

Improving Fractional Mathematics Learning Outcomes Through The *Realistic Mathematic Education* (Rme) Model

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Abstract

This research was motivated by the learning difficulties experienced by students in mathematics subjects, especially in fractional material, the learning process still uses the teacher's method as the main center in learning, and the learning outcomes of students who have not reached KKM on fractional material. To overcome this problem, researchers will improve the learning process by using the Realistic Mathematic Education (RME) model in grade III SDN Babelan Kota 08 Bekasi Even Semester 2022/2023. This study used a classroom action research method referring to the Kemmis and Taggart spiral model. The purpose of this study was to improve students' mathematics learning outcomes on fractional material. The subjects in this study were all 34 grade III students. Data collection techniques in this study are test assessments, student and teacher observation sheets, and interviews. From the research that has been carried out, an increase in learning outcomes has been obtained. In cycle 1 the completeness of learning outcomes was obtained by 29%, cycle 2 increased to 50% and in cycle 3 obtained results of 85%. Student response to the Realistic Mathematic Education (RME) model is very good, because students have the courage to explain answers in front of the class and students more easily understand fractional material using the Realistic Mathematic Education (RME) learning model. Thus, RME can improve mathematics learning outcomes on fractional material in grade III SDN Babelan Kota 08 Bekasi Even Semester 2022/2023.

Keywords: Fractions, Learning Models, Learning Outcomes, Mathematics, Realistic Mathematic Education (RME).

1 INTRODUCTION

Education is one of the most important factors in human life, because education guides humans in setting goals and finding the meaning of life and improving the quality of resources human power. Learning and learning are interpreted as a form of education that makes an interaction between teachers and students (FW Anisa :2020). Mathematics is a basic science that has a role in the development of the nation and state, especially in the field of education. Therefore, mathematics learning in elementary schools is expected to be applied by students in everyday life and learn science related to mathematics. Education is one of the most important factors in human life, because ducation guides humans in setting goals and finding the meaning of life and improving the quality of human resource. This is stated in Law of the Republic of Indonesia no 20 of 2023 article 1 states that education is a conscious and planned effort to create a learing atmosphere and the learning process of student actively developing their potential to have spiritual, religious strength, self-control, personality, intelligence, noble character, and the skills needed by themselves and society, nation and state. Learning and learning are two things that are interconnected and inseparable in educational activities. Learning and learning are interpreted as a form of education that makes an interaction between teachers and students. Learning is

interpreted as a process of behavior change that occurs in every human being as a result of individual interaction with their environment. Behavior changes that occur on learning outcomes are continuous, functional, positive, active, and directed. Learning is the process of interaction between educators and students using learning materials, teaching methods, learning strategies, and teaching resources in a learning environment. Nationally, learning is seen as a process of interaction that involves the main components in the learning process, namely students, educators, and learning resources that take place in a learning environment, so what is said by the learning process is a system that involves.

Based on a survey that has been conducted, it was found that grade III students at SDN Babelan Kota 08 Bekasi still have difficulty learning in Mathematics lessons, especially on fractional material, teachers still teach with conventional methods so that students become passive. Students consider mathematics to be the hardest subject, therefore many students do not follow learning well. From the initial test results, 92% of students scored below KKM, the standard score used was 75.

The factor that causes students to get scores below KKM is because students lack understanding of concepts in fractional material, students are accustomed to being directed by the teacher in answering questions, when students find different questions, students become difficult to do it. Based on the problems that have been described, efforts to improve students' mathematics learning outcomes on fractional material are urgent to be researched so that student learning outcomes become better. To overcome these problems, the RME learning model is used so that in the learning process students can find the concept of fractions by themselves without always being directed by the teacher in the hope that students will better understand the fractional material studied. In the learning process must be followed by learning outcomes, learning outcomes that will prove whether the learning can achieve learning objectives or not. Mathematics learning outcomes are values or abilities obtained by students after following the learning process. Learning outcomes can be said to be good if they reach the predetermined KKM value.

Based on the description above, the purpose of this study is to improve the mathematics learning outcomes of fractional material students in grade III SDN Babelan Kota 08 Bekasi.

2 RESEARCH METHODS

This study used the Classroom Action Research method. Classroom Action Research is research that aims to improve the quality of teaching carried out by examining the process of carrying out research and the results of the research conducted. This research refers to the Spiral model presented by Kemmis and Taggart according to which classroom action research involves planning, action, observation, and reflect. (Mahmud and Tedi Priatna : 2008)

The subjects of this study were 34 grade III students of SDN Babelan Kota 08 Bekasi. The location of this research is in Babelan District, Bekasi Regency City. Data collection techniques in this study are observation, test assessment, interviews and documentation.

The instruments used in this study are test assessment instruments, observation instruments for student and teacher activities. Test assessment is carried out in pre-action as many as 5 questions, cycle 1 as many as 15 questions, cycle 2 as many as 10 questions, and cycle 3 as many as 15 questions. Teacher activity instruments as many as 18 aspects are observed in the learning process that takes place with levels 1 – 4. Student activity instruments as many as 12 aspects are observed in the learning process that takes place with levels 1 – 4.

3 RESULT AND DISCUSSION

Learning activities using the Realistic Mathematic Education (RME) model are carried out in 3 cycles. This research was assisted by 1 collaborator, namely class III homeroom teacher. The time needed in this study was 3 months.

3.1 Results

This research was conducted in 3 cycles, each cycle was 1 learning meeting. In each cycle, researchers have prepared questions in the form of essay questions. In cycle 1 there are 15 essay questions, cycle 2 as many as 10 questions, and cycle 3 as many as 15 questions. The learning process in cycles 1, 2, and 3 uses 5 stages of learning using the RME model, namely orientation to problems, explaining problems, solving problems, comparing and discussing answers, and Summing up learning outcomes.

1. Cycle 1 Results

Based on the results that have been found by researchers from the implementation of cycle 1 on the material of recognizing simple fractions shows that students are still not familiar with using the RME model, it can be seen from some students who come forward to ask about the meaning of the questions given. Of the 9 groups, as many as 5 groups were right in presenting the results of the discussion. The RME model can help students to understand the concept of simple fractional matter. The results of observing teacher activities in cycle 1 got results of 63.8%. The results of observing student activities in cycle 1 obtained results of 56.25%. The percentage of completeness of learning outcomes in cycle 1 is 29%. A total of 6 students scored above KKM (85.00) and as many as 28 students did not get scores reaching KKM. Based on the criteria for completeness of learning outcomes that have been determined by 85%, cycle 1 has not reached the criteria for completeness of learning outcomes.

2. Cycle 2 Results

In cycle 2 discusses material about comparing fractions using the RME model. In cycle 2, researchers divided groups in a way that students who had obtained complete scores in cycle 1 were divided into different groups. Based on the results obtained in the 2nd cycle learning process, it shows that the RME model can increase students' understanding of the concept of fractional matter. The results of observing teacher activities in cycle 2 obtained results of 81.9%. The results of observing student activities in cycle 2 obtained results of 66.6%. The percentage of completeness of learning outcomes in cycle 2 is 50%. A total of 17 students scored above KKM (85.00). Based on the criteria for completeness of learning outcomes that have been determined, cycle 2 has not reached the criteria for learning completeness.

3. Cycle 3 Results

In cycle 3 researchers discuss the material of sorting fractions. During the 3rd cycle learning process, students seem to be very active in discussing and expressing opinions. This is because students have begun to understand the concept of fractions. When the presentation of the results of the discussion many students showed their hands to explain the results of the discussion, in contrast to cycle 1 and cycle 2, students seemed afraid to explain the results of the discussion. Observation of teacher activity obtained results of 95.8%. Observation of student activity obtained results of 89.5%. The percentage of completeness of learning outcomes in cycle 3 was 85%, as many as 29 students scored above KKM (85.00). Based on the criteria for completeness of learning outcomes that have been set, cycle 3 has reached the criteria for completeness of learning outcomes. Then the study was completed on 3 cycles.

3.2 Discussion

Student learning outcomes in cycle 1, cycle 2, and cycle 3 have increased significantly, this can be seen from the results of data in cycle 1, the percentage of completeness of student learning outcomes is 29%, as many as 24 students have not completed or have not received scores above KKM. In cycle 2, the percentage of completeness of student learning outcomes increased to 50%, as many as 17 students were incomplete or had not received scores above KKM. While in cycle 3 the percentage of completeness of learning outcomes

increased to 85% as many as 5 students were incomplete or had not received scores above KKM.

The average value obtained in the pre-action stage, cycle 1, cycle 2, and cycle 3 has increased. In the pre-action, the average value obtained was 67.6, the value has not reached KKM (85.00). In cycle 1, the average value obtained was 75.8, the value obtained in cycle 1 increased when compared to the average value obtained during pre-action, although it increased, the average value in cycle 1 had not reached KKM (85.00). In cycle 2 obtained an average value of 81.4 the value obtained in cycle 2 increased by 5.6 when compared to cycle 1, although it increased in cycle 2, the average value in cycle 2 has not reached KKM (85.00). In cycle 3, an average value of 91.9 was obtained, the value obtained in cycle 3 reached KKM (85.00).

Based on the results of research that has been conducted with 34 students in grade III SDN Babelan Kota 08 Bekasi, several obstacles were found in the learning process. These barriers are found through observation, test assessment and interviews. Based on the difficulties experienced by students in the learning process in this study is also in accordance with what was conveyed by Annisa Uluzukhraini in her research entitled "Improving Learning Outcomes on Fractional Material Using the Realistic Mathematic Education (RME) Model". In the process of learning mathematics, the problem found is that students do not understand the concept of fractional material. When given a question in the form of comparing fractions to fractions with unequal denominators, students answered that fractions that have large denominators are fractions that have a large value compared to fractions that have small denominators. In fact, to answer this question, students must first equate the two denominators.

Another factor that causes students difficulty in answering questions is the absence of teaching aids so that the learning is not concrete which causes students to have difficulty understanding the material because students only get an explanation from the teacher. In a research conducted by Rizki Ananda entitled "Application of Realistic Mathematic Education (RME) Approach to improve Mathematics Learning Outcomes of Elementary School Students". Many students in grade IV have difficulty understanding fractions because teachers tend to use mechanistic ways in learning, namely providing rules to be memorized, remembered, and applied. This causes students to only follow the way as taught in answering the questions, not answering in their own way. In fractional material mathematics learning, teachers still teach in the conventional way without relating to everyday life. In fact, when teachers associate learning with daily life, students become easier to understand. In addition, students are not given the opportunity to discover mathematical concepts on their own, so learning is meaningless to students and results in passive students.

The factor that causes low student mathematics learning outcomes is due to students' lack of interest in mathematics lessons. The problem in this study is also in accordance with research conducted by Dyah Anungrat Herzamzam entitled "Increasing Interest in Learning Mathematics through a Realistic Mathematics Approach (PMR) in Elementary School Students". The students found maths a difficult subject to understand. Students are unable to solve math practice problems because of the lack of interest of students to do these problems, students think that mathematics is useless.

Table 1. Improved Learning Outcomes

Category	Number of Students Complete	Incomplete Number of Students	Class Average	Learning Completion Percentage
Cycle 1	10	24	75,8	29%
Cycle 2	17	17	81,4	50%
Cycle 3	29	5	91,1	85%

Table 1 shows that each cycle experienced an increase in learning outcomes and grade averages.

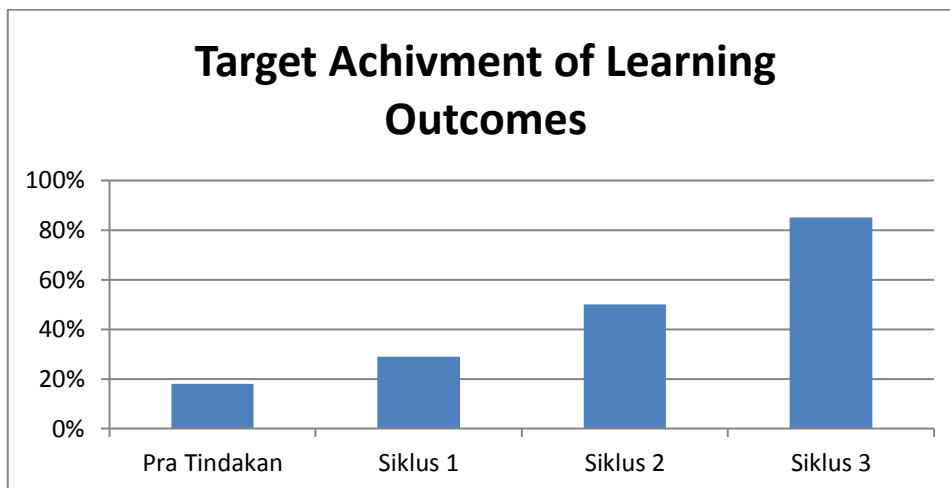


Figure 1. Target Achievement of Learning Outcomes

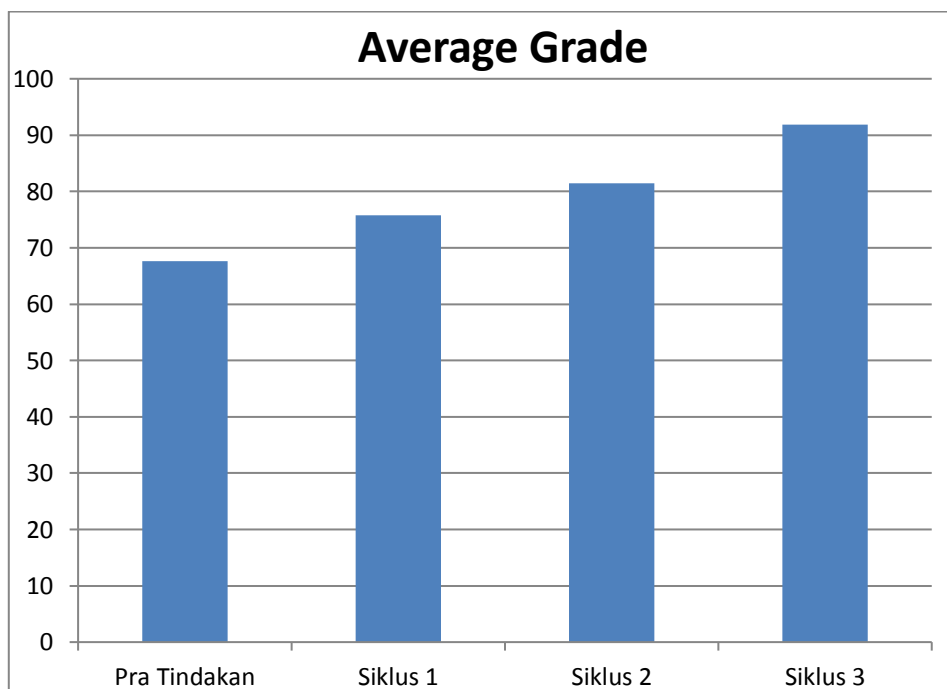


Figure 2. Average Grade

4 CONCLUSION

Student learning outcomes in learning fractional material mathematics in grade III using the RME model have increased. This can be seen from the learning results in the form of the value obtained increases in each cycle. In the pre-action stage, only 6 students or 18% scored KKM. In cycle 1, as many as 10 students or 29% scored KKM with a grade point average of 67.6. In cycle 2, as many as 17 students or 50% got grades reaching KKM with

a grade average score of 81.4 so that the increase between cycle 1 and cycle 2 was 21% with an increase in class average of 5.6. In cycle 3, as many as 29 students or 85% scored KKM with a grade point average of 91.9 so that the increase between cycle 2 and cycle 3 was 35% with an increase in class average of 10.5.

Student activities in the learning process of cycle 1, cycle 2, and cycle 3 have increased. In cycle 1 as many as 25% of students actively ask and propose ideas in learning, some students still do not focus on the learning process because in cycle 1 using group discussions with group division counting. In cycle 2 there was an increase, as many as 50% of students became active in asking, arguing and recording subject matter, in cycle 2 the discussion was more focused because each group had

Student representatives who get scores above KKM and researchers change the way they give questions, researchers read questions so that students who cannot read can still focus on following learning. In cycle 3 almost all students follow the learning process well because each group only consists of 2 students and in cycle 3 researchers provide questions with answers in the form of concrete objects.

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