complete them, it will have an impact on decreasing student academic achievement and a lack of interest in continuing further studies. Difficulties experienced by students need to be investigated and detected early so that they can be addressed as soon as possible.

The difficulties felt by students in mathematics subjects are a challenge for teachers to design the learning process to be better. This study aims to obtain information related to what difficulties students experience in mathematics subjects and what efforts can be made by teachers to overcome them. Therefore, researchers are interested in researching "Analysis of Student Difficulties in Mathematics Learning in Lower Grades of Elementary School".

METHOD

The descriptive qualitative method is one type of research used to present a complete picture of phenomena, facts, and events that occur in the field systematically. This is in line with research conducted by Infantry et al., (2022) who found that descriptive qualitative research aims to present events, facts, situations, and phenomena that occur during research. This research uses structured interviews conducted in the WhatsApp application as primary data and literature studies as secondary data. In this study interviewed 10 respondents were low grade teachers including 4 teachers in Cimahi City, 1 teacher in Bandung City and 5 teachers in Bandung Regency. Respondents were given the initials G1-G10 to maintain data confidentiality. Here are the profiles of the research respondents:

No.	Initials	Respondent
1	G1	Class I Teacher
2	G2	Class I Teacher
3	G3	Class I Teacher
4	G4	Class II Teacher
5	G5	Class II Teacher
6	G6	Class II Teacher
7	G7	Class II Teacher
8	G8	Class III Teacher
9	G9	Class III Teacher
10	G10	Class III Teacher

. Tabel 1.1 Respondent Profile

RESULTS AND DISCUSSION

Results

The results of interviews conducted through the WhatsApp application were quoted and slightly modified to make them clearer and more coherent. The data that has been obtained on the basis of teacher interviews is presented in the following table:

Table 1.1 Class I Teacher Response

No	Question	G1	G2	G3
1	What are some of the difficulties you face when learning mathematics?	Some students have difficulty with subtraction count operations compared to addition count operations	Difficulties that students experience include subtraction calculation operations	Most students experience confusion in counting from 1 to 20 and have difficulty with addition and subtraction operations
2	What do you think makes the problem arise?	In everyday life, students are often introduced to addition operations, so students have difficulty if they find new things other than addition operations	Some students still don't understand the countdown	Problems arise due to the lack of reasoning exercises related to basic numeracy
3	Based on the experience you have, how do you overcome this?	Efforts that can be made to overcome existing problems include making a priority scale of approach for students who have difficulty understanding deductions because the abilities of students vary, some are quick to	difficulties in mastering the material taught. In addition, the role of parents is one of the important factors to supporting and helping	The solution is to continue to train students to learn number concepts either by means of an individual approach or using concrete media

Table 1	.2 Class	II Teacher	Response
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No	Question	G4		G5		G6		G7	
1	What are some	During	the	During	the	Some	obstacles	There	are
1	of the difficulties	mathematics		teaching	and	found	during	miconce	ptions

V	ou face when	learning process,	learning	mathematics	in
•	arning	difficulties are	process of		multiplication
m	nathematics?	found that	mathematics	student	and fraction
		students	subjects, there	misconceptions	matter
		experience	are some are	about	
		misconceptions	slow in	multiplication	
		related to basic	understanding	material. There	
		mathematical	the material	are some	
		operations	presented.	students who	
		including	This is due to	still misinterpret	
		multiplication,	the lack of	the way to solve	
		division, and	learning	multiplication	
		fractions	media and	as adding it up.	
			teaching aids	For example, 5 x	
			used during	2 = 5 + 2 = 7	
			learning. In		
			addition,		
			Students still		
			have		
			difficulties		
			counting		
	71 . 1	D	operations	G (1	
	Vhat do you	Basic	Problems	Some of the	Students' lack
	nink makes the	mathematical	arise due to	difficulties	of
pı	roblem arise?	operations that have not been	the different abilities of	experienced by students are	understanding of the
		mastered make it			
		difficult for	students and the limited	caused by the lack of facilities	concepts of addition and
		students to solve	learning	and	division
		a problem	media used	infrastructure	operations
		u problem	media asea	that can be used	operations
				to support the	
				learning	
				process. This	
				reduces student	
				motivation and	
				makes them less	
				enthusiastic	
				about learning	
В	ased on the	The methods	One way that	The solution	The way that
ez	xperience you	used to	can be used is	that can be	can be done is
	ave, how do	overcome this	the use of	applied to	by utilizing
yo	ou overcome	include	demonstration	overcome this is	interactive
-	nis?	correcting	methods and	to use objects in	learning
		students'	group	the surrounding	media
		mistakes first	discussions	environment as	
		and teaching	during	learning media	

basic mathematical concepts then relating the material to life that is realistic and conceptual. In addition,	taught can communicate and discuss it	leaves, and stones. Choosing the right method can help students understand the
using interesting		
U U		
learning process.	understand more about the material. In addition, teachers must broaden their horizons and be able to determine the right learning media or teaching aids	is discussion. Students can become peer
material that has	learning	about learning
not been mastered	process.	

Table 1.1	Class	III	Teacher	Res	ponse
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No.	Question	G8	G9	G10
	What are some of the	In the process of	Some students	When learning
	difficulties you face	learning	assume that	mathematics,
	when learning	mathematics, there	mathematics is a	obstacles were
	mathematics?	are several	boring, difficult,	found, including
		obstacles	and unpleasant	students still
		experienced by	subject. Some	having difficulty
		students, including	students still	in solving story
		students' lack of	have difficulty	problems,
		understanding of	understanding	especially
1		the problems that	multiplication	fractional material
1		have been solved	material. This	
		because one of the	can hinder the	
		learning tools is	process of	
		inadequate in the	learning	
		learning media. The	mathematics	
		next obstacle	because some	
		occurs in students	materials make	
		who do not	multiplication a	
		understand the	prerequisite	
		whole story and the	material that	

		student learning	must be	
		process is not easy to conducive.	mastered	
2	What do you think makes the problem arise?	Some of the causes of problems that occur include a lack of class management and no moral support from parents. Learning media is not yet online or concrete based and there are some students who cannot read	Most students are not motivated to learn mathematics because they think that mathematics is difficult. The next obstacle is caused by students often playing mobile phones and staying up late so that they do not focus when learning takes place	The problem is caused by students being used to non- story questions or routine questions so that when students are faced with non-routine questions, it will be difficult to solve them
3	Based on the experience you have, how do you overcome this?	Efforts to minimize these problems are to condition the class by ice breaking so that students are more focused on learning.	By using learning that is more effective for students, using good teaching materials, using learning media that are fun and easy for students to understand, and asking for help from parents	Still using conventional learning with the lecture method. I haven't looked for a way to resolve the issue

Discussion

Learning Difficulties

Learning difficulty is a situation where students have not been able to meet learning objectives, so that learning outcomes are less than satisfactory. Based on the results of the interviews that have been conducted, researchers summarize some of the problems that often occur in the mathematics learning process, especially in low grades as follows:

1. Subtraction

The basic competencies that students must master, especially in the lower grades, are the basic operations of addition and subtraction. Teaching the concepts of addition and subtraction is a task that must be done by the teacher. Students must learn the basic concepts of addition and subtraction because these two concepts are very important to understand the next arithmetic material (Jamaludin et al., 2023). In fact, students still have difficulty operating subtraction as expressed by G1, G2, and G3. Students have difficulty and confusion in understanding subtraction calculation operations. This is in line with research conducted by Dalila et al., (2024), many students face difficulties in understanding subtraction and addition operations, one of which is on integers. Some of the difficulties students face when learning math include understanding the concepts of addition and subtraction, mastering calculation skills, and experiencing errors with numbers (Rahmawati et al., 2023).

2. Multiplication

Multiplication is one of the counting operations studied in elementary school mathematics. Students still have many misconceptions about the multiplication operation, as expressed by G4, G6, G7, and G9 in the interviews. Some math lessons make multiplication prerequisite material. If students have not mastered the operation, it will hinder the learning process. In their study, Mei et al., (2020) found that students find multiplication very difficult. Students face difficulties due to their lack of ability to understand multiplication. If these problems are not resolved immediately, it will have an impact on the future. This is in accordance with the opinion of Indriani et al., (2022) that students sometimes experience misconceptions when processing data and applying multiplication concepts that have been learned. The concept of multiplication that is wrong and not immediately resolved will have an impact on the process of counting at a higher level. Students who do not understand the concept of multiplication will have difficulty learning more complex material, such as measuring flat shapes (Suherdi et al., 2020).

3. Fractions

The results of the interviews conducted on G4, G7, and G10 show that students still face difficulties in understanding and solving fraction problems. Research that supports this was conducted by Atiaturrahmaniah et al., (2021), where most students face difficulties in understanding the concept of fractions. When faced with story problems, students will make mistakes during the calculation process and face difficulties understanding the calculation operations used. In solving fraction story problems, students still have difficulty. This is because students are still confused about how to solve the story problems (Pratiwi & Mawardi, 2020). Students face several problems during the learning process, especially with fraction material. Students often complain, are slow to understand the material, and are often lazy when given problems to do (Unaenah et al., 2020).

Causes of the Problem

1. Math is a scary subject

Some students believe that math is a difficult and scary subject overall. This is in line with the findings in the field, where G9 stated that students think that math is difficult and makes them not want to learn. Math is one of the most feared subjects for some students because of the many formulas used. In the process of learning mathematics, students are not only asked to think logically and systematically when learning something (Wulandari & Riajanto, 2020). Rosanti et al., (2022) argue that one of the problems that often occurs when learning mathematics is that students perceive mathematics as something boring and difficult. As a result, most students dislike math

lessons and often avoid them. Students believe that math is a difficult subject. Students have difficulty understanding concepts, principles, and symbols, are less active, and answer questions less thoroughly (Damayanti & Ain, 2023). According to Hendi et al., (2020), math is considered a difficult subject to understand. This is because some students only focus on memorizing formulas and solving problems. The focus on memorizing formulas indicates that the level of thinking of students is low because memorizing formulas alone does not necessarily solve problems in mathematics. Students think that memorizing formulas can help them find solutions or solve problems.

2. Use of Learning Media

One of the supporting tools that teachers can use to explain learning material is learning media. The use of learning media that is not maximized during teaching and learning activities will affect student learning outcomes. Students will have difficulty receiving information provided by the teacher. According to interviews conducted with G5, G6, and G8, the lack of learning media makes it difficult for students to receive information. According to research conducted by Rahma et al., (2023), the use of learning media that is not optimal will cause misconceptions and less effective learning. Students have difficulty understanding the material taught by the teacher due to the lack of application of media as a learning resource (Masykur et al., 2018). Furthermore, Syahputra & Maulida (2019) argue that the learning process in the classroom will be less interesting if no learning media are used. Students experience boredom, difficulty concentrating, difficulty understanding the material, and difficulty completing assignments independently because the learning process is not varied (Kristanti & Sujana, 2022).

3. Accustomed to routine problems

The results of the interviews conducted on G1 and G10, found that most students struggled when facing unusual problems. Nahdi & Cahyaningsih (2019) argue that many students are only able to solve problems that are similar to those in the teaching material book and those exemplified by the teacher. If students are given analytical and non-routine problems, they will face difficulties. Students cannot solve unusual problems, because they are used to ordinary problems (Melanti, 2023). When students solve problems that fall into the non-routine category (story problems), students face learning difficulties. Students do not understand how to solve these problems (Sesanti & Bere, 2020).

Solution

1. Use of learning media

The results of interviews with G3, G4, G5, and G6 show that learning media can help overcome obstacles or difficulties in the learning process. The study conducted by Susanti (2020) obtained information that learning media is very important because it can concretize abstract concepts and help teachers explain subjects that are difficult to understand if only explained verbally. The application of learning media when teaching will affect how effectively and efficiently the learning process takes place. In addition, the use of concrete media will make learning more interesting and less boring (Rahmawati et al., 2023). Some of the benefits of using learning media in the teaching and learning process include the following: (a) attracting student attention and

encouraging learning; (b) increasing the desire to learn; (c) helping students easily understand the material; (d) making learning fun and not stressful; (e) saving time; and (f) fostering student curiosity. The application of learning media can make the learning process more interesting and not boring, the material is conveyed clearly, and students have a varied learning experience so that learning objectives are achieved (Ramadhan & Khairunnisa, 2021).

2. Peer Tutor

The results of interviews with G5 and G6 obtained information that one way that can be applied to overcome the difficulties faced by students is to use the peer tutor method. Munthe & Naibaho (2019) in their research revealed that peer tutors are the best way to encourage students to learn together and get guidance from their classmates. The application of the peer tutor method in learning is able to encourage students to help each other, share information, create a comfortable atmosphere, encourage students to dare to voice opinions, and ask questions if they have learning difficulties. In line with this, Kurniawan et al., (2023) argue that learning with peer tutors can help students understand lessons. Students can help their peers solve difficult problems. Students who have difficulty can ask their peers who act as tutors using their own language. This is done so that students do not feel reluctant or afraid to ask questions because there is no age limit or manners. In implementing the peer tutor method, some students are given the responsibility by the teacher to explain the subject matter to their friends who do not understand. Learning in an environment supported by peers will be more effective because students are more free to manage time, goals, and expected material targets (Wali et al., 2020).

3. Additional Support/Additional Time

The results of interviews with G1, G2, and G4 obtained information that students who did not understand the material taught needed additional time outside of class hours. According to Purwanto (2023), teachers will provide additional support to students who have learning difficulties such as additional individual guidance, additional time, and additional teaching materials so that students are able to understand concepts well. Students usually take guidance outside of class hours to help understand lessons that are not understood during learning at school (Restuina et al., 2022). Students who face difficulties while learning will be given additional time by the teacher to study material that has not been mastered after learning activities or outside of class hours. The purpose of this includes giving students enough time to catch up on material or understanding that is left behind during learning activities in the classroom (Unaenah et al., 2023).

4. Determining Learning Strategies, Approaches, Methods, and Approaches In order for the lessons given to be easily understood by students, teachers must have the ability to plan learning activities well and meaningfully. Meaningful learning is when students understand learning concepts directly or tangibly (Fauziah & Ruqoyyah, 2022). According to (Rohaeti et al., 2019), learning in an active environment can encourage students to continue learning. Choosing the right learning approaches, strategies, methods, and techniques can encourage students to be more active, creative, and logical in achieving learning goals. Students must be active in class because it can make learning more fun and can increase insight, according to (Ruqoyyah, 2018). The selection of appropriate learning strategies, approaches, methods, and techniques can increase student learning motivation so that students can more quickly understand the

material. Some respondents (G5, G10) have used methods that are considered effective in learning including discussions, demonstrations, and lectures).

CONCLUSION

Mathematics is one of the subjects that students must master. But in reality, many students face difficulties in learning mathematics. Students still have difficulty with math arithmetic operations including subtraction, multiplication, and fractions. The causes of the difficulties felt by students include students considering math a scary subject, less than optimal use of learning media, and students being more accustomed to doing routine problems. In minimizing these problems, the things that teachers can do are the use of varied learning media, the existence of peer tutors, additional support, and the selection of appropriate strategies, approaches, methods, and techniques to support more enjoyable and effective learning.

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