

IMPROVED LEARNING OUTCOMES IN CALCULATING REDUCTION OPERATIONS USING CONCRETE OBJECT MEDIA

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ABSTRACT

This research is motivated by the low understanding of grade 1 students on calculating operating material reduction. Through observation, it is known that the students' low understanding of the calculation counting reduction material is a difficult subject to understand. The most easily found indications are pesetas students' learning outcomes which tend to be less satisfactory, especially in obtaining average scores under other lessons. From the observations of the author of grade 1 students of SDN 009 Cikadut, Mandalajati Subdistrict, Bandung City, experienced difficulties in the reduction, the teacher factor also became a problem of how teachers optimize learning planning to improve grade 1 students' understanding of calculating reduction operations. This study aims to obtain an overview of learning planning in the calculation of reduction operating material by using concrete object media so as to obtain an improvement in the learning process of mathematics in grade 1 students of 009 Cikadut Public Elementary School and find out the results of the students' values in calculating the reduction of operational material using concrete objects. Looking at the situation in the field, the researchers are interested in doing research using concrete objects so that they are expected to trigger activity and creativity in the teaching and learning process that is not only teacher-dominated.

Keywords: Ability to Calculate Reduction Operations, Concrete Material Media.

INTRODUCTION

Mathematics is one of the subjects at all levels of education, starting from elementary school to college. Therefore, mathematics needs to be introduced early on to children, because learning mathematics is a requirement to continue their education to the next level. The need for mathematical applications now and in the future is not only for everyday needs, but especially in the world of work and to develop science. So that mathematics is a science that has an important role and underlies technological progress. In the National Education Standards Agency (BSNP, 2006) explained that mathematics subjects need to be given to students starting from elementary school to equip students with logical, systematic, critical, and creative thinking, as well as the ability to work together. Mathematics is a subject that is still difficult to understand or understand by students. The same is true for students in class I of SD 009 Cikadut who still have learning difficulties, especially mathematics subjects. In the implementation of learning, especially mathematics learning, there are still many obstacles faced by teachers. The low mathematics learning outcomes of class I students are caused by

several factors both from the teacher and students, including (1) there are still many students who are passive in the learning process (2) lack of interest and motivation of students in receiving learning materials (3) low students' understanding of the material taught, (4) the learning process undertaken by the teacher does not activate students, (5) the use of media and the application of learning models that are not optimal, (6) classroom management is still lacking.

In order to increase mathematics learning outcomes that are expected to be achieved, researchers try to apply learning media using concrete objects. Learning counting operations reduction with concrete objects media can improve learning outcomes of mathematics because it supports the learning process because it can help teachers in conveying messages or learning information to students and can facilitate the learning process, especially the interaction between teachers and students so that learning activities will be more effective and efficient .

METHOD

The type of research used in this study is Classroom Action Research (CAR) which is also known as Classroom Action Research (CAR) which is conducted with the aim of improving the quality of the learning process in the classroom. In classroom action research, the researcher or teacher can see for himself the practice of learning or with other teachers he can conduct research on students in terms of aspects of interaction in the learning process. According to Arikunto (2008: 3) Classroom Action Research (PTK) is "an observation of learning activities as an action, which is deliberately raised and occurs in a class together."The type of CAR chosen is participant PTK with a simple model, a model consisting of four components in one cycle, namely (1) planning, (2) implementation, (3) observation or observation, and (4) reflection. Systematic PTK design is as in the PTK model chart developed by Kemmis and Taggart

RESULTS AND DISCUSSION

Results

Based on observation and analysis of the evaluation results in cycle II there were 27 students who were completed and 3 students who had not yet completed their study. From the results of the implementation of learning, it is known that as long as the teacher carries out the learning process in cycle II students are already active in learning activities. The results of

observations on the activities of teachers in cycle II obtain an average score of 4.1 while the results of observations on student activities obtain an average score of 4.0. So that the activities carried out by the teacher and students in the second cycle have reached the target of a score of ≥ 4 . To find out the results of the improvement of students' conceptual understanding, researchers conducted an assessment based on several aspects in accordance with the concept of understanding the concept. Every action in the cycle using concrete objects media has shown the following things.

From observations, researchers found various problems and signs of students' conceptual misunderstanding, especially in learning the calculation operation in class I SDN 009 Cikadut.

The first cycle study was carried out on February 1, 2017 in Class I of Public Elementary School 009 Cikadut, with the Learning Implementation Plan (RPP) which had been prepared using learning media namely concrete objects. The time used is three meetings with an allocation of 2 x 35 minutes for each meeting. The second cycle is held on February 15, 2017 within three meetings with a time allocation of 2 x 35 minutes for each meeting. Students during the learning related to the achievement of students' conceptual understanding can be seen from the observations or observations made by observers / researchers. Student learning outcomes during learning can be presented in the table below:

Table 1. Comparison Table of Student Learning Completeness
Pre Cycle, Cycle I, Cycle II

Aspects of observation	Siklus					
	Pre Cycle		Cycle I		Cycle II	
	Many students	percentage	Many student	percentage	Many student	percentage
completeness in learning	6	20%	16	53,33%	27	90%

The results of observations or observations presented in the table above can be described that the achievement of student learning outcomes increases and can be concluded by an increase in student learning outcomes so that the understanding of students' concepts during learning increases as well. A real picture of improving student learning outcomes in the pre test, cycle I and cycle II is presented in the following graph:

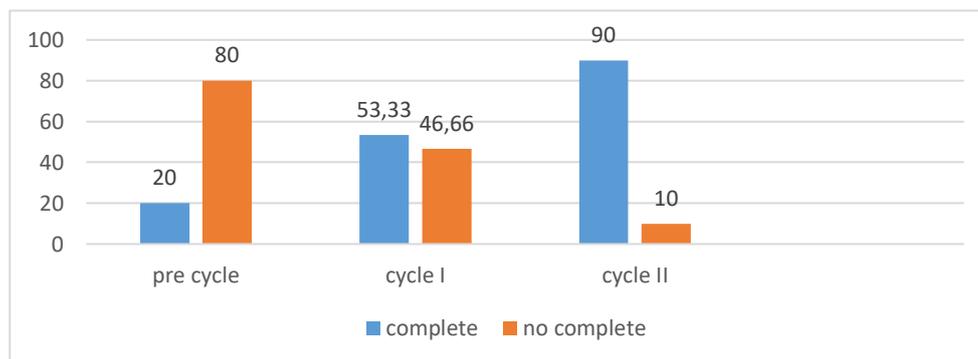


Figure 1. Comparison of Student Learning Completeness
Pre Cycle, Cycle I, Cycle II

Apart from being seen from the learning outcomes, the students' understanding of the concept can be seen based on the improvement of students' observations which include the students' learning activities in taking lessons.

The results of classroom action research conducted as much as two cycles have increased from cycle I to cycle II, and have been able to reach the completion limit in accordance with the performance indicators that have been set on the material. Thus, classroom action research carried out in accordance with the expected objectives, namely by using concrete objects media can improve students' understanding of concepts in learning the calculation of reduction operations.

Reflection

Based on observation and analysis of the evaluation results in cycle II there were 27 students who were completed and 3 students who had not yet completed their study. From the results of the implementation of learning, it is known that as long as the teacher carries out the learning process in cycle II students are already active in learning activities. There has been an increase in student learning completeness from the initial conditions (the results of pre-test) with an average value of 57.66 to 68.33 (the average value of the first cycle evaluation), then to 80 (the average value of cycle II). When viewed based on learning completeness criteria that ≥ 70 are considered understandable, in cycle II shows that students can already be understood because students who have reached KKM (≥ 70) are 90%.

The results of observations on the activities of teachers in cycle II obtain an average score of 4.1 while the results of observations on student activities obtain an average score of

4.0. So that the activities carried out by the teacher and students in the second cycle have reached the target of a score of ≥ 4 .

DISCUSSION

To find out the results of the improvement of students' conceptual understanding, researchers conducted an assessment based on several aspects in accordance with the concept of understanding the concept. Every action in the cycle using concrete objects media has shown the following things.

From the observations, researchers found various problems and signs of students' conceptual misunderstanding, especially in the learning of counting operations in class I SDN 009 Cikadut. In connection with this, the researchers tried to improve students' understanding of concepts in mathematics learning by conducting research in class I of Public Elementary School 009 Cikadut using concrete object media in calculating the reduction of the material. This aims to help students in the learning process in the classroom whose implications are expected to improve students' understanding of concepts.

The first cycle study was carried out on February 1, 2017 in Class I of Public Elementary School 009 Cikadut, with the Learning Implementation Plan (RPP) which had been prepared using learning media namely concrete objects. The time used is three meetings with an allocation of 2 x 35 minutes for each meeting. The second cycle is held on February 15, 2017 within three meetings with a time allocation of 2 x 35 minutes for each meeting.

Students during the learning related to the achievement of students' conceptual understanding can be seen from the observations or observations made by observers / researchers. Student learning outcomes during learning can be presented in the table below:

Table 2. Comparison Of Student Learning Completeness
Pre Cycle, Cycle I, Cycle II

Aspects Of observation	Siklus					
	Pre Cycle		Cycle I		Cycle II	
	many students	Percentage	many students	percentage	many students	Percentage
completeness in learning	6	20 %	16	53,33 %	27	90 %

The results of observations or observations presented in the table above can be described that the achievement of student learning outcomes increases and can be concluded by an increase in student learning outcomes so that the understanding of students' concepts during learning increases as well. Comparison of Student Learning Completeness Pre-Cycle, Cycle I, Cycle II. In addition to the results of the study, students' understanding of the concept can be seen based on the improvement of students' observations which include the students' learning activities in taking lessons.

The results of classroom action research conducted as much as two cycles have increased from cycle I to cycle II, and have been able to reach the completion limit in accordance with the performance indicators that have been set on the material. Thus, classroom action research carried out in accordance with the expected objectives, namely by using concrete objects media can improve students' understanding of concepts in learning the calculation of reduction operations.

CONCLUSION

Based on the results of the research and discussion of the application of a realistic approach to mathematics learning in elementary schools, can be concluded as follows:

1. Before applying a realistic approach, students' understanding of the learning operation count reduction is still low, it is known from the value of students who have not reached KKM 70 reaching 53.33% of all students. After the implementation of concrete objects media students' understanding increases with the value of students who have reached KKM 70 reaching 90% of students.
2. The activity of teachers and students in learning mathematics with concrete objects media shows a fairly good improvement. This is evident from the results of observations conducted by researchers during the ongoing learning process students are so active in following learning, both when discussing and while working on assignments given by the teacher.
3. The response of students to the application of concrete object media approaches is quite positive indicating that students are happy with learning mathematics

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