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PROBLEM-BASED LEARNING MODEL IN IMPROVING LEARNING ACHIEVEMENT OF FLAT BUILDING MATERIAL IN GRADE THREE ELEMENTARY SCHOOL

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ABSTRACT

The research carried out against the background of the low achievement of students in learning mathematics flat building material in class III. The purpose of researchers carrying out research is to increase learning achievement by applying the Problem Based Learning (PBL) model to students. The research used is Classroom Action Research (CAR) with 2 cycles and each cycle is applied to 2 meetings, each meeting consisting of planning, action, observation, and reflection of learning. Tools used by researchers to collect data are written test questions, activity and observation sheets for teachers and activity and observation sheets for students, and documentation. The subjects of this study were 12 students at an elementary school located in Kembaran District, Banyumas Regency. The learning outcomes before the research was conducted had an average learning outcome score of 65.83. Research results and shows the first cycle of the results of the value of students got an average of 83.33. There was an increase in cycle II with an achievement of 92.5 on the average learning value of students. This proves that PBL can increase the learning achievement of grade III students and motivation in flat building material.

Keywords: Problem-based learning, Achievement, Maths.

INTRODUCTION

Technological developments continue to increase and have an impact on increasing one's knowledge. Technology in the millennial era will by applying 21st century learning can improve life skills [1]. The development of science and technology (IPTEK) results in an increase in individual knowledge, encouraging the realisation of high-quality human resources for each individual. Every individual needs to have high-quality human resources [2]. Education plays an important role in developing individual abilities to have high competitiveness. Proper education can create high-quality individuals to become part of highly competitive human resources [3]. Education that is carried out appropriately can create every individual to be competitive.

Mathematics is a basic science for humans to think logically and train to think systematically in the process of solving problems. Mathematics is a "queen" that is central to other branches of science. Mathematics has an orderly structure, deals with patterns, and uses a symbol language [4]. Mathematics plays an important role in technology that develops with the advancement of science [5]. Developments occur in the world, mathematics is always bound in it. Mathematics plays a major role in every science in the world by providing a solid foundation for understanding and analysis[6]. Through mathematics, humans can develop the necessary competencies well as a way to survive the challenges of development and change. Learners must have these competencies to be able to solve various problems in their daily environment. Maths is often something that

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students dread, because it is difficult. They tend to dislike maths because they find it difficult to understand and the material is abstract. Ginanjar [7] argues that mathematics is a scary subject and is often avoided by many students. Maths involves solving problems related to numbers. Mathematics is considered a compulsory subject at every school level [8]. Maths education has begun at the early childhood education (PAUD) level up to university. The statement shows that the importance of understanding and mastering mathematics as an integral part of the education curriculum.

The process does not simply focus on the absorption of information from teachers to students, but will require various learning methods so that the results are optimal. Fauzia [9] the key to learning are students and teachers. A teacher or teacher has an important responsibility in improving the quality of education. Teachers have a central role in making students active in learning [10]. Teachers also have a role in stimulating students' interest in being involved and actively participating. The application of the approach, teachers are more free to create an interactive learning environment, and encourage learner involvement and encourage critical thinking skills. From conducting observations and interviews at the same time at SD Negeri 3 Dukuhwaluh to teachers and grade III students, several problems were found when learning mathematics subjects in class. There is a lack of enthusiasm of students during the learning process in class. Learners always think it is difficult when learning maths. When students work on each problem, they tend to imitate the examples in other problems. And students see it in the book without deeply understanding the material. The results of the teacher interview also show that difficulties occur in students being directed to pay attention and understand the material being presented. The second interview of learners the mathematics learning process only focuses on the presentation of training materials, demonstration of example problems and exercises.

The impact of these conditions is reflected in the learning outcomes of students, where the effectiveness of learning still has not reached the Minimum Completeness Criteria (KKM) for Mathematics is set, which is 70. In total, with all 12 students, there are 5 students (41.6%) managed to reach above the KKM, while the remaining 7 students (58.4%) still have not reached the KKM. Overcoming the problem, action is needed to engage learners in learning the subject of mathematics. One possibility of success is to use an appropriate learning model. Learners can increase their achievement if the right approach is taken [11]. Choosing the right approach can also create an interesting learning environment and motivate students to learn mathematics.

Problem Based Learning (PBL) is a learning model that involves presenting a practical problem to students. PBL model by training the ability to solve problems that are relevant to their real world, can stimulate critical thinking habits [12]. PBL can form learners to have the ability to solve problems and increase the spirit to perform PD on their skills. The PBL approach model involves presenting problems, asking questions, facilitating investigations, and engaging in discussions during the learning process [13]. The number of learner activities carried out in the PBL model can build motivation to learn. The implementation of the PBL model in them is actively involved in the learning process, encourages collaborative problem solving, develops various skills, experiences, and concepts that can be applied simultaneously so that student motivation increases [14]. The application of learning can arouse enthusiasm for learning in class.

Applying the PBL model, students can be motivated to learn, stimulate learning activities, transfer knowledge to understand the problem at hand, assess results, and improve the learning process, develop critical thinking skills, and apply knowledge in the context of real life [15]. PBL can promote children's enthusiasm in class, help them have a broad perspective of solving problems, encourage creativity in learning. Critical thinking can prepare students for the challenges of the 21st century. The encouragement to improve critical thinking will be useful in helping them overcome the challenges of everyday life [16]. The PBL model also involves the use of real problems from the school, home, and community environments [17]. This means that learners gain knowledge and the basis of concepts for problem-solving skills. The research to be carried out has the aim of obtaining information on the use of the Problem Based Learning model can increase students' understanding of the perimeter and area of square and rectangular flat shapes.

MATERIAL AND METHODS

The type of research will be carried out by implementing several cycles, namely two. One cycle there are two meetings there are three stages of the process, mentioned the plan stage, the action stage, the implementation stage, the reflection stage. SDN Dukuhwaluh 03, Kembaran, Banyumas is the location. Teachers and students of grade 3 at SDN Dukuhwaluh 03, a total of 12 individuals with 5 male individuals and 7 female individuals.

The data obtained in this research is related to the actions that will be the topic for improving the conditions that occur [18]. The research objectives are clearly defined so that the expected goals are successfully achieved. The object of the research is to improve the learning outcomes of students' mathematics subjects in class III at Dukuhwaluh 03 State Elementary School. The technique used in collecting data is a test. Obtaining information on learning outcomes in mathematics subjects with test techniques [19]. The test technique used is a test, which is carried out twice with the division of tests in cycle I and tests in cycle II. The test in cycle I was carried out at the end of the second lesson in cycle I, the test in cycle II was carried out at the end of the second lesson in cycle II. The purpose of implementing the test at the end of each cycle is to obtain information on the learning outcomes of students' mathematics subjects that have been carried out improvement efforts. In this study, data collection was used in the form of description questions as a means of measuring individual abilities in mathematics subjects [20]. Each learner will answer each question on the test sheet given by the teacher. The use of instruments as a way of evaluating the learning process in students with a connection to mathematics subjects.

Measurement of the results of the learning process of students is a data collection technique from the research carried out. The data analysis process involves calculating the average learning value of students and the level of completeness of learning values in students [21]. The results of the analysis of the level of learning value in students are obtained and based on the average score of students along with their level of completeness in learning. The success of the research can be assessed based on progress on the results of the learning process carried out by students can pass the KKM determined from the school with a value of 70. Researchers expect the success rate to be achieved in mathematics subjects. This achievement is the average value of students reaching above 70 with the level of learning completeness reaching 85% which is included in the high group.

RESULTS AND DISCUSSION

Results

The implementation of classroom action was carried out at SDN 3 Dukuhwaluh. The participants involved in the research were all students in class III SDN 3 Dukuhwaluh. With each learner there are 5 boys and there are 7 girls. The implementation of classroom action research was carried out in the classroom for two weeks. The results of the recapitulation of students' learning at each stage of the pre-cycle to cycle II are in Table 1 below.

Table 1. Recapitulation of Learner Learning Results in Pre-cycle to Cycle II

No	Aspect	Pre Cycle	Cycle I	Cycle II
1	Number of Learners	12	12	12
2	Total score	790	1000	1110
3	Minimum Completeness Criteria (KKM	70	70	70
4	Average Score	65,83	88,33	92,5
5	Highest Score	85	100	100
6	Lowest Score	40	50	60
7	Number of Learners Completed	5	10	11
8	Number of Incomplete Learners	7	2	1
9	Percentage of Learning Completeness	41,67%	83,33%	91,17%

The application of the PBL model has been proven effective in improving learner achievement. At the pre-cycle stage only 41.67% of learners could achieve a complete score, while the percentage of 58.33% was the number of learners who did not achieve completeness. The average score at the pre-cycle stage reached only 65.83, the score category recorded between 85 the highest and 40 the lowest.

There was a significant increase in cycle I, where 83.33% was the total of students who passed the KKM and only 16.7% with the value of students who had not passed the KKM value. The average class score at the pre-action stage was 65.83 and there was an increase with a result of 83.33 in cycle I. The highest score reached 100, while the lowest score reached 100. The highest score reached 100, while the lowest score was 50. The increase in learning achievement continued in cycle II, where 91.7% of learners managed to achieve completeness, while only 8.33% of learners had not achieved it. The average class score reached 92.50.

DISCUSSION

Learning using the PBL method is consistently able to improve students' learning achievement. The PBL model increases the activity of students so that learning is easily accepted and learning achievement has increased [22]. The increase in the percentage of students' completeness scores has increased the average class score again, as well as a reduction in the scores obtained by students below the KKM. Research conducted with the PBL model was successful so that there was an increase in the value of learning outcomes in students and related problem-solving skills [23]. PBL is an option that is expected to be effective to improve related to achievement in students in the SDN 3 Dukuhwaluh

environment. Achievement in accordance with the success rate set by researchers with data from activities carried out in cycle II, shows that this research is successful. There was an increase in students on the value of the learning process from the pre-cycle stage to cycle II in Table 2.

Table 2. Improvement of Mathematics Learning Outcomes of Class III Students

No	Description	Pre-cycle	Cycle I	Cycle II
1	Average score of students	65,83	83,33	92,5
2	Student learning completeness	41,67%	83,33%	91,17%

Based on Table 2, it provides a comparison of the average learning achievement scores before and after the application of the PBL model. The PBL model by making learning fun in class for students so that learning is easily accepted and learning achievement has increased [11]. It is clearly seen that there is a significant increase in student achievement after the application of the PBL model.

It is known that the average value of pre-cycle activities is only 65.83 and the level of completeness of the learning process of students only reaches 41.67% with this percentage of completeness, it is necessary to take action in cycle I. In cycle I, the average score was 83.33 and the students' learning completeness was achieved with the results of 83.33%, the percentage was said to be high. Learning that achieves completeness above 75% can be said to be a high category and also very high [24]. The increase in the results of the learning process in the pre-cycle activities to cycle I has increased, namely the value of the average student has increased by 17.5 and the learning completeness has increased to 41.66%.

Cycle II was carried out because the achievement had not been met by researchers with an increase of 85%. The research carried out in cycle II obtained the average score of students reached 92.5 and the completion of the learning process in the class reached 91.17%. The increase in student learning outcomes from the beginning of cycle I to cycle II was very significant. It can be understood by the data obtained that the average increase in students with a large increase of 9.17 and completeness in the learning process increased by 7.84%. The average value of students and the completeness of the results of the learning process of students in cycle II have been achieved in accordance with the requirements that have been made before conducting research, namely the average value achieved above the value of 70 and the completeness of the learning process with a minimum achievement of 85%. The achievement of research reaches the achievement target, the research can be fulfilled in a certain cycle [25]. The research has reached the target set by the researcher, so in cycle II the research is sufficient.

This section is the most important part of the content of any research paper. There are four options in this section: (1) answering the research question or showing how the research objectives were achieved, (2) interpreting the results, (3) integrating the research results into the classroom, learning what has been created, and (4) formulating a new theory or modifying an existing one.

CONCLUSIONS

Based on the results obtained when the research was carried out and discussed in the discussion section, it is said and obtained that the point of using the Problem Based Learning model can improve the results of the learning process of mathematics subjects in class III of SD Negeri Dukuhwaluh 03, Kembaran District, Banyumas Regency in semester 2 learning year 2022/2023. This expression is supported by data obtained from research in each cycle related to the learning outcomes of students in mathematics subjects. Pre-cycle the average score reached 65.83 and 41.67% were complete, in cycle I the average score increased to 83.33 and 83.33% who reached the completion of learning mathematics subjects and in cycle II there was an increase in the average score again reaching 92.5 with the category of students having passed the KKM value in mathematics subjects with a percentage of 91.17%. The implementation of the process of applying the Problem Based Learning model can improve the results and interest in learning mathematics subjects in class III SD Negeri Dukuhwaluh 03 Kembaran District, Banyumas Regency.

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