

IMPROVING STUDENT LEARNING OUTCOMES IN LEARNING THE PROBLEM OF STORIES IN MATHEMATICS USING SAINTIFIC APPROACH

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ABSTRACT

This study aims to determine the learning of story problems with a scientific approach. Learning with a scientific approach is a learning process that is designed so that students actively construct concepts, laws or principles through stages of observing, formulating, proposing or formulating hypotheses on the mathematics learning outcomes of grade 2 students of SDN 091 Cibereum. This research is a type of qualitative research, with experiments. The population is all grade 2 students with a total of 32 students. A learning process has an important role in the success of a learning. To create meaningful mathematical learning, student activity is needed in constructing the concepts and structure of the material. Based on learning observations in class 2, the learning carried out was mechanistic. That is, the teacher dominates learning while students only receive the material delivered by the teacher. Learning like this results in students not actively constructing knowledge in the learning process, thus impacting on the low learning outcomes of students themselves. The scientific approach is very suitable for the problems found because it has referred to constructivist learning theory. Therefore, this study was carried out to describe the application of a scientific approach to mathematics learning with a type of classroom action research (CAR). The research subjects were grade 2 students. This research was carried out in 2 cycles. The steps taken by the scientific approach are to observe, ask, collect information, reason, and communicate.

Keywords: scientific approach, mathematics learning, learning outcomes.

INTRODUCTION

Education is important and fundamental for every human being. Education is the main capital for the progress of a country. To support the progress of a country, a good quality of education is needed so as to produce quality human resources (HR) as well Mathematics has an important role in the realm of life, because mathematics is an active tool in developing all knowledge and is the core language for the formulation of underlying theories scientific field. But many students think that mathematics is a difficult and boring lesson. All of that is because there are still many mathematical concepts that are still difficult to understand by elementary school students. The low level of students' understanding of the concept of Mathematics in Primary Schools is a problem because it will have an impact on mastering the concept of Mathematics at the next level of education. Learning is an activity that is carried out in a complex manner. Education is important and fundamental for every human being.

Education is the main capital for the progress of a country. To support the progress of a country, a good quality of education is needed so as to produce quality human resources (HR) as well. Therefore, it is necessary to improve the quality of human resources that can be done by focusing on improving the quality of education.

In improving the quality of education in Indonesia, the government has made efforts through improving the curriculum. The curriculum has undergone several changes and improvements in each development. Based on Law No. 20 of 2003 concerning the National Education System (Munir in Priyanti A.E, 2016), the curriculum is a set of plans and arrangements regarding objectives, material / content or lesson material as well as methods / methods used as guidelines for the implementation of learning activities to achieve educational goals. In other words, the curriculum is a guide in the implementation of learning activities. The curriculum that currently applies in Indonesia is the 2013 curriculum based on a scientific approach. According to Rusman (in Priyanti AE, 2016), the scientific approach is a learning approach that provides opportunities for students widely to explore and elaborate the material being studied, in addition to providing opportunities for students to actualize their abilities through learning activities designed by the teacher.

2013 curriculum integrates several subjects in learning activities, one of which is mathematics. Mathematics is a subject existing at all levels of education, starting from elementary school to college level. Even mathematics is taught in kindergartens informally.

Learning mathematics is a sufficient requirement to continue your education to the next level. Because by learning mathematics, we will learn to reason critically, creatively and actively. Learning is basically not only conveying messages to students, but rather the interaction between the teacher and students, students with the teacher and students with students. In the material learning activities delivered are oriented to students' knowledge, attitudes and skills, which include components such as curriculum, media and facilities. used. In the learning process in elementary school (SD) teachers are not only required to be able to convey the material well, but are able to understand the characteristics of elementary students, so that learning objectives can be achieved. One of the learning programs in elementary school is mathematics. Learning mathematics is a very important learning for students, mathematics is a universal science that has an important role in everyday life, as well as in the development of other sciences. Abdurrahman (2012: 225), argues that mathematics is a symbolic language to express quantitative and spatial relationships that make it easy for humans to think in solving

problems of everyday life. Learning mathematics is said to be effective if students understand the concepts of mathematics and can apply it in everyday life.

Obtained data on daily scores in grade 2 SDN 091 Cibereum, that 23 out of 32 students got grades under the KKM. From these findings, the researchers tried to improve learning. This improvement activity aims to improve students' understanding of the concept of sharing in story problems using a scientific approach. So that is expected to increase the acquisition of more value.

According to the Ministry of National Education in Bafadal (2011: 10), stated that in KTSP 2006 mathematics learning was given to elementary school students (SD) aimed at making students: (1). Understanding mathematical concepts, explaining the relationship between concepts and applying concepts or algorithms, lowes, accurate, efficient and precise in solving problems. (2). Using reasoning on patterns and patterns, doing mathematical manipulation in making generalizations, compiling evidence or explaining ideas in mathematical statements. (3). Solve problems that include the ability to understand problems, design mathematical models.

Complete the model and drain the solution obtained. (4). Communicate ideas with tables, diagrams, or other media to clarify the situation or problem. (5). Having an attitude of respect for the usefulness of mathematics in life is having curiosity, attention and interest in mathematics learning and a tenacious attitude and trust in solving problems.

To achieve these goals in mathematics learning requires a variety of methods and creative. The success of the mathematics learning process can be measured from the achievement of the learning objectives of mathematics. The success can be seen from teacher activities that are able to carry out their duties well as mediators, motivators, and student facilitators. So that students become active and creative and learning becomes effective and enjoyable.

METHOD

This research is a quantitative research with the type of research used in the form of quasi-experimental or quasi-experimental. In this study, the experimental class was given a learning model and the control class was given a conventional learning model. Sampling was done randomly so that all students as research subjects had the same opportunity to be selected as research samples.

The research design used was pretest-posttest control group design, namely the sample was divided into two groups: 1 experimental class and 1 control class. For data collection techniques and instruments used in this study are: Tests that are test instruments to measure the results of post-test mathematics learning samples in the form of test sheets in the form of 5 questions.

RESULTS AND DISCUSSION

Results

Mathematics learning outcomes of students in the material division that is devoted to the set of material and describes the venn diagram in class 2 which is used as the experimental class in this study using the scientific learning model shows that the value obtained by students consists of the lowest value and the highest value, the value the lowest obtained by students is 38 and for the highest score obtained by students in this class is 90. Following is the recapitulation of the value of students' mathematics learning outcomes with the scientific learning model.

The number of samples in this experimental class is 32 students. To calculate the average value, all student scores are summed and divided by the number of samples available so that the average obtained is 69.69.

Variance is used to express how large a sample is obtained. And the value obtained for this experimental class is 275.46. This means that from the variance obtained in grade 2 students there is a diversity or difference between students with one another where in 32 samples obtained range of values (Range) 52.

Discussion

And based on the results of research conducted in Class 2 A and 2B, the following results were obtained:

The average value for the experimental class, namely class 2A namely the class using scientific learning model is 69.69, the value indicates that the average score of students' mathematics learning outcomes taught by the scientific learning model shows that the mathematics learning outcomes of grade 2A students are in high or good learning outcomes category which is seen from the histogram of their learning outcome data that the highest percentage is in the range of 82.5 - 91.5 which is 57% and it shows where more students are

able to solve problems both knowledge, understanding and also the application that they have been able to determine the set of universes from a collection of objects, determine the venn slice diagram and a combination of two sets of story problems and determine the members of the difference from the two sets and members of the complement of the two divisions compared to students who are still unable to solve operations related problems h impun. The mathematics learning outcomes of students in class 2B are devoted to the subject matter set with sub material universe set, venn diagram and division operation. The average value for class 2 B is the class using conventional learning model is 58.85, the value shows that the mathematics learning outcomes of students in class 2B are in the category of high learning outcomes or good which is seen from the histogram data of their learning outcomes percentage the highest is in the range of 63.5-81.5 or 42% of students, and it also shows that many students have been able to determine the division of the universe from a collection of objects, determine the venn slice diagram and the combination of two divisions in the story problem and determine the members the difference from the two sets and members of the complement of the two sets compared to students who were still unable to solve problems related to the division operation. In the Hypothesis Findings or the test results of one-way ANAVA test to obtain $F_{count} > F_{table}$, which means that there is an influence of the learning model on students' mathematics learning outcomes in the Set 2 Class material, it is statistically proven, it proves that the average value of student learning outcomes with the scientific learning model is better than the average value of student learning outcomes with conventional learning models.

This is in accordance with the reference to previous studies conducted by Dina Juni Anggreni Sinaga with the title of the study of the influence of learning models with a scientific approach to student learning outcomes in the subject matter of the division in class 2 that using a learning model with a scientific approach has a significant influence on student learning outcomes on the subject matter of the division.

Based on the research conducted it can be seen that students in the experimental class who are taught with the learning model using the scientific approach are more interested and motivated to play an active role in the learning process. In this learning students are trained to solve problems by grouping and working together and helping each other in understanding the concept, discussing, solving problems or assignments given by the teacher. Through the scientific approach students are required to think critically to solve problems, dare to express their thoughts and can work together in a fun learning atmosphere.

This is consistent with studies conducted by Krynock and Robb showing that the scientific enhances the high-level thinking skills of eight class students by requiring them to think about problems critically and analyze data to find solutions.

In the opinion of Boud and Feletti (in Rusman, 2014) who suggested that problem-based learning is the most significant innovation in education. In line with Peterson and Treagust's opinion (in Ozlem K. & Abdullah K. 2013) states that the scientific is defined to develop students' knowledge in their profession, and reasoning abilities, as well as their problem solving related to discipline. Finkel and Top (in Aris S., 2014) also states that problem-based learning is a curriculum development and teaching system that develops simultaneously problem solving strategies and the basics of knowledge and skills by placing students in an active role as a solution to everyday problems. which is not well structured. Arends (in Sereritasari D., 2017) also states that scientific is designed to help teachers provide as much information as possible to students through a problem. Conventional learning in general is learning using the usual method used by the teacher, namely giving material through lectures, training questions then giving assignments. The activity is centered on the teacher as a speaker and communication in the direction of the reader to the listener, while the listener only pays attention and makes notes as needed. This fact states that the learning model through the scientific approach is better and more effective to be applied in the learning activities of mathematics, especially in the distribution material because it has been proven to improve student learning outcomes. This is understandable because through learning students are educated to be able to learn about a broader life, the skills to convey the results of their thinking, collaborative and learn to cooperate, and have critical thinking skills in solving problems so that their understanding is better than students who only listen to lectures that delivered the teacher.

Indicator of the success of learning activities. Student activity: if students get a score of 31-39. Teacher activity: if the teacher scores 31-39. Cognitive domain Indicator success of action viewed from test results, if the average student is ,0 7.0 with 85% classical completeness.

CONCLUSION

Based on the results of the study it can be concluded that learning using the Scientific Approach affects the ability to calculate student pre-test by 53.85 and post-test students by 58.85. That is there is the influence of learning by using a scientific approach to the ability of

Understanding Mathematical Concepts of students in grade 2 SDN 091 Cibereum, Bandung city.

1. Learning outcomes of students who are given learning with a learning model conventional class 2 Public Elementary School 091 Cibereum Bandung Academic Year 2017/2018 before being given treatment the average pre-test of students was 53.85 and after being given treatment the average post-test of students was 58.85.
2. Learning outcomes of students who are given learning with learning models Scientific grade 2 Public Elementary School 091 Cibereum Bandung. Academic Year 2017/2018 before being given treatment for students' pre-test average of 56.80 and after being given treatment post-test mean of students was 69.69.
3. There is the influence of the scientific approach to the scientific learning model of the mathematics learning outcomes of grade 2 of 091 Public Elementary School in Cibereum Bandung Academic Year 2017/2018.

SUGGESTION

The suggestions that researchers can convey are in accordance with the results of this study, namely:

1. For mathematics teachers, the teacher should have the skills to carry out learning with a scientific approach so that the ability to understand students' concepts becomes more optimal.
2. For other researchers, to be able to use this Scientific Approach on other mathematical material and measure other mathematical abilities as well.
3. For schools, as input to be able to apply learning using the Scientific Approach to the teaching and learning process.
4. For students, can maximize the ability to understand students' mathematical concepts.

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REFERENCE

- Abdurrahman, M. (2010). *Education for Children with Learning Difficulties*. Jakarta: Rineka Cipta.
- Aprilia, D. (2017). *An Analysis Of The Implementation Of Problem Based Learning In Learning English At The XI Grade Science Class Of SMA Negeri 1 Singaraja In The Academic Year 2015/2016*. *International Journal of Language and Literature: Volume 1, No.1*.
- Astriani, N., Edy Surya and Edi Syahputra. (2017). *Influence of Based Learning Problems with Students' Mathematical Problem Solving Ability*. *International Journal of Advance Research and Innovative Ideas In Education*. Vol-3 Issue-2 2017.
- Hosnan, M. (2014). *Scientific and Contextual Approach in Learning 21st Century*, Jakarta: Ghalia Indonesia.
- Sugiono. 2013. *Educational Research Methods*, Bandung: Alfabeta.