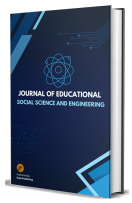
Journal of Educational Social Science and Engineering

Vol. 1 No. 1 JUNE 2025



Analysis of the Causes of Indonesian Elementary School Students' Difficulties in Mathematics Learning

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ABSTRACT

Mathematics is one of the fields of science that can be used by every individual to solve various problems in everyday life. However, there are many students who do not like mathematics, including students at the elementary school level. This study aims to explore the causes of elementary school students not liking mathematics learning. This study is a descriptive qualitative study. The subjects of this study were elementary school students. The determination of the subjects of this study was carried out using purposive random sampling techniques. Data were collected using questionnaires and interviews. The data obtained were then analyzed using data triangulation techniques. The results of the study showed that there were several causes of elementary school students not liking mathematics learning, namely 1) minimal use of learning media; 2) presentation of learning that was not varied so that it was boring; 3) lack of contextualization of the mathematics material being taught; 4) negative stigma that was built in the environment about the difficulty of mathematics; 5) lack of support for the learning environment; and 6) students' lack of self-confidence. Based on the results of the study, in general the cause of elementary school students' mathematical ability difficulties is the inappropriateness of the actions given by the teacher when teaching.

OPEN ACCESS

ARTICLE HISTORY
Received: 17 March 2025
Revised: 12 May 2025
Accepted: 5 June 2025
Published: 10 June 2025

KEYWORDS
Mathematics learning, learning difficulties, elementary school students.

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Introduction

Mathematics is a basic discipline that is not only a foundation for mastering science and technology, but also plays an important role in developing students' logical, analytical, and critical thinking skills from an early age. In the context of basic education, good mathematics skills are an important indicator of students' academic success at the next level of education (NCTM, 2014). However, mathematics is often considered a scary, confusing, and challenging subject by most elementary school students.

Various studies have shown that students' negative attitudes towards mathematics have emerged since elementary school, which then has an impact on low learning achievement and motivation in participating in learning (Dowker et al., 2019). This

problem is a serious concern in the world of education because low mastery of basic mathematical concepts will affect students' ability to understand more complex material at the next level (OECD, 2022). Therefore, it is important to identify the factors that cause difficulties in learning mathematics from the early stages of formal education.

In reality, students' difficulties in understanding mathematics material are not solely caused by cognitive factors, but are also influenced by various affective aspects, the learning environment, and the learning approach applied by the teacher (McLeod, 2016). When mathematics learning is carried out monotonously and without variation, students tend to lose interest and motivation to learn. This is exacerbated by the minimal use of contextual and interactive learning media. Furthermore, several studies have found that negative perceptions of mathematics are often passed down through the social and family environment, thus forming a stigma that mathematics is a difficult and scary subject (Gunderson et al., 2018). This kind of perception has a direct impact on students' low self-confidence in facing mathematics tasks, which ultimately reduces their academic performance.

Various efforts have been made to overcome this problem, ranging from the development of innovative learning models, the use of technology in mathematics learning, to teacher training in developing more effective and enjoyable learning strategies. However, the reality is that the problem of mathematics learning difficulties in elementary school students remains a complex and multidimensional challenge (Schoenfeld, 2020).

Most previous studies have focused more on analyzing mathematics learning outcomes or the effectiveness of certain learning methods, without delving deeply into students' subjective experiences in facing mathematics learning. This creates a gap in research, namely the lack of studies that explore the root of the problem from the perspective of the students themselves, especially in the context of elementary education in Indonesia (Setiawan & Suharto, 2021).

To bridge this gap, this study attempts to explore the causes of students' difficulties in learning mathematics through a descriptive qualitative approach. This approach allows researchers to gain a more comprehensive understanding of students' learning experiences and the factors that influence their perceptions and motivations towards mathematics (Merriam & Tisdell, 2016).

This research is not only important to enrich the literature on mathematics learning, but also provides practical contributions in designing learning strategies that are more in line with the needs and characteristics of elementary school students. On the other hand, the results of this study are expected to provide new insights for teachers, principals, and policy makers in formulating educational policies that are more oriented towards student needs.

The novelty of this study lies in the approach used, namely the exploration of factors that cause difficulties in learning mathematics from the perspective of students directly through questionnaire and interview techniques combined with data triangulation analysis. This approach provides a more authentic picture of the challenges faced by students in learning mathematics in elementary schools (Creswell & Poth, 2018).

This study also emphasizes the importance of the role of teachers in creating a conducive learning environment and building students' confidence in their mathematical abilities. The inappropriateness of the approach used by teachers in teaching is often the main factor that causes students to experience learning difficulties, as expressed in various previous research findings (Boaler, 2016).

Supportive learning environments and learning methods that are relevant to everyday life have been shown to improve student engagement and learning outcomes in mathematics (Anthony & Walshaw, 2019). Therefore, a learning approach that prioritizes contextualization of material is one of the main recommendations from the results of this study.

In the Indonesian context, the challenges of learning mathematics in elementary schools are becoming increasingly complex with the gap in facilities between schools, limited teacher training, and lack of support from parents in accompanying children to study at home (Ministry of Education and Culture, 2021). This study is here to provide a real contribution in answering these challenges through an empirical data-based approach.

The subjects of this study, namely students of SD Negeri 69 Banda Aceh, were selected using purposive random sampling by considering academic, social, and cultural backgrounds that reflect the conditions of elementary school students in urban Indonesia. This strengthens the contextual validity of the results of this study and expands the possibility of generalizing the findings (Miles, Huberman, & Saldaña, 2014).

This research is not only relevant in an academic context, but also has high practical value to be applied in daily learning practices. The findings produced can be used as a basis for curriculum development, teacher training, and more targeted and sustainable educational interventions. Through this research, it is hoped that a new awareness can be built that difficulties in learning mathematics are not solely due to students' inability, but rather due to the lack of adaptation of learning methods to the needs and characteristics of the students themselves. Therefore, a more humanistic and reflective pedagogical approach is needed in learning mathematics at the elementary level.

Methods

This study employed a qualitative descriptive approach to deeply explore the factors that contribute to elementary school students' difficulties in learning mathematics. A qualitative method was chosen as it allows researchers to understand and interpret the experiences, perceptions, and internal challenges faced by students from their own perspectives (Creswell & Poth, 2018). This approach is particularly suitable for revealing complex phenomena in natural settings without manipulation or control over variables.

The research design adopted in this study was a descriptive qualitative study. The goal was not to measure the frequency or quantity of learning difficulties but to describe in depth the underlying causes of students' aversion and struggle in mathematics learning. According to Merriam and Tisdell (2016), descriptive qualitative research is effective in producing rich, detailed accounts of participants' experiences and interpretations of those experiences.

The research was conducted at SD Negeri 69 Banda Aceh, a public elementary school located in an urban area of Aceh Province, Indonesia. This location was selected based on its representativeness of typical public schools in Indonesia in terms of student population and instructional practices. The participants of the study were elementary school students selected through purposive random sampling, ensuring a mix of students with varying achievement levels, socioeconomic backgrounds, and classroom environments.

A total of 25 students from grades IV, V, and VI were involved in the research. The purposive aspect was based on teacher recommendations regarding students who frequently exhibited signs of difficulty or disinterest in mathematics. This was combined with random selection to avoid bias and ensure variability in the participants' experiences.

Data were collected using two primary techniques: questionnaires and semi-structured interviews. The questionnaires consisted of open-ended questions designed to elicit students' feelings, attitudes, and perceptions about mathematics learning. This instrument served to provide initial insights into recurring themes.

Following the questionnaire, semi-structured interviews were conducted to probe more deeply into the students' experiences and clarify responses given in the questionnaire. Interviews lasted approximately 20–30 minutes per student and were conducted in a quiet and comfortable environment within the school to minimize anxiety and encourage openness. The semi-structured format allowed the researcher to explore relevant issues while still permitting participants to freely express themselves (Kvale & Brinkmann, 2015).

The data collected were analyzed using the data triangulation method, which combines data from questionnaires and interviews to enhance credibility and validity. The analysis involved several steps: data reduction, data display, and conclusion drawing/verification as outlined by Miles, Huberman, and Saldaña (2014). Initially, all qualitative responses were transcribed and categorized into thematic units. These themes were then cross-checked across data sources to identify consistencies and discrepancies.

Coding was conducted manually to maintain closeness with the data and ensure an in-depth understanding of each participant's experience. Codes were later grouped into categories that represented key factors contributing to students' mathematical learning difficulties. The emerging themes were further analyzed to establish causal relationships and patterns.

To ensure the trustworthiness of the study, several strategies were applied including triangulation, member checking, and peer debriefing. Triangulation, as mentioned, involved comparing data from different instruments. Member checking was conducted by sharing interpreted data with participants to confirm the accuracy of the researchers' interpretations. Peer debriefing was employed by consulting with two fellow researchers to review and validate the coding process and thematic conclusions (Lincoln & Guba, 1985).

This study adhered to ethical standards in educational research. Prior to data collection, permission was obtained from the school principal and informed consent was secured from students' guardians. Participants were informed of the purpose of the research, their right to withdraw at any time, and the confidentiality of their responses. All data were anonymized to protect participants' identities.

Result

This study aimed to investigate the underlying causes of learning difficulties experienced by elementary school students in mathematics. Data were collected from 25 students through questionnaires and semi-structured interviews and were analyzed using triangulation methods. The results of the data analysis revealed six dominant themes that consistently emerged as primary factors contributing to students' difficulties and disinterest in mathematics.

Limited Use of Instructional Media

From the questionnaires, 18 out of 25 students (72%) reported that mathematics lessons were mostly delivered using textbook-based methods without visual aids or hands-on activities. During interviews, students expressed boredom and confusion due to abstract explanations without concrete examples.

> *"The teacher just gave me questions and told me to do them. There were no pictures or teaching aids, so I was often confused." (Students, Grade V).*

The absence of interactive media such as manipulatives, visual representations, and digital tools significantly reduced student engagement and hindered their ability to conceptualize mathematical problems. These findings suggest that the traditional approach contributed to a lack of contextual understanding.

Unvaried and Monotonous Teaching Strategies

A total of 20 students (80%) stated that classroom instruction felt repetitive and lacked variation. Teachers were perceived as delivering content in the same format daily—lecturing followed by individual practice without incorporating collaborative activities or game-based learning.

> *"The lessons are always the same, there are no games or group work. So sometimes I feel sleepy and lazy," (Student, Grade VI).*

This lack of variation led to decreased student motivation and contributed to disengagement from the subject. A monotonous learning experience was directly associated with reduced participation and lower cognitive retention of mathematical concepts.

Lack of Contextualization in Mathematics Content

Seventeen students (68%) indicated that they did not understand how mathematical concepts related to real life. Many reported difficulties in solving word problems or applying formulas outside the classroom.

> *"I don't know what math is for outside of school. It feels like memorization," (Student, Grade IV).*

This finding underscores the importance of contextual learning, as students struggle to find relevance between classroom content and daily applications. The gap between theory and practice becomes a barrier that impairs comprehension and reduces interest.

Negative Stereotypes about Mathematics

Interviews revealed that 14 students (56%) had internalized negative beliefs about mathematics, often inherited from parents, peers, or media portrayals. Comments such as "mathematics is difficult," "not everyone is good at math," and "math makes people stressed" were frequently mentioned.

> *"In my house, my parents said that math is hard. So I am also afraid of that subject," (Student, Grade V).*

This stereotype becomes a psychological barrier that affects students' self-perception and creates a fear-based attitude toward learning mathematics. The formation of a negative mindset from an early age contributes significantly to performance anxiety and avoidance behavior.

Inadequate Learning Support Environment

Thirteen students (52%) admitted to rarely receiving assistance with homework or mathematical tasks at home. Many explained that their parents were either too busy or lacked the ability to help with schoolwork.

> *"My father and mother cannot help me. Sometimes I do it myself but it is always wrong," (Student, Grade VI).*

The absence of academic support at home reduces the opportunity for reinforcement and clarification outside the classroom. This leads to knowledge gaps and sustained misunderstanding of fundamental concepts.

Low Self-Confidence in Mathematical Ability

Sixteen students (64%) described a persistent feeling of insecurity regarding their mathematical abilities. Students reported avoiding participation in class discussions and hesitating to ask questions due to fear of being wrong or ridiculed.

> *"I'm afraid of giving the wrong answer. If my friends laugh, I'll be embarrassed and not want to ask again," (Student, Grade IV).*

This low confidence inhibits active learning and reinforces a cycle of failure and avoidance. It is both a cause and consequence of repeated difficulty in mastering mathematical content.

Table 1. Research Summary

No	Factor Identified	Number of Students	Percentage (%)
1	Limited Use of Instructional Media	18	72%
2	Monotonous Teaching Methods	20	80%
3	Lack of Contextualization	17	68%
4	Negative Mathematics Stereotypes	14	56%
5	Inadequate Learning Support at Home	13	52%
6	Low Self-Confidence	16	64%

These findings confirm that difficulties in mathematics learning at the elementary level are not merely academic but are shaped by pedagogical, environmental, and psychological factors. They also affirm that teacher behavior and instructional design play a critical role in influencing students' experiences and attitudes toward mathematics.

Discussion

The results of this study indicate that one of the main causes of elementary school students' difficulties in learning mathematics is the lack of use of concrete and interactive learning media. Students have difficulty understanding abstract concepts because there is no adequate visualization or aids. Netson and Ain (2022) stated that interesting learning media can increase students' attention and strengthen conceptual understanding. Without appropriate media, students only rely on memorization, not a deep understanding of mathematical concepts.

In addition, learning strategies that are not varied are also a serious obstacle. Many teachers still rely on lecture methods and practice questions without an approach that actively involves students. Kiarsi and Ebrahimi (2023) explain that a monotonous learning approach tends to reduce student motivation and attention, especially in mathematics subjects that require gradual understanding and repeated practice. Variations in methods such as group discussions, educational games, and mathematical experiments can increase student activity.

The lack of contextualization of mathematical material is also an inhibiting factor. Students feel that what they are learning is not related to real life. Laili and Purbowati (2023) found that contextual mathematics learning can strengthen students' emotional involvement and make it easier for them to understand abstract concepts. Without relevant context, students have difficulty understanding the usefulness of the material being taught.

The negative stigma towards mathematics that forms in the environment around students also influences their attitudes and interests in learning. Many students have "given up" on mathematics from the start because they are indoctrinated that this subject is difficult and boring. Research by Mutmainnah et al. (2022) shows that the family and school environment play a major role in shaping students' perceptions of certain subjects. Therefore, a paradigm shift among parents and teachers is important.

An unsupportive learning environment, both at home and at school, also contributes to difficulties in learning mathematics. Mahardiyanti (2022) stated that a conducive learning atmosphere, moral support, and parental involvement have a significant influence on students' success in understanding mathematics. When students do not get encouragement to study outside of school hours, they will feel frustrated with math assignments more quickly.

Another problem that emerged from the research results was students' lack of confidence in solving math problems. Many students feel that they do not have the ability, even though they actually lack practice and proper guidance. Szczygiel (2021) explained that low self-confidence is closely correlated with the emergence of math

anxiety, which has a direct impact on students' academic performance. Teachers need to provide positive reinforcement and create a non-intimidating learning atmosphere.

Difficulty understanding story problems or narrative-based problems is also an obstacle for students. Story problems require an understanding of language, logic, and the application of mathematical concepts. Syaf et al. (2024) revealed that students often fail to understand important information in questions due to a lack of critical reading and logical thinking skills. Therefore, integration between literacy and mathematics learning is essential.

The COVID-19 pandemic has also worsened the condition of mathematics learning, especially when learning is done online. Maricance et al. (2023) stated that limited interaction and minimal supervision during online learning cause students to lose focus and motivation. In addition, not all students have access to adequate devices and internet connections, so that the learning gap widens.

From the teacher's perspective, the lack of training in recognizing and handling student learning difficulties is also a fundamental problem. Febriyanti et al. (2021) emphasized the importance of professional development for teachers to be able to apply appropriate learning differentiation and intervention strategies based on student characteristics. Without ongoing training, teachers tend to use a one-way approach that does not pay attention to the individual needs of students.

A multisensory approach to mathematics learning can be an alternative solution to overcoming learning difficulties, especially for students with special needs. Jackson (2023) stated that the involvement of various senses, such as visual, kinesthetic, and auditory, helps students build a better understanding of mathematical concepts. For example, the use of teaching aids, concrete objects, and manipulative activities is highly recommended in elementary level learning.

Educational technology has also been shown to increase students' interest and understanding of mathematics. DePiper (2025) stated that the integration of technology such as learning applications, interactive videos, and math games can make learning more interesting and adaptive to student needs. Technology also provides space for teachers to conduct formative assessments more effectively and efficiently.

A supportive learning environment is an important aspect that is often overlooked. Norris (2024) stated that psychological, social, and academic support from the surrounding environment plays a major role in creating a fun learning experience. Schools need to create a learning culture that encourages students not to be afraid to make mistakes and to keep trying.

A curriculum that is too dense and inflexible is also an obstacle. Lockhart (2021) criticized the traditional curriculum approach that emphasizes memorizing formulas and technical procedures without instilling conceptual understanding. A curriculum that is more flexible, creative, and based on students' real experiences will help increase the appeal of mathematics in the eyes of elementary school students.

The emotional aspect also plays an important role in mathematics learning difficulties. Excessive anxiety about mathematics can cause students to be reluctant to try or even give up before trying. Ashcraft and Moore (2009) showed that math anxiety can interfere with working memory function, which is essential in solving math problems. Therefore, teachers need to create a fun classroom climate and build student confidence.

Collaboration between teachers, students, and parents is the main key to overcoming this problem. Kiarsi and Ebrahimi (2023) emphasized that a holistic approach that actively involves all parties can create a strong support system for students in learning mathematics. Open, trusting, and directed communication will form a network of cooperation that can significantly improve student learning outcomes.

Conclusion

Based on the research results and discussions that have been presented, it can be concluded that elementary school students' difficulties in learning mathematics are caused by various interrelated factors, including minimal use of interesting learning media, monotonous teaching methods, lack of contextualization of materials, negative stigma towards mathematics, less supportive learning environments, and low student self-confidence. These factors indicate that the main problem lies in the incompatibility of the learning approach applied by teachers with the needs and characteristics of students. Therefore, systematic and collaborative efforts are needed between teachers, schools, and parents to create an inclusive, innovative, and motivating learning environment, as well as the implementation of more contextual, varied, and student-based learning strategies in order to overcome mathematics learning difficulties effectively.

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