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DOMINANT FACTORS CAUSE STUDENTS WITH SPECIAL NEEDS (DEAF) IN SOLVING MATHEMATICS PROBLEMS

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ABSTRACT

This research objective is to describe the dominant factors that cause students with special needs (deaf) to solve mathematics problems. This research is qualitative descriptive research with a case study approach. The research was carried out at SLB Negeri Lutang Kab. Majene. The subjects of this research were seven people, consisting of three deaf students, three parents, and one teacher. The instruments used in this research consisted of observation sheets and interview guidelines. The data analysis techniques used consist of data reduction, data presentation, and conclusion. Based on the results of the data analysis, it was concluded that the factors that influence deaf students to solve mathematics problems consist of two factors, namely internal factors, and external factors. Internal factors consist of learning interest, learning habits, and student learning motivation. Meanwhile, external factors consist of the influence of the family environment and the school environment.

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1. INTRODUCTION

Education is defined by Law No. 20 of 2003 as a deliberate and planned endeavor to provide pupils with spiritual intelligence, noble character, decent behavior, self-control, and other skills that will benefit them personally and in their community. Solving problems is one of the skills that students require (Szabo et al., 2020). For pupils whose lives are getting more complicated every day, problem-solving is essential.

Learning mathematics is one area of schooling that helps pupils develop strong problem-solving abilities (Khalid et al., 2020; Muzaini et al., 2021). Mathematics is one of the required subjects in both public and private education institutions. There are other required subjects in public education as well. Math is one of the fundamental subjects that students need to know. In addition to serving as a stand-alone tool for the advancement of mathematics, mathematics also serves as a knowledge-serving tool that advances other sciences, including the social and exact sciences, through technological advancements. This is known as mathematics' dual role as the queen of science. Realizing how important

mathematics is, students are required to be able to study mathematics seriously to produce good and even satisfactory mathematics learning results (Hartati, 2015).

According to Siagian (2016), who quoted Russefendi's conclusion, mathematics comes from the Latin word mathematic, which was originally taken from the word matematike, which means to study. This word has its origin, namely mathema, which means knowledge or science. The word mathematice is related to other words that are almost the same, namely mathein or mathenein, which means learning (thinking). So, based on the origin of the word, the word mathematics means knowledge obtained by thinking (reasoning). Mathematics emphasizes activities in the world of ratios (reasoning) rather than emphasizing the results of experiments or the results of observations of ideas, processes, and reasoning (Thompson, 2013). One of the mathematics subject materials in the education of children with special needs is counting material. Putri & Pujiastuti (2021) reveal that students with special needs have difficulty understanding counting material. Among them is a lack of communication between students with special needs, teachers, and students with students. Communication is the most important thing in delivering material to students, so teachers must understand the needs of each student so that learning is good and there is no gap between those who are normal and students with special needs. The mental readiness of teachers and students is necessary to establish a good relationship in mathematics learning.

Based on the results of observations and interviews conducted at Lutang State Special High School, I received information that students with special needs (deaf) understanding of basic mathematical concepts such as understanding or differentiating numbers is still very low. Students should be able to understand basic concepts regarding calculations such as recognizing numbers, adding, subtracting, multiplying, and dividing numbers. However, deaf students at Lutang State Special High School can only write or imitate what their teacher wrote but cannot solve calculation problems.

Many theories reveal the causes of student learning difficulties. Among them, Pradika (Damayanti, 2020) states that the causes of learning difficulties are influenced by external factors. External factors that cause learning difficulties, especially in mathematics, consist of several sub-aspects, namely school environmental factors, family environmental factors, and community environmental factors. Meanwhile, according to Haryatni (2014), two factors are factors in students' learning difficulties, namely, first, internal factors consisting of physical, psychological, and mental factors, and poor study habits. The second is external factors, consisting of family environmental factors, school environmental factors, and community environmental factors. Apart from that, Kirk and Gallager (Tyas, 2016), argue that four factors cause learning difficulties: physical condition factors, environmental factors, motivation and attitude factors, and psychological factors.

2. METHOD

This research is qualitative, with a case study type of research. This type of case study research is where the researcher tries to find out the causes of difficulties for students with special needs (deaf) in learning mathematics at the SLB Negeri Lutang Majene. The subjects in this research consisted of seven people, divided into three deaf students, three parents, and one teacher. The instruments of this research consisted of an observation sheet

and an interview sheet. The validity of the data is carried out to prove whether the research carried out is truly scientific research as well as to test the data obtained. The data validity test that can be carried out is by using technical triangulation and source triangulation. Data analysis is a crucial part of the scientific method because, with data analysis, it can be given meaning that is useful in solving research problems. The data analysis technique used in this research is qualitative data analysis, which includes data collection, data reduction, and concluding.

3. RESULTS AND DISCUSSION

3.1 Result

Based on the results of observations, researchers received information that the research subject's interest in learning was still very low. When taking arithmetic lessons, students tend not to be enthusiastic about following the learning process, students only write what is explained by the teacher but do not understand what is written. Students are only more interested in drawing, reading, and writing. Apart from that, students quickly get bored when learning to count. If they are bored, students will do other activities outside of teaching and learning activities. The result of the subject's lack of interest in learning to count is not doing the assignments given by the teacher. Apart from the results of observations, the researcher also obtained other information based on the results of the researcher's interviews with students and their parents. The following are the results of interviews with students and their parents.

Table 1. Result of interviews one

Question	Answer	Resource
Do you like learning mathematics?	Dizzy, don't understand (Shakes head and holds head)	Subject 1
What lesson do you like?	Drawing (Shows the resulting image)	Subject 2
According to you, what is your child's interest in learning mathematics, especially arithmetic?	If I pay attention, he only wants to learn if he is guided directly, but if not, he doesn't learn	Parents

So, based on the results of observations and interviews that have been conducted, it can be concluded that deaf students' interest in learning is still very low, which can be seen in students who tend not to be enthusiastic about learning, deaf students who only write whatever is explained by the teacher but do not understand what is recorded, and students who tend to get bored quickly when learning mathematics.

In addition, researchers also get other information about research subjects while learning to count or solving other mathematical problems. Based on the results of the observations made, researchers received information that the three students had difficulty focusing on learning to count. This can be seen when carrying out the learning process.

Students tend not to pay attention to the teacher explaining the material but instead do other activities outside of learning activities. Apart from that, during the teaching and learning process, students do not repeat the mathematics lessons taught by the teacher. Students feel bored when teachers try to repeat themselves in explaining material related to numeracy lessons, especially numeracy material, to make students understand what they are learning. When students are given questions related to mathematics, especially numeracy, they will have difficulty answering them. For example, when a teacher gives an addition problem, students seem to be able to add with the help of their fingers, but the answer the student writes is wrong. Another learning habit that occurs is that students sometimes do arithmetic problems on time, and students rarely do math assignments at home (homework). This condition is in line with the results of researchers' interviews with students and their parents.

Table 2. Result of interviews two

Question	Answer	Resource
Do you often learn mathematics at home?	No (Shakes head)	Subject 1
According to you, what are your children's study habits at home?	If I pay attention, he only wants to learn if he is guided directly. But otherwise, he doesn't learn.	Parents

In another subject, another factor identified by researchers that influences the learning conditions of deaf students, especially in learning mathematics, is the motivation factor. The following are the results of the researcher's observations and interviews: The learning motivation of students with special needs (the deaf) is still very lacking, as can be seen from the results of observations made during field research. Namely, students do not answer the questions given by the teacher; students feel unable to solve problems or questions related to numeracy material; students are less enthusiastic about participating in the learning process; and students only want to learn when they are given prizes.

Besides internal factors, researchers also identified external factors that influence the mathematics learning conditions of students with special needs (deaf). Based on researchers' observations, the family environment is the main supporting factor for students. Based on the results of the observations that have been made, the three students who were used as informants by the researchers were children who came from intact families, meaning that all students did not come from broken homes. On average, students' parents work as farmers; because of their parents' busy schedules, students receive less attention from their parents. So, students lack control when learning to count. Apart from that, the facilities and infrastructure that students have at home to learn to count are also still lacking.

Apart from the family environment, the school environment also influences the learning conditions of students with special needs (deaf-impaired). Based on the results of observations made by researchers, teachers who are tasked with teaching in deaf classes use sign language and learning methods that are appropriate to the subject matter and depth of the material. teachers also often motivate students and are fair to all students, such as by

providing guidance. individually to all deaf students. At school, teachers continue to teach about numbers and how to count because students in deaf classes still find it very difficult to understand calculations, making it difficult to understand mathematics lessons, especially counting material. At school, deaf students usually learn using simple teaching aids, namely the abacus. Limited teaching aids are one of the causes of difficulties for deaf students in learning to count because students feel bored when teachers teach without using teaching aids. Lutang State Special High School is a school that is quite close to the main road, so when learning, students pay less attention to the teacher because students concentrate more on looking at the main road. Apart from that, according to the results of observations at the Lutang State Special High School for those with physical limitations, in this case, the deaf do not have a separate class, so deaf students usually carry out the learning process in the library.

Table 3. Result of interviews three

Question	Answer	Resource
Do you or other family control when your child learns mathematics?	I rarely control him when learning because I'm busy working and I also don't understand his lessons.	Parents
Are there facilities and infrastructure available at home that can be used to learn mathematics	there are no facilities and infrastructure such as a special room for learning. There are no learning aids such as games either	Parents
Do you use sign language when teaching?	of course because otherwise, it will be more difficult for students to understand what is being explained	Teacher
Do you have any problems when teaching mathematics to the deaf class?	Yes, there are obstacles, especially since those I teach are children who have physical limitations. The obstacles are the minimal availability of teaching aids that can be used to teach mathematics and counting and the absence of special classes for deaf students.	Teacher

Based on the results of observations and interviews, the researchers concluded that there are 5 factors that influence the mathematics learning conditions of students with special needs (deaf). These factors were triangulated based on data collection techniques and subjects in this research. The results of the triangulation of research results can be seen in the following table.

Table 3. Result of triangulation

		Description		Conclusion
		Observation	**Interview**	
Internal Factor	Learning interest	Deaf students are not enthusiastic about the mathematics learning process and only write what the teacher explains but do not understand what the students write	Students don't like mathematics lessons because students prefer other lessons, the most dominant of which is students like drawing.	Students' interest in learning mathematics is relatively low, students' study habits are poor, and students' lack of motivation to learn. Besides that, learning difficulties for deaf students also occur due to family environmental factors and school environmental factors.
	Learning habbits	Deaf students often do other activities during the learning process, deaf students often copy assignments from their friends, students never repeat arithmetic lessons and deaf students often come in and out during the learning process.	Deaf students never study at home	
	Learning motivation	Students never answer those questions given by the teacher, students are not enthusiastic about participating in the learning process, students only want to learn when they are given a prize	Students never answer questions from the teacher when asked.	
External factors	Family environmemt	Students do not have complete facilities and infrastructure to use for learning at home and parents do not guide their children when learning at home	They don't have complete facilities and infrastructure and parents don't guide their children when learning at home, because they are busy with work and don't have enough knowledge.	
	School environment	There are no special classes for	There are no special classes	

	Description		Conclusion
	Observation	Interview	
	the deaf, lacking complete teaching aids or learning media that can be used to study at school and the distance between the main road and school.	for the deaf and there is a lack of teaching aids or learning media that can be used to study at school so that the learning process runs less effectively.	

3.2. Discussion

Internal factors that cause learning difficulties for students with special needs (deaf) in learning mathematics at Lutang State Special High School

1. The first internal factor is students' interest in learning. Students' interest in learning is very low, which can be seen from the lack of enthusiasm of deaf students when learning numeracy material. Interest in learning influences students' mathematics learning difficulties because interest in learning is one of the main drivers for determining the level of student activity in the learning process (Sari & Madio, 2021). Students' lack of interest in participating in mathematics learning can be indicated by students only taking notes on numeracy material but not understanding what the students are writing down. Students also rarely do the tasks given by the teacher and students quickly get bored when learning to count. Therefore, students' interest in learning in numeracy is still lacking so that students have difficulty accepting and understanding numeracy material which will affect student achievement or learning outcomes. This is in accordance with the findings that interest is one of the factors causing learning difficulties. Relevant to the research results is that a lack of interest in learning will have an influence on difficulties learning mathematics, because students do not pay attention to the teacher when explaining the material, students rarely take notes on the material explained and rarely study at home (Ayu et al., 2021).
2. The second internal factor is students' study habits. Study habits are learning patterns that exist in students which are regular and automatic. Study habits can be formed by the students themselves and their supporting environment. Based on the results of research conducted by researchers, it was found that due to students' study habits, it was difficult for students to focus on learning to count. Students pay attention to other activities when learning to count, deaf students rarely repeat arithmetic lessons at home, and students rarely do homework when given by the teacher. Study habits influence students' learning difficulties because low study habits or being lazy when learning mathematics will make students' concentration less (Hardianty & Septian, 2020). Learning behavior can also show students' study habits which can cause students to have difficulty learning to count. Based on the research results, it was found that students' learning difficulties in numeracy were caused by students'

learning behavior which was characterized by students frequently going in and out during the teaching and learning process. Students also often copy assignments from other students when given assignments by the teacher. Because this learning behavior possessed by students is the cause of the emergence of poor study habits so that the student's learning process becomes less than optimal, which can result in poor learning results or learning achievement and difficulty in achieving success targets. This is in accordance with the finding that study habits are one of the factors causing difficulties in learning mathematics. Relevant to the research results is that students have difficulty learning mathematics because of poor mathematics study habits, such as students only learning mathematics when there is a mathematics lesson schedule, not learning when there is a mathematics exam and students not doing the homework given by the teacher (Anggraeni et al., 2020; Hadayani & Mahrita, 2021).

3. The third factor is about student learning motivation. In carrying out all activities, one of which is when learning, of course students need motivation. Motivation plays a very important role in growing students' desire to learn, especially in learning to count. Students' learning motivation influences students' learning difficulties because motivation plays a role in fostering students' enthusiasm for learning so that if students' motivation is lacking then students will experience difficulties in understanding or learning mathematics (Sari & Madio, 2021). The very poor learning motivation of deaf students can be seen from the students' lack of enthusiasm when learning to count. Students do not pay attention to the teacher when explaining numeracy material, students rarely answer questions from the teacher and students are unable to solve their own problems related to numeracy material. Another motivation for learning can be seen from students only wanting to learn when given a prize which can have a bad impact on other learning processes. Lack of student motivation in learning to count has an impact on learning outcomes or learning achievement. This is in accordance with the finding that learning motivation is one of the factors causing students' learning difficulties. Relevant to the research results is that low learning motivation will result in students not having the enthusiasm to learn mathematics, so that students will experience difficulties in learning or understanding mathematics lessons (Ayu et al., 2021).

External factors that cause learning difficulties for students with special needs (deaf) in learning mathematics at Lutang State Special High School

1. External factors that cause students with special needs (deaf) include family environment. This is influential because the family environment is the first center of education for students, guidance and attention from parents will influence student learning success (Utari et al., 2019; Damayanti et al., 2023). Based on research results, the factors causing students to experience learning difficulties can be seen from the lack of parental attention due to being busy at work. Parents of students also rarely control when students learn to count and there is a lack of facilities that can help students learn to count so that students have difficulty understanding the numeracy material. This is in accordance with the finding that family factors are one

of the external factors of student learning difficulties. Relevant to the research results is that children who receive less attention, guidance and supervision from parents will experience difficulties in learning, especially learning mathematics (Anturichana et a.l, 2021).

2. The second external factor is the school environment. The school environment is a place where students can discover new things or knowledge that cannot be obtained at home, especially for numeracy lessons. The school environment is also one of the influences causing students to experience difficulties in learning mathematics because the school environment can shape students' personalities through learning and the rules at school (Aristha, 2018). Based on several things found by researchers in the field, the difficulty of students learning to count is caused by the lack of teaching aids used in learning to count, the proximity of the school to the main road and the unavailability of special classes for deaf students. This is in accordance with the finding that school factors are one of the external factors that cause students' mathematics learning difficulties. Relevant to the research results is that a school environment that does not support student activities will cause students to experience difficulties in learning mathematics (Wati & Muhsin, 2019).

Efforts to overcome the difficulties of students with special needs (deaf) in learning mathematics at Lutang State Special High School. Efforts made by the family to overcome the problem of students' mathematics learning difficulties, especially in arithmetic, such as increasing students' interest in learning, are by giving gifts that they like and giving praise to students. Apart from that, there are efforts made by the teacher to overcome the problem of learning difficulties experienced by students, namely teaching using learning while playing methods, using teaching aids or media related to numeracy material and giving prizes to students. This is in accordance with the findings that giving gifts or giving praise can increase students' interest in learning. Relevant to the research results is that implementing a direct learning model by giving gifts or praise is a learning medium that can encourage students' enthusiasm for learning (Asriyanti & Purwati, 2020).

4. CONCLUSION

Based on the results of research the factors that cause difficulties for students with special needs (deaf) in learning at Lutang State Special High School can be concluded that there are two factors. First internal factor consists of learning interest, learning habbits, and learning motivation. Second, external factors that cause difficulties for students with special needs (deaf) in learning mathematics are family environmental and school environmental factors. Based on the research results, besides the factors that cause difficulties for students with special needs (deaf) in learning mathematics, formation was also obtained that there are several efforts made by teachers and parents to minimize the difficulties experienced by students with special needs (deaf) in learning. numeracy, namely by carrying out the learning process using the learning while playing method, giving prizes that students like and giving praise to students.

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