

Application Of The Problem Based Learning Model For Improving Mathematics Learning Outcomes In Elementary School V Class Students

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ABSTRACT

This study examines the low learning outcomes of mathematics in fifth grade students of SD Inpres Maccini Baru, Tamalate District, Makassar City. The purpose of this study was to describe the application of the Problem Based Learning model to improve mathematics learning outcomes in fifth grade students of SD Inpres Maccini Baru, Tamalate District, Makassar City. This study uses a descriptive qualitative approach. The type of research is classroom action research (CAR) which is carried out in 4 (four) stages in each cycle, namely planning, implementation, observation, and reflection. The focus of this research is the application of the Problem Based Learning model and student learning outcomes. The setting of this research is the fifth grade of SD Inpres Maccini Baru, Tamalate District, Makassar City, while the subject of this research is one class teacher and 24 students consisting of 13 female students and 11 male students. In this study, the researcher acts as a teacher and the class teacher acts as an observer. Data analysis techniques are qualitative and quantitative. The results showed that the teacher's teaching activities in the first cycle still showed a sufficient category and in the second cycle increased to a good category. Similarly, student learning activities in the first cycle were in the sufficient category and in the second cycle increased to a good category. Meanwhile, student learning outcomes in the first cycle were in the sufficient category and student learning outcomes in the second cycle increased to a good category. The conclusion of this study is that through the application of the Problem Based Learning model, the learning outcomes of mathematics in fifth grade students of SD Inpres Maccini Baru, Tamalate District, Makassar City have increased.

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INTRODUCTION

A developed nation is a nation that has good quality education. It is a common opinion that the progress or failure of a nation is influenced by educational factors. Basic education is the foundation of all existing levels of education, and is spread from cities to remote villages. Basic education is a vehicle for formal learning for students which is used as a provision to be able to continue to a higher level of education and a vehicle for students to be able to develop into fully human beings.

Learning in elementary schools in the learning process, a teacher must understand the characteristics of learning materials, the characteristics of students, and understand the learning methodology so that the learning process will be more varied, innovative, and constructive in reconstructing knowledge insights and its implementation so that it will increase student activity and creativity. Learning mathematics in elementary school has its own purpose and function. According to Hudoyo (Lenterak, 2011) the function of learning mathematics in elementary schools is to develop communication skills using numbers and symbols as well as sharpness of reasoning that can help clarify and solve problems in everyday life. Learning mathematics in elementary schools (SD) needs serious attention from various parties, namely educators, government, parents, and the community, because learning mathematics in elementary schools is the foundation of basic concepts that are used as the basis for learning at the next level.

Mathematics is the study of quantities, structures, shapes, and changes in numbers. In the Big Indonesian Dictionary (KBBI), mathematics is the science of numbers and everything related to them which includes all

forms of operational procedures used in solving problems regarding numbers. Mathematics is one of the subjects studied at all levels of education, from elementary school to university level.

To improve the quality of mathematics education in elementary schools, various efforts have been made, such as increasing the number of textbooks, improving the curriculum, upgrading teachers, adding facilities and infrastructure for teaching and learning activities as well as strengthening the teaching and learning process. Mathematics learning in elementary schools needs to be planned and implemented using various approaches and strategies that are in accordance with the development of students and the need to concretize abstract mathematical objects so that learning is easier to understand.

Based on the results of observations made on August 7, 2019 as well as researcher interviews with homeroom teachers for class V SD Inpres Maccini Baru, obtained an average value of 45.83 from the odd semester math test scores of students, namely from 24 students consisting of 11 male students and 13 female students, there were 11 students who did not reach the minimum completeness criteria (KKM).) in mathematics. From these observations, the researcher concluded that the low learning outcomes of mathematics were caused by two factors, namely the teacher factor: (1) the teacher had not been able to lead students to problem solving by relating it to problems that occurred in everyday life (2) the teacher did not activate students in discussion. group work or activities that familiarize teachers with students and (3) less familiarization of students in conducting experiments. The factors from students: (1) students cannot construct their own knowledge in problem solving, (2) students are passive in participating in the learning process, students' abilities in understanding different materials and (3) lack of experience in conducting experiments. Seeing these factors, one of the steps that the teacher can take as a student mentor is to choose the right learning model. Therefore, in strengthening the teaching and learning process, the teacher has an important role where student learning outcomes are not only influenced by the teacher's mastery of the subject matter, but also the learning model during the teaching and learning process.

Learning Problem Based Learning students are required to solve the problems presented by digging up as much information as possible. Based on the description above, it is clear that learning with the Problem Based Learning model begins with a problem, then students deepen their knowledge about what they already know and what they need to know to solve the problem. Problem Based Learning is a model that challenges students to "learn how to learn", working in groups to find solutions to real-world problems. According to Darmadi (2017: 117) problem-based learning is a learning approach that presents contextual problems so as to stimulate students to learn. According to Handayama (2016: 116) argues that the Problem Based Learning learning model is learning that focuses on meaningful life problems for students.

In principle, this Problem Based Learning model exposes students to real world problems to start learning and is one of the innovative learning models that can provide active learning conditions for students. The objectives of the Problem Based Learning learning model according to Imas Kurniasih and Berlin Sani (2015: 48) are: (1) helping students develop thinking skills and problem solving skills (2) learning authentic adult roles (3) becoming independent students to moving on to a more general level of understanding (4) making the transfer of new knowledge possible (5) developing critical thinking and creative skills (6) improving problem solving skills (7) increasing student motivation (8) helping students to transfer knowledge to new situations.

According to White H.B and Richlin quoted by Purwoto (2006: 24), the steps in Problem Based Learning are explained as follows: Stage 1 student orientation to the problem, namely the teacher explains the learning objectives, explains the logistics needed, proposes phenomena or demonstrations or stories to raises problems, motivates students to be actively involved in solving the chosen problem. Stage 2 organizes students, namely the teacher helps students to define and organize learning tasks related to the problem. Stage 3 guides individual and group investigations, namely the teacher encourages students to collect appropriate information, carry out experiments to get explanations and solve problems. Stage 4 develop and present the results of the work, namely the teacher assists students in planning and preparing appropriate works such as reports, videos, and models as well as sharing assignments with friends. Stage 5 is analyzing and evaluating the problem-solving process, where the teacher helps students to reflect or evaluate their investigations and the processes they use.

Based on the explanation above, the researchers chose to apply the Problem Based Learning model in learning mathematics, it is hoped that students can understand the subject matter they are studying by connecting the subject matter with its application in everyday life.

METHOD

The approach used in this research is a descriptive qualitative approach. In this approach, the researcher uses observation to see an overview of all teacher and student activities during the learning process using the Problem Based Learning model. The type of research used in this research is Class Action Research. This classroom action research (CAR) was conducted in 2 cycles, each cycle consisting of four steps, namely: (1) planning, (2) implementation, (3) observation/evaluation, and (4) reflection. In this study the teacher will be included in the study as an observer who will observe the researcher during the action.

The focus of the research used in this study, there are two, namely: (1) the Problem Based Learning model is a learning process in which at the beginning of learning students are stimulated to study problems based on the knowledge and experience they have previously, from this new knowledge and experience will be formed. Existing problems are used as a means for students to learn something that can support their knowledge (2) student learning outcomes in mathematics learning are the cognitive abilities students have after seeing the test results obtained by students from the end of the cycle, to find out any changes in student learning outcomes in the eyes mathematics lessons after applying the Problem Based Learning model as a measure of the success achieved.

The subjects of this study were the teacher and 24 fifth grade students of SD Inpres Maccini Baru, Tamalate District, Makassar City, which consisted of 11 male students and 13 female students, as well as matters relating to the learning process based on observations of ongoing learning. This research was conducted through a Classroom Action Research (CAR) design which consisted of 2 cycles. The CAR stages used in this study consisted of four stages in the implementation of the action research method, namely: (1) planning, (2) action, (3) observation, and (4) reflection.

To collect data, data collection techniques such as tests, observations/observations, and documentation are needed. The data obtained from the research results were analyzed quantitatively and qualitatively. Indicators of success in this action research include process and outcome indicators. Process indicators can be observed through observations carried out by researchers. While the outcome indicators can be observed through learning outcomes tests which are used to determine student abilities which include knowledge and skills as a result of learning activities.

RESULTS AND DISCUSSION

Result

This research has been carried out based on the CAR procedure which consists of four stages, namely the planning, implementation, observation and reflection stages. The research data is in the form of student learning outcomes obtained by conducting learning outcomes tests at the end of cycle I and cycle II. Meanwhile, observation data in the form of student learning activities and teacher teaching activities during the learning process were obtained using observation sheets according to the Problem Based Learning model. The data obtained were then calculated the average value and percentage as a reference source for interpretation in descriptive analysis.

Table 1. Distribution of Frequency and Percentage of Students' Mathematics Learning Outcomes in Cycle I

No	Interval test score	category	Frequency	Percentage(%)
1.	85 - 100	Very Good	-	-
2.	70 – 84	Good	5	20,9%
3.	55-69	Moderate	12	50%
4.	40-54	Less	7	29,1%
5.	< 39	Very Less	-	-
Totally			24	100%

Based on the results of data analysis and reflection and referring to the established success indicators, it is concluded that the learning for the first cycle has not been successful due to the success of students during the process and the results are not as expected by the researchers, namely if there are 80% of students or all students complete in learning and get grades. at least 70 classically. However, in the first cycle, student learning outcomes only reached 50% and included in the sufficient category. There are 12 students who have completed and there are still 12 students who have not.

Table 2 Distribution of Frequency and Percentage of Students' Mathematics Learning Outcomes in Cycle II

No	Interval test score	category	Frequency	Percentage(%)
1.	85 - 100	Very Good	3	12.5%
2.	70 – 84	Good	21	87.5%
3.	55-69	Moderate	0	0
4.	40-54	Less	0	0
5.	< 39	Very Less	0	0
Totally			24	100%

Based on the results of data analysis and reflection and referring to the established success indicators, it is concluded that the learning for cycle II has been successful due to the success of students during the teaching and learning process and the results as expected by the researchers are in accordance with the specified success indicators.

Table 3 Description of the Completeness of Student Learning Outcomes in Mathematics Subjects by Applying the Problem Based Learning Model in Cycle II

Category	Value Scala	Frequency	%	
Not Finished	0 – 69	0	0%	KKM = 70
Finished	70 – 100	24	100%	
Totally			100%	

Based on the results of data analysis and reflection and referring to the established success indicators, it is concluded that the learning for cycle II has been successful due to the success of students during the process and the results have been as expected by the researchers, namely if there are 80% of students or all students complete in learning and get grades. at least 70 classically, where in the second cycle student learning outcomes have reached 100% and are in the good category. There are 24 students who have completed and there are no students who have not.

Discussion

This research was conducted in two cycles. Before carrying out the research, the researcher first knows the extent to which the level of understanding and success of students in mathematics subjects is. The results obtained from the previous student learning outcomes data, it turns out that there are still students who have not reached the KKM value set by the school, namely 70.

In the learning process in the first cycle, it has shown changes but is still lacking. This is because of the shortcomings that occur at each stage of learning activities both in the teacher aspect, in this case the fifth grade teacher and also from the student aspect. The shortcomings that occur from the teacher's aspect can be seen in the observation sheet that has been described previously. Student learning outcomes in the first cycle are in the sufficient category, due to the implementation of the steps of the learning model used that has not run optimally. In the presentation of the material and when group activities have not been maximized so that the learning process is not achieved in accordance with what is expected. This results in student learning outcomes in mathematics subjects are still relatively low, because students do not understand the steps of the learning model and still pay less attention to the teacher's explanation. Seeing the learning outcomes of students in cycle I who have not reached the KKM, this is where there is a demand for a second cycle to be held as a follow-up to cycle I.

The results of the research in cycle II, showed that there was an improvement both in terms of the learning process and student learning outcomes after the implementation of the Problem Based Learning model in mathematics subjects. The results obtained in the second cycle are much better than the first cycle. Therefore, it can be said that the second cycle is a cycle in which the teacher successfully applies the Problem Based Learning learning model to mathematics subjects in class V SD Inpres Maccini Baru, Tamalate District, Makassar City.

This is evidenced by the acquisition of student learning outcomes who are able to reach the very good category. Descriptive analysis of student learning outcomes obtained from the data on the average score of even semester students' math report cards in cycle II was 100% obtained from the total score of 1,947 students divided by the number of class V students. Data analysis also showed that the learning outcomes of 24 students, 24 students have achieved the KKM standard with a percentage of 100%. Meanwhile, there were no students who did not reach the KKM standard. The Minimum Completeness Criteria (KKM) that must be achieved is 70. Student learning outcomes based on the acquisition of the second cycle test have increased, namely from the results of the first cycle test the average score of students is 64.17 to increase in the second cycle with the overall average score of students is 81.13%. The results of the observation of the implementation of the second cycle prove that the teaching activities of teachers have increased from before, where in the first cycle the teacher's teaching activities are in the sufficient category and in the second cycle are in the good category. In line with this, student learning activities also experienced an increase, where student learning activities in cycle I were still in the sufficient category, and cycle II was able to change student learning activities for the better and were in the good category. The results of research and opinions confirm that learning activities and learning outcomes achieved by students can be increased through the selection and application of appropriate learning models according to the demands of mathematics subject matter, namely the Problem Based Learning model.

Based on the results of observations of student learning activities, the results of observations of teacher teaching activities, and the increase in the average value of student learning outcomes from cycle I to cycle II from the discussion above, it can be concluded that the application of the Problem Based Learning model to improve mathematics learning outcomes in class V SD Inpres Maccini Baru, Tamalate District, Makassar City is stated to be able to improve student learning outcomes and there is no need to conduct research in the next cycle.

CONCLUSION

Based on the results of data analysis and discussion that has been described, it can be concluded that the application of the Problem Based Learning model can improve mathematics learning outcomes in fifth grade students of SD Inpres Maccini Baru, Tamalate District, Makassar City. This result is evidenced by the results of research showing that teacher teaching activities at meetings I and II are in sufficient category (C) and student learning activities at meetings I and II are in sufficient category (C). And in the second cycle it was noted that teacher teaching activities and student learning activities had increased, where teacher teaching activities at the first meeting were in the good category (B) and student learning activities at the first meeting were in the good category (B). This was followed by an increase in student learning outcomes in the first cycle which was in the sufficient category (C) and the second cycle increased so that it was in the good category (B).

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