

**DIFFICULTIES OF ELEMENTARY SCHOOL GRADE VI SOLVING NARRATIVE TEST IN
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e-mail: sitikhabibah@unesa.ac.id**Abstract**

Mathematics is one of the sciences closely related to human life in helping to solve a problem. Narrative tests are a type of question that is suitable for use in presenting a mathematical problem. When solving narrative tests, difficulties are often found. This study aims to describe the difficulties experienced by students in solving narrative tests. The type of this research is qualitative research, with the research subjects being 12 sixth grade students who have the various mathematical abilities in one of the elementary schools in Gresik. Data collection through written tests, interviews, and documentation. The results showed that students experienced difficulties in three aspects, namely: 1) language aspects. Broadly speaking, students' difficulties in language aspects were caused by a lack of understanding of narrative tests, 2) schematic knowledge aspects, this difficulty was triggered because students were unable to remember and use mathematical concepts well, and 3) the algorithm aspect, this difficulty is caused by students doing the calculation process in a hurry. Narrative tests with simple context and language regularly can be done as an alternative to minimize the level of difficulty of students and help students build a more structured way of thinking.

Keywords: qualitative research, difficulties, narrative tests.

Abstrak

Matematika merupakan salah satu ilmu yang memiliki kaitan erat dengan kehidupan umat manusia dalam membantu memecahkan suatu masalah. Soal cerita merupakan tipe soal yang cocok untuk digunakan dalam menyajikan suatu masalah matematika. Pada saat menyelesaikan soal cerita, seringkali ditemukan kesulitan-kesulitan. Penelitian ini bertujuan untuk mendeskripsikan kesulitan-kesulitan yang dialami siswa kelas VI sekolah dasar dalam menyelesaikan soal cerita pada materi bilangan. Jenis penelitian ini adalah penelitian kualitatif dengan subjek penelitian adalah 12 siswa kelas VI yang memiliki kemampuan matematis yang beragam di salah satu sekolah dasar di kabupaten Gresik. Pengumpulan data dilakukan melalui tes tertulis, wawancara, dan dokumentasi. Hasil penelitian menunjukkan bahwa siswa mengalami kesulitan pada tiga aspek, yaitu: 1) aspek bahasa, secara garis besar kesulitan siswa pada aspek bahasa disebabkan oleh kurangnya pemahaman pada soal cerita, 2) aspek pengetahuan skematis, kesulitan ini dipicu karena siswa belum mampu mengingat dan menggunakan konsep matematika dengan baik, dan 3) aspek algoritma, kesulitan ini disebabkan karena siswa melakukan proses perhitungan dengan terburu-buru. Pemberian soal cerita dengan konteks yang mudah dipahami serta bahasa yang sederhana secara berkala dapat dilakukan sebagai salah satu alternatif untuk meminimalisir tingkat kesulitan siswa dan membantu siswa membangun cara berpikir yang lebih terstruktur.

Kata Kunci: penelitian kualitatif, kesulitan, soal cerita.

INTRODUCTION

Human life is inseparable from difficulties. Difficulty is a condition that is able to inhibit an activity in achieving a predetermined goal. Therefore, a better effort is needed in overcoming difficulties. Many difficulties are found in various aspects, one of which is in education, especially

in the field of mathematics. Therefore, every human being needs education for their life because through education, humans can interact and socialize, explore their potential, and obtain information. In general, education is an effort to grow and develop innate potential physically and spiritually. Education becomes an absolute that every human being must fulfil. Without

education, man cannot live and develop to achieve goals or maturation. According to SISDIKNAS Law No. 2 of 1989, education is a process of guidance, teaching, or training in preparing students for the future. In particular, education in Indonesia has been regulated in the National Education System Law (UUSPN). In chapter 3 number 20 of 2003, it is explained that the purpose of education is to educate the nation's life and has been listed by the opening of the 1945 Constitution as one of the goals of Indonesian independence.

Mathematics is one of the subjects that must be taught from elementary school to high school. Mathematics is one of the important foundations for the development of science and technology and in the development of mathematics itself (Gunawan, 2016: 215). Competition in the global era requires the mastery of mathematics by students to be the main thing that cannot be contested (Siagian, 2016: 60). Mathematics is seen as one of the sciences that have a close relationship with the life of humankind. Students can be trained to develop critical and logical abilities in solving problems by studying mathematics. Nevertheless, on the other hand, many students consider that mathematics is one of the creepy lessons that cause students to have difficulty of learning mathematics.

In mathematics subjects, students are required to be able to think critically, understand concepts, and solve problems (Latifah & Afriansyah, 2021: 136). It is known that narrative tests are a type of problem that is very suitable for use in presenting mathematical problems. The problems contained in the narrative tests are presented in simple and concise language to not arouse the reader's attention. Narrative tests can provide problems with the simplest to most complex levels. The more complex the problems presented in the story, it will allow for a longer narrative (Dharma et al., 2016: 3).

Narrative tests are subjective types of questions, so in solving them, students need to pay attention to several aspects before answering. Solving problems in narrative tests requires unusual steps (Farida, 2015: 43). Therefore, some skills are needed to solve these problems, such as mathematical modeling, problem-solving, skills in numeracy, and writing conclusions. These abilities must be mastered by students so as not to have difficulty solving math narrative tests (Gunawan, 2016: 217).

Some studies on student difficulties provide results that show that students' difficulties in solving narrative tests consist of several types of difficulties. This suggests that the difficulties that students may experience are more complex and diverse. Students' difficulties in solving narrative tests can be classified into four types of difficulties (Widdiharto, 2008: 36), namely the linguistic aspect (language), schematic knowledge aspects

(knowledge schemes), planning aspects, and algorithm aspects. Research from Dila & Zanthly (2020: 24) states that students' difficulties are classified into three aspects, namely (1) aspects of language, where students have difficulty in translating questions into their language, (2) prerequisite aspects, where students have difficulty in understanding the concepts in the question and determining the formula to be used, (3) applied aspects, where students have difficulty in calculating activities that cause difficulties in concluding. The difficulties in solving the narrative tests are also categorized by Azis (2019: 67) into three types of difficulties, namely concept difficulties, principle difficulties, and algorithm difficulties. It can be concluded that the types of difficulties that may arise in solving the narrative tests are difficulty in understanding the problem, difficulty in determining the mathematical principles to be used, and difficulty in operating mathematical numbers.

Difficulty in solving math problems is one manifestation of mathematics learning difficulties experienced by students. Every student can experience difficulties in learning mathematics even with different levels of ability (Shah, 2007: 182 in Ardilah, 2017: 17). According to Ardilah (2017: 22), there are several things can be an indication that students are having difficulty in learning mathematics, including:

1. Students are not capable of mastering mathematical concepts correctly;
2. Students are not capable of performing algorithm processes;
3. Students are not able to understand the mathematical symbols in the problem;
4. Students are not able to understand the meaning of the problem.

Quoted from the belitung.go.id website, the difficulties experienced by students can be analyzed through investigations in the form of observations, interviews, diagnostic tests, and documentation. In addition, the difficulties experienced by students can be noticed in their behavior, namely confusion when answering questions, unable to be calm in class, and messing with their friends. Therefore, the need to identify difficulties in solving narrative tests can be a reference in determining how learning should be done so that students understand the concepts in the narrative tests.

Number material is one of the essential materials found in elementary school. In the matter of numbers, there are a series of calculation operations involved, including addition, subtraction, multiplication, and division. Elementary school grade VI students must to study the use of counting operations on numbers, fractions, and decimal numbers. Researchers will focus on stories about applying material operations to calculate

addition, subtraction, division, and multiplication in integers, fractions, and decimals. The material is one of the materials closest to the daily life of students and the basic material that each student must master.

Based on preliminary observations it was obtained that 8 out of 12 students received learning outcomes that were still below the criteria for minimum completion of the numbers material. Therefore, it can be said that students in class VI in one of the elementary schools in Gresik regency have diverse mathematical skills. This is also based on the statement of class VI guardians that some students are considered to have above-average math skills, but there are also students who lack math skills. Research result from Dwidarti et al. (2019: 315) shows that students with high, medium, and low abilities still have difficulty in solving story problems in set materials. Therefore, researchers want to know the difficulties experienced by 12 students of grade VI with diverse mathematical abilities in solving narrative tests in number material.

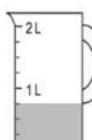
METHOD

This type of research is descriptive qualitative research. The data collection was carried out at one of the elementary schools in Gresik regency. This research aims to describe the difficulties experienced by students in grade VI with diverse mathematical abilities in solving narrative tests in number material.

Data is obtained through observation processes, written tests, interviews, and verification of existing data sources. The research was conducted by providing written tests to 12 students in grade VI. Written tests were given in the form of stories about applying number materials. Research instruments in the form of story questions totaling three questions with number materials.

The narrative test used is present below.

1. This kettle below is filled with milk.



If Hawa increasing the volume of the milk about 500 mL into the kettle, how much milk in the kettle now? (in litre)

2. Farmers in Sidorejo village received the help of 9 sacks of urea fertilizer from the government. Each sack weighs 72 kg. If urea fertilizer were to be distributed to 18 farmers with the same amount, how many kg of urea fertilizer would each farmer receive?
3. Mother has 25 kg of rice. After several cooks, the remaining mother's rice at home is 1/4 part of the total initial rice. If you want to cook 1/5

of the leftover rice, how much is the rest of the mother's rice now?

Interviews will be conducted with the research subject to obtain a more in-depth explanation. The data obtained will be analyzed through data reduction, data presentation, and data verification (Sugiyono, 2015: 338). Written test results are analyzed and classified based on the types of difficulties according to Widdiharto. The types of difficulties, according to Widdiharto (2008: 36), are grouped into four: difficulties in the language aspect, difficulties in the schematic aspect, difficulties in the aspect of planning knowledge, and difficulties in the algorithm aspect. Researchers will focus on three types of difficulties, namely difficulties in aspects of language, difficulties in schematic aspects, and difficulties in algorithm aspects. The indicators of student learning difficulties observed are difficulty in interpreting problems, difficulties in developing mathematical concepts, and difficulties in algorithm processes.

RESULTS AND DISCUSSIONS

Test results and interviews from 12 students of grade VI identified that some students experienced difficulties during the work on the given questions. Identification of the difficulties experienced by students will be grouped into three, namely difficulties in aspects of language, schematic knowledge, and algorithms. The number of students who experienced consultation on each aspect can be seen in table 1.

Table 1 Number of Students Experiencing Difficulties

Types of Difficulties	Number of Students Experiencing Difficulties		
	Question 1	Question 2	Question 3
Language Aspect	10	6	7
Schematics Knowledge Aspect	1	4	3
Algorithm Aspect	1	3	3

Assessment of the aspects of the language carried out is a way to determine if students have difficulty understanding what is known and asked in the question. Assessment of aspects of schematic knowledge will explain whether students have difficulty remembering mathematical concepts related to problems. Assessments on aspects of the algorithm are carried out to determine if students have difficulty using calculation operations to find answers.

1) Difficulties in Language Aspect

From the table above, it can be seen that the number of students who experienced the most difficulties lies in the aspect of language. Assessment of the aspect of language is one of the important parts to know the students' difficulties because the ability to speak, in this case, reading, becomes one of the foundations so that students do not encounter difficulties in solving narrative tests. In line with the results of research from Mariani (2018: 10), which stated that there is a relationship between the ability to read understanding and the ability to solve narrative tests.

In question number one, two students wrote precisely and completely what things were known in the problem. 11 out of 12 students re-wrote down the question correctly using similar sentences.

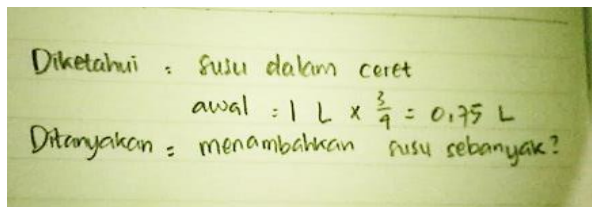


Figure 1 M's Answer

Translate:

Note: milk in the jar

$$\text{initial: } 1 \text{ L} \times \frac{3}{4} = 0,75 \text{ L}$$

Question: how much milk is added?

From the student's answer above (figure 1), it can be seen that the student only wrote one of the two things known in the question. The student also wrote "how much milk is added?" in the section asked which should be written as "how much milk is in the kettle now?". In question number two, as many as 6 out of 12 students did not fully write the known part of the problem. The six students also did not write back correctly the things asked in the question.

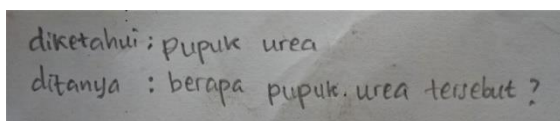


Figure 2 I's Answer

Translate:

Note: urea fertilizer

Question: how much urea fertilizer is?

Judging from the picture above (figure 2), students did not write things that were known in the question and they were not precise in writing the things asked. Students wrote "how much urea fertilizer is?" which raised the uncertainty in the question. Students should be able to write "how much urea fertilizer is distributed to each farmer?". In question number three, seven students did not write down the fully known things in the question. One student has difficulty rewriting the things asked in the question. This can be observed on the answer sheet of students who did not write anything on question number three (figure 3).

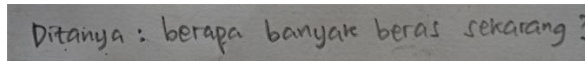


Figure 3 M's Answer

Translate:

Question: how much rice now?

Through the observation processed, many students still talked to friends when working on questions. This kind of thing affected the concentration in reading and understanding the problem. At the interview, most of the students admitted that they could not understand the problem well. This can be seen in one of the following interview results.

R: What is asked at number two?

S: Total fertilizer provided by the government

R: Try to understand the question again, please

S: (reread) hehe.. yes (I) was wrong

Lack of understanding of the problem can trigger difficulties in rewriting known and asked things. This statement is supported by the results of research from Dila & Zanthly (2020: 24), which states that students who have difficulty in understanding the given questions will have an impact on the emergence of errors in rewriting important things in the known and asked questions.

2) Difficulties in Schematic Knowledge Aspect

In question number one, students were required to come up with the concept of summing decimal numbers. M, who also has difficulty in the language aspect, has difficulty remembering and using principles related to the problem (figure 4). This is because mathematics has a hierarchical nature, where basic mastery becomes very important to avoid difficulties in further mastery (Ario, 2017: 57).

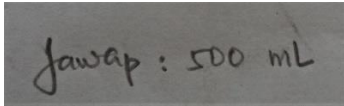


Figure 4 M's Answer

Translate:

Answer: 500 mL

In question number two, there were four students who did not bring up the entire mathematical concept needed. Here was an interview with one of the students.

R: What do you think is used in number 2 (mathematics concept)?

A: Don't know, ma'am. I (answered) it without considering.

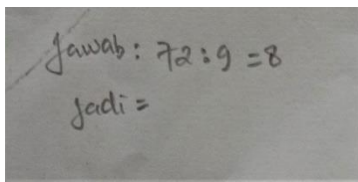


Figure 5 A's Answer

Translate:

Answer: $72 \div 9 = 8$

In conclusion: (blank)

From the answer above (figure 5), student only wrote down the concept of division and did not write down the concept of multiplication that should have appeared before the principle of division. In question number three, three students did not write down the answers at all (figure 6).

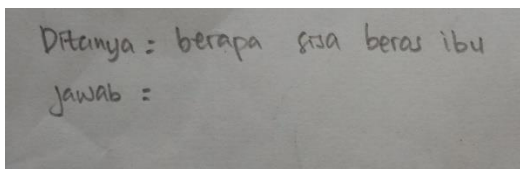


Figure 6 A's Answer

Translate:

Question: how much is the rest of the mother's rice?

Answer: (blank)

Their difficulty was not knowing the concepts to use in determining how to solve the narrative tests. In addition, statement from class VI teacher, students are not used to do story questions, so they are not used to writing complete answers. This situation is also found in

a research from Utari et al. (2019: 537) entitled Analysis of Mathematical Learning Difficulties in Solving Narrative Tests where students did not get proper teaching from teachers, so there were difficulties in remembering and using mathematical concepts when applied to different forms of problems.

3) Difficulties in Algorithm Aspect

In question number one, students must operate the addition of decimal numbers. One student has difficulty with the algorithm because the student has difficulty when understanding the problem (figure 4). In question number two, three students wrote the answer incorrectly. In question number three, one student did not do the algorithm correctly and three students did not answer.

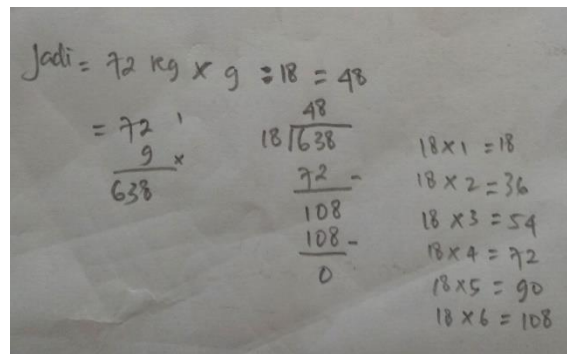


Figure 7 F's Answer for Question 2

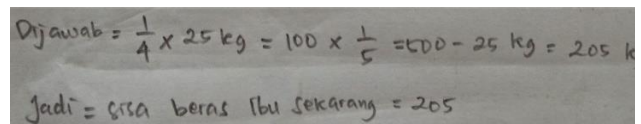


Figure 8 F's Answer for Question 3

Translate (figure 8):

Answer: $\frac{1}{4} \times 25 \text{ kg} = 100 \times \frac{1}{5} = 500 - 25 \text{ kg} = 205$

In conclusion: the rest of the mother's rice now = 205

In answer number two (figure 7), it can be seen that student F made a mistake in performing the multiplication and division calculation operation. In answer number three (figure 8), it can be seen that student F made a mistake in performing the multiplication and subtraction calculation operation. After looked back, student F has written down exactly the things known, asked, and the mathematical concepts needed for both questions. However, through the observation process, student F showed a rush and panic in doing the calculation process because she saw the other students had finished working. Panic and rush in

doing work are factors in the emergence of difficulties experienced by students (Novferma, 2016: 86).

From the data and analysis results above, it was found that the most difficulties experienced by students in language difficulties. While in the type of difficulty of schematic knowledge and algorithm difficulties, some students have not shown errors in test answers, but at the time of the interview, some students admitted that the two questions given fall into the difficult category so that students have difficulty in determining the way or principle to be used. Through the observation process, as many as nine students worked on the problem while discussed it with their friends even though they had previously been given instructions to did it individually by their abilities. This caused some students to have done nothing wrong in doing problems but still have difficulty determining the mathematical principles that must be used.

CONCLUSION AND SUGGESTION

Conclusion

Based on the results and discussions that researchers have given, it can be concluded:

1. Difficulties in the language aspect are caused by the student's lack of understanding of the given questions;
2. Difficulties in the aspect of schematic knowledge are caused by the lack of student skills in solving narrative tests;
3. Difficulties in the algorithm aspect are caused because students are too hasty in carrying out the calculation process.

Suggestion

The suggestion is aimed at teachers to give more attention to the practice of story questions to students, and this is because narrative tests require structured knowledge that can help students have a structured way of thinking as well. The last suggestion is aimed at researchers who will conduct research on similar topics in order to further re-mature the analysis obtained and provide a deeper explanation and highlight things that are different from existing research.

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