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DIAGNOSIS OF CALCULATION DIFFICULTIES AT ELEMENTARY SCHOOL IN LOW CLASS

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Abstract
The purpose of this study was to diagnose the difficulty of counting, the factor causing the difficulty of counting and the solution to the problem of learning difficulties in numeracy experienced by the lower grade students. This study uses a qualitative approach. This research data collection uses test, observation and interview. The data collected were analyzed with the stages of data reduction, data presentation and conclusions. Based on the result of the analysis of the data obtained, the result showed that subjects with high abilities did not have difficulty in counting. Subjects who are capable are having difficulty understanding concepts, difficulty distinguishing operating symbols, difficulty applying counting principles and difficulty translating questions. Subjects with low abilities have difficulty counting and distinguishing operating symbols, difficulty translating questions, and difficulty applying arithmetic principles. Factors causing difficulty in counting are the lack of motivation and interest of students in learning and students are not yet fluent in reading. The solution in overcoming these problems is to instil the concept of addition and subtraction of numbers to children using concrete and semi-concrete objects, the questions presented are using picture questions, both routine questions and story questions, and the use of media and learning models to generate interest and motivation in children in counting addition and counting subtraction.
Keywords: learning difficulties, arithmetic operations, addition and subtraction

INTRODUCTION

In life, learning is an activity that is continuously carried out without realizing it. For example, in everyday life, we carry out activities related to problems that require a solution as a problem-solving. From solving the problems faced, we learn how the solutions we find can be applied to the same problem if it is found in the future and learn to solve problems with various solutions with different levels of problems.

Many experts describe the notion of learning, but all of them have the same meaning and it can be concluded that learning is a process in which changes occur in the learner, both cognitive, affective and psychomotor (Pratama, 2019).

In their activities, the learning experienced by each child varies depending on the environment and with whom he learns. There are various ways of learning activities used by children such as listening, seeing, touching, writing, and so on. Through learning, children will get changes in thinking, provide a new understanding of the learning activities they do, to provide new skills that result in changes in children's behaviour. Learning activities occur throughout human life, both in the family environment, community environment, and

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school environment. Many things that must be learned by students in the school environment are packaged in subject matter as a basis that they must master. One of them is mathematics.

Mathematics is one of the important subjects taught to students. Huljannah, et al (2018) revealed that mathematics is important to be taught to students starting from elementary school to equip them to solve problems. Mathematics is a part of science that teaches children how to think rationally, critically, analytically and systematically. According to Uno (2009), mathematics is used as a science that starts from the study of parts that are well known towards unknown directions. The known part is the personal experience of each student, then gradually faced with complicated or unknown conditions. For example, starting from teaching concretely through objects around the child such as the number of pencils and books the child has. After students master concepts based on the objects around them, children are introduced to abstract ways through number symbols.

The number is a concept in the process of counting and measuring (Suwarto, 2017). Counting can be for example when someone shows the number of objects, and measurement can be shown when showing the length, height, or weight of an object. In the process of learning mathematics subjects in first-grade elementary school, number operations have been introduced, namely addition and subtraction (Djaelani, 2008). At first, students are introduced to the concept of numbers by concretely showing the count or showing the number of objects, either in the form of concrete objects or visualized in the form of pictures. Number operations need to be mastered well because it is the basis for solving other more complicated operations.

In the process of learning mathematics, especially counting, students can experience difficulties and obstacles. This difficulty is not only experienced by students with low abilities but can also be experienced by students with above-average abilities. Counting difficulties are a form of the child's inability to master concepts, principles, facts, and skills in mathematical arithmetic, even though children are trying to learn them (Safitri, et al 2019). The ability to abstract a problem, in this case, is the concept of number operations, either addition or subtraction. Several factors cause learning difficulties, including internal factors, namely factors from within students for example attitudes, interests, motivation, and sensing abilities; and external factors, namely factors that come from outside, be it the family, school or community environment (Dewi et al, 2012; Novita et al, 2018).

The categorization of learning difficulties in this study refers to 3 types of difficulties according to Yusmin (2017), namely: 1) difficulties in using concepts; 2) difficulty in applying the principles; 3) difficulty solving verbal problems or story problems. The following is a table explaining the difficulty indicators according to Yusmin (2017) which has been modified.

Table 1. Indicators of Difficulty in Solving Math Problems

No	Indicator	Explanation
1	Difficulty in learning concepts	a. Students are not appropriate in translating the form/illustration of the problem. b. Students are not right in using the formula in accordance with the prerequisite

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		conditions for the enactment of the formula. c. Students cannot distinguish operating symbols
2	Difficulty in applying the principles	a. Students are not right in using the properties of arithmetic operations b. Students do not complete calculations
3	Difficulty in solving verbal problems or story problems	a. Students are not right in translating into mathematical models b. Students are not appropriate in using the available data c. Students are not right in drawing conclusions

(Yusmin, 2017)

Difficulties in learning mathematics can be identified through the process of administering a diagnostic test. Diagnostic tests are tests that are used to find out the weaknesses of students so that these results can be used as a basis for providing follow-up according to the weaknesses of the students (Depdiknas, 2007).

Based on the description of the background above, it is necessary to diagnose students' learning difficulties in counting so that they can find out the causes of their difficulties and of course can make input for elementary school teachers, especially first graders, to determine the right learning method, so that difficulties in understanding children's arithmetic operations can be overcome. The aims of this research are: (1) to describe students' difficulty in counting, and (2) to describe the factors that cause learning difficulties for first graders of the elementary school in arithmetic operations (addition and subtraction).

METHOD

This study uses a qualitative approach. The research subjects were 6 grade 1 student of SD Negeri Rantau Kanan 2 Tapin who was selected based on their mathematical abilities, namely 2 students with high abilities, 2 students with moderate abilities and 2 students with low abilities. Data collection in this study used the main instrument, namely the researcher and the supporting instruments, namely tests, observation sheets, and interview guidelines. Through the test, the researcher collected primary data by giving 5 essay questions which included addition and subtraction material and presented in the form of semi-concrete, abstract and story questions. The question categories can be seen in Table 2 below.

Table 2. Category of Questions

Question Number	Question	Level Material
1	Addition	Semi concrete
2	Subtraction	
3	Addition	Abstract
4	Subtraction	
5	Subtraction	Story Problems

Observations were made by observing the learning carried out by the teacher through limited face-to-face learning and recording the difficulties faced by students in learning mathematics in addition and subtraction operations. In addition, the researchers also collected secondary data through interviews with teachers and subjects to obtain information about the factors causing the difficulties encountered in addition and subtraction material. The data analysis technique used is using the model from Miles and Huberman with the stages of data reduction, data presentation, and verification and concluding.

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RESULT AND DISCUSSION

Finding in the field through observation and interviews with parents

1. Subject Selection Result

In this study, subjects were selected based on their mathematical abilities and consideration with the class teacher. The subjects chosen were 6 people from each of them with high, medium and low mathematical abilities. Research subject data can be seen in Table 3 below.

Tabel 3. Subject of research

Subject	Mathematical Ability
SN	High
FZ	
ZA	Medium
DA	
DW	Low
RA	

2.Test and Interview Result

Based on the data from the test result conducted on 6 subjects in question number 1, the form of the question is presented in the form of an animal picture that shows the addition operation with semi-concrete question levels. Subjects are asked to answer how many animals there are in total if the first 5 animals in the first image are added to 3 animals in the second image. The data obtained that the six students answered correctly. Based on the result of the interviews, the six subjects had no difficulty in answering the addition operation questions with semi-concrete questions.

In question number 2 is presented in the form of a pencil drawing which shows the operation of subtraction with a semi-concrete level of questions. The subject is asked to answer how many pencils, if there are 6 pencils then 4 pencils are taken by the second child. Based on the result of the interviews, all subjects had no difficulty in answering the subtraction operation questions using semi-concrete.

Problem number 3 is presented in the form of the symbol '4 + 3 = …' which indicates the addition operation. From the data obtained, 3 subjects were able to answer correctly, namely SN, FZ with high ability and ZA with moderate ability. The other 3 subjects, namely DA with moderate ability, DW and RA with low ability, made mistakes. DW answered '4 + 3 = 2'; RA answered '4 + 3 = 8'; and DA answered '4 + 3 = 43'. Based on the answers to these three subjects, it can be seen that DW and RA made almost the same mistakes. After interviewing DW and RA, information was obtained that DW and RA did not perform the calculations correctly. So that DW and RA have difficulty in applying the principle of arithmetic operations. While DA made a different mistake than DW and RA. DA immediately writes the numbers 4 and 3 close together. During the interview, DA explained that when there is a "+" sign, it means to write down the numbers as a whole. So that DA has difficulty in learning the concept of counting and applying its operating principles.

In question number 4, it is presented in the form of the symbol '7 – 3 = ...' which shows the operation of subtraction with the level of abstract questions. Seen from the form of the question as many as 3 subjects answered correctly. The 3 subjects who made mistakes were DA, DW, and RA. DA and RA answered the same, namely '7 – 3 = 10'. After interviewing DA and RA, information was obtained that they were translating the symbol "–" which is addition. Thus, subjects DA and RA have difficulty distinguishing symbols of subtraction and addition. While DW answered '7 – 3 = 3'. Based on the information obtained from the interview, DW made an error in the counting

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process so that DW had difficulty in applying the principles of counting.

In the form of abstract reduction questions, there was a decrease in the number of students who answered correctly. There is a difference in the delivery of subtraction operations from the semi-concrete model in question number 1 to an abstract form.

Question number 5 is presented in the form of story questions 'Ani has 5 pencils then Ani lends 2 pencils to Sasa. Ani's pencils become as much as Pencil.' which denotes the subtraction operation. The data obtained were only 2 subjects who answered correctly and as many as 4 subjects who made mistakes on this question, namely ZA and DA with moderate abilities, DW and RA with low abilities. The percentage obtained is 20% with the ZA category answering this question with the help of pictures, he describes 5 pencils and 2 pencils. So ZA answered 6 pencils. DA also answered by describing 6 pencils plus 2 pencils so that the answer obtained was 8. DW in his answer wrote '5 + 2 = 6'. While RA wrote '5 + 2 = 7'. From the answers of the 4 subjects, it can be seen that there are similarities in the way of completion by 2 subjects with the moderate ability and the method of completion by 2 subjects with low ability. These four subjects have difficulty in translating story problems that should be subtraction into addition. In addition, the subjects of ZA, DA and DW did not perform the calculations correctly. So it can be said that ZA, DA and DW have difficulty in applying the principle. In the matter of the form of this story, it is seen that the subject does not understand the question because there are still subjects who are not yet fluent in reading so that the subject's understanding of the question is not optimal.

The following table presents the difficulty categorization at each level of questions experienced by the subject based on the result of tests and interviews.

Table 4. Category of Student Difficulty

Subject	Level of Question	Semi Abstract	Abstract	Story question
SN		-	-	-
FZ		-	-	-
ZA		-	-	1. Difficulty translating question 2. Difficulty applying principles
DA		-	1. Difficulty learning the concept of countin 2. Difficulty applying principles 3. Difficulty distinguishing symbols	1. Difficulty translating question 2. Difficulty applying principles
DW		-	Difficulty applying the principle of arithmetic operations	1. Difficulty translating questions 2. Difficulty applying principles
RA		-	1. Difficulty applying the principle of arithmetic operations 2. Difficulty distinguishing symbols	Difficulty translating questions

Based on Table 4, subjects with high abilities did not have difficulty counting on semi-abstract, abstract and story questions. Subjects who have the moderate ability have

no difficulty in semi-abstract questions. But they do not understand the concept of counting, it is difficult to distinguish operational symbols and it is difficult to apply the principles of arithmetic to abstract problems. While in story questions, capable subjects are having difficulty translating the questions, and finally, have difficulty in applying the principles. Subjects with low abilities have difficulty counting and distinguishing operating symbols on semi-abstract questions and have difficulty translating questions and applying numeracy principles to story problems.

Several factors cause the subject's difficulty in solving problems, including 1) the child is not yet fluent in reading; 2) children's low interest in learning; 3) lack of motivation in children and teachers do not motivate children when learning takes place. Based on the explanation above, it is necessary to increase children's numeracy skills by using concrete, semi-concrete, and abstract media to introduce the concept of addition.

Based on the problems found from 6 subjects. Most of the children have difficulty in applying the principles in solving abstract problems and story problems. This difficulty indicates the child's lack of understanding of the symbols and numbers in the problem. In learning mathematics, children need to be introduced to and understand the concept of the first stage, namely the enactive stage. At this stage, children learn to count based on objects around students or known as concrete objects (Prastitasari, 2020). According to (Prastitasari, 2018; Prastitasari, 2020) through learning based on objects around children, children understand concepts faster because they are related to their lives. Children will naturally remember concepts based on what they see. After the child has mastered the concept at the enactive stage, it is continued with the second stage, namely the iconic stage. At this stage, the child is introduced through mental images or pictures in other words using semi-concrete. After instilling the concept in a semi-concrete manner, the teacher enters the final stage, which is symbolic or known as abstract. At this stage, children are introduced to the concept of addition and subtraction using the forms and symbols of addition and subtraction operations (Karso, 2014).

In addition to the problems found, the factors that caused the subject's difficulty in solving problems, firstly, the child was not fluent in reading. The ability to read is a basic ability at the basic education level and elementary school (SD) is an educational unit that provides these basic abilities as stated in Chapter II article 6 paragraph 6 of PP no. 19 of 2005 concerning National Education Standards. So, this ability is very important for students to have. Through reading, children will understand the text they read. For this reason, it is necessary to increase children's reading skills by making habituation with special times for students, for example after learning the teacher provides time to teach students to read, provides reading book facilities for children in the library and makes programs for children to like reading on certain days to hone their reading skills. children (Meo, et al 2021).

The second factor, children's low interest in learning. Interest in learning is the key to determining the success of learning. If the child has a high interest in learning in the learning process, then the child will have a sense of pleasure in participating in learning mathematics. Interest in learning is one of the factors needed in the student learning process at school. Students' high interest in learning will direct their

behaviour to achieve learning goals and succeed in getting optimal learning outcomes. However, in reality, not all students have a high interest in learning which is indicated by the attitudes and behaviours of students that tend to hinder them in participating in the learning process and indicate low student interest in learning (Reski, 2021).

Many studies offer solutions to overcome the lack of interest in children's learning, especially mathematics. The first way is for teachers to teach the concept of addition and subtraction in addition to using enunciative, iconic and abstract methods, which can be included using interesting learning media, thus stimulating students to feel happy in learning the concepts of addition and subtraction (Dewi, 2019). The second way is the use of learning models in the learning process, many studies reveal that the use of learning models the learning process has a positive effect on children's learning outcomes, both in groups and individually (Silviani, et al 2017).

The third factor is the lack of children's motivation in learning. In addition to interest, motivation is also the key to the success of the learning carried out. Motivation serves as a driver of learning efforts and the achievement of better learning outcomes. Motivation can direct students in learning to achieve their goals or ideals. Motivation can play a role in selecting student actions, what to do and what to put aside (Nurmuiza, et al 2015). Many studies offer solutions to children's lack of motivation in learning, namely by using media and learning models that help overcome these problems.

CONCLUSION

Based on the result of the analysis that has been done, it can be concluded as follows (1) the result of interviews and tests on 6 subjects. Children's difficulties were found in addition and subtraction operations with abstract questions. The difficulties that students get are learning the concepts of counting, applying principles, and distinguishing symbols in addition and subtraction operations, then (2) the result of interview and tests on 6 subjects. Children's difficulties were found in addition and subtraction operations with questions in the form of story questions. The difficulties that students get are translating problems and applying principles in solving addition and subtraction operations problems (3) the factors that cause children's numeracy difficulties in addition and subtraction operations are that there are still children who are not fluent in reading, children's low interest in learning, and children's lack of motivation in learning.

Based on these problems, the right solution to overcome this problem are (1) in the aspect of children's difficulties in addition and subtraction operations with abstract questions. Children need to be taught addition and subtraction operations through enactive, iconic and symbolic stages (2) Children's difficulties in addition and subtraction operations with questions in the form of story questions. Children need to be taught addition and subtraction operations through enactive, iconic and symbolic stages (3) The difficulty factor in counting children in addition and subtraction operations if there are still children who are not fluent in reading, the teacher can provide special time habituation to students, for example after learning the teacher provides time to teach students to read, provides reading book facilities for children in the library, and make programs for children to like reading on certain days so that children's reading skills can be honed (4) The difficulty factor

in children's counting in addition and subtraction operations in terms of children's low interest and motivation in learning. Teachers can innovate learning by using media and learning models as a means to increase children's interest in learning.

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