Analysis of the factors causing mathematics learning difficulties of grade iv students at sonosewu state elementary school

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Abstrak

Matematika mempunyai peranan penting dalam berbagai disiplin ilmu dalam mengembangkan daya pikir manusia, dengan mempelajari matematika peserta didik lebih kritis dalam memahami permasalahan dalam kehidupan sehari-hari. Penelitian ini bertujuan untuk menganalisis faktor-faktor penyebab kesulitan belajar matematika yang dialami peserta didik kelas IV SDN Sonosewu. Metode penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus. Subyek penelitian ini adalah guru kelas dan peserta didik kelas IV yang teridentifikasi mengalami kesulitan belajar matematika. Teknik pengumpulan data dalam penelitian ini adalah observasi, wawancara, dokumentasi dan catatan lapangan. Teknik analisis data yang digunakan dalam penelitian ini adalah reduksi data, penyajian data, dan penarikan kesimpulan/verifikasi. Hasil penelitian menunjukkan bahwa 1) Kesulitan pembelajaran matematika yang dialami peserta didik kelas IV SDN Sonosewu adalah kesulitan memahami konsep pecahan, kesulitan dalam menghitung keterampilan perkalian dan pembagian, dan kesulitan menyelesaikan soal-soal berbentuk soal cerita. 2) Faktor penyebab kesulitan belajar matematika terdiri dari faktor internal dan faktor eksternal. Faktor internal penyebab kesulitan belajar adalah kemampuan penginderaan, minat peserta didik terhadap pelajaran matematika masih rendah, sikap belajar masih rendah, motivasi dan kebiasaan peserta didik dalam belajar matematika juga rendah. Sedangkan faktor eksternal penyebab kesulitan belajar adalah metode mengajar guru yang kurang menarik, hubungan guru dengan peserta didik, dan kurangnya fasilitas pembelajaran.

Keyword: Kesulitan Belajar_1, Matematika SD_2

Abstract

Mathematics has an important role in various disciplines in developing human thinking, by studying mathematics, students are more critical in understanding problems in daily life. This research aims to analyze the factors that cause mathematics learning difficulties experienced by class IV students at SDN Sonosewu. This research method uses a qualitative approach with a case study design. The subjects of this research were class teachers and class IV students who were identified as having difficulties learning mathematics. Data collection techniques in this research are observation, interviews, documentation and field notes. The data analysis techniques used in this research are data reduction, data presentation, and drawing conclusions/verification. The results of the research show that 1) The difficulties in learning mathematics experienced by class IV students at SDN Sonosewu are difficulty understanding the concept of fractions, difficulty in calculating multiplication and division skills, and difficulty solving questions in the form of story problems. 2) Factors that cause difficulties in learning mathematics consist of internal factors and external factors. Internal factors that cause learning difficulties are sensory abilities, students' interest in mathematics lessons is still low, learning attitudes are still low, students' motivation and habits in learning mathematics are also low. Meanwhile, external factors that cause learning difficulties are the teacher's less attractive teaching methods, the teacher's relationship with students, and the lack of learning facilities.

Keyword: Learning Difficulties_1, Mathematics SD_2



DOI: 10.26486/jm.v8i1.3921

: http://ejurnal.mercubuana-yogya.ac.id/index.php/mercumatika

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INTRODUCTION

Mathematics has an important role in various disciplines in developing human thinking, by studying mathematics students are more critical in understanding problems in daily life (Astuti, 2018). The importance of mathematics in daily life can improve students' ability to understand and absorb lessons faster, in addition to being able to train students' thinking skills in a rational, critical, logical, analytical and systematic manner (Ayu et al., 2021). According to Qurotu 'aini & Marhaeni (2024), learning mathematics is not just about being able to calculate quickly but processing concepts so that they can understand the meaning of mathematics and be able to reason to solve problems in various ways. Therefore, mathematics lessons are one of the subject areas given to all elementary school students.

ISSN: 2548-1819

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Mathematics learning in elementary school cannot be separated from two things, namely the nature of mathematics itself and the nature of students in elementary school (RivaI & Rahmat, 2023). Of course, teaching mathematics in elementary school is not as easy as imagined, in addition to students whose mindset is still in the concrete operational stage, students' abilities are also very diverse. Similarly, the application of character values in mathematics learning requires good pedagogical mastery and support for teachers' attitudes as well as those related to education (Budiasa et al., 2023).

The basic purpose of teaching and learning mathematics in elementary school is to provide adequate skills to students in dealing with mathematics material at the secondary education level (Dahlan et al., 2019). In an effort to achieve mathematics learning goals, there are various problems that cause learning goals not to be achieved optimally. Various problems in the learning process make the quality of mathematics learning in Indonesia still low. This is based on information from the *Program for International Student Assessment* (PISA) in 2022 which was just announced on December 5, 2023, and Indonesia is ranked 68th with scores; mathematics (379), science (398), and reading (371).

The quality of mathematics learning is still low due to various problems. One of the problems in learning mathematics is the assumption by most students that mathematics is a difficult and boring subject, so many students do not like mathematics (Putri & Safrizal, 2023). In fact, if students do not like mathematics lessons, it causes students to have difficulties in understanding the material presented and results in low mathematics learning achievement.

According to Syah (Jayanti et al., 2020), there are two factors that cause learning difficulties, namely internal factors and external factors, the first internal factor is the factor that arises from within the student, the second external factor is the factor that arises from outside the student. Based on observations made by researchers, there are some students who do not like learning Mathematics because they think that learning Mathematics is very difficult and difficult, and the students' scores in learning Mathematics are also low. Therefore, researchers want to find out the factors that cause learning difficulties experienced by students. Learning difficulties experienced by students can be caused by themselves or others, which consists of internal factors, namely factors that come from within the students and external factors, namely factors that come from outside the students. Based on the above problems, the researcher is interested in conducting a research entitled "Analysis of Factors Causing Difficulties in Learning Mathematics in Elementary School".

METHOD

This study uses a qualitative descriptive research method. Research that intends to understand the phenomena of what the research subject experiences, for example behavior, perception, motivation, action etc., holistically, and by means of description in the form of words and language, in a special natural context and by utilizing various natural methods (Adlini et al., 2022).

This study investigated grade IV students who had difficulty learning mathematics and the researcher collected complete information using various data collection procedures such as interviews, observations, documentation and field notes. The research was carried out at SDN Sonosewu, Bantul.

The data analysis technique is data reduction, which is to conclude, set aside important things through observation, interviews and documentation about the difficulties of learning mathematics and the factors that cause difficulties in learning mathematics. The next stage of data presentation is the follow-up of data reduction. The data that has been reduced is then presented in narrative form, and the last stage makes a thorough conclusion so that results are found that are in accordance with the research objectives.

RESULTS AND DISCUSSION

From the results of the research that has been carried out, it is known that there are students who have

difficulties in learning mathematics. These difficulties can be known based on the results of interviews, observations, documentation and field notes that have been carried out. The data description in this study is as follows:

1. Difficulties in Learning Mathematics

a. Difficulty Understanding Concepts

In the first stage of observation of students, researchers found that students still had difficulty in understanding the concept of flat building. Through the analysis of the students' answer sheets, it was revealed that the answers given by the students were not in accordance with the concepts taught. However, when asked what type of flat building is depicted, students answered "square". Through the students' answer sheets, it was revealed that he was confused in identifying the shape of the flat building. This may be due to a lack of understanding of the properties of flat builds. For example, learners may not notice that the flat build has two parallel sides of equal length, so they think of it as a square.

In addition, as for students who were asked to provide examples of flat buildings that can be found in daily life, students answered "KARDUS". However, cardboard is actually a three-dimensional object, not a flat building. This error shows that students are still confused between a flat building that has two dimensions and a spatial building that has three dimensions. This suggests that RR students are wrong in identifying the shape of a flat wake.

Analysis of the results of interviews with students revealed that when the students tried to identify the concept of building flat, they had difficulty comparing and choosing the correct answer. In other words, this confusion is caused by a lack of a mature understanding of the concept of flat buildings, so students have difficulty recognizing these shapes. This is in line with the view of Jamal (Ayu et al., 2021) who states that difficulties in learning mathematics often arise because students do not understand concepts well. In addition, students tend to use the wrong formulas when trying to solve various math problems.

b. Difficulty of Numeracy Skills

In the later stages, researchers also found that students experienced difficulties in numeracy skills, especially in multiplication materials. When working on the question, students make mistakes that result in incorrect answers. A concrete example of this difficulty is seen when students are asked to estimate the result of multiplication between 56 and 56. However, the answer given by the student is 3156, when the correct answer should be 3136. This error shows the learner's lack of understanding of multiplication operations. Through interviews with students, information was obtained that the students were in a hurry to do the questions, so they were less thorough in completing calculations. This results in errors in answering math test questions.

In addition, the subjects also noted that students had difficulty in numeracy skills on the division material. In this study, it was found that students also experienced significant difficulties in mastering numeracy skills, especially in the context of division materials. Learners point out that they are often unable to give the correct answer when asked to estimate the outcome of complex mathematical operations. This kind of mistake has an impact on the accuracy and accuracy of students' answers, which in turn can indicate a lack of a strong understanding of fundamental mathematical concepts.

Further, through a series of interviews with the learners, it was revealed that one of the main factors that led to their inability to give accurate answers was the overall lack of their approach to math tasks. They tend not to engage in a meticulous and systematic calculation process, often relying on "guessing" or even copying answers from their peers. This shows a lack of sense of responsibility and independence in learning, as well as inaccuracies in developing effective numeracy skills.

Of course, these findings are consistent with observations of students and their peers. Analysis of interview results and documentation with students illustrates that the lack of rigor and independence in completing math tasks is the main obstacle to their academic achievement. This is in accordance with the view of Amallia & Unaenah (Ayu et al., 2021), who stated that difficulties in numeracy skills are often caused by students' lack of precision and seriousness in answering questions, resulting in obstacles in mastering more complex mathematical concepts and skills.

Thus, it can be concluded that further efforts are needed in providing guidance and support to students, to help them overcome difficulties in numeracy skills and increase independence and accuracy in learning mathematics. Through a holistic and integrated approach, it is hoped that they can develop a solid foundation in mathematics, so that they can achieve better academic success in the future.

c. Difficulty Solving Problems

Researchers have found that students face significant challenges in solving problems, particularly in responding to story problems. The analysis shows that the majority of students are not able to give the right answers. Based on the analysis carried out on the students' worksheets, it was revealed that they often made mistakes in answering questions, especially in story questions. One example is when students are asked to convert kilometers of distance into meters, and they answer with 8 meters. Whereas, the correct answer should be 8000 meters, according to the correct conversion process, where 8 kilometers is equivalent to 8000 meters. This error occurs because students multiply the number of kilometers by the number 1, while they should have multiplied it by 1000 because 1 kilometer equals 1000 meters.

Interviews with students also indicated that they had difficulty comparing correct answers. This shows that students are not fully developed in their mathematical problem-solving skills, especially in the context of story problems, which has an impact on their difficulty in understanding mathematics subjects as a whole. The research also found that students face difficulties in following the correct steps in solving problems, as well as difficulties in interpreting the information presented in the questions.

This is consistent with the findings put forward by (Kusumasari and colleagues, 2020) which highlight that often teachers only give tasks to students to solve problem-solving problems without providing learning about the steps needed to solve the problem correctly. Thus, special attention needs to be paid to the development of students' ability to solve mathematical problems, especially in the context of story problems, so that they can overcome difficulties in learning mathematics more effectively.

2. Factors Causing Difficulties in Learning Mathematics

After the researcher knows the types of mathematics learning difficulties experienced by students, the next step is to discuss the factors that cause students to have difficulties learning mathematics. Through observational analysis, interviews and documentation. The results of the analysis show that there are internal factors and external factors that cause students to have difficulties in learning mathematics. In addition, to find out each of the factors that cause difficulties in learning mathematics, it can be explained as follows.

a. Factors Causing Difficulties in Learning Mathematics Internally

1) Sensing Capabilities

Five sense conditions can occur in students' special organs, such as the level of health of the sense of hearing and sight, which also greatly affects the ability of students to absorb scientific information delivered by teachers in the classroom (Hosang & Rakian, 2023). Based on the results of interviews with students, researchers found that none of the students had visual and hearing impairments. This is because students can clearly see the writing on the board, and the sitting position of students does not affect the distance of seeing the writing on the board, both students who sit in the front position and students who sit in the back position. The students also said that their eyes did not experience disorders such as nearsightedness or nearsightedness, and in terms of hearing, students could hear the teacher's explanation very clearly.

2) Interest in Learning

Interest as one of the internal factors plays a role in supporting student learning outcomes. Students who are not interested in the learning material will show an unsympathetic, lazy and unenthusiastic attitude in following the teaching and learning process (Prastika, 2020). Based on the results of interviews with students, students' interest in mathematics learning is still very low. This is because many students do not like Mathematics lessons, they consider mathematics lessons difficult and difficult to understand, as well as many formulas and calculations.

3) Learning Attitude

Learning attitude is the tendency of students to carry out or not carry out learning activities. A positive attitude towards a subject is a good start in the learning process. On the other hand, negative attitudes towards subjects will have the potential to cause learning difficulties or result in suboptimal learning outcomes (Permatasari et al., 2023). The results of the analysis showed that students' attitudes towards mathematics lessons vary, some liked and some disliked mathematics lessons. Students who do not like mathematics lessons have a negative attitude towards mathematics learning so that students do not follow learning well. This is in accordance with the opinion (Rizqi et al., 2023) that students consider mathematics to be a difficult subject. This kind of thinking of students makes it difficult for students to learn mathematics and think that mathematics is not important.

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4) Motivation

Based on the results of observations and interviews with students, it can be seen that students' enthusiasm for learning is still low. When students are at home, students do not relearn the material that has been taught at school. When the math lesson starts, the students feel unhappy. In addition, when there is a math test, students do not learn it. This is in accordance with the opinion of (Rizki & Fauziddin, 2021) that students have no interest and motivation in learning and are indifferent, do not receive delivery from an educator, school achievement decreases or there is no progress at all and undesirable attitudes or behaviors arise. As a result, many have learning difficulties.

5) Study Habits

Judging from the process, learning habits do dominate the behavior or actions of students every time they carry out the learning process consistently. In other words, if students have good learning habits from the inside, then this will directly have an impact on students in mastering the subject matter. to achieve success in their studies at school (Wijaya et al., 2019). Based on the results of interviews and observations with students, students' learning habits about mathematics are still very lacking. This is because when there is a math lesson schedule, students who have difficulty learning mathematics never learn first because they have not entered class time, so students prefer to play while waiting for their teacher to come to class.

Internal factors are factors that come from within students without being influenced by others. An internal factor that does not affect students' difficulties in learning mathematics is sensing ability. The first internal factor that affects students' difficulties in learning mathematics is the students' interest in learning. The results of the analysis show that students' interest in learning mathematics is still very lacking. Because students who have learning difficulties do not like math lessons because many formulas and calculations and explanations are difficult to understand. The second factor is the attitude of learning. From the students' statements in the interview results, that students' attitudes towards mathematics lessons vary, some like it and some dislike mathematics lessons. Students who do not like mathematics lessons have a negative attitude towards mathematics learning so that students do not follow learning well. The third factor is motivation, the results of the analysis of learning difficulties factors are in accordance with those stated by Kirk & Gallagher (Sunariah & Rijal, 2017) that lack of children's motivation to learn can result in children lacking confidence and causing negative feelings towards school. From the students' statements in the interview results, the motivation and attitude of the students are still very lacking, when the students are at home, the students do not relearn the material that has been taught at school and when the mathematics lesson starts, the students feel unhappy. The fourth factor is the learning habits of students. Learning habits are learning patterns that exist in a person that are regular and automatic. The results of the analysis show that students' learning habits are still very lacking, this is because students never learn first when there is a mathematics lesson and students rarely reread the material that has been explained by their teachers.

Students also rarely learn Mathematics at home, even if they learn to study other subjects, students only learn if there is Mathematics homework and if there is no Mathematics homework, students prefer to relax while watching television and playing on mobile phones. Irregular learning habits of students have an impact on student learning outcomes, this is as revealed by Andri et al (2020) that learning habits are one of several factors that can affect learning.

b. Factors Causing Difficulties in Learning Mathematics Externally

1) Teacher Teaching Methods

According to Macquarie, learning methods are components of learning methods that teachers must do in delivering learning materials to achieve learning goals (Afifatusholihah, 2022). Based on the results of interviews with students, when learning in class the teacher conveys the material very well and clearly, but the teacher never applies an interesting learning method when learning Mathematics, the teacher only explains the material with ordinary explanations.

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2) Teacher-Student Relationship

In teaching and learning activities, interpersonal communication is a must, so that a harmonious relationship is established between teachers and students (Sidik & Sobandi, 2018). Based on the results of interviews with students, researchers found that the relationship between teachers and students was good. This is because teachers often invite students to chat and joke before or after learning. Students also said that teachers are fun, kind, friendly people and fun to talk to and joke with.

3) Learning Facilities

Learning facilities consist of building conditions, mathematics textbooks, media used by teachers and teaching aids. Based on the results of interviews with students, the condition of buildings in schools such as classrooms looks quite good, this is because students feel comfortable when studying in classrooms with classroom conditions that are always clean and tidy. However, for other learning facilities, it still does not support students in learning such as books, media and teaching aids which are still not good. This is because math books at school should not be taken home but only borrowed while in class. The reason schools don't lend books to take home is because there are few math books in schools and not enough for students to borrow. Students also said that they were told to buy their own books.

The discussion of this research was carried out to find out the factors of difficulty learning mathematics experienced by grade IV students of SDN Sonosewu which consist of internal and external factors. The following are the results of the research that will be discussed. The relationship between teachers and students according to Dalyono (in Jayanti et al., 2020) if the relationship between teachers and students is not established good communication, difficulties will arise in learning. This is different from the results found in the field. Researchers found that the relationship between teachers and learners was excellent.

External factors that affect students' learning difficulties are teachers' teaching methods and learning facilities. The following are the results of the research that will be discussed. The first factor that affects the difficulty of students learning mathematics is the teacher's teaching method. The results of the analysis of the factors of teachers' teaching methods are in accordance with those stated by Dalyono (2010:230-247) that the teaching methods applied by teachers in providing inappropriate subject matter can cause students to have difficulty learning. The second factor that affects the difficulty of students learning mathematics is the learning facilities. Learning facilities include building conditions, mathematics textbooks, media used by teachers, and teaching aids. The building condition at SDN Sonosewu is quite good, because the building conditions meet the standards, the classrooms are always clean, neat, and have window ventilation and fans. However, other learning facilities such as mathematics textbooks, media and teaching aids are still not good. This is in accordance with what was stated by Irham & Wiyani (in Mendrofa & Surbakti, 2023) that external factors that can cause students' learning difficulties are learning facilities. Incomplete facilities can affect students to have learning difficulties.

The implication of this study is that teachers should understand the difficulties of learning mathematics experienced by grade IV students of SDN Sonosewu and analyze these difficulties from the factors that cause difficulties in learning mathematics, as well as other factors that may be involved in the emergence of these difficulties. Analysis of mathematics learning difficulties needs to be carried out to find out and determine the right mathematics learning strategies that can be used to overcome the mathematics learning difficulties.

CONCLUSION

Based on the results of the data analysis that has been carried out, it can be concluded that difficulties in learning mathematics include several aspects, such as difficulties in understanding

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concepts, numeracy skills, and problem-solving skills. The causes of difficulty learning mathematics can come from various factors, both internal and external that affect students. Internal factors that can affect the difficulty of learning mathematics include, sensory ability, low interest in learning, low attitude and motivation to learn, and low learning habits. Meanwhile, external factors that also play a role include unattractive teacher teaching methods, teacher-student relationships, and lack of learning facilities. In this context, it is important to understand that the difficulty of learning mathematics is not only influenced by the internal factors of the learner alone, but also by the environment and external support that exists around them. Therefore, efforts to overcome the difficulties of learning mathematics must involve a holistic approach that pays attention to these various factors. Thus, it can be expected that learners will have a better chance of overcoming difficulties learning maths and achieving their academic potential to the fullest.

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