

## ANALYSIS OF ARITHMETIC DIFFICULTIES AMONG ELEMENTARY SCHOOL STUDENTS

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### ABSTRAK

This study aims to identify the learning difficulties of grade VI students in arithmetic at MIS YPII Tanjung Pura and analyze the factors influencing these difficulties. A quantitative method with a descriptive approach was employed for data collection through questionnaires and analysis of student scores. The questionnaire consisted of 20 statements with "Yes" or "No," focusing on aspects such as motivation, conceptual understanding, and support from the learning environment. Additionally, student score data were analyzed to identify patterns of learning difficulties. The results showed that 54.7% of students had difficulty understanding basic arithmetic operations, particularly in multiplication and division. Furthermore, 66.7% of students felt insecure when faced with math problems, and 77.8% expressed needing additional guidance outside of school. Internal factors, such as low motivation and anxiety about math, and external factors, including monotonous teaching methods and minimal parental support, negatively impacted learning outcomes. Data indicated that 50% of students scored below the passing standard. This study recommends using interactive learning strategies, utilizing visual media, and enhancing collaboration between teachers and parents to better support students in their learning processes.

**Keywords:** Learning Difficulties, Arithmetic, Learning Motivation,

### INTRODUCTION

Mathematics is one of the fundamental subjects that has an important role in developing logical, analytical, and systematic thinking skills (Slameto, 2010). In addition, mathematics also plays a role in developing the necessary problem-solving skills in everyday life (Van De Walle, 2018). However, in reality, mathematics is often a subject that is considered difficult by most students at various levels of education (Ahmadi & Supriyono, 2013). Difficulty in learning mathematics occurs in public schools and private schools—religious-based schools, including Private Elementary Madrasahs (MIS). One example of a case can be found at MIS YPII Tanjung Pura, where students experience challenges in understanding mathematical material, especially in studying arithmetic (Raharjo, 2021).

Arithmetic is a basic branch of mathematics that includes fundamental operations such as addition, subtraction, multiplication, and division. Understanding arithmetic is essential because it serves as the foundation for mastering other mathematical concepts at higher levels of education (Suherman et al., 2003). However, many students experience difficulties in mastering these basic concepts (Setiawan, 2018). Factors such as learning interest, teaching methods, learning environment, and support from parents and schools significantly influence the mathematics learning process (Yusuf, 2015). In this context, identifying mathematics learning difficulties is a crucial step in finding appropriate solutions to improve students' understanding and academic performance (Sari, 2019).

Learning difficulties are a common phenomenon in the world of education and can be caused by various factors, both internal and external. According to Slameto (2010), Learning difficulties can arise due to students' low motivation, interest, or basic abilities in understanding the material. In addition, the condition of the learning environment, such as the ineffectiveness of the teaching methods teaching or lack of support from parents, also plays an important role in affecting student achievement.

In the context of learning mathematics, difficulties in learning arithmetic are often associated with anxiety or anxiety about mathematics (mathematics anxiety). According to Ashcraft and Moore (2009), math anxiety can cause students to feel afraid and not confident in facing this lesson, which has an impact on their academic performance. Therefore, it is important for schools and teachers to recognize the signs of difficulties. Learn as early as possible and take appropriate intervention steps.

Table 1. Student learning achievement

No	Name	Mark
1.	Ahmad Faqih Al hafizh	70
2.	Salman	80
3.	Mutiara Mariza	80
4.	Queen	70
5.	Rafii'ah	80
6.	Sakila	0
7.	M. Adlin Ramadan	50

8.	Aditya Ramadhana	70
9.	Nazwa	0
10.	Indara Pratama	40
11.	M. Ansori	60
12.	Adid Rachman	80
13.	Hanna	50
14.	Hafis Farezi	70
15.	Syifa Az-Zahra	70
16.	Salsabila	20
17.	Lailatul Cahaya	20
18.	Gina Talita	60

Based on the results of initial observations and student grade data in class 6 of MIS YPII Tanjung Pura, it was found that some students obtained grades below the expected standard. This shows the potential for problems in the mathematics learning process. In addition, the results of the diagnostic questionnaire given to students showed that some students feel uncomfortable or uninterested in mathematics subjects. Some students even show low motivation to learn and an inability to understand the material presented in class. Limited learning facilities compound this challenge. and minimal learning assistance outside school hours.

In the context of education in madrasas, mathematical skills are essential for academic achievement and support useful logical and analytical skills in studying religious and scientific subjects. Therefore, an in-depth analysis of factors that cause difficulties in learning mathematics is necessary. This research aims to identify the types of difficulties experienced by students in learning arithmetic, analyse the factors that contribute to these difficulties, and provide practical recommendations to improve the quality of mathematics learning at YPII Tanjung Pura School.

Specifically, this study will use data from the results of diagnostic questionnaires and student scores to see the relationship between student perceptions of mathematics lessons and their learning outcomes. The results of this study are expected to provide

insight for teachers, parents, and schools in improving more effective mathematics learning strategies. effective. Thus, students can improve their academic performance and have a positive attitude towards mathematics as a valid science in everyday life.

Based on the background above, this research focuses on identifying students' learning difficulties in arithmetic at MIS YPII Tanjung Pura. The formulation of the problem discussed in this research is: 1. What are the forms of difficulties experienced by 6th-grade students in learning arithmetic? 2. What factors cause learning difficulties in mathematics for students at MIS YPII Tanjung Pura? 3. How do learning interest and environmental support influence student learning outcomes? 4. What strategies can help students overcome difficulties in learning arithmetic?

## LITERATURE REVIEW

### Definition of Mathematics Instruction

Mathematics originates from several languages, such as mathematics (English), Mathematik (German), mathématique (French), matematico (Italian), matemáticas (Spanish), and wiskunde (Dutch). The term is derived from the Greek word mathematike, which means "related to learning," referring to knowledge or science, and is closely linked to another similar word. (Fahrurrozi & Syukrul, 2017: 1).

Mathematics is a mandatory subject that must be studied from elementary school through higher education. It is an essential part of the curriculum in both primary and secondary education because it involves calculation and critical thinking processes, which are crucial for solving problems humans encounter.

In line with this statement, mathematics is a discipline that enhances thinking and argumentative skills, contributes to solving everyday problems in the workplace, and supports the development of science and technology (Susanto, 2013, p. 185). Rohmah (2021: 7) states that mathematics is a deductive science. Every proposition is derived from agreed-upon axioms and the following principles, which are then used to form theorems and applied to explore natural phenomena. Mathematics plays a crucial role in fostering logical, systematic, and critical thinking skills to solve problems that arise in everyday life. Students can apply these skills in real-life situations and effectively solve

problems in mathematics and other study areas. Therefore, this subject can be practised and connected to life outside the classroom.

Based on the definition of mathematics outlined above, it can be concluded that mathematics is a field of knowledge that involves processes of calculation and problem-solving in everyday life and the workplace, as well as providing support for the development of science and technology.

### **Arithmetic in Mathematics Instruction**

Arithmetic instruction in elementary schools plays a crucial role in building the foundational knowledge of mathematics for students. Arithmetic encompasses basic operations such as addition, subtraction, multiplication, and division, which are essential everyday skills and serve as the foundation for learning more complex mathematical concepts in subsequent education. The main objective of arithmetic instruction is for students to master these basic operations, enabling them to apply them in practical situations, both academically and in real life (NCTM, 2000).

In elementary arithmetic instruction, it is essential for students to not only understand how to perform mathematical operations but also to grasp the concepts behind these operations. For example, in addition, or subtraction, students need to understand the concepts of sum and difference rather than just memorizing rules or procedures. This is essential for building a deep understanding and preparing them to solve more complex problems in the future. Teachers should create an environment that supports exploration and understanding of concepts, whether through more concrete methods such as using physical objects or visual aids or by providing problems that relate the material to real-life situations (Hiebert & Grouws, 2007).

Game-based learning or methods that connect the material to real-life situations can effectively teach arithmetic concepts. In this way, students learn mathematics as numbers and symbols and as tools for solving real-world problems. For instance, teaching addition and subtraction using play money or counting objects in their surroundings can make learning more relevant and engaging for students (NCTM, 2000).

However, arithmetic instruction in elementary schools does not always proceed smoothly. Many students struggle with understanding basic mathematical concepts, especially when the material is presented abstractly or does not align with their cognitive developmental stage. These difficulties may be caused by various factors, such as a lack

of motivation, understanding basic number concepts, or insufficient mastery of foundational number operations. Therefore, teachers must conduct appropriate assessments, provide constructive feedback, and offer opportunities for students to learn in ways that align with their abilities and needs (Tharp & Gallimore, 1988).

In conclusion, arithmetic instruction in elementary schools must focus on developing a deep understanding of concepts, applying them to real-life situations, and creating a learning environment that supports exploration and problem-solving. Through the right approach and relevant methods, it is hoped that students can overcome their difficulties and succeed in learning arithmetic (Hiebert & Grouws, 2007).

### **Definition of Learning Difficulties**

Learning difficulties refer to a disruption in one or more of the basic psychological processes involved in understanding and using spoken or written language. These difficulties manifest as problems in listening, thinking, speaking, reading, spelling, or calculating. Learning difficulties are disorders that children face, related to both internal and external factors, which result in challenges for the brain to follow the normal learning process in terms of receiving, processing, and analyzing information during instruction (Yeni, 2015: 3). In reality, there are still students who experience learning difficulties during the teaching and learning process. Learning difficulties are issues within the child that lead to an inability to learn optimally. According to Imamuddin et al. (2020: 17), learning difficulties are conditions in which students cannot learn usually due to threats, obstacles, or disruptions in the learning process. These difficulties indicate barriers in teaching and learning; in such conditions, students cannot achieve good learning outcomes or perform poorly. These challenges are often associated with abstract mathematical concepts, which are difficult for students to understand.

In conclusion, learning difficulties refer to a condition where an individual cannot learn due to various obstacles, resulting in a decline in learning outcomes. A child experiencing learning difficulties will face challenges in their learning efforts and struggle to achieve the desired learning goals.

### **Factors Causing Difficulties in Learning Arithmetic**

The following factors can influence difficulty in learning arithmetic:

**Internal (from within the student):** Internal factors include low motivation, emotional disturbances, and anxiety about mathematics (math anxiety). Crouch and Deane (2016) stated that fear of failure to complete the problem can affect students' self-confidence. In addition, some students may have specific disorders, such as dyscalculia, which makes they have difficulty processing numbers and symbols

**External (environment and learning methods).** An unconducive learning environment, monotonous teaching methods, and Lack of use of learning media can cause students to feel bored and have difficulty understand mathematical material. Ahmadi and Supriyono (2013) emphasize the importance of the role of teachers in creating an interactive learning atmosphere and using a variety of methods so that students are more motivated

**The Impact of Difficulties in Learning Mathematics.** Learning difficulties that are not immediately addressed will result in decreased achievement. academic performance of students and their decreasing interest in learning. Students who feel they have failed in understanding arithmetic tend to avoid this subject, so a cumulative effect occurs where they are increasingly left behind compared to their classmates. Research shows that students who experience difficulties in mathematics tend to experience high anxiety and low intrinsic motivation, which affects their overall achievement

## METHODOLOGY

This study employs a quantitative method with a descriptive approach, aiming to describe and analyze students' mathematics learning difficulties, particularly in arithmetic, at MIS YPII Tanjung Pura. The quantitative method was chosen because it focuses on the objective measurement and analysis of numerical data to identify patterns of learning difficulties and the factors influencing students' achievement. Data were collected using structured instruments, specifically a questionnaire, which allowed the researchers to gather measurable and analyzable information. The population of this study consisted of sixth-grade students at MIS YPII Tanjung Pura, and the sampling technique used was total sampling (census). This technique was selected because all sixth-grade students had gone through the process of learning arithmetic, providing a comprehensive overview of the conditions in the school. Total sampling also minimized

bias in respondent selection and ensured that all students participated, thus increasing the external validity of the study's results.

The primary instrument in this research was a questionnaire designed based on aspects of learning difficulties, such as the ability to understand concepts, learning interest and motivation, and support from the family and school environment. The questionnaire consisted of closed-ended questions using a Likert scale, where respondents were asked to respond with categories such as "Agree" or "Disagree." This scale was chosen to facilitate data analysis by assigning numerical values to each response received. After the data were collected, analysis was conducted using descriptive statistics, including percentage and average calculations, to describe the level of student learning difficulties and the factors influencing them.

The formula used for percentage calculation was

$$\text{Percentage} = \frac{\text{Number of Responses in a Category}}{\text{Total Responses}} \times 100$$

The formula for average calculation was

$$\text{Mean} = \frac{\Sigma(\text{Numerical Value of Responses})}{\text{Total Number of Responses}}$$

Using these formulas, the study is expected to provide an objective picture of the mathematics learning difficulties at MIS YPII Tanjung Pura, particularly in understanding arithmetic material. The results of this study are also expected to serve as evaluation material for schools and teachers in improving teaching methods and as a reference for parents and related parties in providing more effective support for students.

## RESULT AND DISCUSSION

This research was conducted by distributing questionnaires to 18 grade VI students at MIS YPII Tanjung Pura. Students were asked to fill out a questionnaire based on their experiences during studying Mathematics and arithmetic at school. The questionnaire results, which consisted of 20 statements with the answer options "Yes" or "No," show the data obtained. Based on all the data explained in the research results,

this research aims to answer the problem formulation: Identify learning Difficulties in Students' Mathematics in Learning Arithmetic at MIS Ypii Tanjung Pura. In order to answer the formulation of the problem, the researcher will discuss the results of the analysis of student interests, which can be seen in the following table:

**Tabel . 2 Data on the results of the distribution of the Mathematics Learning Difficulties Questionnaire Students in Learning Arithmetic at MIS YPII Tanjung**

No	Questionnaire Statement	Percentage of Research Results			
		Yes	Description	No	Description
1.	Mathematics is not a complex subject for students.	50 %	Half	50%	Half
2.	I am always enthusiastic when studying.	22,2 %	Less than half	77,8 %	More than half
3.	I always pay attention to the math teacher explaining in front of the class. When given a math	61,1%	More than half	38,9%	Less than half
4.	When given a math problem, I feel like I can do it.	33,3 %	Less than half	66,7%	More than half
5.	I do not get bored quickly when studying math at school.	66,7%	More than half	33,3%	Less than half
6.	I often read math books when studying at home.	61,1%	More than half	38,9%	Less than half
7.	I feel that I have potential in mathematics	27,7%	Less than half	72,3 %	More than half
8.	Mathematical formulas are not something I am afraid of	33,3 %	Less than half	66,7	More than half
9.	I enjoy studying with my math teacher at school because he/she is fun.	66,7%	More than half	33,3 %	Less than half

10.	I feel that I can understand math material faster than my friends.	22,2 %	Less than half	77,8 %	More than half
11.	I get additional teaching for math lessons.	83,3 %	More than half	16,6 %	Less than half
12.	I need a fun study partner when studying math.	94,4 %	More than half	5,6%	Less than half
13.	The classroom atmosphere supports the learning of mathematical processes.	50 %	Half	50 %	Half
14.	I do not hesitate to ask the teacher when there is a difficult topic.	27,8 %	Less than half	72,2 %	More than half
15.	I ask my friends if there is something I do not understand learning mathematics outside of class hour	94,4 %	More than half	5,6%	Less than half
16.	School or the teacher provides additional learning facilities when there is material that I do not understand.	66,7 %	More than half	33,3 %	Less than half
17.	My parents provide sufficient facilities for learning mathematics.	61,1%	More than half	38,9%	Less than half
18.	I take mathematics tutoring outside of school.	22,2 %	Less than half	77,8 %	More than half
19.	I like the lesson Mathematics	55,5 %	More than half	44,6 %	Less than half
20.	I want to be a good student in mathematics.	94,4 %	More than half	5,6%	Less than half

Based on the explanation above, it can be concluded that Mathematics Learning Difficulties Students in Learning Arithmetic at MIS YPII Tanjung Pura showed that the average Mathematics Learning Difficulty indicator that answered "Yes" was 54.7%,

which is included in the “more than half” category. Meanwhile, 45.3% of students answered “no,” which falls into the “less than half” category, indicating that more than half of students find learning arithmetic material in mathematics challenging.

Based on the questionnaire and value data results, it was found that most students have difficulty understanding the basic concepts of arithmetic. As many as 54.7% of students experience difficulty remembering formulas or arithmetic operation procedures (addition, subtraction, multiplication, and division). These difficulties mainly arise in operations division and multiplication, where many students repeat mistakes or forget the proper steps. This is in line with Raharjo's research (2021), which shows that elementary school students often have difficulty mastering the concepts of division, and their long-term memory is not always effective

Based on the value data obtained from school documents, 50% of students received a value below the passing standard, less than 70. Of the 18 respondents, some students had scores below 50, indicating that they have a shallow understanding of arithmetic. This difficulty is also seen in students who get a grade of 0 on a particular exam, which indicates failure to complete the exam. basic arithmetic tasks correctly or even give up without trying to answer the questions.

Through interviews with teachers, it was found that one of the leading causes of learning difficulties is students' lack of motivation to learn mathematics. Some students feel that mathematics is too complex and scary, so they avoid it. this lesson. Math anxiety is a psychological factor that is significant in reducing student motivation, which is also supported by findings in the study by Ashcraft and Moore (2009)

In addition, it was found that teachers' teaching methods were not entirely varied, so many students felt bored and unmotivated to learn. The use of media and Visual aids in mathematics learning is still less than optimal, even though students need more concrete examples to understand abstract concepts such as division and multiplication. Environmental factors, such as lack of parental support in assisting students to study at home, also contribute to low achievement in learning mathematics.

Apart from internal factors, the learning environment at home plays a vital role in student learning success. Based on interviews with parents, many students do not get additional tutoring outside of school. Some parents admit to having difficulty helping their children because they do not master the material in mathematics. taught in schools.

This situation exacerbates students' difficulties in learning and reduces opportunities to improve understanding

Direct observation during the learning process shows that students with good grades tend to be less active in participating in teaching and learning activities. They tend to be passive and just wait for instructions without asking if there is a material that is not understood. Teachers also acknowledge that students who experience difficulties avoid challenges and prefer not to work on difficult problems. This confirms the previous research that students with difficulties learning mathematics often fear failing, so it is better not to try than to try and fail.

## CONCLUSION

The research on mathematics learning difficulties at MIS YPII Tanjung Pura found that more than half of the students experienced difficulties understanding arithmetic concepts, particularly in multiplication and division operations. Around 50% of the students scored below the passing standard, indicating a low grasp of basic mathematical concepts. The main factors contributing to these difficulties include low learning motivation and high anxiety toward mathematics, leading students to avoid the subject and have low self-confidence. Additionally, monotonous teaching methods and limited use of visual aids resulted in boredom, while the lack of parental support and minimal school resources further hindered progress. To address these challenges, adopting more interactive teaching methods, effectively utilising visual media, and enhancing collaboration between teachers and parents is crucial. These strategies aim to improve students' understanding, boost academic performance, and foster a positive attitude toward mathematics.

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