INCREASING MATHEMATICS LEARNING OUTCOMES USING REALISTIC MATHEMATICS EDUCATION

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ABSTRACT

The problem that underlies this research is the low value of learning outcomes of students, especially in class VII D. This study aims to improve the learning outcomes of students by using a realistic mathematics education approach to students of class VII D in State Junior High School (SMP Negeri) 2 Bambanglipuro even semester 2017 Academic Year / 2018. This study includes Classroom Action Research (CAR). The research was conducted in two cycles. Each cycle consists of two meetings. Data collection techniques used are interviews and tests. Data analysis used is data reduction, data presentation, conclusion, and verification. The indicator of the success of this study is the achievement of increased learning outcomes of students. Learning outcomes of students are obtained from the work of solving the description questions. This success is shown by students' learning outcomes achieving an average good category ($\geq$ 61%). Based on the study results using a realistic mathematics education approach in the quadrilateral sub-topic, there is an increase in students' learning outcomes. This is evident from the first cycle test results to the second cycle test, which has increased by 1.76%. In the first cycle, the average test results of students were 42.47. In the second cycle, the average test results of students were 43.22. However, there has been an increase in learning outcomes but has not met the indicators of success.
Keywords: Improvement, Learning Outcomes, Realistic mathematics education

INTRODUCTION

Education is the need of every human being in the World. Education is divided into two, namely formal education and non-formal education. Formal education activities are carried out in schools or formally. In contrast, non-formal education activities are carried out outside the school, such as in the community. Education is very important, so education is included in the primary needs group. Immediate needs were only clothing, food, and shelter. Now it turns into clothing, food, shelter, and education (Latief Sahidin and Dini Jamil, 2013, p.211). The development of Science, Technology, and Science (IPTEKS) is very rapid, especially in telecommunications and information (Mumun Syaban, 2008, p.57). The impact of science and technology development is that new information can be spread quickly throughout the World and false information or false news or hoaxes.

It takes great effort to become a superior person in these changing and competitive circumstances. According to Anna Fauziah (2010, p.1), the ability that must be possessed to become a superior person is the ability to obtain, choose and process information, the ability to be able to think critically, systematically, logically, creatively, and the ability to work together effectively. This ability can be developed through the process of learning mathematics. Based on the explanation above, Mathematics can improve social thinking skills, especially students. Mathematics is studied at every level of formal education, from elementary schools to tertiary institutions. Mathematics is learned hierarchically and pays attention to individual learning abilities and the nature of mathematics itself. According to Latief Sahidin and Dini Jamil (2013, p.211), mathematics is the most challenging subject for students to learn. As a result of student, learning difficulties is a decrease in student learning outcomes.

Based on the results of interviews and pretests, it needs an effort to improve student learning outcomes. The teacher is expected to be able to master the class so that learning runs effectively. An appropriate learning model is needed so that learning mathematics can improve student learning outcomes.

Realistic Mathematics Education is an approach to learning mathematics. Differences in Realistic Mathematics Education with other mathematics education theories such as mechanistic, empiricism, and structuralistic. Realistic Mathematics Education has horizontal and vertical mathematical components (Treffers in Sutarto Hadi, 2005, p.21). Realistic Mathematics Education has stepped in its implementation, such as students understanding contextual problems to make meaning and make arguments that make sense. So, researchers will apply the Realistic Mathematics Education Approach (PMR). Researchers hope that by using the learning model approach, learning outcomes can improve.

Previously, researchers will describe research that is relevant to this study. The first, a study conducted by Maulana Aznar (2011) with the title Efforts to Improve Mathematics Learning Outcomes with the Indonesian Realistic Mathematics Approach (PMRI) in Class VII Semester II Students at SMPN 4 Banguntapan Academic Year 2010/2011. This study showed that students' mathematics learning outcomes experienced an increase in the average value in the first cycle of 67.59 (70.37%). In the second cycle, the average value was 84.81 (92.59%). Second, Herawati Sholekhah (2009) with the research title Improving Learning Outcomes with Indonesian Realistic Mathematics Education Class II SD 3 Bantul. Based on research results, the average test of student learning outcomes in the first cycle was 71.96 and in the second cycle was 81.83. Then the research conducted by Diyah Nurlia Astuti (2014) with the title The Implementation of the PMRI Approach and the 5E Learning Cycle Model to Improve Mathematics Learning Outcomes of Class III Students at SDN Tegalgondo 1 Malang. The average value in each cycle has increased. The first cycle of student learning completeness achieved 58.3% increased to 78.2% in the second cycle.

Identification of the problems found is students not playing an active role in class. Students do not have a picture of the contextual problems provided. Students are accustomed to memorizing formulas. Students lack concentration in the learning process and lack of understanding of students towards the material being taught. This study aims to improve students' learning outcomes by using the Realistic Mathematics Education approach to grade VII students of SMP Negeri 2 Bambanglipuro Even Semester of the Academic Year 2017/2018.

METHODS

This research is classroom action research (CAR). Classroom Action Research is defined as studying learning problems in the classroom through self-reflection to solve these problems by carrying out various planned actions in real situations and analyzing each treatment effect (Wina Sanjaya, 2012). According to E. Mulyasa (2013), Classroom Action Research attempts to examine a group of students' learning activities by providing an action that is deliberately raised. According to Suharsimi Arikunto (2017), Classroom Action Research is a series of three words, each of which can be explained as follows, (i) Research is an activity of observing an object using specific methods and methodological rules, (ii) Action is an activity that deliberately done with a specific purpose, and (iii) Class is a group of students who at the same time, learn the same thing from the same educator as well.

This research was conducted on March 19, 2018, until April 6, 2018, in SMP Negeri 2 Bambanglipuro, Bantul Regency in the even semester of the Academic Year 2017/2018. SMP Negeri 2 Bambanglipuro is located in Bambanglipuro District, Bantul Regency, Yogyakarta Special Region Province. The subjects of this study were students of class VII D of SMP Negeri 2 Bambanglipuro. The study was conducted in two cycles. The study population was determined based on researchers' observations, where the learning outcomes of students were the lowest (Table 1). The subjects in this study were grade VII students of SMP Negeri 2 Bambanglipuro, Bantul Regency. This study's object is the process and learning outcomes through the Realistic Mathematics Education approach to improve student learning outcomes. The indicator of the success of this study is the achievement of increasing student learning outcomes. Student learning outcomes are obtained from the work of solving the problem description. This success is shown by students' learning outcomes reaching an average of good

categories (≥ 61%). Data collection techniques used were tests and interviews. Data analysis techniques used are data reduction, data collection, conclusions, and verification.

RESULTS AND DISCUSSION

This research was conducted from March 19, 2018, until April 6, 2018. The results of the first cycle test had increased quite dramatically. Students' first cycle I test results can be seen in Table 1.

Table 1. Student Test Results in Cycle I

The highest score	60
Lowest value	0
The average value of the test results	42,47
The number of students who reach the indicator of success	0
The number of students who have not yet reached the indicator of success	32
Qualification	Enough

Based on the results of these tests, the study continued in the second cycle of action. Cycle II test results have increased. The test results of the second cycle of students can be seen in Table 2.

Table 2. Student Test Results in Cycle II

The highest score	85
Lowest value	20
The average value of the test results	43,22
The number of students who reach the indicator of success	7
The number of students who have not yet reached the indicator of success	25
Qualification	Enough

Improved student learning outcomes from cycle I to cycle II can be seen in Table 3.

Table 3. Improved Learning Outcomes

	Cycle	
	I	85
The highest score	60	20
Lowest value	0	43,22
The average value of the test results	42,47	7
The number of students who reach the indicator of success	0	25
The number of students who have not yet reached the indicator of success	32	85

Overall from the results of cycle tests and interviews with teachers and students, it can be concluded that the use of a realistic mathematics education approach can be used as an effort to improve student learning outcomes in class VII D even semester of SMP Negeri 2 Bambanglipuro Bantul Regency in the academic year 2017/2018. The hypothesis of proven action.

CONCLUSION

Based on the study results using a realistic mathematics education approach to the rectangular sub-subject, it can be concluded that there is an increase in student learning outcomes. This is evident from the first cycle test results to the second cycle test, which increased by 1.76%. In the first cycle, the average student test results were 42.47. In the second cycle, the average student test results were 43.22. However, there has been an increase in learning outcomes but have not met the indicators of success.

Realistic mathematics education used in learning mathematics has received positive responses from interested students, more enthusiastic and happy in learning mathematics to increase students' learning outcomes. This is evident from the results of the student interviews. Realistic mathematics education received good responses from grade VII D. Mathematics teacher because the teacher saw that

some students experienced an increase in learning outcomes. Students were more active in-class learning to create interactive learning. This is evident from the results of interviews with mathematics teachers in class VII D.

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