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Model Deployment Realistic Mathematics Education to Improve Student Learning Outcomes Grade 5

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ABSTRACT

This study aims to improve learning outcomes by applying learning models to Realistic Mathematic Education on material for arithmetic operations on fractions in class V SDN 1 Karangkendal, Kapetakan District, Cirebon Regency. This research is a Classroom Action Research conducted in 3 cycles. The subjects of this study were 29 grade 5 students at SDN 1 Karangkendal, Kapetakan District, Cirebon Regency. Research data was collected through tests. This data analysis uses a qualitative descriptive analysis technique. The results showed increased learning outcomes in fifth-grade students at SDN 1 Karangkendal, Kapetakan District, Cirebon Regency, through a learning model, Realistic Mathematic Education. The increase in student learning outcomes is shown by the increasing number of students who meet the Minimum Mastery Criteria scores. In cycle one there were 62.1% of students achieved the Minimum Mastery Criteria scores. Then, in cycle two there were 75.9% of students had achieved the Minimum Completeness Criteria score; in cycle three, 86.2% of students had achieved the Minimum Mastery Criteria score. Based on these results, there is an increase in student learning outcomes with the application of learning models Realistic Mathematic Education on material for arithmetic operations on fractions at SDN 1 Karangkendal, Kapetakan District, Cirebon Regency.

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1. INTRODUCTION

A group of people educates to find identity, change attitudes, self-potential, and for social survival. One form of education that can shape character and increase students' knowledge is formal education, namely school. Educators are role models for every participant in the school environment [1].

The process of teaching and learning in the school environment will increase knowledge for students. According to Yeni and Jayanto [2], studying yourself is a change in each individual's behavior that can be formed through experience or knowledge gained.

According to Hamalik [3], learning is a process, an activity, and not a result or learning goal. Learning is not just remembering, but more than that, namely experiencing. Learning outcomes are not a mastery of the exercise results but a behavior change. In addition, Setiawan [4] argues that learning is a process of mental activity carried out by a person to obtain a positive change that lasts relatively long through training or experience involving aspects of personality, both physically and psychologically. From this opinion, it can be concluded that learning is a human activity that can provide changes in behavior cognitively, affectively, and psychometrically.

As a prospective educator, it is best to know the meaning of study and learning to accurately carry out his primary duties as a teacher. Learning is essentially a process that regulates and organizes the environment around students so that it can grow and encourage students to do the learning process. The role of the teacher as a guide depends on the number of students who have problems. Therefore, if the essence of learning is "change," then the essence of learning is "setting." Pane & Dasopang [5]. In line with that, according to Fakhrurrazi [6], the learning process is a process that contains a series of implementations by teachers and students based on reciprocal relationships that take place in educational situations to achieve specific goals. A learning objective is prepared to meet the level of learning success and determine learning changes. Hamalik [3] states that learning objectives are the needs of students, subjects, and educators. Based on the needs of students, it can be determined what to achieve, develop and appreciate. According to Setiawan [4], learning objectives are behavior students want to achieve or can do at certain levels and conditions.

Prasetyo's [7] learning outcomes are abilities students possess after receiving learning experiences. Several experiences gained by students include the cognitive, affective, and psychomotor domains. In line with this, Fitria [8] and Ediyanto, Giastuti, et al.[9] states that learning outcomes are a benchmark for achieving educational goals for students who participate in the learning process, whether which can be measured directly with letters and numbers as well as learning outcomes that can be seen in its application in everyday life. In addition, according to Suprijono [10], learning outcomes are changes in behavior as a whole, not just one aspect of human potential. Meanwhile, according to Jihad and Haris [11], Learning outcomes are forms of achieving changes in behavior that tend to settle in the direction of cognitive, affective, and psychometric from the learning process carried out in a specific time. From this opinion, it can be concluded that learning outcomes are a change students must take after participating in the learning process. The changes cannot be seen only from one aspect of human potential but must be viewed from changes in the student's behavioral, cognitive, affective, and psychomotor development.

Mathematics is a subject that often experiences problems with learning outcomes. A preliminary study conducted in class V SDN 1 Karangkendal through interviews with educators revealed that students had not achieved optimal understanding in learning mathematics. Fractional material is complex material in Mathematics to teach because it requires a high understanding of concepts. Some students only know fractional material as a set of mathematical symbols, and this is due to the application of a learning model that is

unrealistic and not related to everyday life, where students have only explained the formula and then given practice questions.

A practice test of fractional arithmetic is provided to determine a student's mathematical understanding. From the results of the trial tests conducted in the VA class for the 2022/2023 school year, which 26 students attended out of 29 students in the class, it was found that the lowest score obtained by students was 30, the highest score obtained by students was 75 and the average student of 51.1. The data shows many student scores have reached the Minimum Completeness Criteria set at SDN 1 Karangkendal of 70. This problem makes educators try to find ways to help students achieve the expected competencies by applying realistic learning models and improving learning conditions that attract students' interest in mathematics so that the concepts to be studied are more meaningful and embedded in students' memories. To solve the problem of low learning outcomes in class V SDN 1 Karangkendal, applying a learning model, Realistic Mathematics Education is expected to improve learning outcomes in Mathematics for VA class students at SDN 1 Karangkendal. Because the learning model of Realistic Mathematics Education refers to conceptual learning and makes the environment a learning resource so that students can more easily understand Mathematics lessons, especially in fraction material.

This study aimed to see any changes shown by increasing student learning outcomes in Mathematics class 5 at SDN 1 Karangkendal, Kapeakan District, Cirebon Regency, after using the learning model Realistic Mathematic Education during the learning process. This can be seen from the fulfillment of the minimum completeness criteria set at the school, namely achieving a minimum of 70, and learning is successful if the percentage of students who complete reaches at least 80% of the total number of students who complete the classical completeness. Based on the problems above, the solution that can be done is to apply the model of Realistic Mathematic Education to improve the learning outcomes of class V students at SDN 1 Karangkendal.

2. METHOD

This study uses Classroom Action Research, which was chosen because it fits the research that will be discussed to make this research more relevant. Tikollah et al. [12] state that action research is a systematic study of efforts to improve the practice or implementation of education by a group of participants using the methods of their practical actions accompanied by reflections on their practical actions. This classroom action research uses the Kemmis and Mc Taggart models. This model consists of four components: planning, action, observation, and reflection. Action research takes research subjects that are selected purposively, namely in classes that experience problems only. The research subjects in this study were 29 students in class 5 at SDN 1 Karangkendal, Kapetakan District, Cirebon Regency.

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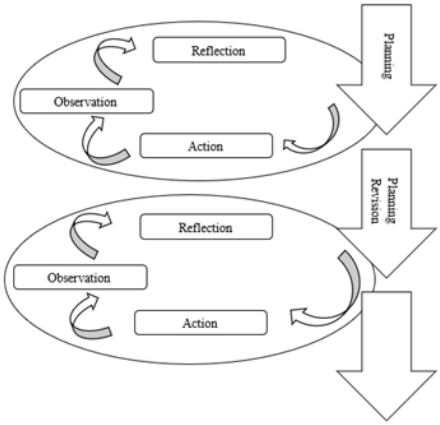

Figure 1. Kemmis & Mc Taggart Classroom Action Research Design

The Kemmis and McTaggart Classroom Action Research model is used because the action stages are simple and easy to understand [13]. Another consideration for using this model is that the problems encountered in class require completion through Classroom Action Research. For this reason, a research model is needed that is appropriate to the problems in the class. Arikunto [14] states that in carrying out a class action, researchers can collect two types of data: qualitative and quantitative.

The instruments used in this study were (1) test questions, (2) an attitude scale questionnaire, and (3) teacher teaching assessment observation sheets. Data collection techniques used in this study are tests, questionnaire observation sheets, interviews, and documentation. The five techniques are expected to complement each other to assist researchers in completing their research. The data analysis technique in this study was that the data obtained during the observation activities of each cycle were analyzed descriptively using percentages to see trends that occur in the learning process using the Realistic Mathematical Education learning model.

According to Abdurrahman [15] states that the factors causing the low or lack of students' understanding of mathematical concepts, one of which is the learning method used by teachers, for example, in learning oriented to traditional approaches that place students in the teaching and learning process as a listener.

Learning outcomes are not only about cognitive abilities but affective abilities, namely students' attitudes when participating in teaching and learning activities. Rakhmat [16] suggests that attitude is a tendency to act, perceive, think, and feel objects, ideas, situations, or values. In line with that, Azwar [17] argues that attitude is a pattern or behavior of tendencies or readiness for a person to be able to adapt, or maybe referred to as adaptation.

This study was marked by a change shown by increasing student learning outcomes in Mathematics class V at SDN I Karangkendal after using the Realistic Mathematics Education learning model during learning. This can be seen from the fulfillment of the minimum completeness criteria set at the school, namely achieving a minimum of 70, and learning is successful if the percentage of students who complete reaches at least 80% of the number of students who complete the classical completeness.

3. RESULTS AND DISCUSSION

3.1. Result

To be precise, this research was conducted in the even semester of July 2022. The homeroom teacher for grade 5 assisted the researcher. This research consisted of three cycles, each with two meetings.

Learning outcomes

a. Cycle 1

The learning outcomes in the first learning cycle increased from the pre-cycle to 41.4%.

Table 1. Value of Learning Outcomes Cycle 1

Average	Category	Total	Presentation
69,1	Complete	18	62,1%
	Not Finished	11	37,9%

From the table data, the following information can be obtained.

1. In cycle 1, the average value of students reached 69.1
2. In cycle 1, there were around 62.1% or 18 students who entered the complete category
3. In cycle 1, there were around 37.9% or 11 students who entered the unfinished category

b. Cycle 2

Learning outcomes in cycle two learning increased from cycle I by 13.8%.

Table 2. Value of Learning Outcomes Cycle 2

Average	Category	Total	Presentation
74	Complete	22	75,9%
	Not Finished	7	24,1%

From the table data, the following information can be obtained.

1. In cycle 2, the average value of students reached 74
2. In cycle 2, there were around 75.9% or 22 students who entered the complete category
3. In cycle 2, there were around 24.1% or seven students who entered the unfinished category

c. Cycle 3

Learning outcomes in cycle three learning increased from cycle two by 10.3%.

Table 3. Value of Learning Outcomes Cycle 3

Average	Category	Total	Presentation
80,5	Complete	25	86,2%
	Not Finished	4	13,8%

From the table data, the following information can be obtained.

1. In cycle 3, the average value of students reached 80.5

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2. In cycle 3, there was around 86.2% or 25 students who entered the complete category
3. In cycle 3, there were around 13.8% or four students who entered the unfinished category

Attitude of Learners

At this implementation stage, it was carried out after completing research using a questionnaire distribution containing 20 statements consisting of 10 positive and ten negative statements. The questionnaire distributed is attached. The distribution of this questionnaire aims to measure students' attitudes toward applying the Realistic Mathematics Education learning model in the subject of Mathematics on fractional arithmetic operations in class 5 of SDN 1 Karangkendal.

Table 4. Attitude Scale Presentation

Presentation	Category
70,4%	Good

From table 4, it can be concluded that the results of the questionnaire distribution showed that 70.4% of students gave a positive attitude. This shows that the application of learning modelsRealistic Mathematics Education in the subject of Mathematics in grade 5 SDN 1 Karangkendal is in a good category.

3.2. Discussion

The learning model is a container for all learning activities to achieve learning objectives [18]. Trianto [19] states that the learning model is a broad and comprehensive approach and can be classified based on the learning objectives, syntax, and nature of the learning environment. This means that the learning model provides a framework for educators to teach. According to Shoimin [20], the function of the learning model is as a guide for teachers and educators in carrying out learning.

Learning model Realistic Mathematic Education can make students understand more about mathematical concepts because it is packaged in realistic and continuous learning with everyday life. Elwijaya, Harun, and Helsa [21] reveal that Realistic Mathematics Education is One of the relevant learning activities. The designed learning activities are expected to make students rediscover mathematical concepts or algorithms. According to Jupri [22], there are three principles related to Realistic Mathematic Education: guided rediscovery and progressive mathematization, didactic phenomenology, and own model development. This is in line with the opinion of Hidayat [23], which states that the learning approach to Realistic Mathematic Education is an approach to learning mathematics that views mathematics as a human activity. Increased interaction in teaching and learning activities also makes less intelligent students experience increased learning outcomes. Based on the increase in the acquisition of learning outcomes, it is clear that learning Realistic Mathematic Education can improve student learning outcomes. These

results follow the learning objectives, which prioritize applying realistic mathematical concepts.

According to Suprijono [10], Learning outcomes are changes in behavior, not just one aspect of human potential. Meanwhile, according to Jihad and Haris [11], Learning outcomes are forms of achieving changes in behavior that tend to settle in the direction of cognitive, affective, and psychometric from the learning process carried out in a specific time. From this opinion, it can be concluded that learning outcomes are a change students must take after participating in the learning process. The changes cannot be seen only from one aspect of human potential but must be viewed from changes in the student's behavioral, cognitive, affective, and psychomotor development.

The attitude of learning itself has an important influence on learning, and practical learning will make teaching and learning activities more memorable to foster a positive attitude in students when learning. According to Mufridah, Hindriana, and Awaliya [24], Learning attitude is the tendency of students to do or not do learning activities due to their views and feelings towards learning activities. In line with that, according to Schrader [25], learning attitude is a behavioral tendency when he learns things related to lessons that can affect learning outcomes, a reaction or a person's attitude towards something, such as a positive or negative learning attitude, an attitude of acceptance or liking, reject or dislike learning which will later affect learning outcomes. From this opinion, it can be concluded that students' learning attitudes also play a role in improving students' learning outcomes cognitively.

According to Jihad and Haris [11], there are several indicators of learning attitudes, namely: (1) Attitude toward subjects, (2) Attitude towards teachers or instructors, (3) Attitudes towards the learning process, (4) Attitude toward the material presented. Learning model Realistic Mathematic Education has a positive influence, significantly improving student learning outcomes in mathematics. By learning Realistic Mathematic Education In this way, students become more active during the process of teaching and learning activities and facilitate students' understanding of learning mathematics because Realistic Mathematic Education sees Mathematics not only as a set of symbols and numbers but see Mathematics as a human activity that cannot be separated from everyday life.

4. CONCLUSION

Applying learning models to Realistic Mathematic Education can improve the learning outcomes of class 5 students at SDN 1 Karangkendal in mathematics on the material for arithmetic operations on fractions. Student learning outcomes increased from cycles 1, 2, and 3 with the actions taken on any matters that had to be revised from student learning outcomes, student attitudes analysis, and students' and teachers' activities in managing to learn. This is done because it is a supporting factor in improving student learning outcomes. Student learning outcomes from cycle 1 to cycle three increased by 24.1%. This can be proven from the results of the pre-cycle or pre-test before applying the learning model to realistic Mathematics Education. Only six students, or around 20.7%, achieved the Minimum Completeness Criteria score, while 23 students, or 79.3%, had not

reached the Minimum Completeness Criteria score with an average score of 50.1, in cycle 1, 18 students, or around 62.1%, had achieved the Minimum Completeness Criteria score.

In contrast, the other 37.9% had not reached the Minimum Completeness Criteria score, with an average score of 69.1. In cycle two, as many as 22 students, or around 75.9%, have achieved the KKM score, while seven students, or 24.1%, have not yet achieved the Minimum Completeness Criteria with an average score of 74. In cycle three, 25 students, or around 86, 2%, have achieved the KKM score, while four students, or another 13.8%, have not achieved the Minimum Completeness Criteria with an average score of 80.5. Therefore, this Classroom Action Research can improve participants' learning outcomes to be declared victorious.

Based on the questionnaire distribution data, the results of 70.4% of students gave a positive attitude to the application of the Realistic Mathematical Education learning model in Mathematics in class 5 SDN 1 Karangkendal. So, it can be concluded that students' attitude while participating in learning by applying the Realistic Mathematics Education learning model is quite good.

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