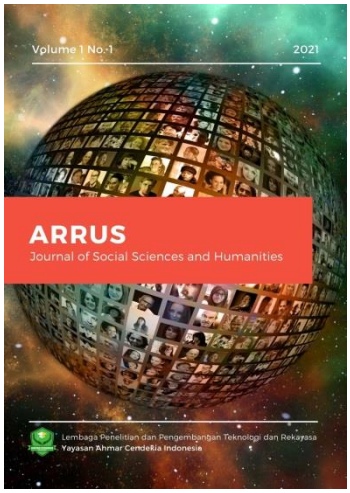
https://doi.org/10.35877/soshum3280

OPEN ACCESS

ISSN: 2776-7930 (Print) / 2807-3010 (Online)



RESEARCH ARTICLE

Improving Science Learning Outcomes Through Problem Based Learning Methods in Class IV SDN 176 Palembang

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Abstract: This research discusses the use of Problem Based Learning (PBL) to improve student learning outcomes in learning science and technology regarding plant body parts in class IV.C at SDN 176 Palembang. The research was carried out using the classroom action research (PTK) method which includes two cycles, including planning, implementation, observation, and reflection. The research results show a significant increase in student learning completion after implementing PBL. Before the cycle, only 40% of students had completed the KKM, increasing to 64% in the first cycle and 88% in the second cycle. PBL has proven to be effective in increasing students' understanding and motivating them to think critically and creatively in solving problems related to science material.

Keywords: Classroom Action Research, Problem Based Learning, IPAS

1. INTRODUCTION

National Education makes a significant contribution to the development of skills and character young generation. Republic of Indonesia Law No. 20 of 2003 concerning the national education system articulates that "national education functions to grow abilities and form a dignified national character, with the aim of increasing national intelligence and developing students' potential." This aims to produce individuals who are pious, have noble character, and are knowledgeable, independent, and forming a democratic and responsible society (Iswara & Kusuma, 2022).

The government's initiative to improve national education is the creation of an independent curriculum. The Merdeka Curriculum is a diversified intracurricular framework designed to optimize material, provide opportunities for students to grow their understanding of subjects and improve their abilities (Munawar, 2022). Educators have the autonomy to choose a variety of teaching resources to adapt learning according to students' needs and interests. The independent curriculum aims to facilitate student learning in a comfortable and calm environment, without pressure, fostering happiness and attention to their abilities. In the independent curriculum, science and social studies topics in basic education are integrated into one discipline, namely science and science. This combination arises from the fact that elementary school age children are more involved in real, holistic and comprehensive thinking, rather than detailed analysis. The integration of science and social science curricula is expected to enable young people to effectively deal with the natural and social environment as a cohesive whole (Novina et al., 2023).

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IPAS includes the study of living organisms, inanimate objects and the study of human existence both as individuals and as social creatures in relation to their environment. IPAS is often characterized as a systematic and logical arrangement of diverse information, including causality. This knowledge covers both natural and social domains (Viqri et al., 2024). IPAS fosters children's interest in things that happen in their environment. This interest can lead students to understand the mechanisms of the universe and its interactions with human existence on earth.

The results of observations at SDN 176 Palembang class IV.C showed that there were students who had not achieved the KKM limit scores that had been decided. Of the 25 students, only 10 students scored above the KKM, while the other 15 students were below the KKM. A comprehensive investigation revealed that students' poor performance in KKM scores was caused by a lack of understanding and willingness to engage with science. This can be seen in teaching and learning activities which are still focused on the teacher as a result of not providing opportunities for students to develop critical thinking skills when solving a problem. Apart from that, the use of teaching materials on scientific topics is less than optimal, resulting in a boring experience and the application of learning models that are less than proportional and learning media that are not optimal, causing student learning outcomes to be inadequate, resulting in students' failure to understand the material obtained throughout teaching and learning activities.

Student learning outcomes that do not meet the criteria, especially IPAS, require a learning model that can increase students' motivation and interest in learning, as well as facilitate contextual education that is linked to students' lives. The Problem Based Learning (PBL) model is a useful model for increasing student learning motivation. PBL is an educational methodology that applies daily life issues as a design for students to develop critical thinking skills and solve problems, as well as obtain important information and ideas related to the subject matter. The Problem-Based Learning methodology emphasizes real-life problems that have important meaning for students (Aprina et al., 2024). Problem Based Learning is structured to present challenges that require students to expand their knowledge base, allowing them to gain new insights through their own discovery. This approach fosters independent and creative problem solving skills that can be applied to real life situations (Jatiyasa et al., 2024).

Responding to the problem of inadequate student learning outcomes in science learning, the researcher carried out classroom action research using Problem Based Learning to improve the learning outcomes of class IV students at SDN 176 Palembang in science learning, especially material on plant body parts.

2. Research Method and Materials

The methodology in this research is classroom action research (PTK). The research was carried out in two cycles, namely cycle 1 and 2. This PTK method applies the Kemmis and McTaggart framework which has four stages including the planning stage, implementation stage, observation and reflection stage (Tyas, 2023). This research aims to increase science learning outcomes with a PBL approach in class IV.C at SDN 176 Palembang. This research involved all 25 students of class IV.C at SDN 176 Palembang.

Data collection involves carrying out evaluations of student skills in two cycles. Researchers use observations, tests, and documentation to understand teaching and learning activities. This research uses quantitative analysis to assess improvements in student learning outcomes in each cycle. Improvements in learning outcomes are assessed based on the average learning outcomes from each cycle as well as the proportion of students who meet the KKM. The results of the analysis are comprehensive and measurable in every increase in student learning outcomes.

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Figure 1. PTK Cycle

3. Results and Discussion

PTK has four stages including preparation, implementation, observation and reflection. In the planning stage, researchers created strategies to improve student learning outcomes using the PBL model. Activity planning includes making schedules, PBL model resources, practical equipment, learning media, LKPD, and research instruments. Based on the findings of this research, the process begins with planning activities, continues with pre-cycle activities, and continues with improvements in cycle 1 then continues with action in cycle II. Cycle I actions begin after pre-cycle activities carried out on July 26 2024, then proceed to cycle II on August 2 2024.

3.1. Precycle Description

Based on pre-cycle activities, it shows that student learning outcomes have not reached expectations, because several students failed to achieve the KKM limit score. It was determined that 10 students with a percentage of 40% obtained scores above the KKM, while 15 or 60% of students did not meet the requirements.

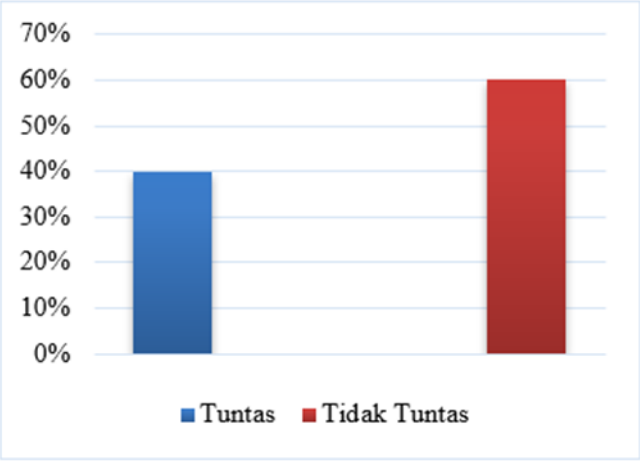

Figure 2. Initial conditions of student learning outcomes

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The graph shows that 40% of students have completed the KKM, while 60% of other students have not completed it. Learning outcomes show that more than 50% of students failed to meet the minimum criteria for science learning.

The lack of student learning outcomes at SDN 176 Palembang is due to a lack of awareness and motivation in learning science and technology. The implementation of teaching and learning activities shows a teacher-centered approach that lacks new learning models, resulting in a monotonous experience that fails to engage students effectively. In addition, students often show a lack of self-confidence when expressing their opinions or seeking clarification on concepts they do not understand, resulting in a lack of critical, creative and analytical thinking in solving problems.

In order to improve student learning outcomes in science and science learning, PTK is held by implementing PBL. The aim of implementing the PBL approach is to resolve the main problems previously encountered by students, including teacher-centered teaching and the lack of student involvement during class activities. The PBL approach integrates problem-based learning with scientific content to improve students' motivation and desire to learn.

3.2. Description of Cycle I and Cycle II

The application of classroom action research seeks to improve the learning outcomes of class IV.C students in science learning, especially regarding plant body parts by using Problem Based Learning (PBL) and is carried out in two main cycles, then an increase in student learning outcomes is obtained from before and after implementing Problem Based Learning. (PBL). Each cycle contains planning, implementation, observation and reflection stages. The planning stage consists of preparing the teaching materials used in the research, including learning modules, LKPD and learning media. The evaluation instrument consists of an assessment rubric and a learning process observation sheet.

The implementation and observation stages are the stages where learning has been carried out in the classroom. Learning is implemented in one meeting per cycle, using Problem Based Learning (PBL) in each session. Apart from carrying out teaching and learning activities, researchers also examine elements related to learning, such as student responses and descriptions of learning in each session.

The reflection stage is an assessment stage carried out during the learning process in class. The results of the reflection show that the steps that have been designed by researchers can work effectively and succeed in increasing students' interest in learning through fun ways. A teaching and learning process that combines students' daily experiences through problem solving and gamification which fosters enthusiasm for learning.

Based on the results of the two learning cycles carried out by researchers, student competency evaluation was carried out on the teaching and learning activities carried out. The results of the research show that there is an increase in the learning outcomes of class IV.C students at SDN 176 Palembang Semester I 2024/2025 in science learning. These results can be observed in the following table.

Ketuntasan Belajar	Kriteria	Pra Siklus		Siklus I		Siklus II	
		Jumlah Siswa	Presentase (%)	Jumlah Siswa	Presentase (%)	Jumlah Siswa	Presentase (%)
< 75	Tidak Tuntas	15	60%	9	36%	3	12%
≥ 75	Tuntas	10	40%	16	64%	22	88%
Jumlah		**25**	**100%**	**25**	**100%**	**25**	**100%**

Figure 3. Differences in Student Learning Outcomes

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The table above illustrates the increase in student learning outcomes. During the pre-cycle, 10 or 40% of students complete, while 15 or 60% of students do not complete. In cycle I, 16 or 64% of students met the requirements, and 9 or 36% of students did not meet the requirements. In cycle II, the completion rate increased to 22 or 88% of students, and 3 or 12% of students did not complete. This can be seen in the graph below.

Figure 4. Diagram of Differences in Learning Outcomes in Each Cycle

The graph shows that there has been a significant increase in student learning outcomes in both cycle I and cycle II. This increase can be seen from the decrease in the number of students who did not complete the KKM, while the number of students who completed the KKM increased with each cycle. In cycle II, only 3 or 12% of students from the total class population did not meet the KKM.

Observation results show that there is an increase in student learning outcomes after using Problem Based Learning in science and science learning in class IV.C of SDN 176 Palembang, first semester of the 2024/2025 academic year. This can be observed from the percentage obtained by teachers in the very good category throughout the implementation of Problem Based Learning. The increasing percentage indicates an increase in teacher effectiveness regarding the implementation of Problem Based Learning.

Research conducted in class IV.C of SDN 176 Palembang, first semester of the 2024/2025 academic year, shows that Problem Based Learning significantly improves science learning outcomes. This increase is shown in the percentage of completeness of student learning outcomes from before research activities to cycle II stage. This finding is in line with (Iswara & Kusuma, 2022) which shows that there is an increase in science learning outcomes by using Problem Based Learning throughout learning.

These findings show that the Problem Based learning model can change passive thinking into active knowledge, which facilitates solving problems and drawing conclusions from these problems based on real evidence in groups and teacher guidance (Meilasari & Yelianti, 2020). This change in thinking makes student learning outcomes improve. Meanwhile, teacher and student involvement also occurs throughout the cycle implemented. This is in accordance with (Dewi et al., 2024) which shows an increase in teacher effectiveness through Problem Based Learning and greater student involvement in its application.

4. Conclusion

This research shows that the use of Problem Based Learning in science and science learning can significantly improve the learning outcomes of class IV students at SDN 176 Palembang. The PBL model, which emphasizes learning based on real problem solving, has proven

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effective in overcoming the challenges of traditional learning that is more teacher-focused and lacks student involvement.

In its implementation, this research had two cycles. In the initial stages before the action, as many as 60% of students did not complete the KKM. This shows that there is an urgent need for a more interactive learning approach. After the first cycle was implemented, there was an increase, with 64% of students fulfilling the KKM, then at the end of the second cycle students' learning completion reached 88%. This data shows the effectiveness of PBL in changing learning outcomes that were initially low to become higher and closer to the desired achievements.

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