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Keefektifan Model Pembelajaran Realistic Mathematics Education (RME) Terhadap Kemampuan Pemecahan Masalah Matematika

Juli Asmida Rambe[1], Erika[2]
[1,2] *Universitas Haji Sumatera Utara, Indonesia*
Corresponding Author: : juliasmida46@gmail.com

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ABSTRACT

The background that drives this research is the results of students' mathematical problem solving abilities which are still low and there are still many students who have not reached the KKM of 65 and the use of learning models that are less varied is the reason for researchers to carry out research in class V of Almusabbihin Elementary School The objectives in this study are This study aims to determine (1) the average class value of the mathematical problem solving ability of grade V students of Almusabbihin Elementary School reaches 65. (2) The mathematical problem solving ability of students who are given the RME learning model is better than before treatment. This type of research uses experimental research methods with Pre Experimental Design One-Group Pretest-Posttest Design. The study population was all fifth grade students of Almusabbihin Elementary School. The sample taken was 34 fifth grade students of Almusabbihin Elementary School using purposive sampling technique. Data collection instruments used math problem solving ability test instruments and observation sheets. Data analysis used, quantitative analysis of the right one-party t test. The calculation results obtained, the average class value of the mathematical problem solving ability of fifth grade students of Almusabbihin Elementary School reached KKM 65 as evidenced by the average initial score of 34.12 to 76.32 and classical learning completeness of 0% to 88.24%, there was a higher increase in postest scores than pretest scores. Students' math problem solving ability is better than before with a tcount of 12.358> ttable of 1.997. So, the Realistic Mathematics Education (RME) learning model is effective on mathematical problem solving of fifth grade elementary school students.

Key Word *Effectiveness, RME, Problem Solving*

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INTRODUCTION

National education functions to develop abilities and help character and civilization of a dignified nation in order to educate the nation's life, aims to develop the potential of students to become human beings who are faithful and devoted to God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become

democratic and responsible citizens (Law Number 20 of 2003). Education that is able to support future development is education that is able to develop the potential of students, so that they must be able to apply what they learn at school to deal with problems faced in everyday life today and in the future. One of the fields of study that has an important role in the world of education and in dealing with the problems of everyday life is mathematics. Although not all problems are mathematical problems, mathematics has an important role in answering daily problems. In accordance with the opinion expressed by Skemp (1971, p.132) that "mathematics is also a valuable and generalpurpose technique for satisfying other needs. It is widely known to be an essential tool for science, technology, and commerce; and for entry to many professions" (Sholihah, 2015).

Mathematics studies about order, about organized structures, mathematical concepts are arranged hierarchically, structured and systematic, ranging from the simplest concepts to the most complex concepts. In mathematics the basic object studied is abstraction, so it is called a mental object, the object is an object of the mind. The basic objects include: Symbol, is a symbol of an object or statement. Concept, is an abstract idea used to classify a set of objects. For example, a triangle is the name of an abstract concept. In mathematics there is an important concept namely "function", 'variable', and "constant". Concepts are closely related to definitions, definitions are expressions of a concept, with the definition of people can make illustrations or pictures or symbols of the concept in question. Principle, is a complex mathematical object. Principles can consist of several concepts linked by a relation/operation, in other words, principles are relationships between various basic objects of mathematics. Principles can be axioms, theorems and properties. Operations, are arithmetic operations, algebraic operations, and other mathematical operations, such as addition, multiplication, combination, intersection. In mathematics, there are various kinds of operations, namely unair, binary, and ternary operations depending on the number of elements being operated on. Addition is a binary operation because there are two elements being operated on, but addition is a single operation because there is only one element being operated on. The vision of mathematics education today is the mastery of concepts in mathematics learning that are used to solve problems. While the vision of future mathematics education is to provide opportunities to develop mindset, self-confidence, beauty, objective and open attitude (Hasratuddin, 2013).

Formal education serves to build the character and civilization of a nation in accordance with the contents of Permendiknas No. 22 of 2006. Education in Indonesia is expected to be able to improve the quality of resources in every color of the country. Education that is able to develop the potential of students, so that students are able to face and solve life problems they face is education that is able to support future development (Trianto, 2011: 1). Developing the potential of students to become humans

who are faithful and devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens is the goal of national education, this is contained in Law No. 20 of 2003 article (3) concerning the National Education System.The low absorption of students, seen from the average student learning outcomes are still very low (Trianto, 2011: 5). Student learning outcomes are caused by learning that is still conventional or still dominated by the teacher and has not involved students directly to develop independently. Whereas at the education level in Indonesia there are many subjects that are required to have more understanding, not only receiving material but students take part in the learning process in it so that students understand the learning concept, because what is taught is the concept of finding formulas not just receiving formulas. One of these subjects is mathematics (Sabri, 2003: 2). In mathematical proof, there are several simple proof methods using basic logic rules, such as direct proof, indirect proof, proof by contradiction, proof of uniqueness, refutation of proof by counter example, proof by mathematical induction (Putri, 2011). The evidence used can be in the form of formal evidence and informal evidence (Suandito, 2017).

According to Susanto (2013: 195) mathematics is a field of study that makes it easier to solve everyday life problems related to calculations with numbers, which require a skill and ability to solve them. In essence, mathematics is not only used in mastering mathematical material as a science, but using mathematics as problem solving in achieving success in life. Competency standards are said to be successful if the teacher is able to process learning that can create a calm situation in learning so that students can focus on learning this is the starting point for successful learning.

Many students think that mathematics is a difficult subject because of the abstractness of its concepts, while the thinking power of elementary school students in general is still thinking concretely. At elementary school age abstract power has not yet developed optimally. Bruner (Heruman, 2007: 4) in his discovery method reveals that in learning mathematics students must discover for themselves the various knowledge they need. “Finding” here is mainly “finding again” (Discovery), or it can also find a completely new one (invention).

Rediscovering means that the teacher does not teach it but students must try to find it themselves. For this reason, students must be accustomed and trained to think independently, it is hoped that more useful abilities can be developed to overcome the problems that students will face in the future. One of the learning models that can be used in learning mathematics is the Realistic Mathematics Education (RME) learning model. Realistic Mathematics Education (RME) learning is a mathematics learning model that is implemented by placing realistic and student experience as the starting point of learning. Realistic problems are used as a source of emergence of mathematical concepts or informal mathematical knowledge.

Zainurie in (Soviawati, 2011: 81) argues that realistic mathematics is learning that starts from the realistic application of student experience. Realistic problems are the source of mathematical concepts. Realistic learning in the classroom is oriented towards the characteristics of RME, so that students have the opportunity to rediscover mathematical concepts or formal mathematical knowledge. Furthermore, students have the opportunity to apply mathematical concepts to solve problems in everyday life or problems in other matters. to find out whether there is an effectiveness of the Realistic Mathematics Education (RME) model on the mathematical problem solving ability of fifth grade students of Almusabbihin Elementary School.

RESEARCH METHOD

The research method used is the experimental research method. The experimental research method is a research method used to seek the effect of certain treatments on others under controlled conditions (Sugiyono, 2015: 107). The design used in this study uses a pseudo-experimental design (Pre Experimental Design), namely research that only uses one group as a research sample, namely the experimental group. The Pre Experimental Design used is One-Group Pretest-Posttest Design, In this study, the population was all fifth grade students of Almusabbihin Elementary School. Meanwhile, the sample taken in this study were all fifth grade students of Almusabbihin Elementary School, totaling 34 students. Furthermore, the sampling technique used by researchers is purposive sampling technique. The data collection technique used a test, this test was carried out by all fifth grade students of Almusabbihin Elementary School using pretest and posttest question sheets.

RESULTS AND DISCUSSION

This data description describes the results of research that has been obtained by researchers. Data obtained from pretest results or before students get treatment using the RME learning model. Furthermore, at the end of the lesson, a posttest was conducted or students had received treatment using the RME learning model. The data obtained can be seen in Table 1 below.

Table 1.
Pretest and Posttest Result Data

Description	Pretest	Posttest
Highest Score	60	100
Lowest Score	8	47
Average	34,12	76,32
Number of students completed	0	30

Based on table 1, it can be seen that the highest and lowest pretest scores are very different. The highest score was 60 while the lowest score was 8 with an average score of 34.12. There were no students who achieved completeness on the pretest. This shows that the scores on the pretest are low and have not reached the KKM of 65.

The comparison between the pretest scores taken before learning and the posttest scores obtained after learning has increased. As seen in table 4.1, the highest posttest score is 100 and the lowest score is 47 with an average of 76.32. The posttest results show that almost all students are complete and meet the KKM, only four students cannot meet the KKM score, so there is an increase from the prettest to the posttest results. This difference is due to the use of the RME learning model, so that the value has increased significantly. The initial stage before being given treatment, an initial normality test was first carried out using the pretest score. This is done to determine whether the sample is normally distributed or not. Based on the calculation of the initial normality test, Lhitung < Ltabel, namely 0.118 < 0.152 with $\alpha = 5\%$, so it can be concluded that the fifth grade of Almusabbihin Elementary School is normally distributed.

The first hypothesis test was carried out by testing the posttest and pretest scores of class V against the completeness of students' mathematical problem solving skills or the KKM test. Testing was carried out using individual and classical completeness tests, then the learning results obtained using the RME learning model were with the predetermined KKM of 65. Based on data analysis as described in the research results section, in the experimental class, 2 treatments were given, namely before being given the RME learning model and those that had been given RME learning given to the same class. Which will later be referred to as pretest and posttest values. On the pretest value of students who were declared as complete learners as many as 0 students out of 34 students. This means that classical completeness was not achieved, because most students in the class did not achieve individual completeness, namely 0% of 34 students. In the posttest score, there were 30 students out of 34 students who were declared as complete learners. This means that classical completeness was achieved 858.24% of 34 students.

In practice, the class that has been treated with the RME model is better than the one that has not been treated with RME, because during the learning process, the participants of the RME model were able to achieve classical mastery students are required to be more active in learning. The activeness of these students can be seen when students present the results of their discussions in front of the class and when expressing their opinions enthusiastically. Evident from the results of learning completeness, as many as 0 out of 34 students were not complete so that classical completeness was not achieved, because the achievement of individual completeness was 0%. Another factor that causes the RME model to affect learning outcomes is the

different stages in a more structured learning process where students will better understand what they are learning. Thus there is a correspondence between the results obtained and the theory put forward, namely learning outcomes using the RME learning model.

The results in the second hypothesis, namely comparing students' mathematical problem solving skills before using the RME learning model, resulted in an average of 34.32 with n = 34 and after using the RME learning model resulted in an average value of 76.32. Based on these results, it is obtained tcount = 12.538 with ttable = 1.997, then tcount> ttable. It is concluded that the posttest value of students' mathematical problem solving ability after using the RME learning model is better than the pretest value before using the RME learning model. The learning process by using the RME learning model, students can find their own answers to problems given by the teacher by discussing with their group of friends.

Based on theoretical studies, relevant research and analysis of research results, it is found that the RME learning model on addition and subtraction material has an effect on the mathematical problem solving ability of fifth grade students of Almusabbihin Elementary School.

CONCLUSION

Based on the formulation of the problem, hypothesis submission, research data analysis and discussion, it is concluded that the RME learning model on addition and subtraction of various forms of fractions is effective on the mathematical problem solving skills of fifth grade students of Almusabbihin Elementary School. This is indicated by the achievement of success indicators, namely: (1) the grade v value of the mathematical problem solving ability of grade V students of Almusabbihin Elementary School who used the RME learning model was completed individually and classically. This is evidenced by the completion of 30 students out of 34 students, which means that the students' KKM scores are achieved with an average initial score of 34.12 to 76.32 and classical learning completeness of 0% to 88.24%; (2) students' math problem solving skills are also better than before using the RME learning model. This is supported by the increase in problem solving ability in the class that received treatment using the Realistic Mathematics Eduacion (RME) learning model higher than before getting RME learning. It is proven that the Realistic Mathematics Eduacion (RME) learning model can be applied in problem solving skills with data analysis using the t test, from the ttest analysis obtained tcount> ttable. After calculating it turns out that the ttest is obtained from the t distribution with an opportunity of 0.95 and dk = 66 obtained t (0.95) = 1.997 with dk = 66 obtained t table = 1.997 and tcount = 12.358. Because tcount> ttable, namely 12.358> 1.997 then H0 is rejected and Ha is accepted. Thus it can be concluded that the use of the Realistic Mathematics Eduacion (RME) learning model is

effective for mathematical problem solving of fifth grade students of Almusabbihin Elementary School.

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