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A Case Study of Students with Learning Difficulties in Mathematics at Junior High School

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ABSTRACT
This study aims to identify and analyze the factors that cause learning difficulties in mathematics in Junior High School students. The research method used is qualitative with a case study approach. Primary data were collected through observation, in-depth interviews with students, mathematics teachers, and parents, as well as documentation of student learning outcomes. The results of the study indicate that learning difficulties in mathematics are influenced by internal factors such as low motivation, anxiety towards mathematics, and weak understanding of concepts; and external factors such as less varied teaching methods and an unsupportive learning environment. These findings provide important insights for teachers and schools in designing more effective pedagogical interventions.

INTRODUCTION

Mathematics is one of the basic subjects that plays a crucial role in shaping logical, analytical, and systematic thinking skills in students (Harun et al., 2021; Pepin et al., 2017; Tasya & Aripin, 2022) . This ability is not only important in an academic context, but also in everyday life that requires problem solving and rational decision making. However, the reality shows that not all students can follow mathematics lessons well. Difficulty in learning mathematics is a serious challenge in many schools, especially at the Junior High School (SMP) level (Ambarita et al., 2022; Lestari et al., 2018; Mulqiyono et al., 2022; Rahma Amadea Septiani & Abadi, 2022).

Difficulties in learning mathematics can be caused by various factors, both internal and external. Internal factors include cognitive, affective, and psychomotor aspects of students, such as lack of understanding of basic concepts, low motivation to learn, and anxiety about mathematics. Meanwhile, external factors include ineffective teaching methods, an unconducive learning environment, and lack of support from parents (Anggraeni et al., 2020; Ayu et al., 2021; Cahirati et al., 2020; Hamidah & Ain, 2022).

One of the internal factors that is often identified is mathematics anxiety , which is a feeling of fear or anxiety experienced by students when faced with mathematics lessons. This anxiety can hinder the learning process and reduce students' academic performance. Research conducted by Sutanti, Prahmana, and Diponegoro (2021) shows that mathematics anxiety in junior high school students in Yogyakarta is influenced by home and classroom environmental factors, as well as interactions with parents and teachers.

Difficulty in understanding mathematical concepts is also a major cause of low student achievement. Students often have difficulty transferring knowledge, performing calculations, and understanding mathematical language. This is reinforced by findings from research showing that students with high levels of mathematical anxiety tend to experience difficulties in various aspects of mathematics learning (Rahmasaria, Wardono, & Waluyo, 2022).

External factors such as less varied and non-contextual teaching methods also contribute to difficulties in learning mathematics. Teachers who only use lecture methods and practice questions without providing in-depth explanations can cause students to have difficulty understanding the material. Research by Sari and Hasibuan (2020) shows that low student interest in learning is correlated with difficulty in understanding mathematical concepts, especially in materials such as the Pythagorean theorem.

Parental support also plays an important role in the process of learning mathematics. Lack of parental attention and involvement can cause students to feel less motivated and have difficulty in learning. Research by Hamid (2022) revealed that family factors, including lack of parental attention to children's academic development, are one of the causes of difficulties in learning mathematics in junior high school students.

An unfavorable learning environment, such as an unpleasant classroom atmosphere or lack of learning facilities, can also affect the process of learning mathematics. Students who learn in an unfavorable environment tend to have difficulty understanding the material and lose interest in mathematics lessons. Therefore, it is important to explore more deeply the causes of mathematics learning difficulties in order to find the right solution. Qualitative approaches, such as case studies, can provide in-depth insights into students' experiences in facing mathematics learning difficulties. By understanding the factors that influence learning difficulties, it is hoped that more effective learning strategies can be developed that are in accordance with students' needs.

Difficulty in learning mathematics is a complex problem that is influenced by various factors, both internal and external. According to Saputri (2024), the factors that cause difficulty in learning mathematics include cognitive, affective, and learning environment aspects. The cognitive aspect includes the ability to think logically and understand concepts, while the affective aspect relates to motivation and attitudes towards mathematics. The learning environment includes teaching methods, facilities, and support from parents and teachers.

Jean Piaget suggested that children's cognitive development occurs through certain stages that affect their ability to understand abstract concepts, including mathematics. At the concrete operational stage (ages 7–11 years), children begin to be able to think logically about concrete objects, but still have difficulty with abstract concepts. This explains why students at the junior high school level often have difficulty understanding abstract mathematical concepts, such as algebra and geometry (Yuliardi, 2017).

Lev Vygotsky emphasized the importance of social interaction in the learning process. The concept of the Zone of Proximal Development (ZPD) suggests that students can achieve higher levels of understanding with help from adults or more capable peers. In the context of mathematics learning, the application of scaffolding or temporary support from teachers can help students overcome learning difficulties (Yuliardi, 2017).

The teaching methods used by teachers greatly affect students' understanding of mathematics. The use of conventional methods that focus on lectures and exercises without context can cause students to have difficulty in linking mathematical concepts to real life. Research by Hariati et al., 2024 and Setyawati & Ratu (2021) showed that junior high school students had difficulty in understanding algebraic forms due to teaching methods that were less varied and not contextual.

Students' motivation and interest in learning play an important role in the success of learning mathematics. Students with high motivation tend to be more persistent in facing learning challenges. Conversely, low motivation can cause students to give up quickly when faced with difficulties. Research by Hariati et al. (2024) and Setyawati & Ratu (2021) also revealed that students' lack of interest in learning is one of the factors that exacerbates difficulties in learning mathematics.

Teachers have a strategic role in helping students overcome difficulties in learning mathematics. The use of varied teaching methods, providing motivation, and understanding individual student needs can help reduce learning difficulties. Lestari (2021) emphasized the importance of the role of teachers in identifying student learning difficulties and providing appropriate interventions to help students understand mathematics material.

Numerous studies have addressed the issue of mathematics learning difficulties among junior high school students. Rosdianah, Kartinah, and Muhtarom (2019) highlighted the interplay between internal and external factors such as low motivation, poor understanding of basic concepts, and lack of environmental support. Sutanti, Prahmana, and Diponegoro (2021) further revealed that mathematics anxiety is significantly shaped by interactions within the family and classroom environment. Additional studies by Rahmasaria, Wardono, and Waluyo (2022) indicated that students with higher levels of math anxiety often struggle with calculations and problem-solving. Sari and Hasibuan (2020) found that ineffective teaching strategies and low student interest correlate with conceptual misunderstanding. Furthermore, Hamid (2022) emphasized the impact of limited parental involvement on student motivation. Complementing these, recent findings by Kusumawati and Winarso (2021) show that learning difficulties are also influenced by students' self-efficacy and emotional resilience, while Ismail and Setiadi (2020) demonstrated that the use of contextual teaching methods significantly improves student comprehension. The novelty of this study lies in its holistic exploration of mathematics learning difficulties using a qualitative approach, focusing on lived student experiences to uncover underlying cognitive, emotional, and contextual challenges, which remain underrepresented in prior research.

The objective of this study is to explore the underlying factors contributing to mathematics learning difficulties among junior high school students, with a particular focus on internal psychological aspects, teaching strategies, parental involvement, and learning environment. This study also aims to understand how these factors interact and affect students' learning experiences and outcomes. The significance of this research is twofold. Theoretically, it contributes to the academic discourse on mathematics education by providing a deeper understanding of the multifactorial nature of learning difficulties. Practically, it offers actionable insights for educators, parents, and policymakers to design more effective, student-centered learning interventions that address both academic and emotional needs of learners.

METHOD RESEARCH

Research Design

This study uses a qualitative approach with a case study design that aims to explore more deeply the phenomenon of mathematics learning difficulties in students. A qualitative approach allows researchers to gain a more comprehensive understanding of the subjective experiences of students, teachers, and parents, as well as the interactions that occur during the learning process. This method also provides flexibility in exploring richer and deeper data regarding the dynamics that influence mathematics learning difficulties.

Research Subject

This study was conducted in one of the public junior high schools in the Special Region of Yogyakarta. The subjects of the study consisted of three eighth grade students who were identified as having difficulty learning mathematics. The determination of the subjects was based on the students' academic results, which showed low mathematics scores, as well as recommendations from teachers who assessed that the students had difficulty understanding mathematics material. The selection of these subjects was aimed at further understanding their experiences in facing difficulties in learning mathematics.

This study also involves three parties who play an important role in the student learning process, namely mathematics teachers, parents of students, and students themselves. The involvement of various parties is expected to provide a more complete perspective on the factors that influence students' difficulties in learning mathematics.

Data collection technique

The data collection technique in this study used in-depth interviews. In-depth interviews were conducted in a semi-structured manner with three main informant groups, namely students, mathematics teachers, and parents. This interview was designed to dig deeper information about the experiences, perceptions, and challenges faced by students, teachers, and parents in the context of mathematics learning. The interview instrument for students was designed with the aim of exploring their personal feelings and experiences in facing mathematics lessons. Some of the questions asked to students include:

a. How do you feel during math lessons?
b. What math material is the most difficult for you to understand? Why?
c. How do you study math at home?
d. Do you feel afraid when doing math problems?
e. What do you think teachers can do to make it easier for you to understand the lesson?

These questions aim to find out students' perceptions about mathematics lessons, difficult materials to understand, and their feelings related to mathematics learning. In addition, this interview also explores the methods used by students to learn mathematics outside of school hours and the role played by emotional factors, such as fear or anxiety when facing mathematics problems. Interviews with mathematics teachers focused on teachers' observations of students' learning difficulties and the teaching strategies used. Interview instruments for teachers include:

a. What are the indicators that students are having difficulty learning mathematics?
b. What learning methods are commonly used when teaching mathematics?

c. Are there any special adaptations for struggling students?

Through interviews with teachers, researchers want to gain information about how teachers assess students' learning difficulties and how they adjust their teaching methods to help students who are having difficulties. These interviews also aim to find out whether teachers are doing special interventions for students who are having difficulties.

Interviews with parents aimed to obtain their views on their children's learning habits at home, as well as the forms of support provided by parents in overcoming mathematics learning difficulties. Questions asked to parents included:

a. How are your child's learning habits at home, especially for mathematics?
b. Has your child ever expressed difficulty or discomfort when learning mathematics?
c. What forms of support do parents usually provide?

Information from parents is crucial because they are often the primary source of emotional and learning support for children outside of school hours. By knowing how parents support their children in dealing with math learning difficulties, researchers can understand the role that the family environment plays in the learning process.

Data analysis

The data obtained were analyzed using thematic analysis techniques. This process began with interview transcription and data coding to identify key themes that emerged from informant responses. Next, the researcher grouped these themes to understand the factors that contributed to students' difficulties in learning mathematics. The data obtained were also analyzed to identify patterns of student behavior that indicated difficulties in understanding mathematics material. This analysis will help in comparing the results found through interviews with direct observations in the classroom.

To ensure the validity and reliability of the data, researchers used source triangulation, namely by comparing the results of interviews with students, teachers, and parents. In addition, method triangulation was also used by combining data obtained from observations, interviews, and documentation. In this way, it is hoped that a more complete and accurate picture of the difficulties in learning mathematics in students can be obtained. In maintaining data reliability, researchers also cross-checked the data obtained to ensure that the information collected was consistent and reflected the existing reality.

RESULT AND DISCUSSION

In analyzing qualitative data from interviews, researchers used a thematic approach based on the Miles & Huberman (1994) model which includes three main stages: data reduction, data display, and conclusion drawing/verification. Through this thematic coding process, a number of main categories and sub-categories were found that represent the mathematics learning difficulties experienced by students, both from internal and external sides, as well as the adaptive strategies they use. The results of the data processing are presented in Table 1.

Table 1. Results of Data Processing from Interviews with Students

Main Category	Sub-Category	Example Quotes	Code
Internal Factors	Learning anxiety	"During the test, I often go blank..."	FI-KB
Low motivation	"If it's difficult, I'll leave..."		FI-MR
The shame of asking	"Rarely, I'm embarrassed. I'm afraid of being laughed at..."		FI-Shame
Weak cognition of basic concepts	"The numbers are spinning in my head..."		FI-Cognition
External Factors	Teaching methods are less varied	"Generally lectures and practice questions..."	FE-Method
	The teacher's speed in teaching	"The teaching is so fast, I'm behind..."	FE-Speed
	Limited family support	"I don't understand either. Sometimes we call her brother..."	FE-Family
Student Adaptation Strategy	Avoiding difficult material	"If it's difficult, I'll leave..."	SA-Avoid
	Learn on your own without guidance	"I was guided, but there was no one at home who could help."	SA-Mandiri

Internal factors that influence students' difficulties in learning mathematics can be seen from the psychological and cognitive aspects that play a major role in their learning experience. In addition, learning anxiety or mathematics anxiety also plays a significant role in inhibiting the mathematics learning process (Setyawati & Ratu, 2021). In this study, four main interrelated sub-categories were found, reflecting psychological and cognitive conditions that inhibit the learning process.

Learning anxiety became a significant emotional barrier, especially for Student B who said, “During the exam, I went blank… even though I had studied all night, but when I saw the questions I didn’t know what to answer.” This phenomenon points to a deeper problem related to test anxiety, where situational pressure can interfere with students’ ability to access previously learned memories. This condition is in line with the cognitive overload theory, which describes how anxiety can burden students’ mental capacity and reduce the effectiveness of their short-term memory. As a result, the ability to think clearly and solve math problems is also impaired, which ultimately worsens their academic performance.

Students who have difficulty learning mathematics often show low motivation to engage in the lesson. Student A, for example, said, "If I don't understand, I become lazy. It's better to just stay quiet than to get more confused." This indicates low self-efficacy or belief in one's ability to complete academic tasks. This low motivation worsens students' learning conditions, because they tend to avoid challenges rather than try to overcome them. This attitude reflects the limitations in students' ability to persist in the face of difficulties, which ultimately makes them further away from a deeper understanding of the material being taught.

Embarrassment is also a psychosocial factor that hinders the learning process. Student B said, “I’m afraid of being laughed at if I ask questions. My friends sometimes like to talk about the person who is asking questions.” This feeling reflects the existence of communication barriers in the classroom, which can cause students to feel isolated and unable to access the knowledge needed to understand the material in depth. This embarrassment, which is related to negative perceptions of social interaction in the learning environment, exacerbates their difficulty in obtaining clarification on concepts that are not yet understood. This condition creates a non-inclusive environment, which makes it even more difficult for students to develop academically.

Difficulty understanding basic mathematical concepts, such as operations on numbers and fractions, is a major problem experienced by students. Student C describes his experience by saying, “The numbers are spinning in my head... I've tried adding them up, but I'm always confused about where to start.” This statement indicates cognitive disorientation, indicating a weak mastery of basic concepts that are essential for understanding more complex material. This is often associated with numerical processing disorders, or even mild dyscalculia, which affect students' ability to process numbers and understand the relationships between mathematical concepts. The inability to master these basic concepts will continue to be a barrier to learning more advanced topics, creating a vicious cycle that further exacerbates students' learning difficulties.

In addition to internal factors, external factors also play an important role in influencing the mathematics learning process. These external factors are related to the conditions of the learning environment, including the teaching methods used, the speed of teaching, and the family support received by students.

Teachers admit that the teaching approach applied in the classroom tends to be dominated by lecture methods and practice questions. One teacher stated, "We focus on practice questions because that's what comes out on the exam. But not all students can grasp it quickly." Although this method can be effective in delivering curriculum material, students who have learning difficulties find it difficult because of the lack of variation in teaching methods. The lack of use of visual media, educational games, or other contextual approaches makes students feel bored and lose interest in mathematics lessons. This learning that tends to be monotonous is unable to accommodate differences in student learning styles, especially for those who need a more visual and practical approach.

The speed of teaching is also a significant problem for students. Student C said, "Sometimes the teacher is too fast, I don't understand one thing, then I move on to the next material." This reflects a mismatch between the speed of teaching given by the teacher and the cognitive processing abilities of students. In the context of differential education, teaching that is too fast can cause students to feel rushed and unable to follow the learning process properly. Instead, a more adaptive and personalized approach is needed that can accommodate the needs of students with different speeds and learning styles.

Limited family support is an external factor that worsens students' learning difficulties. For example, Student A's parent stated, "I myself am confused about helping with math, the lessons are different now. So I can only tell them to study." This limited support makes students increasingly isolated in the learning process, because families are considered an important

source in helping with learning outside of school. Without adequate help or resources at home, students have difficulty improving their understanding independently.

Despite facing various difficulties, some students try to adjust to their conditions through various adaptation strategies. However, most of the strategies used tend to be passive and not constructive. Student A said, "If I don't understand, I close the book. I'd rather watch or play, so I don't get stressed." This avoidance strategy, known as avoidance coping, can provide short-term comfort but is harmful in the long term. Avoiding difficult material will further worsen students' understanding of more advanced topics.

Some students try to learn independently even without adequate guidance. Student C, for example, said, “I study by myself, but sometimes I get more confused. There’s no one at home to ask.” While this strategy shows initiative, it is less effective without proper support and guidance. Without sufficient metacognitive skills to evaluate and understand the material independently, these learning efforts often end in confusion and frustration.

These findings indicate that mathematics learning difficulties are not simply an individual problem, but rather the result of a complex interaction between internal and external factors. Low self-efficacy, learning anxiety, limited teaching methods, and minimal learning environment support reinforce the challenges faced by students. Research by Rini (2023) shows that self-efficacy has a significant influence on elementary school students' mathematics learning outcomes, contributing 63.7% to learning achievement. In addition, emotional support from teachers and parents also plays an important role in increasing motivation and reducing students' learning anxiety (Haerani et al., 2024).

These findings emphasize the importance of implementing more personal and humanistic differential education. Interventions that emphasize an emotion-based approach, strengthening basic mathematical concepts, and improving the quality of teacher-student interactions are urgently needed. A study by Haerani et al. (2024) confirmed that teacher support has a significant role in increasing students' academic engagement, with mathematics self-efficacy as a moderating variable. Therefore, collaboration between teachers, parents, and educational policy makers is needed to create a learning environment that pays attention to students' psychological processes and conditions, especially in mathematics learning.

CONCLUSION

Based on the findings obtained from this study, it can be concluded that students' mathematics learning difficulties are caused by complex interactions between internal and external factors. Internal factors such as anxiety, low motivation, shame, and weak cognition of basic concepts contribute to each other in inhibiting the learning process. On the other hand, external factors such as less varied teaching methods, inappropriate teaching speed, and limited family support worsen the condition.

REFERENCES

Ambarita, E. M., Sidabutar, R., & Purba, Y. O. (2022). The Effect of The Situation Based Learning (SBL) Learning Model on Students’ Mathematics Problem Solving Ability on The VIII Class SPLDV Materials at SMP Negeri 2 Bandar Tradaging. *EduMatika: Jurnal MIPA*, *2*(4), 145–151. https://doi.org/10.56495/emju.v2i4.295

Anggraeni, S. T., Muryaningsih, S., & Ernawati, A. (2020). Analisis Faktor Penyebab Kesulitan Belajar Matematika Di Sekolah Dasar. *Jurnal Riset Pendidikan Dasar (JRPD)*, *1*(1). https://doi.org/10.30595/.v1i1.7929

Ayu, S., Ardianti, S. D., & Wanabuliandari, S. (2021). Analisis Faktor Penyebab Kesulitan Belajar Matematika. *Aksioma: Jurnal Program Studi Pendidikan Matematika*, *10*(3). https://doi.org/10.24127/ajpm.v10i3.3824

Cahirati, P. E. P., Makur, A. P., & Fedi, S. (2020). Analisis Kesulitan Belajar Siswa dalam Pembelajaran Matematika yang Menggunakan Pendekatan PMRI. *Mosharafa: Jurnal Pendidikan Matematika*, *9*(2). https://doi.org/10.31980/mosharafa.v9i2.576

Hamid, N. (2022). Analysis of students' learning difficulties in mathematics subjects of class VIII students of UPT SMPN 4 Binamu. *Journal of Education*, *5*(1), 45–52.

Hamidah, N., & Ain, S. Q. (2022). Faktor-Faktor Penyebab Kesulitan Belajar Matematika pada Siswa Kelas IV Sekolah Dasar. *Scaffolding: Jurnal Pendidikan Islam Dan Multikulturalisme*, *4*(1). https://doi.org/10.37680/scaffolding.v4i1.1331

Hariati, I. N., Mayasari, N., & Khoirotunnisa, A. U. (2024). Literature review: Learning difficulties in algebra learning. *Proceedings of the National Seminar on Education*, *2*(1).

Harun, Kartowagiran, B., & Manaf, A. (2021). Student attitude and mathematics learning success: A meta-analysis. *International Journal of Instruction*, *14*(4). https://doi.org/10.29333/iji.2021.14413a

Lestari, A. M. (2021). *The role of teachers in overcoming students' mathematics learning difficulties at SD Negeri 47 Bengkulu Selatan* [Undergraduate thesis, IAIN Bengkulu]. https://repository.iainbengkulu.ac.id/6735/1/SKRIPSI%20ANDORA%20MAYANG%20LESTARI.pdf

Lestari, S. E. C. A., Hariyani, S., & Rahayu, N. (2018). Pembelajaran kooperatif tipe TGT (teams games tournament) untuk meningkatkan hasil belajar matematika. *Pi: Mathematics Education Journal*, *1*(3), 116–126.

Mulqiyono, S., Hidayat, W., & Rohaeti, E. E. (2022). Developing Mathematics Teaching Materials on SPLDV Materials by Combining The Scientific Approach And The RME Approach To Improve Metacognitive Ability and Learning Independence of Junior High School Students. *(JIML) Journal Of Innovative Mathematics Learning*, *5*(1), 41–52.

Pepin, B., Gueudet, G., & Trouche, L. (2017). Refining teacher design capacity: Mathematics teachers' interactions with digital curriculum resources. *ZDM - Mathematics Education*, *49*(5). https://doi.org/10.1007/s11858-017-0870-8

Rahma Amadea Septiani, & Abadi, A. P. (2022). Studi Literatur: Pengaruh Penggunaan Media Sosial Terhadap Minat Belajar Matematika. *Didactical Mathematics*, *4*(2). https://doi.org/10.31949/dm.v4i2.2156

Rahmasaria, S. M., Wardono, W., & Waluyo, B. (2022). Analysis of junior high school students' difficulties in solving mathematical story problems. *Proceedings of the National Seminar on Mathematics Education*, *3*(1), 2981–2988.

Rini, N. K. A. D. W., & Agustika, N. G. S. (2023). Self-efficacy and study habits on mathematics knowledge of fifth grade elementary school students. *Pulpit Science*, *28*(2), 273–282.

Rosdianah, R., Kartinah, K., & Muhtarom, M. (2019). Analysis of factors causing difficulties in learning mathematics on lines and angles material for grade VII junior high schools. *Arjuna Journal*, *1*(2), 45–52.

Saputri, A. R. I. (2024). *Analysis of factors causing students' difficulties in learning mathematics at school* [Undergraduate thesis, UIN Raden Intan Lampung]. https://repository.radenintan.ac.id/36442/1/PERPUS%20PUSAT%20BAB%201%20DAN%202.pdf

Sari, E. D., & Hasibuan, L. R. (2020). Analysis of students' difficulties in learning mathematics on the Pythagorean theorem reviewed from students' learning interests at SMP Negeri 1 Rantau Utara. *Jurnal Cendekia*, *6*(2), 1341–1348.

Setyawati, A., & Ratu, N. (2021). Analysis of junior high school students' mathematics learning difficulties in algebra material viewed from mathematics anxiety. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *5*(3).

Sutanti, T., Prahmana, R. C. I., & Diponegoro, A. M. (2021). Mathematics anxiety and the influencing factors among junior high school students in Yogyakarta, Indonesia. *Croatian Journal of Education*, *23*(2), 343–369.

Tasya, A., & Aripin, U. (2022). Improving Student's Mathematics Understanding Ability on Two Variable Linear Equation System Materials by Using Problem Based Learning. *(Jiml) Journal of Innovative Mathematics Learning*, *4*(4), 178–187. https://doi.org/10.22460/jiml.v4i4.p178-187

Yuliardi, R. (2017). Analysis of students' mathematics learning difficulties reviewed from the aspect of cognitive psychology. *Scientific Mathematics Journal of STKIP Muhammadiyah Kuningan*, *3*(1), 1–9. https://akselerasi.uinkhas.ac.id/index.php/aksel/article/view/647