

Application of the Realistic Mathematical Education (RME) Approach to the Operational Material of Addition of Fractions to Increase Activities and Learning Outcomes of Elementary School Students

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Abstract

This study aims to describe the application of the RME approach in increasing student activity and learning outcomes in the material for adding fractions for class V SD Inpres 3 Birobuli. This research uses classroom action research (PTK) which refers to Kemmis and Mc. Taggart Data collection techniques used were tests, observations, interviews, and field notes. The results showed that the application of the RME approach could increase student learning activities and results in the material for addition operations for class V SD Inpres 3 Birobuli by following the steps of the RME approach; (1) understand contextual problems, (2) explain contextual problems, (3) solve contextual problems, (4) compare and discuss student answers, and (5) conclude problems. This research was conducted in two cycles. The results showed that there was an increase in activity and learning outcomes which were seen in the observation of teacher activity in the very good category, student activity in the very good category, student activity in the very active category, and student affective learning outcomes were good. habits, and psychomotor learning outcomes of highly skilled students in cycle II. Likewise, the results of students' final tests with a percentage of learning completeness of 85% in cycle II.

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Introduction

Mathematics is one of the fields of study that plays an important role in education and gets a larger portion of lesson time than other subjects. However, mathematics is still considered a difficult subject because it uses abstract ideas that contain symbols and formulas that must be memorized (Nurcholis, 2013). This is in line with research conducted by Rahmawati (2013) which states that mathematics is often considered a difficult, frightening, and boring subject for most school children, although not a few enjoy this subject. This is because there are still many students who have not mastered the basic concepts of mathematics itself. Students tend to be passive in learning and the new knowledge they acquire is only based on what is conveyed by the teacher, without learning instructions on understanding the concept or principle independently.

This results in students' weak understanding of concepts in mathematics. Based on the 2013 curriculum, one of the subjects of mathematics that students learn in elementary schools is the addition

of fractions. The operation of adding fractions is one of the materials that occupies a special position in mathematics learning in schools. The material for the addition of fractions is the material that is considered difficult by students, because this material requires fairly high reasoning because it relates to everyday life.

Law Number 02 Article 1 of 2010 states that education is an activity of the components of the education system and educational programs on the path, level, and type that are in accordance with the objectives of national education itself. Indonesia has also promoted the 2013 curriculum, where the main goal is to make children start thinking critically in every subject they get at school. Based on the objectives of learning mathematics in the 2013 curriculum and the above problems, learning mathematics in schools does not only require students to memorize formulas or formulas and apply the procedures taught by the teacher, but students must also be able to reason or think critically and creatively. So that learning mathematics in schools can be a means to train students' thinking patterns, one of which is

students' critical thinking patterns. This shows that critical thinking skills are very important competencies to be developed in students.

In terms of student learning activities in class, there are many students who view learning as something that is boring and not very important, for example, many students are found lazy, and feel reluctant to learn and do the assignments given by the teacher. Even in supporting learning, it is necessary to have a willingness and motivation so that learning is considered a fun and beneficial activity. Basically, with motivation, individual encouragement to carry out learning and teaching activities will also be carried out well. Mathematics is seen as a difficult and very scary subject, resulting in low student achievement in mathematics. One of the factors that influence student success in learning is student learning activities.

Lack of student activity in the classroom is due to the use of inappropriate or inaccurate teaching methods so students cannot easily understand and master the material presented. The teacher briefly explains the material, gives examples, then gives questions for the students to work on. This provides an overview of the teacher-centered learning process, not student-centered. Learning like this causes students to tend to be passive without constructing their own understanding.

This greatly affects the learning outcomes obtained by students who tend to have low scores and do not reach the minimum completeness criteria score set by the school, which is 67. Based on the results of observations of researchers who are also class V teachers of SD Inpres 3 Birobuli, it is known that around 55.17% of students get low scores, which is the minimum completeness criteria average in the 2019/2020 school year. Most of the students experience difficulties and often obtain low scores on the calculation of the addition of fractions. The following is an example of daily test questions done by class V students along with answers from students in the 2019/2020 school year using the 2013 curriculum.

Question:

Do the addition of the fractions below!

- | | | | |
|----|-------------------------------------|----|-------------------------------------|
| 1. | $\frac{4}{5} + \frac{3}{4} = \dots$ | 3. | $\frac{1}{6} + \frac{2}{5} = \dots$ |
| 2. | $\frac{5}{6} + \frac{2}{7} = \dots$ | 4. | $\frac{5}{6} + \frac{4}{5} = \dots$ |

Following are the answers from students that the researchers took as the answer samples.

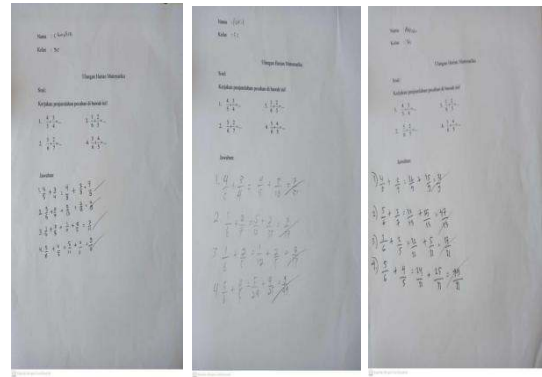


Figure 1. Student answers to daily test questions

The results of the test given obtained information from several students who made mistakes in solving questions about the addition of different denominated fractions, the student's answer has a similar level of error in each question. Based on the results obtained from the given test, it can be seen that the three students were unable to determine the denominator of the questions given. This can be observed from the results of the work of the three students who did not clearly write down where the answers came from. They immediately add up the denominators for the fraction without equating the denominators first. The problem should have been worked out by finding a fraction of the same value or finding the smallest common denominator (KPK) of the two denominators of the fraction. This causes the student's final answer to be wrong.

The results of daily tests carried out by teachers in mathematics obtained data on student test scores in the 2019/2020 academic year from a total of 29 students, only 13 students (44.83%) achieved learning completeness, while 16 students (55.17%) Others have not reached the minimum completeness criteria determined by the class teacher, namely 70. From these questions the researcher took 3 students' answers and saw the students' mistakes in general the students were less careful and didn't even know how to complete the addition of fractions, especially with different denominators. The student immediately adds up the two different denominators for the fraction. This is because students have not been able to determine the fraction of value. Judging from the student learning outcomes, it appears that the percentage of classical learning completeness in mathematics learning has not been achieved. Regarding the student's answers, the researcher

suspected that students at SD Inpres 3 Birobuli had difficulty adding up fractions. Therefore, researchers conducted research on the application of the RME approach to the fraction addition operation material to increase the activity and learning outcomes of the fifth-grade students of SD Inpres 3 Birobuli.

Based on the above problems, alternative learning is needed that can involve students actively collaborating, discussing, and arguing with classmates in order to find mathematical concepts for themselves through presenting problems that are close to student life. The presentation of these problems aims to make students closer to mathematics so students can understand the benefits of mathematics in everyday life and provide meaningful experiences in learning. One alternative learning that can be used is the realistic mathematics education approach (RME).

Supardi (2013) argues that realistic mathematics education (RME) is an approach that starts from real things for students, emphasizes the skills of the process of doing mathematics, discussing and collaborating, and arguing with classmates so that they can find out for themselves mathematical concepts and ultimately be able to use mathematics to solve problems, both individually and in groups. In realistic mathematics learning (RME), the role of the teacher according to Rahmawati (2013) is as a facilitator, mentor, or more experienced study partner, who knows when to provide assistance and how to help the construction process in students' minds take place.

Several studies that show that the realistic mathematics education (RME) approach can improve student learning outcomes including research conducted by Hasanah (2006) concluded that realistic mathematics learning is effective for teaching social arithmetic subject matter. Furthermore, Lasati (2006) concluded that learning mathematics using RME on straight-line equations was declared effective. Furthermore, Astuti (2018), concluded that the application of RME can improve student achievement in triangular material. Therefore candidate Researchers are interested in conducting research with the title "application of the realistic mathematics education approach (RME) to the material of fractions addition operations to increase the activities and learning outcomes of class V students of SD Inpres 3 Birobuli". In addition, students do not know the

relationship and benefits of this material in their daily life so that students cannot apply it directly in the environment, causing students to be less motivated in learning mathematics (Isnawati, 2020).

Research conducted by Tunnisa (2018), concluded that: the application of the realistic mathematics education approach (RME) can improve student learning outcomes on transformation material in class IXA at SMPN 1 Tanantovea by following the steps as follows: Step (1) understand the contextual problem, in this step the researcher presents contextual problems in student worksheets and students discuss in their group to understand the problems given by the teacher (2) solve the problem, in this step the students in each group work together to solve the problem following the steps in the worksheets and make conclusions about the answers to each problem given (3) compare and discuss the answers, Each group representative takes turns presenting the answers to the problems determined by the teacher and other group members comparing the answers they get with the answers presented by the presenter's group (4) concluding, the researcher guides students to conclude the material that has just been studied. The relevance of this research with the research conducted by Tunnisa (2018) is that it lies in the results student learning has increased after implementing the RME approach.

Research conducted by Gumanambo (2016) concluded that: The results of the study show that the application of PMR can improve the learning outcomes of Grade VIIB students of SMPN 9 Palu on addition material and algebraic changes increase, by following the PMR stages, namely: 1) understanding the problem contextual, 2) solving contextual problems, 3) comparing and approaching completion, 4) conclusions. Research conducted by Sari & Yuniati (2018) which lies in the PMR approach can improve understanding of mathematical concepts. Research conducted by Herzamzam (2020), concluded that the application of the RME approach can improve student learning outcomes.

Other research conducted by Napitupulu (2019), concluded that: (1) by carrying out realistic mathematics education (RME) to improve students' understanding of concepts in Elementary School Mathematics subject, there was an increase of 1,123% on the subject of fractions. After the

action cycle 1 was compared before the action was given. After making improvements in the second cycle students' understanding of concepts has increased by 40.92% compared to cycle I, and has increased 41.58% compared before being given action (pre-cycle); (2) After carrying out the activities of the lecturer in the application of realistic mathematics learning, it turns out to be very effective, because achieving the learning objectives is greater than 75 (≥ 75) and reaching 85% completeness which has less time than the same as ordinary learning; (3) After implementing realistic mathematics learning to improve students' understanding of concepts in the first basic mathematics course with stages from cycle I to cycle II and also seen in student activities during lectures, students have increased so that it can be concluded that there is a student response to the application of learning. this. The relevance of this research to the research conducted by [Napitupulu \(2019\)](#) is located at learning Realistic mathematics can increase student learning activities.

RME is an approach developed in 1971 by a group of mathematicians from the Freudenthal Institute, Utrecht University in the Netherlands, and in Indonesia. This approach is based on Hans Freudenthal's assumption that "mathematics must be connected to reality and mathematics as human activity" ([Tandililing, 2010](#)).

The realistic mathematics approach (RME) or realistic mathematic education (RME) which means realistic mathematical education, operationally called realistic mathematics learning (RME) is an approach that refers to Freudenthal's opinion which says mathematics must be linked to reality and mathematics is a human activity. This means that mathematics must be close to the child and relevant to children's everyday situations ([Hobri, 2009](#)).

Furthermore, [Soedjadi \(2007\)](#) explains what is meant by reality, namely things that are real or concrete that can be observed or understood by students through imagining, while what is meant by the environment is the environment in which students are in the school, family, and community environment that can be understood by students. This environment is called the daily life of students ([Hadi, 2005](#)).

From the description above, it can be concluded that the realistic mathematics education approach (RME) is a mathematics learning

approach that is associated with reality and experiences in everyday life so that students can construct their own formal mathematical knowledge through existing relationship problems.

Furthermore, [Hobri \(2009\)](#) phases of learning mathematics with the Realistic Mathematics Learning approach adapted from Fauzi are as follows:

- a. Understand contextual problems
The teacher provides contextual problems (questions) in everyday life and asks students to understand these problems.
- b. Describe a contextual problem
In this step, the teacher can ask students to explain/describe contextual problems given to students in their own language.
- c. Resolving contextual problems
Students individually or in groups solve contextual problems in their own way. Different solutions or solutions to problems are preferred.
- d. Compare and discuss students' answers
The teacher provides time and opportunity for students to compare and discuss answers to questions in groups, for further comparison (checking, correcting) and discussion in class.
- e. Conclude
From the results of class discussions, the teacher directs students to draw conclusions about concepts or definitions, theorems, principles, or mathematical procedures related to recently resolved contextual problems.

Learning activities are activities that occur during the learning process. The object of learning activities here is students because students are active actors in the learning process, while the teacher acts as a designer, motivator, motivator, and student guide. According to [Rahman \(2006\)](#) learning activities are all student learning activities both physically and spiritually that support learning success. [Kunandar \(2010\)](#) argues about student activity as student involvement in the form of attitudes, thoughts, actions, and activities in learning activities to support the success of the teaching and learning process and get the benefits of these activities.

The conclusion obtained from the experts above is that learning activities are activities that always involve students in the form of attitudes, thoughts, actions, and activities that are given to students in the learning process and emphasize more on achieving affective and psychomotor

assessments. Aspects to be observed in this study are student activity in groups, student participation, motivation and enthusiasm, interaction between fellow students, and student-teacher interactions.

Learning will not happen if there is no activity. Activities must always exist in learning activities. So, the teacher must design learning that can stimulate students to be active. In learning mathematics, students must carry out activities that can stimulate students' understanding of concepts. Students also practice problem solving, analyzing, and linking activities.

According to Sudjana (2012), learning outcomes are essentially changes in behavior in a broad sense covering the cognitive, affective, and psychomotor fields. Learning outcomes in the opinion of Kunandar (2010) are the results obtained by students after following certain material from subjects in the form of qualitative and quantitative data.

Thus, researchers can conclude that learning outcomes are learning achievements achieved by students in the process of learning activities by bringing about a change and shaping one's behavior.

To assess student learning outcomes, teachers use tests as a means of assessing student learning outcomes. Tests are generally used to assess and

measure student learning outcomes, especially cognitive learning outcomes with regard to mastery of teaching materials in accordance with educational and teaching objectives. However, to a certain extent, the test can also be used to measure or assess learning outcomes in the affective and psychomotor fields (Sudjana, 2009).

Materials and Method

Types of research

This type of research is classroom action research (CAR). According to Arikunto (2016), CAR is a research conducted by teachers with the aim of improving the quality of learning practices in their classes which focuses on the teaching and learning process that occurs in class, carried out in natural situations.

Research design

According to Arikunto (2016), This research design refers to the classroom research model developed by Kemmis and Mc. Taggart, divides the procedure of action into four stages of activity in one cycle, they are: (1) planning, (2) implementing action, (3) observation/observation, and (4) reflection. The action and observation stages were carried out at the same time. In its implementation, the RME approach is applied as an effort to improve learning outcomes in the fraction addition operation material. The research design is described schematically in Figure 2.

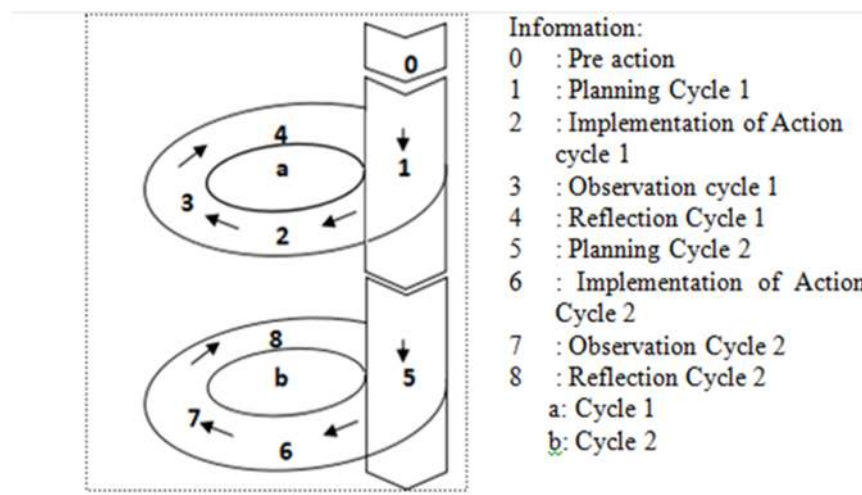


Figure 2. Cycle Flow Chart

Setting and time of research

This research was conducted at SD Inpres 3 Birobuli, South Palu District from July 2020 to September 2020. The location of this study was chosen because it was based on the experience of

researchers who were also class V teachers who stated that there were problems faced by students in learning mathematics, especially in the matter of adding fractions.

Research subject

The subjects of this study were fifth grade students of SD Inpres 3 Birobuli, who were registered in the 2020/2021 school year a total of 36 students, consisting of 18 male students and 18 female students. In this study, 3 informants were selected for the purpose of interviewing with different qualifications of ability (high, medium, and low ability) based on the initial test results and two partner teachers as observers who were in charge of observing teacher activities and student learning activities and outcomes.

Types and sources of data

The types of data in this study are qualitative data and quantitative data.

- 1) Qualitative data were obtained from teacher and student activities in the form of observations during the implementation of the action, interview results, and field notes.
- 2) Quantitative data were obtained from student learning outcomes in solving questions in the form of the results of the initial and final tests of students after participating in the learning process that applied the RME approach. This quantitative data is used to complement the qualitative data.

Data in the form of numbers will be described by giving meaning in the form of narrative exposure.

Data collection technique

1. Qualitative data

Qualitative data in this study were obtained as follows:

- 1). Observation
Observations were made during learning activities to determine the activities of researchers and research subjects during learning activities. The data were collected using the researcher activity observation sheet and the research subject.
- 2). Interview
Interviews were conducted to find out and explore problems experienced by students during the learning process and the factors that caused them.
- 3). Field Notes
Field notes were made to complement the data obtained, which were not recorded in data collection on the observation and interview sheets.

2. Quantitative data

The collection of quantitative data in this study was obtained by giving written tests to students. The written test is divided into two types, namely:

- 1) The initial test, is a test given to find out the student's initial knowledge or prerequisite knowledge of students related to the addition of fractions.
- 2) The final action test, which is a test given at the end of each action cycle to obtain data and provide an overview of the development of students' level of understanding of the fraction addition operation material.

Research instruments

According to Arikunto (2007), data collection instruments are tools that are selected and used by researchers in data collection activities so that these activities become systematic and made easier by researchers. In this study, researchers used the following instruments:

- a) Observation guide sheet, this instrument was designed by researchers in collaboration with fellow teachers who acted as observers, namely Maryam Pulukadang, S.Pd. as an observer of the activities of the teacher and mother, Tuti S. Langkanae, S.Pd. as observers of student activity and learning outcomes. The observation sheet is used to collect data about teacher performance, activities, and student learning outcomes in the affective and psychomotor domains in the learning process by applying the RME approach.
 1. Teacher activity observation sheet
 2. Student activity observation sheet
 3. Observation sheet of student affective learning outcomes
 4. Observation sheet of student psychomotor learning outcomes
- b) Learning outcomes test, this instrument is used to collect data on student learning outcomes in the cognitive domain regarding students' understanding or mastery of learning material that has been studied using the RME approach. This instrument is in the form of a written test in the form of a formative test that is done individually.

Data analysis technique

The data to be analyzed is data regarding the problem-solving stage that has been obtained at the data collection stage. To analyze the data, data analysis techniques were used referring to the Miles and Huberman model.

Miles and Huberman (Sugiyono, 2014), argued that activities in qualitative data analysis were carried out interactively and continued continuously until completion, until the data was saturated. Activities in data analysis, namely data condensation, data display, and conclusion drawing / verification.

a. Data condensation

Data condensation is the process of selecting, focusing, simplifying, abstracting, and changing field notes, interview transcripts, documents, and other empirical (findings) material. Data condensation means converting previously evaporated data into denser ones.

b. Presentation of data

Data presentation is an effort to present data clearly and easily to understand in the form of narrative exposure, tables, graphs, or other manifestations that can provide a clear picture of the process and results of the actions taken.

c. Data verification

Verification is the taking of extracts or conclusions and presenting data that has been organized in the form of statements or short sentences, concise and meaningful.

This research was analyzed using qualitative and quantitative analysis:

1. Qualitative analysis

Qualitative analysis is used to analyze teacher teaching activities, student learning activities, and student learning outcomes which show the dynamics of the process by providing real and deep meaning.

a. The value of teacher teaching activities is obtained by the formula:

$$N = \frac{R}{SM} \times 100$$

Information:

N = value sought or expected

R = score obtained by the teacher

SM = maximum score

100 = a fixed number

b. The value of individual student learning activities is obtained by the formula:

$$NA = \frac{Js}{SM} \times 100$$

Information:

NA = value of activity sought or expected

Js = total score obtained by students

SM = maximum score

100 = a fixed number

Classical student activity values are obtained by the formula:

$$P = \frac{\Sigma \text{Active students}}{\Sigma \text{All students}} \times 100\%$$

Information:

P = classical student activity value

Σ = number

100% = a fixed number

c. The affective and psychomotor values of students individually are obtained by the formula:

$$N = \frac{R}{SM} \times 100$$

Information:

N = value sought

R = total score of acquisition

SM = ideal maximum score

100 = a fixed number

Students' affective and psychomotor values are classically obtained by the formula:

$$A = \frac{\Sigma x}{N} \times 100\%$$

Information:

A = the percentage of classical affective/psychomotor completeness

Σx = the number of students who have affective/psychomotor scores ≥ 70

N = number of students

100% = a fixed number

2. Quantitative analysis

Quantitative analysis will be used to determine the progress of student learning outcomes on mastery of the material that has been studied. The test scores of student learning outcomes were obtained from the initial test and the test at the end of each action.

a. These individual values are obtained using the formula:

$$N = \frac{R}{SM} \times 100$$

Information:

N = value sought or expected

R = score obtained

SM = maximum score from the test

100 = a fixed number

b. Class average score

To calculate the average value of learning outcomes obtained by the formula:

$$\bar{X} = \frac{\sum X}{\sum n}$$

Information:

\bar{X} = average value sought

$\sum X$ = total student grade

$\sum n$ = number of students

c. The percentage of classical learning completeness

$$\text{Percentage of KBK} = \frac{\text{number of students who passed}}{\text{number of total students}} \times 100$$

(Tampubolon, 2013)

Action success criteria

The success of the actions taken can be seen from the teacher's activities in managing classroom learning and student activities during learning using the RME approach and student learning outcomes. Action is considered successful if:

1. The quality of teacher activity in the learning process is declared successful if the quality of the learning process for each aspect that is assessed is in the good or very good category and the student activities are classically in the active or very active category.
2. Student learning outcomes after participating in learning with the RME approach are said to be successful if they meet the indicators of research success in cycle I, namely students are able to find a way to add fractions with different denominators. The success indicator for cycle II is that students are able to understand how to solve problems about adding fractions with different denominators. A class is said to have completed classical learning if the completeness of classical learning is $\geq 75\%$. This is in accordance with what has been stipulated in SD Inpres 3 Birobuli.

Results and Discussion

1. Pre-action results

Before the implementation of the action, the researcher gave a preliminary test in class Vc SD Inpres 3 Birobuli.

By using the test technique, quantitative data were obtained about the operation of adding fractions which were then analyzed. The results obtained at the pre-action stage can be seen in the following table 1.

Table 1. Result of the operation assessment of the fraction addition in stage

pre action		
No.	Acquisition Aspect	Result
1	The highest score	95
2	Lowest Value	0
3	The number of students	36 people
4	The Number of Students Who Completed	13 people
5	Percentage of classical absorption	53.61%
6	The percentage of classical learning completeness	36.11%

Source: Initial test evaluation results

2. Cycle I

In the first cycle, the action was carried out with 2 meetings of teaching and learning activities and 1 time the final action test. The analysis of the results of the final test action cycle I can be seen in Table 2.

Table 2. Analysis of cycle I action tests

No.	Acquisition Aspect	Result
1	The highest score	100
2	Lowest Value	30
3	The number of students	36 people
4	The Number of Students Who Completed	24 people
5	Percentage of classical absorption	68.89%
6	The percentage of classical learning completeness	66.67%

Source: Cycle I evaluation results

Reflection is carried out to determine the advantages and disadvantages that occur during the cycle action. Reflection cycle I is carried out as a material for improving the implementation of cycle II. Reflection is carried out based on data from observations of student activities and teacher activities. Based on the results of observations of teacher activities, the teacher has implemented the lesson plan well. However, there are several shortcomings, namely the teacher is still lacking in terms of perception and provision of motivation, and when closing the lesson the teacher does not involve students in reflecting and making summaries.

From the implementation of the action cycle I, namely 3 meetings, it can be argued that the actions or activities of students in teaching and

learning activities using the RME approach obtained an average score percentage of 62.50% for the first meeting, and 68.75% for the second meeting. According to observers, this level of success is in the sufficient category. Whereas for the learning management action by the teacher using the RME approach, the score was 70.97% for the first meeting, and 79.35% for the second meeting. Qualitatively, this percentage gets a good predicate. The data from the observation of student learning activities, in cycle I show that students do not understand the picture of the importance of the material to be studied, students do not understand the "Real" problems (questions) proposed by the teacher and are involved in the lesson meaningfully, and students are less able to accept Problems given by the teacher that lead in accordance with the goals to be achieved (Salma et al., 2020).

Although qualitatively the implementation of learning in cycle I was categorized as good but qualitatively student learning outcomes still need to be addressed, which is thought to be the cause, among others:

- a. Not optimally using the RME approach, there are still students who have not mastered the operation material for the addition of different denominated fractions.
- b. Students have not fully paid attention to the lesson well.

Based on this, the researchers tried to maintain and increase the strengths in cycle I and minimize the deficiencies that occurred during the actions in cycle I.

3. Cycle II

In cycle II the action was carried out with 2 meetings of teaching and learning activities and 1 time the final action test. The analysis of the results of the final test action cycle I can be seen in Table 3.

Table 3. Cycle II action test analysis

No.	Acquisition Aspect	Result
1	The highest score	100
2	Lowest Value	45
3	The number of students	36 people
4	The Number of Students Who Completed	33 people
5	Percentage of classical absorption	85.00%
6	The percentage of classical learning completeness	91.67%

Source: Cycle II evaluation results

After all activities in cycle II are carried out, the teacher reflects on cycle II. As for the reflection carried out based on the data from the observation of teacher activities in managing learning, it was found that in general, the ability of researchers as teachers in managing learning using the RME approach had increased. Based on the data from the observation of student activities, students have been actively involved in learning in a calm and orderly atmosphere. In the learning process, it shows that in general there has been an increase in the student's ability to operate the addition of different denominated fractions, and students have been able to conclude the material that has been studied. If in cycle I students received excessive guidance from the teacher,

In addition, from the observation data, the students' affective, psychomotor, and cognitive learning outcomes also experienced an increase compared to the first cycle. very good. Likewise, the analysis of the final test results for the second cycle of action also showed an increase. The number of students who did not complete was less than in the final action test analysis cycle I. This can be a support that the level of understanding of students in cycle II has increased. Based on the data that has been described above, the teacher concludes that no further action is given to students.

This research is a classroom action research (CAR) which aims to improve student learning outcomes in the addition of fractions in class V SD Inpres 3 Birobuli with a total of 36 students. This research was conducted in two cycles. Each cycle consists of 4 components, namely (1) planning, (2) implementing the action, (3) observation, and (4) reflection. This is in accordance with what was stated by Kemmis and Mc. Taggart.

The teacher applies the realistic mathematics learning (RME) approach. In learning, associated with reality and experiences in everyday life so that students can construct their own formal mathematical knowledge through existing relationship problems. Mathematics must be close to the child and relevant to the child's everyday situation. This is in accordance with the opinion of Soedjadi (2007) who explains that what is meant by reality is real or concrete things that can be observed or understood by students through imagining, while what is meant by the environment where students are in the school, family, and community environment. that can be understood by students.

This environment is called the daily life of students (Hadi, 2005).

Before implementing the action, the teacher first gives students a preliminary test to determine the students' abilities on the prerequisite material. This is in accordance with the opinion of. The material in the initial test was the addition of the different denominated fractions. The initial test results are used as a guide in determining informants. Furthermore, the teacher determines the research subject with a heterogeneous level of academic ability.

In applying the RME approach, the teacher divides students into 6 study groups. Each group consists of 6 students. This group division aims so that students can exchange ideas and work together with other students. This is done so that the implementation does not take a long time.

In its implementation, the teacher also distributes Students Worksheet to each group which aims to guide and encourage students in solving contextual problems that are associated with reality and experiences in everyday life so that students can construct their own formal mathematical knowledge through existing relationship problems so that students can draw conclusions. Material taught. This is in line with the opinion of Trianto (2009) that a student's Worksheet is a student guide used to carry out investigations or problem-solving. In the Students Worksheet, there are several work procedures, and questions are arranged systematically, so as to help students draw conclusions on the material being taught.

During the learning process, it was seen that most of the students were active and enthusiastic in working on the Students Worksheet that was given in equating the denominators of fractions with different names. This is in accordance with the opinion of Hadi (2005) that students are not seen as passive recipients, but should be given the opportunity to rediscover mathematical ideas and concepts under the guidance of the teacher. This process of reinvention is developed through exploring various everyday problems so that students are actively involved. Because from all aspects of the observations that have been carried out in student observations using the Realistic Mathematics Education approach in each cycle it looks better, students become more enthusiastic and active in the learning process, students who are

initially noisy when the teacher explains become more attentive when the teacher provides explanations of related material. With contextual problems, even during group discussions, students seem to be more active in expressing opinions in their groups (Parno, 2020).

As long as students work on the Students Worksheet, the teacher supervises and provides guidance to students if there are things that are unclear and not understood during the discovery process. The teacher only acts as a facilitator and motivator whose job is to observe, motivate, and direct students to equalize the denominators of fractions with different denominations.

After the time to equalize the denominators of the fractions with different denominators has been completed, the teacher asks representatives from the group to present their findings. Furthermore, the teacher asks each individual to work on additional practice questions related to the material. Based on their answers to these questions, information was obtained that some students already understood the application of the principles they found to solve the questions. But some have not. Therefore, after all, students have finished working on the given practice questions, the teacher returns to work on the practice questions on the blackboard.

From the results of the final test action cycle I, it can be seen that most students still make mistakes in equating the denominators of different denominators. This indicates that the indicators of the success of the action for cycle I have not reached the criteria for the success of the action.

After the cycle I learning activities ended, the researcher and the observer reflected on all the learning activities carried out. This reflection is carried out to determine deficiencies that occur in the implementation of cycle I and to recommend improvement activities in the next cycle II. This is in accordance with Arikunto's (2007) that reflection is an activity of analyzing data that has been obtained based on the initial tests conducted before the learning activity takes place, the results of the final tests of actions taken after the learning action, the results of observations, field notes, and the results of interviews as basic improvement plans for the next cycle if still needed.

In the implementation of the second cycle of learning, all activities carried out are generally the same as the activities carried out in the previous first

cycle. The group of students is still the same as the group in the previous first cycle of learning. The purpose of this grouping is still the same as the purpose of grouping in cycle I, so that students can exchange ideas and work together with other students, so that the use of time during learning is more efficient.

At the beginning of the lesson, the teacher gives perceptions to students who asking questions about different denominated fractions, as well as asking students about the material that has been studied in the previous meeting, namely the addition of fractions. From this apperception activity, it turns out that students still remember the material about the operation of adding different fractions using the RME approach. This shows that the knowledge learned by students in cycle I can last a long time in students' memories.

Still the same as the implementation of cycle I, each group was also distributed a Students Worksheet which could help students develop their creativity in conducting investigations or problem-solving. Students Worksheet in cycle II aims to solve the problem of adding different denominated fractions.

During work on the Students Worksheet, the teacher's role is only as a motivator and facilitator who cannot tell students the real answer directly, but only guides and directs students to solve the problem of adding different denominated fractions. When working on the Students Worksheet, most students have been able to find it by getting the necessary guidance from the teacher. If in cycle I students are more dominant in obtaining guidance, then in cycle II there is an increase in performance among fellow students in the group so that they can work on the Students Worksheet provided with guidance as needed from the teacher. After the groups present their findings, the teacher and students summarize the material that has been studied.

Next, the teacher asks students to do additional practice questions. Based on the student's answers to the additional practice questions given, it seems that most of the students can do it individually, even though their answers still have errors. After that, the teacher returns to working on the additional practice questions on the board, so that students understand how to solve the problem solving the addition of the fractions with different denominators.

Based on the results of the final action test in cycle II, it was found that there were still students who still caused errors in equating different denominators. This is because students are wrong in looking for fractions with a value or KPK from two different denominators.

Based on the analysis of student test results in cycle II, it can be concluded that the criteria for the success of the action for cycle II have been fully achieved and the individual absorption of grade V students of SD Inpres 3 Birobuli shows that most students have increased learning outcomes. After the second cycle of learning activities ended, the researcher and the observer reflected on all the learning activities carried out. From the results of reflection on teacher activities in managing learning, in general, the ability of researchers as teachers in managing learning using the RME approach has increased. The things that are done in order to improve the deficiencies in the cycle action are: (1) the teacher must always provide guidance in doing question exercises, especially for students who don't understand, and (2) the teacher must motivate students more so that students are more confident and there is no need to be shy to ask questions and express opinions (Susanti, 2020).

Student activity in the learning process shows that in general there has been an increase in students' ability to equalize the denominators of fractions. If in cycle I students received more guidance from the teacher, then in cycle II students were able to find it with guidance as needed from the teacher. The same goes for the work of LKPD. Most of the study groups increased cooperation and exchanged ideas. Based on the above, the teacher assumes that student learning activities have increased, and have achieved indicators of successful action.

Broadly speaking, the discussion as seen from the analysis of student learning outcomes in cycle I and cycle II that has been stated above, it can be concluded that there has been an increase in activity and learning outcomes of class V students of SD Inpres 3 Birobuli for the operation of adding fractions after being taught by applying the RME approach.

Conclusions

Based on the results of research in cycle I and cycle II and discussion, it can be concluded that the application of the RME approach can improve student activity and learning outcomes of fraction

addition operation material in class V SD Inpres 3 Birobuli by following the phases of the RME approach.

In the phase of understanding contextual problems, the researcher presented the problem using origami paper to direct students to material about the operation of adding different denominating fractions. After that the researchers distributed Students' worksheet to be worked on in groups. In the phase of explaining the contextual problem, the researcher explains how to solve the addition problem related to different denominating fractions. Then the researcher asked students to explain again the problem given in their own language so that they could easily understand it. Researchers give freedom to each student to explain again the questions given. After that, the researcher explained using props in the form of origami paper so that it was easy for students to understand. Then the researcher observes and provides guidance to both groups and individuals. Researchers provide opportunities for students to ask questions about the material presented. Then students ask for explanations that have not been understood about solving the problem of adding fractions that are called different. Researchers explain student questions.

In the phase of solving contextual problems, researchers ask students to solve the problems given and work on them individually. Researchers encourage students to solve problems (questions) that are given individually without asking for help from their group friends. Then in the phase of comparing and discussing students' answers, the researcher provided the opportunity for students to compare their answers and discuss them. Researchers guide the course of the discussion. Furthermore, the researcher asked representatives from the group to present the answers to the results of their group discussions. Then the researcher gave a response. In the concluding phase, the researcher guides students to draw conclusions together from the results of the problems. The conclusion is that the sum of the denominator fractions can be done by equating the denominators first.

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