Application of PBL Learning Strategies Based on Environmental Exploration to Improve Student Learning Outcomes on Ecosystem Materials at SMP Negeri 1 Kotamobagu

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Abstrak

Penelitian ini dilatarbelakangi oleh hasil observasi dan wawancara yang dilakukan di SMP Negeri 1 Kotamobagu didapati bahwa siswa kurang aktif dalam proses pembelajaran dan pembelajarasn hanya berpusat pada guru yang mengakibatkan hasil belajar siswa rendah. Penelitian ini merupakan penelitian tindakan kelas (PTK) yang bertujuan untuk mengetahui peningkatan hasil belajar siswa. Penelitian ini dilaksanakan di kelas VIII SMP Negeri 1 Kotamobagu dengan jumlah siswa sebanyak 21 orang. Hasil penelitian siklus I menunjukkan bahwa terdapat 6 siswa yang tuntas dengan persentase 28,57% sedangkan 15 siswa lainnya dinyatakan tidak tuntas dengan persentase 71,43%. Dan pada saat pelaksanaan pembelajaran kegiatan siklus II terdapat 19 siswa yang tuntas dengan persentase 90,48% sedangkan 2 siswa lainnya dinyatakan tidak tuntas dengan persentase 9,52%. Sehingga terjadi peningkatan ketuntasan hasil belajar siswa sebesar 61,91% Kesimpulan dalam penelitian ini membuktikan bahwa penerapan strategi pembelajaran PBL berbasis JAS dapat meningkatkan hasil belajar siswa kelas VIII SMP Negeri 1 Kotamobagu.

Kata kunci: *Problem-Based Learning, Jelajah Alam Sekitar, Hasil Belajar*

Abstract

This research is motivated by the results of observations and interviews conducted at SMP Negeri 1 Kotamobagu found that students are less active in the teaching process and learning is only teacher-centered, resulting in low student learning outcomes. This research is classroom action research (PTK) that aims to determine the improvement of student learning outcomes. This research was carried out in grade VIII of SMP Negeri 1 Kotamobagu with a total of 21 students. The results of the first research cycle showed that 6 students completed with a percentage of 28.57%, while the other 15 students were declared incomplete with a percentage of 71.43%. When implementing the second cycle of learning activities, 19 students completed with a percentage of 90.48%, while the other 2 students were declared incomplete with a percentage of 9.52%. So, there is an increase in the completeness of student learning outcomes by 61.91%. The conclusion in this study proves that applying JAS-based PBL learning strategies can improve the learning outcomes of grade VIII students of SMP Negeri 1 Kotamobagu.

Keywords: *Problem-Based Learning, Environmental Exploration, Learning Outcomes*

INTRODUCTION

Biology is a science that studies living things, how they interact with each other, the interaction between living things and their environment, and the mutual relationship between the two. In biology learning, of course, it is related to how to search and understand knowledge systematically, so in learning biology, the teacher must act as a facilitator, and students will carry out a discovery process (Mangelep, 2015; Agustin & Khotimah, 2019). If teachers do not get students used to trying to find themselves or the knowledge or information being learned, then the learning obtained is meaningless and, of course, will be quickly forgotten (Mangelep, 2017; Nadia, 2023; Apriyuliza et al., 2024). Therefore, of course, teachers as educators must be able to design responsive and student-centered learning so that students become active in learning activities and increase student learning outcomes (Mangelep et al., 2020; Darwati & Purana, 2021). In the world

of education, educational institutions, namely schools, are institutions that are very responsible for building students' social attitudes and learning to understand what must be done both in individual and group work so that learning goals can be achieved properly (Andriani, 2019; Desmawati et al., 2023).

So far, the teaching and learning process has always focused on teaching in the classroom and on teachers by using the lecture learning method, where 90% of the active ones are teachers, while students only function their senses of hearing and sight. As a result of this one-way teaching and learning activity, students become less able to explore their insights about the material they receive (Fiyku, 2018; Mangelep et al., 2023; Revelita et al., 2024).

Learning process activities will be successful if supported by relevant learning models, which will improve student activities and learning outcomes. Thus, teachers are required to be able to carry out the teaching and learning process and determine the right learning interaction in accordance with the material presented (Maa, 2018; Hutagalung et al., 2023; Mangelep et al., 2024).

Therefore, of course, a student-centered learning strategy is needed. One of them is the problem-based learning (PBL) learning strategy. PBL strategies are learning activities that use problems as a stimulus to find or acquire the necessary knowledge so that students can understand it on their own (Jufri and Hasrijal, 2023; Lestari et al., 2024). The problems used must, of course, be authentic, ill-structured, and open as a context for students to develop problem-solving and critical thinking skills so that they can gain new knowledge (Maa, 2018). Real-world problems trigger students' learning process before they are familiar with formal concepts, in contrast to conventional learning, which requires real-world problems to be applied to concepts (Mauliana & Novallyan, 2023; Mangelep et al., 2024). Students conduct investigations to address the problem by critically identifying data and finding solutions (Maulida, 2020). Students gain or expand their knowledge by solving these problems, and this will certainly hone their analytical and problem-solving skills (Maulina & Indriayu, 2019). Students will solve a problem from the real world either independently or in groups in the classroom or outside the classroom.

Through the environmental exploration (JAS) approach combined with the PBL strategy, it is one of the biology learning innovations that has the characteristic of utilizing the surrounding environment as a source of learning through scientific work, which is balanced with student-centered learning activities (Pratama et al., 2023). Through this JAS approach, students can further explore the situation in nature, and it is hoped that students can be more active during learning activities (Ningsih, 2021; Sabir et al., 2023).

Based on the results of an interview held on March 29, 2024, one of the science teachers said that learning at SMP Negeri 1 Kotamobagu students were less active in the teaching and learning process. The teacher also said that it is rare to use a learning method that can make students more active, only able to focus on the lecture method and tell students to copy writings from the package book to the student's notebook so that student activity is very low and results in very unsatisfactory learning results. This can be seen from the very low results of student exams/exams, especially in science subjects, with the percentage of incompleteness of student learning outcomes reaching 65%. In comparison, those who complete are only 35% with the KKM standard (minimum completeness criteria) determined by the school, which is 65.5.

This is also in line with the results of interviews with several students at SMP Negeri 1 Kotamobagu; some students said that learning science, especially biology material, is a learning that many students like because biology learning is a learning that is widely done outside the classroom. However, contrary to students' expectations, biology learning at SMP Negeri 1 Kotamobagu only focuses on package books that are distributed to each student. Even to see ecosystem learning, they only learn abstractly about the surrounding environment without being brought directly to nature. Basically, at SMP Negeri 1 Kotamobagu, many natural opportunities can be used to carry out activities outside the classroom because it is supported by a park in the yard that is still quite green scattered in front of each class, the library, around the volleyball court, and around the school environment, which can be used by teachers and students in learning ecosystem materials (Andriani, 2019).

Related to this, it is considered necessary to conduct a study on the application of JAS-based PBL learning strategies to improve student learning outcomes in ecosystem materials at SMP Negeri 1 Kotamobagu.

METHOD

The type of research that will be used in this study is classroom action research (PTK). The type of classroom action research was chosen because the problems to be solved came from classroom learning practices as an effort to improve the learning process and improve students' abilities and learning outcomes. This is in accordance with the characteristics of classroom action research. As said by Arikunto (2011), Classroom Action Research (PTK) is a scrutiny of learning activities in the form of an action, which is deliberately carried out in a class at the same time. It can be seen in Figure 1 below:
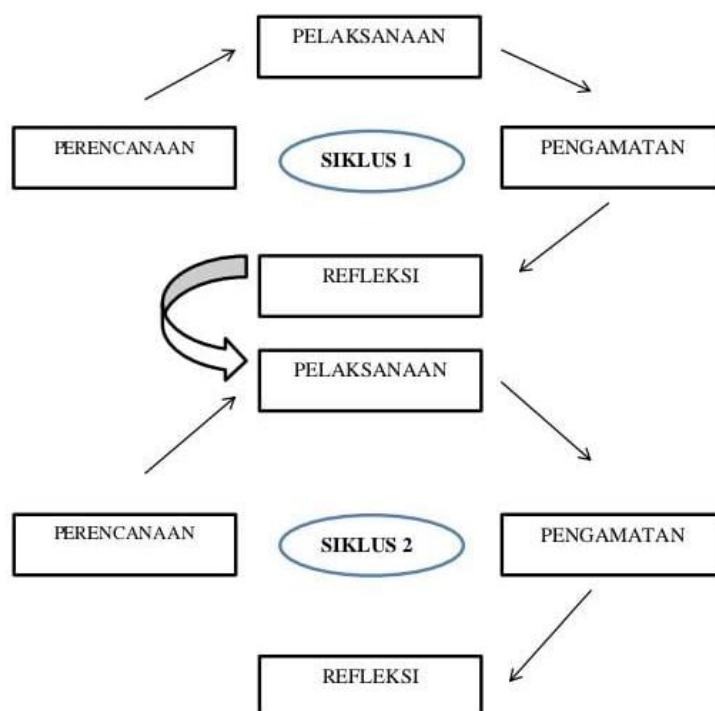

Figure 1. Classroom action research cycle

This research will be carried out at SMP Negeri 1 Kotamobagu in the odd semester of the 2024/2025 school year, which is located on Jalan Arief Rahman Hakim, Kotamobagu Village, West Kotamobagu District, North Sulawesi Province. The subjects that will be used in this study are all grade VIII students of SMP Negeri 1 Kotamobagu which consists of 1 class with a total of 21 students.

Data collection techniques are the most strategic step in research, because the main purpose in research is to obtain data to reveal problems in the research that is being carried out. Therefore, to obtain data related to this study, the researcher used several techniques in the data collection process, including observation, interviews, documentation, and tests.

In conducting data analysis techniques, researchers will use quantitative descriptive analysis techniques. Quantitative descriptive data analysis is a data analysis used by researchers by calculating and describing the data that has been collected, especially the results of the test implementation scores that have been given. The formula that will be used to calculate the percentage of completeness of students in the implementation of the test in each cycle is:

$$P = \frac{F}{N} \times 100\%$$

Information:
P = Learning outcomes/completeness of students' learning in a classical manner
F = Number of students who complete the KKM individually
N = Total number of students

The criteria for student success are said to be complete in participating in learning activities if they meet the Minimum Completeness Criteria (KKM), which is 65.5. It can be seen in the following table:

Table 1. Minimum Completeness Criteria (KKM)

Value of Learning Outcomes	Predicate	Category
89 – 100	A	Excellent
77– 88	B	Good
65,5 – 76	C	Enough
< 65,5	D	Less

(Source : SMP Negeri 1 Kotamobagu)

RESULTS AND DISCUSSION

This type of research is classroom action research (PTK) consisting of two cycles and each cycle consists of four stages, namely: planning, implementation, observation and reflection. This research was carried out in August 2024 at SMP Negeri 1 Kotamobagu with 21 students in class VIII. This classroom action research uses a problem-based learning (PBL) learning model based on environmental exploration (JAS) to improve students' learning outcomes in science learning, especially ecosystem materials.

Cycle I

The results of the research conducted in cycle I, a description of student learning outcomes was obtained. The data from the recapitulation of the learning outcomes of the first cycle of students is shown in the following Table 4.1.

Table 2. Recapitulation of Student Learning Outcomes Cycle I

Number of students	Percentage	Information
6	28,57%	Complete
15	71,43%	Incomplete

Based on the results of the above analysis, the formula used to calculate the percentage of achievement of completeness classically is as follows:

P = $\frac{F}{N}$ x 100%

= $\frac{6}{21}$ x 100%

= 28,57%

Based on Table 2, it shows that the percentage of learning results of students in Cycle I only reached 28.57% with the number of students who completed the study amounting to 6 people while the percentage of learning outcomes of students who did not complete was 71.43% with the number of students 15 people. This shows that the learning in the first cycle is not in accordance with the minimum completeness criteria (KKM), so that it has not achieved an increase in learning outcomes because in the first cycle students lack interaction/lack of activity and lack of focus in following the learning process, therefore the researcher together with the observer, namely the science subject teacher, decided to continue the research in the second cycle by using reflection in the first cycle so that the obstacles or problems that contained in cycle I can be improved so that student learning outcomes can later increase.

Cycle II

The results of the research after carrying out the second cycle of actions obtained a description of the students' learning outcomes. The data on the recapitulation of the learning outcomes of students in the second cycle is shown in the following Table 3.

Table 3. Recapitulation of Student Learning Outcomes Cycle II

Number of Students	Percentage	Information
19	90,48%	Complete
2	9,52%	Incomplete

Based on the results of the above analysis, the formula used to calculate the percentage of achievement of completeness classically is as follows:

$$P = \frac{F}{N} \times 100\%$$

$$= \frac{19}{21} \times 100\%$$

$$= 90.48\%$$

Based on the results of Table 3 above, the learning completeness of students is higher than in the first cycle with a completion percentage of 90.48% or 19 students are declared complete or have reached the KKM score, which is 65.5. Meanwhile, 2 students who still do not meet the KKM will be remedial or repaired. Improvement of student learning outcomes in cycle I to cycle II learning.

Table 4. Improvement of Learning Outcomes in Cycle I and Cycle II

Description	Cycle I	Cycle II
Students complete	6	19
Incomplete students	15	2
Percentage of classical completeness	28,57%	90,48%

Based on the summary of the learning outcomes of cycle I and cycle II in Table 4.3, the learning completeness of students in cycle I 6 students and the learning completeness of students in cycle II is 19 students with the percentage of learning completeness of students classically in cycle I 28.57% and cycle II 90.48%. The percentage of increase in student learning outcomes from cycle I to cycle II is shown in the following figure 2.

Figure 2. Improvement of student learning outcomes

This class action research was carried out at SMP Negeri 1 Kotamobagu. The subjects were 21 class VIII students with heterogeneous abilities.

After the implementation of classroom actions by applying problem-based learning (PBL) learning model based on environmental exploration (JAS) with ecosystem materials to improve student learning outcomes. There was a significant increase from cycle I to cycle II.

It was found that the results of students in the first cycle only had a percentage of 28.57%, with 6 students who completed it, and the results of the percentage of students who did not complete it were 71.43%, with a total of 15 students. This shows that cycle I have not shown completeness, so there has not been an increase in learning in Cycle I; for that, researchers need to continue to Cycle II by reflecting so that the shortcomings in Cycle I can be corrected. The disadvantages of students in cycle I are (1) students are less actively involved in learning, (2) lack of attention from students in learning, (3) the learning process becomes less attractive to students. With these obstacles, efforts are made to overcome the problems in the first cycle, namely by implementing several actions, namely, the researcher provides encouragement and motivation to students so that they are more focused and pay attention to the material to be learned with other group members. The teacher's determination of the group to be heterogeneous helped create a better situation of cooperation and group discussion. Every student with more competence in the group can help explain material that team members do not understand by having skills that are still lacking and increasing the confidence to dare to appear in public.

The implementation of classroom actions in cycle II is an optimization and anticipation of obstacles that will arise in cycle I; in cycle I, the results of students have not reached the success indicator because 15 students obtained a score of <65.5 (below KKM) or 71.43% have not reached KKM. Therefore, the research is continued in cycle II to repeat to achieve better learning outcomes or >65.5 (above KKM).

After the research analysis, there were meetings during the implementation of cycle I and cycle II actions, namely during the learning process, student learning activities, such as student interaction with teachers, student interaction with students, group cooperation, and student participation still seemed active. In general, it has started to be active, and students have gotten used to group learning, doing assignments using modules, and presenting group work results. Students who are not completely prepared can be remedial so well. The test results carried out in the first cycle were obtained by 6 students or 28.57% and 15 students or 71.43% were not completed, followed by 19 students or 90.48%, who completed the KKM in the second cycle. Meanwhile, the other 2 students were declared incomplete with a percentage of 9.52%. The percentage of students who had the completeness of learning outcomes in cycle I and cycle II had a very significant increase, namely 61.91%.

The increase occurred because the learning process of the second cycle was made with improvement efforts. The increase in student learning outcomes from cycle I to cycle II is due to the PBL learning strategy that can improve students' critical and creative thinking and problem-solving skills in students both independently and in groups as well as increase student motivation in learning (Tumbel, et al. 2022; Tanjung et al., 2023). And through JAS, can provide an interesting learning experience for students to understand concepts through direct observation, improving students' cognitive learning process skills and outcomes (Sari, 2023; Lumandung et al., 2024).

Several relevant previous studies have also supported this, stating that the implementation of JAS-based PBL strategies can improve students' creativity and learning outcomes (Ayu and Santi 2024, Noviana and Darmiasih 2023, Nursafitri 2023). Thus, the description above shows that the implementation of the JAS-based PBL strategy can improve student learning outcomes in grade VIII of SMP Negeri 1 Kotamobagu.

CONCLUSION

The conclusion of the results of this study is that the application of the problem-based learning (PBL) learning model based on environmental exploration (JAS) can improve students' learning outcomes in ecosystem materials in grade VIII of SMP Negeri 1 Kotamobagu.

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