Analysis of Early Mathematical Problem-Solving Ability in Mathematics Learning for Junior High School Student

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Abstract. Problem solving ability is one of the mathematical abilities that is very important so that students are able to apply the concepts they have learned. The purpose of this study was to analyze the initial ability of mathematical problem solving in mathematics learning of eighth grade students of junior high school. this is seen from the indicators as follows; 1) Identifying the elements that are known, asked, and the adequacy of the elements needed, 2) Formulating problems or compiling mathematical models, 3) Implementing strategies to solve various problems inside or outside mathematics, and 4) Summing up the results. The instrument used in this study was a preliminary test of students' mathematical problem-solving abilities with questions as many as 3 items and a research sample of 32 people in the first school and 30 people in the second school. Assessment of students' mathematical problem solving ability tests is based on a scoring rubric of mathematical problem solving abilities. Based on the results of this study, the percentage of students' mathematical problem solving abilities was 18.95% and 14.57. The results of this study indicate the low ability of students to solve mathematical problems and the need for further action to improve them.

1. Introduction
Mathematics is one of the subjects that determine the graduation of students from an educational level. This can make students' motivation to learn mathematics. However, mathematics is considered difficult and boring to learn. Mathematical learning that is carried out should be able to help students construct their own knowledge. Learning that prioritizes the activeness of students makes it easier for students to understand mathematics learning. However, there are still many students who do not like mathematics because they still find it difficult to solve mathematical problems, especially in solving mathematical problem solving.

Problem solving is a basic principle in learning mathematics because it can be a means to learn mathematical ideas and mathematical skills [1]. However, there are still many students who find it difficult to solve mathematical problems in the form of problem solving.

Just as when researchers make observations on mathematics learning that takes place, researchers find the reality that when teachers provide questions about problem solving, students have difficulty answering questions that are different from what the teacher has explained in the example problems. According to the teacher, students more easily understand mathematics learning with conventional teacher explanations and are given examples of questions and exercises. However, students still ask questions and start to get confused if the sample questions and the given questions are different from what has been explained so the teacher must explain the purpose of the problem and what is known from the problem.
In addition, students think that learning mathematics is fun if students understand what has been explained by the teacher and they can answer the questions given by the teacher. Learners also easily understand learning because the teacher explains learning in detail. However, students have difficulty with formulas and answer mathematical problems that are different from the example problems given by the teacher and identify the elements that are known and asked in the story problem and formulate mathematical problems or arrange mathematical models on the problems. Based on these observations, researchers want to conduct research to determine students' problem solving abilities.

According to Fajar in [2] Problem-solving ability is to use mathematics in solving various problems in everyday life. Mathematical problem-solving skills are very important for students because learning mathematics is mostly to solve problems so students do not just learn about mathematical concepts but are able to solve mathematical problems that are normal or not normal for students who need skills. According to Gagne in [2] Problem-solving is a way to solve difficulties by using the science to be applied in solving problems. By accustoming students in problem-solving can improve the ability to think and develop their intellectual abilities.

A problem can develop students' mathematical understanding to fulfill certain abilities because in the process, a student asks about how to use mathematics for daily life based on the material learned in mathematics learning [3]. Mathematical problem-solving is part of a mathematics curriculum that is very important in the learning process and completion. Students gain experience using the knowledge and skills they have to apply to solving non-routine problems such as applying rules to non-routine problems, pattern discovery, generalization, mathematical communication, etc can be better developed [4]. Problem solving is very important so that it becomes a general goal of teaching mathematics even as the heart of mathematics. Mathematical problem solving has meaning as a learning approach, which is used to rediscover (reinvention) and understand material / concepts / mathematical principles as well as goals or abilities that must be achieved [5].

Problem solving ability is one of the mathematical abilities that can improve thinking skills so that students are able to apply concepts that have been learned with non-routine problems that can be well developed and can understand material / concepts / principles of mathematics. Therefore, with this research the researcher is expected to be able to know the students' mathematical problem solving abilities by providing an initial ability test. Researchers will provide initial tests in the form of questions that are problem-solving. The initial ability of students to solve problems will be analyzed so that researchers can provide further action so that students' mathematics learning becomes better. The researcher aims to analyze the initial ability of mathematical problem solving in mathematics learning of eighth grade students of junior high school. Mathematical problem solving ability of students is seen from the modification of indicators of mathematical problem solving ability as follows; 1) Identifying known elements. asked. and the adequacy of the required elements. 2) Formulate mathematical problems or arrange mathematical models. 3) Implement strategies to solve various problems in or outside mathematics. and 4) Summing up the results [6].

2. Research Methods

This research is descriptive qualitative because in this study the researchers tried to describe and analyze the students' initial abilities. This research was carried out at Padang 11 Middle School and 23rd Middle School in Padang in the odd semester of the 2018/2019 school year. The population in this study were students of class VIII SMP. The sample in this study was 32 people in VIII.A SMP N 11 Padang and 30 people in VIII.D SMP 23 Padang. The instrument used to obtain research data in the form of a matter of mathematical problem solving ability about straight-line equations. To analyze the data obtained is based on scoring mathematical problem solving from scoring rubrics test mathematical problem solving ability.
3. Results and Discussion

The research data were obtained through written tests of students' initial mathematical problem solving abilities from two classes. Initial test assessment is based on scoring a mathematical problem solving ability test.

Based on the results of the initial problem solving ability test from the first school and the second school it was found that in question number one, the average score of students who could answer the correct questions according to indicators of problem solving was 27.36% and 22.38%. The low percentage of students' scores is found in the third indicator, which is implementing strategies to solve various problems in or outside mathematics.

In question number two, the average scoring of students who can answer the correct question according to the indicator of problem solving is 23.45% and 5.00%. The low percentage of students' scores is found in the third indicator, which is implementing strategies to solve various problems in or outside mathematics.

In question number three, the average score of students who can answer the correct question according to the indicator of problem solving is 25.00% and 0.00%. The low percentage of students' scores is found in the third indicator for the first school, which is implementing strategies to solve various problems in or outside mathematics. However, the second school students have not been able to answer the question at all.

The results showed that the average percentage of students who answered correctly in the initial test questions mathematical problem-solving ability was still low at 18.95% for the first school and 14.57% for the second school. This shows that the mathematical problem solving ability of students represented by the four indicators has not reached 50% of students who answered correctly. Some of the reasons put forward by students when asked in working on problems are some students can answer with common types of questions and are the same as the sample questions given by the teacher so that if given questions in the form of solving students' problems it is difficult to know what is known and asked from questions and apply in the mathematical model.

To overcome this situation fundamental changes need to be made in learning mathematics and the need for further action to improve students' problem solving abilities. Problems faced by students if not immediately addressed, students will experience difficulties in learning which can result in underachievement because one of the goals of students in school is to achieve maximum achievement in accordance with their abilities [7].

4. Conclusion

The purpose of this study was to analyze the initial ability of mathematical problem solving in mathematics learning of eighth grade students of junior high school. Mathematical problem solving abilities of students are seen from the indicators mathematical problem-solving ability. Based on the results of this study, the percentage of students' mathematical problem solving abilities was 18.95% for the first school and 14.57% for the second school. The results of this study indicate the low ability of students to solve mathematical problems and the need for further action to improve them.

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