

## Analysis of Students' Difficulties in Learning Mathematics on Integer Topics in Grade 7 of MTs Ashhabul Yamin Academic Year 2022/2023

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### Abstract

This research was motivated by the large number of students who had difficulty in understanding integer material. This is seen from the students' daily assignments given and interviews. This is because students do not know the whole of the integer material presented by the teacher, students do not know the material presented so they think that integer material is difficult material. The aim of this research is to describe the participants' difficulties in learning mathematics. Students from the 7th grade of MTsS Ashhabul Yamin will be the informant in this research. The type of research used is qualitative narrative. The techniques used in collecting data are tests, interviews and documentation. The data analysis used is the Miles and Huberman model which consists of three steps, namely data reduction, data presentation and drawing conclusion. The research results showed that from 28 students who took the integer material test, there were only 6 students (21.43 %) who achieved the KKM score, while 22 students (78.57%) had not achieved the KKM score. Students' difficulties in learning mathematics in integer material are difficulties in counting, difficulties in repeating the material, difficulties in understanding the language of mathematics and difficulties in visual perception. So it can be concluded that there really are difficulties in students' learning mathematics in round number material in the 7th grade of MTsS Ashhabul Yamin.

### Abstrak

Penelitian ini dilatarbelakangi oleh banyaknya siswa yang mengalami kesulitan dalam memahami materi bilangan bulat. Hal ini terlihat dari tugas harian siswa yang diberikan dan wawancara. Hal ini disebabkan siswa tidak mengetahui keseluruhan materi bilangan bulat yang disampaikan guru, siswa tidak mengetahui materi yang disampaikan sehingga menganggap materi bilangan bulat merupakan materi yang sulit. Tujuan dari penelitian ini adalah untuk mendeskripsikan kesulitan peserta dalam belajar matematika. Siswa kelas 7 Pondok Pesantren Ashhabul Yamin akan menjadi informan dalam penelitian ini. Jenis penelitian yang digunakan adalah narasi kualitatif. Teknik yang digunakan dalam pengumpulan data adalah tes, wawancara dan dokumentasi. Analisis data yang digunakan adalah model Miles dan Huberman yang terdiri dari tiga langkah yaitu reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan dari 28 siswa yang mengikuti tes materi bilangan bulat hanya 6 siswa (21,43%) yang mencapai nilai KKM, sedangkan 22 siswa (78,57%) belum mencapai nilai KKM. Kesulitan siswa dalam belajar matematika pada materi bilangan bulat adalah kesulitan dalam berhitung, kesulitan dalam mengulang materi, kesulitan dalam memahami bahasa matematika dan kesulitan dalam persepsi visual. Jadi dapat disimpulkan bahwa memang terdapat kesulitan belajar matematika siswa pada materi bilangan bulat di kelas VII MTsS Ashhabul Yamin.

## INTRODUCTION

Based on research by Amin et al. (2021) to form a reasonable and structured way of thinking from a person there is an important role in it, one of them is mathematic. One of the benefits of studying mathematics is that students can gain the ability to solve problems, ranging from maths problems at school to problems in everyday life. Meanwhile, Chintia et al. (2021) revealed that one of the sciences studied by students at school that can improve the

thinking process of students to become more understanding of the problems that cause problems to occur is mathematics.

Currently, there are still many students who find it difficult to understand and solve problems given by teachers, especially in school mathematics problems, therefore educators must have a deep understanding of the difficulties that students have faced during the learning process, especially in solving problems in learning mathematics at school. Educators can provide time for questions and answers or give quizzes about the lessons that have been learned so that they can find out how far students understand the material and what obstacles students face in solving problems.

From these two statements, it can be concluded that mathematics is a science that is very important to be learned and understood by all students, because the mathematics taught at school can make students more skilled and easy to solve problems that they will face in everyday life. In this case the teachers play an important role. Teachers must have a talent or creative way to attract students' attention so that students can learn well and understand all the concepts they teach. Measurement of student learning outcomes after carrying out learning can be seen from the answers that students give in direct questions or questions given by the teacher.

At present there are still many students who have difficulty in solving problems or problems given by the teacher, this indicates that there is still a low ability of students to understand the concepts or learning delivered by the teacher, besides that there are several factors that influence it, including the delivery of material and concepts by educators who still tend to be monotonous or uninteresting to students, then educators who are too convoluted in delivering material or concepts during learning, and many more. Factors that can affect the smoothness of the learning process include teachers who teach, methods used by teachers, students who learn, and tools used during the learning process.

According to Mulyono (2003), there are two factors that influence students in learning, namely factors from within the students themselves or also called internal factors and factors from outside students such as ineffective teacher delivery which is also called external factors. These factors can be observed and used as guidelines by teachers or educators in order to maximise the learning process by making things interesting in the learning process so that students are not lazy and bored in participating in learning, then making the delivery of material and concepts uncomplicated so that students can more quickly understand the concepts and learning taught. Obstacles in solving a problem can be resolved if the difficulties faced can be overcome properly. Students' difficulties in doing or Volume 6, No. 6, November 2023 pp 2185-2206 2197 solving mathematics problems can be seen from the answers students give from questions or problems given by the teacher after the learning process takes place.

One of the ways proposed by Syahreza Fahlevi et al. (2020) in order to find out how deeply students understand the material that has been learned is to give several essay questions about the material that has been taught and analyse the results of student answers systematically. Meanwhile, according to Jamal (2019) difficulties in understanding concepts are the biggest thing that makes students have difficulty in learning mathematics at school, there are 3 things that make students have difficulty solving problems, including the first is perception or mathematical calculations, then the second is intervention or the steps students must go through to get the correct results, then the last is extrapolation or the process of estimating the results that will be obtained. In this case, the obstacle that most students face in the learning process, especially in mathematics lessons at school, is the thinking of students who think that mathematics is difficult, counting makes their heads hurt, then not to mention the formulas that are very difficult to understand because they are very difficult to understand.

Number is a mathematical concept that is applied to enumeration and measurement. Number is taught to students from kindergarten to senior high school. Number material basically explains about numbers and how to count. Number material is always taught to students with different levels of difficulty according to the level of education. In junior high school, the number material taught consists of whole numbers, how to calculate whole numbers and fractional numbers and how to calculate them. Based on the results of Yulia's research (2018) by understanding the properties of arithmetic operations on whole numbers and fractions, students are able to solve problems in everyday life related to the concept of numbers.

But in reality, there are still many students who do not understand how to calculate integers, starting from how to calculate with negative numbers, then how to calculate with fractional numbers, how to calculate numbers in decimal form, and many other basic calculations that students still have not mastered. Based on research by Hidayati et al. (2017) there are many students who are still unable to understand the principles and procedural or operations of integers. The factors that make students have difficulty in solving integer problems include 1) not knowing at all how to operate numbers and derive numbers from the given problem in order to complete the calculation easily and correctly, 2) not really understanding integer material such as negative, positive numbers, then how to operate them, 3) not understanding the concept of solving problems, basically students when they first see a problem immediately conclude that numbers are difficult, especially with negative integers, students feel dizzy just by seeing a negative sign in the problem, 4) do not understand how to determine the final result in the problem, if in the problem there are negative and positive integers, students immediately feel confused about the answer later whether negative or positive, and 5) do not pay attention to the teacher when explaining the material and problem solving exercises, in this case it has become familiar to students, because most students when they hear mathematics they are already dizzy first, this makes students not eager to learn mathematics at school, therefore educators or teachers must be able to make learning interesting for students.

In addition, the results of Dewi's research (2020) state that students have several difficulties in solving fraction calculation operation material, namely difficulties in using concepts, difficulties in using principles and difficulties in solving verbal problems. In this case students are still lacking in understanding the material, even though they have often received material on this number, starting from the elementary school level (SD) students have been given material about the number line, then how to calculate the addition and subtraction operations of whole numbers with the help of the number line, then also in elementary school students have received material about multiplication and division with negative and positive numbers, but when students enter junior high school (SMP) and are given questions about this material again, students still cannot do it because they are dizzy seeing negative numbers.

In addition, the results of research from Dewi (2020) also show that students who score above the Minimum Completeness Criteria (KKM) also have difficulty in solving mathematics problems using fraction calculation operations. Meanwhile, according to Utami (2016), the errors faced by students in number operations material include: 1) Errors in concepts, 2) errors in principles and 3) procedural errors. Then the solution is: 1) Learning media can be used for contextual learning by teachers in order to overcome conceptual errors in teaching, 2) Osborn Parne's learning model and drilling structured problems can be used by teachers to overcome principle errors, and finally 3) To overcome procedural errors warming up teachers can be used in learning apperception. Based on the description above, there are many problems that students experience, as well as the solution. For this reason, in order to find out the truth of all the above opinions, the researcher was moved to carry out research on junior high school students (SMP) with the title analysis of class VII students' difficulties in number material.

The purpose of this study is to analyse what are the difficulties of students in solving problems in number material and later the results of this study can be used as a benchmark so that teachers or educators can change or make the learning process more interesting for students and make students more interesting.

## METHODS

Based on the problem under study, the type of research used in this study is descriptive qualitative. According to Sugiyono, descriptive qualitative is intended to determine the existence of one or more variables making comparisons and without looking for relationships from other variables. Descriptive research is not intended to test certain hypotheses, but only describes what happens to one variable, symptom or event. It can be concluded that descriptive qualitative research is research that describes a situation or a phenomenon that occurs in words or sentences, then separated by category to be concluded.

## RESULT AND DISCUSSION

### RESULT

#### A. Research Results

##### a. Data on Test Question Results

Presented written tests and interviews of research instruments on each research subject. From the written test of each research subject, an analysis of students' mathematics difficulties in integer material was carried out. Researchers took several questions to be analysed.

a) Subject I made a mistake on  $-(18): (-3)$ . The sum should be 6, but in the picture Subject I answered -6. This illustrates that Subject I has not been able to repeat the material properly in accordance with the material that has been taught.

b) Subject II is the same as the error experienced by Subject I. This is evidenced by the way Subject II answered the question. This is evidenced by the way Subject II answered the questions given. Based on the picture above, two mistakes have been made by Subject II. The first error is  $-20 + 40$ , the answer should be 20, but Subject II answered 60, as if the min sign in front of 20 is missing. The second error was  $-(-6)$  which should be 6 but Subject II answered -6. This shows that Subject II had difficulty in repeating the material.

c) Subject III Errors that often occur in students are when answering story problems they often forget known, asked, and so. They always rush to answer the questions given without doing the provisions that have been given. And the picture above shows that Subject III did not do that, Subject III only immediately answered the results of the question without elaborating according to the mathematical provisions. This shows that Subject III lacks understanding of mathematical language

##### b. Interview Result Data

Interview is one of the techniques in data collection in this study. This interview aims to find out in depth the students' mathematics learning difficulties in whole numbers material. Through the process of conducting this interview, it is hoped that the difficulties experienced by class VII students of MTsS Ashhabul Yamin can be known. In this study, the source of information (informants) for interviews was class VII students of MTsS Ashhabul Yamin, totalling 5 people.

##### a. Ainil Ramadhani

Based on the results of the researcher's interview with class VII students of MTsS Ashhabul Yamin, he said that for ordinary addition and subtraction he could, but when the properties of integer operations were applied he began to get confused. When he was confused by the problems given he was just silent and did not want to ask the teacher. When

the questions were given he could not answer them according to the material explained, he just answered as best he could without thinking about whether it was right or not. When the teacher explained the material, he only listened and did not want to ask when he did not understand the material. He also said that the reason he had difficulty understanding the material was because he did not dare to ask questions and did not pay much attention to the teacher when explaining the material.

b. Al Faira Zonia Fitri

Based on the results of researchers' interviews with seventh grade students of MTsS Ashhabul Yamin, he said that basically he did not understand integer material at all, what he knew was only addition and subtraction. So that when given a problem he could not do it himself, when given the task he also cheated when the teacher did not see him.

c. Nur Aisyah

Based on the results of the researchers' interviews with VII grade students of MTsS Ashhabul Yamin, she said that for integer operations she could understand the material. But when the next material was explained by the teacher such as FPB, roots and others he began to get confused. When he was confused he asked the teacher to explain it again, and he found it difficult to understand because when the teacher explained it again the teacher was too fast in explaining the material. To complete the material that he did not understand, he just left his answer sheet blank.

d. Fairoza Humai Rati

Based on the results of the researcher's interview with VII grade students of MTsS Ashhabul Yamin, he said that for the beginning of the material he really understood the integer material. But as the integer material continued he began to be confused in understanding integer material. When he began to not understand he asked his teacher to repeat, but because in mathematics lessons do not have much time, the teacher can only explain enough and ask to study with other friends. His obstacles to understanding the material were the short learning time and the way the teacher presented the material he did not understand.

e. Lawra Sicywalia

Based on the results of the researcher's interview with VII grade students of MTsS Ashhabul Yamin, he said for the initial material on integers he could understand. After the next material was added, he began to find it difficult to understand the material provided by the teacher. When he had difficulty, he did not dare to ask the teacher, but he asked his classmates. He also said that the reason he had difficulty with the material was because he did not like learning maths and he also did not like learning mathematics.

## DISCUSSION

Based on the results of test questions and interviews conducted with VII grade students of MTsS Ashhabul Yamin, a description of students' mathematics learning difficulties in whole numbers was obtained. The results related to the findings on students' mathematics learning difficulties can be described as follows:

### 1. Weakness in counting

Weakness in calculating is one of the indicators in mathematics learning difficulties. Judging from students working on test questions, not many students were found to have difficulty calculating or reducing. Judging from the results of interviews with students, for

addition or subtraction students do not experience too much difficulty, although there are some students who are wrong in adding or subtracting.

## 2. Difficulty in repeating material

Judging from the results of the test questions given, many students find it difficult to work on the material that has been taught. Even to cover up difficulties in working on problems, not a few students cheat. Judging from the results of the interview, the student also admitted that he was also difficult to work on problems other than addition or subtraction problems.

## 3. Lack of understanding of mathematical language

In working on test questions, students are not too difficult to understand mathematical language such as numbers, roots, parentheses and others, although some students made mistakes when working on test questions. From the interview results, students did not find it too difficult to use mathematical symbols.

## 4. Difficulty in visual perception

Visual perception is the ability to translate what can be seen by the eye. This can be proven in the way students work on maths problems. By the way the teacher explains the material in front of the class, the students' visual perception immediately works. Judging from the results of tests conducted by students, many students cannot understand the tests given. This is also supported by the results of student interviews who said that he was unable to master the material that was difficult to accept. But most of the students also did not want to ask back.

## CONCLUSION

Difficulty learning mathematics is a specific type of learning difficulty that requires normal or slightly below average performance, no emotional, primary or environmental support. The problem encountered is difficulty with addition, subtraction, division and division. Children who find it difficult to learn maths are not incapable, but they experience certain difficulties that make them unprepared to learn.

Based on the results of the research, it is stated that some students have difficulties in understanding round materials because students are weak in counting, difficulty in transferring knowledge, lack of understanding of mathematics and difficulties in visual perception. The students do not understand the whole of the whole number material delivered by the teacher and the students also have no desire to solve the problems given so that they think that whole number material is difficult material.

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