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Improving Learning Outcomes in Natural Sciences (IPA) for Grade VI Students MIN 2 Bulukumba through the *Problem Based Learning* model

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ABSTRACT

This class action research aims to find out the steps of applying the *Problem Based Learning* Model. The subjects of this study were students of class VI MIN 2 Bulukumba in the odd semester of the 2022/2023 school year, totaling 21 people. This research consists of 2 cycles, each cycle includes stages: planning, action, observation, evaluation and reflection. Cycle I was carried out three times a meeting and cycle II was carried out three times a meeting. Data collection was carried out through observation of each learning process and analyzed by descriptive analysis. The application of the *Problem Based Learning* (PBL) Model goes through the following steps: 1) Orient students to the problem, 2) Organizing students to learn, 3) Guiding individual and group investigations, 4) Developing and presenting work, 5) Analyzing and evaluating the problem solving process. In cycle I, the average score of students' learning outcomes was 77.73 which was in the high completion category, in cycle II it was 84.93 which was in the very high completion category, while the learning outcomes of students obtained in cycle I were 60% and cycle II was 63.33%. This shows that there was an increase of 21.33%.

Keywords: *Learning* model, *Problem Based Learning,* and learning outcomes.

INTRODUCTION

The rapid development of Science and Technology (IPTEK) has also determined the use of science that is increasingly broad and sophisticated. Even on the contrary, the development of science and technology has spurred the development of the subject of Natural Sciences (IPA) itself. For this reason, science as one of the sciences taught at the basic education level is as far as possible adapted to the cognitive development of students.

Science is one of the lessons in an effort to achieve educational goals. Science subjects are a means of thinking logically, analyzing, and systematically. Therefore, mastery of science for students is very important, so that students master science lessons whose indicators are in the form of science learning outcomes.

However, on the other hand, it shows that the science learning outcomes whose indicators are in the form of scores or scores achieved by students are still low. This is a challenge for all parties involved in the world of science education. Therefore, improvement efforts are needed that can improve science learning achievement at the basic education level.

One of the factors in trying to improve science learning achievement is the teaching method. There are many types of teaching methods and there is no perfect teaching method because each has advantages and disadvantages. So that teachers are required to selectively choose and use the right method in teaching science material to students, which can involve students' activeness in the learning process.

In the process of learning science at school, teachers are often faced with various problems related to science, such as boring, uninteresting, even as if science is nothing more than mere counting. Many factors can cause these problems. One of them is the source of the

portion of science that is not in accordance with the level of intellectual development of students and some are sourced from the way teachers present science material.

For this problem, it is necessary to find a solution or appropriate steps that empower students more, which exposes students to real problems and challenges them to solve these problems. Teachers who are one of the factors that are very decisive in achieving optimal learning outcomes. Which is expected to be able to convey science teaching materials and mastery of material by the teacher greatly supports the success of the science learning process. In particular, the approach used by the teacher in the learning process is a determining factor in increasing the success of students in learning.

One of the teaching models is *problem-based* learning. With this learning, students are given the opportunity to solve their own problems so that students become independent learners.

However, before being given a problem, students are expected to better understand the basic concepts of science and problem-solving skills must be possessed by students. Every learner in the learning process must also have a problem, but the problems he faces are more specific to the subject matter, which must be solved by using subject matter that is in accordance with the problems he faces. In line with the above statement, through interviews, the conditions experienced by students at MIN 2 Bulukumba school. If they find science problems in everyday life. They are still difficult to apply science concepts. One of the problems faced by students is the lack of interest in learning on their own and the low ability of students to find problems and solve them themselves. With this *Problem Based Learning* model, it is expected to increase the interest and readiness of students, especially grade VI students of MIN 2 Bulukumba.

Based on this background, the authors are motivated to conduct research related to science learning outcomes in class VI students of MIN 2 Bulukumba through the *Problem Based Learning* model.

METHODS

Location and Time of Research

The research was conducted on grade VI students of MIN 2 Bulukumba in the 2022/2023 academic year, from July 17 to November 2, 2022.

Research Procedure

This class action research was carried out over two cycles, between cycle I and cycle II is a series of interrelated activities. In the sense that the implementation of cycle II is a continuation of the improvement of cycle I. In detail, the implementation of the research for these two cycles is as follows:

Cyclus I

Cycle I lasted for four meetings with the following details:

1. Planning Stage

The activities carried out in this planning stage are as follows:

a. Reviewing the curriculum at MIN 2 Bulukumba odd semester science subjects.
b. Making lesson plans for each meeting.
c. Make an observation sheet of students' activities to see how the learning conditions in the classroom during the implementation of the action.
d. Prepare assessment tools.

2. Action Phase

This stage is an implementation or follow-up to the planning stage by applying the inquiry learning model, as for what will be implemented is as follows:

a. The teacher checks the learners' readiness for the lesson and checks the learners' attendance.
b. The teacher conveys the learning topic and learning objectives to be achieved in the learning process.
c. The teacher provides motivation.
d. The teacher conducts an apperception activity.
e. The teacher presents the material.
f. The teacher divides learners into groups of 3 - 5 learners.
g. The teacher writes some problems on the blackboard.
h. The teacher provides opportunities for students to brainstorm in developing a problem-solving plan.
i. The teacher provides guidance in developing a hypothesis for solving the problem.
j. The teacher provides opportunities for students to determine the steps that are in accordance with the hypothesis.
k. The teacher guides learners to sequence the steps to solve the problem.
l. The teacher guides students to solve the problem.
m. The teacher gives each group the opportunity to present the results of the discussion.
n. The teacher guides the learners to make conclusions from the group discussion.
o. The teacher reflects to the students about the material that has been discussed.

3. Observation Stage

At this stage, during the research, students' activities in the learning process will be observed.

4. Reflection Stage

The results obtained at the observation and evaluation stages are then collected and analyzed. The intended reflection is an assessment of the success or failure of achieving temporary goals. The results of the data analysis carried out at this stage will be used as a reference to determine the actions in the next cycle in order to achieve the final goal.

Cyclus II

The steps to be taken in cycle II are relatively the same as the planning and implementation in cycle I, but in some steps it is possible to make improvements and refinements or add actions according to the reality found in the field.

RESULTS AND DISCUSSION

At the end of cycle I, a learning outcome test was held in the form of an evaluation test after completing one sub-topic. The results of descriptive analysis of students' scores obtained after learning the PBL model can be seen from the following table:

Table 1 Statistics of Science Learning Outcome Scores in Cycle I

No.	Statistics	Statistical Value
1.	Subject	21
2.	Ideal Score	100
3.	Highest Score	100
4.	Lowest Score	60
5.	Score Range	40
6.	Average score	77,73

From table 1 shows that the average score of students is 77.73 of the ideal score achieved which is 100. and the lowest score is 60 and the highest score is 100. the average score of students is 77.73 categorized into a scale of five then the average score of students is in the high category. If the score of students' science learning outcomes is grouped into five categories, the frequency distribution of students' scores is obtained as shown in 2.

Table 2. Frequency and Percentage Distribution of Science Learning Outcome Scores Cycle I

No.	Score	Category	Frequency	Percentage (%)
1.	0 - 20	Very Low	0	0 %
2.	21 - 40	Low	0	0 %
3.	41 - 60	Medium	2	6,67 %
4.	61 - 80	High	9	33,33 %
5.	81 - 100	Very High	10	60 %
Total			21	100 %

After being categorized into a five scale in Table 2, the data obtained that of the 21 students, there were no students (0%) in the very low and low categories, 2 students (6.67%) were in the medium category, 9 students (33.33%) were in the high category and 10 students (60%) were in the very high category.

Quantitative descriptive scores of students' science learning outcomes after being given action in cycle II can be seen in the following table.

Table 3 Statistics of Science Learning Outcome Scores in Cycle II

No.	Statistics	Statistical Value
1.	Subject	21
2.	Ideal Score	100
3.	Highest Score	100
4.	Lowest Score	63
5.	Score Range	37
6.	Average Score	84,93

Table 3 shows that the average score of students in cycle II is 84.93 of the ideal score achieved, which is 100. With the lowest score of 63 and the highest score of 100. If the average score of students, namely 84.93 is categorized into a scale of five, the average score of students is in a very high category.

If the score of students' science learning outcomes in cycle II is grouped into a five scale, the frequency distribution of students will be shown in table 4.

Table 4 Frequency Distribution and Percentage Score of Science Learning Outcomes Cycle II

No.	Score	Category	Frequency	Percentage (%)
1.	0 - 20	Very Low	0	0 %
2.	21 - 40	Low	0	0 %
3.	41 - 60	Medium	0	0 %
4.	61 - 80	High	2	36,67 %
5.	81 - 100	Very High	19	63,33 %
Total			21	100 %

From table 4, it is obtained that out of 21 students there are 19 students (63.33%) in the very high category, 2 students (36.67%) are in the high category, and in the medium, low and very low categories there are no students who get it.

By paying attention to the following table, the frequency distribution and percentage of student learning outcomes during cycle I and cycle II will be shown.

Table 5 Frequency Distribution and Percentage Score of Learners' Learning Outcomes during Cycle I and Cycle II

No.	Score	Category	Frequency		Percentage	
			Cycle I	Cycle II	Cycle I	Cycle II
1	0 - 20	Very low	0	0	0 %	0 %
2	21 - 40	low	0	0	0 %	0 %
3	41 - 60	Medium	2	0	6,67 %	0 %
4	61 - 80	High	9	2	33,33%	36,67 %
5	81 - 100	Very high	10	19	60 %	63,33 %
Total			21	21	100 %	100 %

Table 5 shows an increase in students' science learning outcomes after PBL learning which was carried out for two cycles. In cycle I of 21 students there were 2 students (6.67%) in the medium category, in cycle II there were no more students in that category. Then for the high ability level category also changed, namely in cycle I there were 9 learners (33.33%) and in cycle II there were 2 learners (36.67%). While in the category of very high ability level in cycle I there were 10 students (60%) and in cycle II there were 19 students (63.33%).

From the comparison of the descriptive analysis of cycle I and cycle II above, it shows that the average score has increased from 77.73 to 84.93. The maximum value of students' science learning outcomes in cycle I was 100 and in cycle II did not change. But there are still learners whose scores remain, up and down, there are also learners whose scores have greatly increased. This is because the analysis of the understanding of each learner is different and the subject matter in cycle II is classified as difficult. Then the minimum score of students in cycle I was 60 and in cycle II it was 63.

CONCLUSION

After this class action research was conducted, the researcher concluded that: The average science learning outcomes in school class action research from 2 cycles, namely cycle I is 77.73 and cycle II 84.93 is from the ideal score that may be achieved, namely 100. from these results it is obtained that the ability of students in solving science problems in class VI students of MIN 2 Bulukumba, has increased. With the *Problem Based Learning* model it is easier to solve problems because it is done in groups or together.

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