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Implementation of the Problem Based Learning Method to Enhance Students Learning Activities and Outcomes at SD Negeri 077786 Tuhembaruzo

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ABSTRACT

This study aims to improve students' learning activities and outcomes through the implementation of the Problem-Based Learning (PBL) model in Grade IV students of SD Negeri 077786 Tuhembaruzo. The research subjects consisted of 18 students, including 8 boys and 10 girls. The study employed a Classroom Action Research (CAR) design using the Kemmis and McTaggart model, carried out in two cycles, each consisting of planning, action implementation, observation, and reflection. Data were collected through observations of learning activities, learning outcome tests, short interviews, and documentation, and were analyzed using both qualitative descriptive and quantitative approaches. The results show that the application of PBL significantly improved students' learning activity. The average activity score increased from 53% in Cycle I to 83% in Cycle II, with notable improvement in problem reading, group discussion, questioning, expressing opinions, and presenting group work. Students' learning outcomes also increased substantially. The average score rose from 58.3 in the pre-action stage to 71.1 in Cycle I, and further to 83.8 in Cycle II. Learning mastery improved from 22% to 50% in Cycle I, and reached 83% in Cycle II. These findings align with previous studies indicating that PBL is effective in enhancing student engagement, conceptual understanding, and critical thinking skills. Therefore, the PBL model can be recommended as a relevant and effective learning innovation for improving both the process and outcomes of learning in elementary school settings.

Key Word *Problem Based Learning, Learning Activities, Learning Outcomes*

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INTRODUCTION

Elementary education serves as a crucial foundation for shaping students' thinking abilities, character, and learning skills. However, in practice, the learning process in many Indonesian elementary schools still faces various challenges (Herawan, 2012). Common issues include low levels of active student participation, the dominance of lecture-based instruction, and the lack

of activities that encourage critical thinking, problem-solving, and collaboration. These conditions were also found at SD Negeri 077786 Tuhembaruzo, where classroom activities were largely teacher-centered, and students tended to be passive, merely following instructions with limited opportunities to explore their own ideas. Such learning patterns often lead to shallow conceptual understanding and the inability to apply knowledge in real-life contexts.

Preliminary observations revealed that classroom interactions had not fully supported the development of 21st-century competencies such as critical thinking, creativity, communication, and collaboration. Several teachers also reported that students were not accustomed to working in groups to solve authentic problems, resulting in learning activities that focused more on memorization rather than understanding. This situation highlights the need for an instructional innovation that shifts the role of students from passive recipients of information to active participants in the learning process.

Theoretically, shifting instructional approaches from teacher-centered to student-centered is one of the core principles emphasized in the Merdeka Curriculum and modern pedagogical standards (Muslihah, 2014). One model proven to support this shift is Problem-Based Learning (PBL)(Anggarani et al., 2024). According to Barrows & Tamblyn, PBL is an instructional approach that positions real-world problems as the starting point for learning. This model emphasizes investigative activities, collaborative discussions, and reflection, encouraging students to analyze information, formulate solutions, and present their findings (Hursen, 2021). Conceptually, PBL is grounded in constructivist theory, which posits that knowledge is actively constructed by learners through direct experience and social interaction (Noprina et al., 2022).

The literature outlines several key characteristics of PBL in classroom implementation: (1) the use of authentic problems relevant to students' lives; (2) learning conducted in small groups; (3) the teacher acting as a facilitator rather than the primary source of information; (4) independent and group investigation; and (5) the production of a final presentation or learning product as a form of accountability. Previous national and international studies have shown that PBL improves critical thinking, cognitive learning outcomes, learning motivation, and students' confidence in solving real-world problems. Thus, PBL is considered an instructional innovation well aligned with the needs of contemporary elementary education (Primadoniati, 2020).

In the context of SD Negeri 077786 Tuhembaruzo, PBL becomes increasingly relevant after findings showed that classroom instruction still relied heavily on conventional methods and did not adequately support the

development of process skills. Teachers reported that when learning was dominated by lectures, students often felt bored, struggled to maintain focus, and failed to understand how lesson content related to everyday life. Moreover, low student engagement in discussions and minimal exposure to problem-solving activities hindered the development of literacy and numeracy skills. These conditions were consistent with early assessment results showing a gap between learning objectives and students' actual performance.

Argumentatively, changing the instructional model is an urgent necessity. If classroom learning remains one-directional, the goals of elementary education to develop critical and problem-solving skills will not be achieved (Ridho et al., 2021). Therefore, implementing PBL is assumed to be more effective than traditional methods. PBL provides opportunities for experiential learning, problem-solving based on real-life contexts, and meaningful collaboration. Logically, this model has strong potential to address students' passive learning habits and low engagement during lessons (Hamdani et al., 2022).

The main hypothesis of this article is that implementing PBL contributes positively to improving learning quality, particularly in terms of student activity, conceptual understanding, and motivation at SD Negeri 077786 Tuhembaruzo. This assumption is supported by constructivist theory and empirical studies consistently showing that students learn more effectively when they are directly involved in constructing meaning. Additionally, PBL aligns with modern educational paradigms that position students as the center of the learning process, with teachers serving as facilitators guiding them toward deeper understanding.

Considering these empirical and theoretical foundations, the implementation of PBL is viewed as a strategic and relevant instructional innovation. Its application not only aligns with current pedagogical trends but also responds to the school's concrete needs. PBL also supports the strengthening of the *Profile of Pancasila Students*, particularly in critical reasoning, collaboration, and independence. Thus, PBL does not merely enhance academic achievement but also contributes to character formation an integral aspect of elementary education.

The purpose of this article is to describe the process of implementing Problem Based Learning as a learning innovation at SD Negeri 077786 Tuhembaruzo and to analyze its impact on students' learning activities and quality. This study also aims to provide practical insights into how teachers can integrate PBL into daily instruction through systematic steps, from planning and implementation to reflection. Furthermore, the article contributes to the

development of elementary education literature on innovative instructional models relevant to school contexts.

Through this article, it is expected that teachers and schools gain insights into more effective and contextual instructional strategies. The implementation of PBL can serve as a reference for other schools facing similar challenges and may also inspire further research examining its effectiveness across subjects and grade levels. Ultimately, PBL-based instructional innovation represents not only a short-term solution but also a long-term investment in improving the quality of elementary education.

RESEARCH METHODE

This study employed Classroom Action Research (CAR) using the Kemmis and McTaggart model, which includes the stages of planning, action implementation, observation, and reflection (Arikunto et al., 2015; Sanjaya, 2013). The research subjects were 18 fourth-grade students of SD Negeri 077786 Tuhembaruzo, consisting of 8 boys and 10 girls. This class was selected because students' learning activities were still relatively passive and their conceptual understanding had not yet developed optimally, indicating the need for an instructional innovation that encourages greater student engagement.

The intervention involved the implementation of the Problem-Based Learning (PBL) model, carried out through the steps of problem orientation, group organization, investigation, preparation and presentation of findings, and reflection on problem-solving. In each cycle, the teacher applied PBL by providing contextual problems, guiding group investigations, and facilitating discussions to help students construct understanding actively. Observations were conducted throughout the process to examine student activities, group interactions, and the effectiveness of the teacher's facilitation.

Data were collected through classroom observations, learning outcome tests, brief interviews, and documentation. Reflection was conducted at the end of each cycle to evaluate the success of the intervention and to determine improvements for the following cycle. The research was considered successful when students' learning activity increased to the "active" category and at least 75% of students achieved the minimum mastery criteria (KKM). Through this CAR design, the implementation of PBL is expected to improve learning quality and enhance the problem-solving abilities of fourth-grade students.

RESULT & DISCUSSION

This classroom action research was carried out in two cycles to examine the improvement of students' learning activities and learning outcomes through

the implementation of the Problem-Based Learning (PBL) model in fourth-grade students at SD Negeri 077786 Tuhembaruzo. The study involved 18 students, consisting of 8 boys and 10 girls. The research focused on two main components: students' learning activities during instruction and their learning outcomes (formative tests) at the end of each cycle.

At the beginning of the study, it was found that most students had not demonstrated optimal engagement in the learning process. Activities such as asking questions, participating in discussions, expressing opinions, reading instructions, and solving problems in groups were still low. The teacher reported that students tended to wait for explanations rather than attempting to understand the problems independently. This condition served as the basis for implementing the PBL intervention.

Tabel 1.
Aktivitas Belajar Siswa Per Siklus

Category	Pre-Cycle	Cycle I	Cycle II
Highest score	75	85	95
Lowest score	40	55	70
Class average	58,3	71,1	83,8
Students achieving KKM (≥75))	4 students	9 students	15 students
Mastery percentage	22%	50%	83%

In Cycle I, the average student activity reached only 53%, indicating that many students were still adjusting to a learning model that required active participation. Students appeared hesitant to express their ideas or initiate discussions. Many waited for teacher guidance because they were not yet accustomed to processing information independently.

However, after improvements were made based on reflection such as:

- providing problems closely related to students' daily experiences,
- arranging heterogeneous groups,
- clarifying instructions,
- giving examples of problem-solving steps,

student activity increased significantly in Cycle II, reaching 83%. Almost all students actively engaged in group discussions, read instructions carefully, and followed the PBL steps more independently. Even students who were previously passive began to ask questions and contribute ideas during discussions.

The most notable improvements occurred in the following components:

- Expressing ideas: from 39% → 72%
- Asking/responding: from 44% → 77%
- Presenting results: from 50% → 83%

This improvement demonstrates that PBL is effective in encouraging students to communicate and think critically.

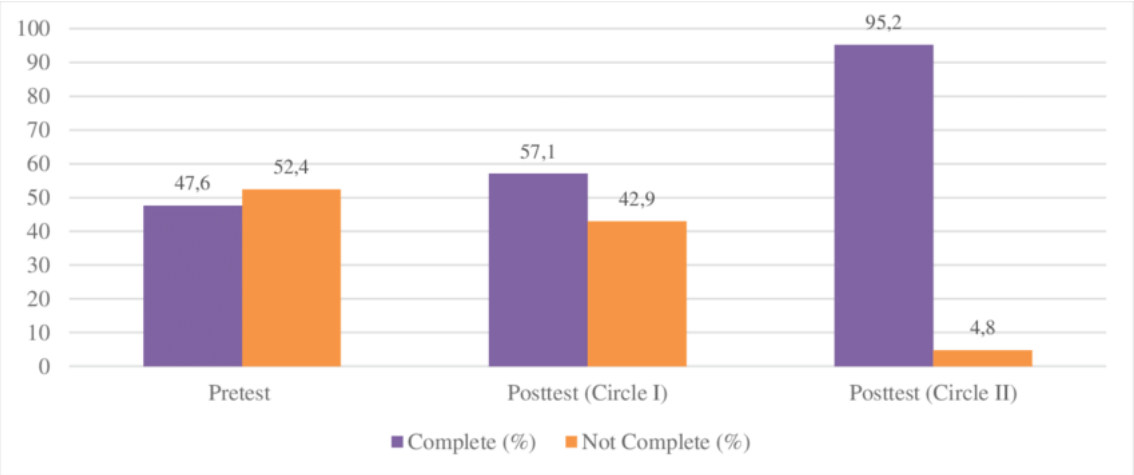

Figure 1.
Student Learning Activity Diagram per Cycle

Table 2.
Students' Learning Outcomes per Cycle

Category	Pre-Cycle	Cycle I	Cycle II
Highest score	75	85	95
Lowest score	40	55	70
Class average	58,3	71,1	83,8
Students achieving KKM (≥75))	4 siswa	9 siswa	15 siswa
Mastery percentage	22%	50%	83%

Students' learning outcomes also improved across each cycle. In the pre-cycle stage, the average score was only 58.3, with a mastery level of 22%. This indicates that the previous instructional method had not been effective in supporting conceptual understanding. In Cycle I, the average score increased to 71.1 and the mastery level reached 50%. However, several students still experienced difficulties in reading test instructions, lacked accuracy during analysis, and were not yet able to connect information from the given problems to appropriate solution steps.

Improvements made in Cycle II such as using more structured problem-based worksheets, providing examples of thinking patterns (scaffolding), and optimizing teacher supervision during discussions produced a substantial

impact. The average score increased to 83.8, and the mastery level rose to 83%, exceeding the CAR success indicator (minimum 75% mastery).

The increase in the lowest score from 40 to 70 also shows that lower-performing students benefited from group work, discussion, and the problem-based learning model. The combined data above demonstrate a consistent pattern: as learning activity increased, learning outcomes also improved**.**

- Cycle I: activity 53% → average score 71.1
- Cycle II: activity 83% → average score 83.88

Higher learning activity such as discussion, questioning, expressing ideas, and solving problems directly correlates with improved conceptual understanding. Students did not merely receive information; they engaged in deeper cognitive processes when solving problems collaboratively. In other words, PBL enhanced the quality of the learning process, and this improvement was reflected in the final outcomes.

Each step of PBL contributed to positive changes in classroom dynamics:

1. Problem Orientation: Students became more focused and had clear learning goals.
2. Group Discussion: Improved collaboration and encouraged students to share ideas.
3. Independent Investigation: Encouraged students to seek information actively.
4. Presentation: Built confidence and responsibility for learning outcomes.
5. Reflection: Helped students refine their thinking and problem-solving approaches.

Students' behavior shifted from passive to active. They became more accustomed to asking questions, proposing solutions, and validating information. Peer interaction also played a significant role in encouraging students to participate more confidently in discussions.

Overall, the findings indicate that the implementation of Problem-Based Learning (PBL) in this classroom action research successfully improved both learning activity and learning outcomes among fourth-grade students. Data from Cycles I and II show consistent improvement in both process and academic achievement. Therefore, PBL can be recommended as an effective instructional innovation for enhancing the quality of learning at SD Negeri 077786 Tuhembaruzo.

Discussion

The findings of this study show that the implementation of the Problem-Based Learning (PBL) model had a significant impact on improving the learning activities and learning outcomes of fourth-grade students at SD Negeri 077786

Tuhembaruzo. The increase in learning activity from 53% in Cycle I to 83% in Cycle II, along with the rise in mastery level from 22% in the pre-action stage to 83% in Cycle II, reinforces the argument that problem-based learning creates a more meaningful, active, and collaborative learning process. These results align with the fundamental characteristics of PBL, which position students as active agents in constructing knowledge through authentic problem solving.

Overall, the improvement in student activity can be explained through the shift in learning paradigm that occurred with the implementation of PBL. In the initial stage, students were still accustomed to traditional teacher-centered instruction, and therefore in Cycle I they tended to wait for direct instructions, were reluctant to ask questions, and lacked confidence in expressing their ideas. As the teacher gradually provided more opportunities for exploration, presented more contextual problems, and formed heterogeneous groups, students began to show positive adaptation. By Cycle II, students were quicker to understand the problems, more active in group discussions, and more confident in presenting arguments. This indicates that PBL functioned as a form of social scaffolding that facilitated collaborative construction of understanding.

The findings of this study are consistent with previous research. Studies by Arends and various elementary education researchers have shown that PBL enhances critical thinking and collaboration because students are encouraged to identify problems, analyze information, and find solutions both individually and in groups. (Darmawati & Mustadi, 2023) Darmawati & Mustadi (2023) found that PBL significantly improved student activity and motivation, as authentic problems stimulate curiosity. Similar results were reported by (Koçoğlu & Kanadlı, 2025) who demonstrated that PBL increases student engagement and confidence in classroom discussions. In this context, the improvement in student activity observed at SDN 077786 Tuhembaruzo reinforces the consistency of PBL as an effective approach for fostering active learning.

In addition to learning activity, the improvement in students' learning outcomes shows that PBL influences not only the learning process but also academic achievement. The average student score increased from 58.3 in the pre-action stage to 83.8 in Cycle II. This indicates that students not only became more active but also developed deeper conceptual understanding. PBL provides space for students to connect concepts with real-life contexts, making the information easier to retain in long-term memory. These findings are aligned with Piaget's and Vygotsky's constructivist theories, which emphasize that knowledge is built through experience and social interaction.

Research by (Vany Oktaviana & Naniek Sulistya Wardani, 2023) also supports that PBL improves problem-solving ability because students are encouraged to engage in higher-order thinking skills. Students do not merely memorize content; they analyze, evaluate, and generate solutions. This was reflected in the present study, where students in Cycle II demonstrated improved ability to recognize problem patterns, draw conclusions, and justify their answers. Studies by (Nur Ikasari & Siti Maisaroh, 2025) similarly show that PBL enhances learning outcomes because group discussions play a major role in correcting student misconceptions. Thus, the significant increase in student scores in this study is consistent with previous research findings.

PBL also benefited students with lower initial ability. The lowest score increased from 40 to 70, indicating that lower-performing students also experienced meaningful gains in understanding. This improvement is attributed to heterogeneous grouping, which enabled interaction between higher- and lower-ability students. Previous studies, such as *Nurhayati* (2018), have also reported that PBL supports low-achieving students by providing social assistance during group discussions. In this study, the role of group work was crucial, especially for students who were initially passive and lacked confidence.

Furthermore, the role of the teacher as a facilitator was a key factor in the success of PBL. In Cycle I, the teacher tended to be overly involved in group discussions, resulting in student dependency. However, in Cycle II, the teacher shifted into the role of a guide rather than a source of answers. The teacher provided guiding questions, modeled thinking processes, and monitored discussions without dominating them. This aligns with Hmelo-Silver's (2004) perspective, which states that the success of PBL depends greatly on the teacher's ability to create a challenging yet structured learning environment.

PBL also contributed to the development of students' soft skills. Students became more confident in speaking, more respectful of their peers' opinions, and more engaged in group decision making. Several students who had never volunteered to speak began to express their ideas in Cycle II. This is in line with findings by Rahmawati & Fauzan (2020), who reported that PBL improves students' self-confidence and communication skills through frequent presentations and discussions.

The relationship between student activity and learning outcomes in this study further reinforces the theory that active learning has a direct influence on conceptual understanding. As activity increased, learning outcomes improved. This correlation was clearly visible in the activity-versus-mastery trend, which showed parallel improvement. These findings correspond with (Mulyasana,

2019) who states that active participation is a central indicator of improved learning quality. Learning involving interaction, discussion, and problem solving provides deeper learning experiences that allow students to understand the material optimally.

From the perspective of cycle implementation, the improvements made in Cycle II significantly influenced the increase in learning outcomes. The use of more contextual problems, clearer instructions, more structured worksheets, and more balanced group arrangements helped students understand tasks more effectively. This aligns with Fitriyani (2019), who noted that well designed problems and clear guidance are key components of successful PBL. In this study, the refinement of actions proved effective as students appeared more prepared and more confident in completing their tasks.

Overall, this research strengthens the literature stating that PBL is a relevant and effective learning model that aligns with the developmental characteristics of elementary school students. PBL not only improves academic performance but also enhances social skills, communication, and problem-solving abilities competencies emphasized in the Merdeka Curriculum and the Profile of Pancasila Students.

Based on the findings and supported by previous research, it can be concluded that PBL is a feasible and effective learning innovation for SD Negeri 077786 Tuhembaruzo. This study confirms that student-centered learning provides significant positive effects, especially in classrooms with heterogeneous abilities such as Grade IV. The PBL model enables students to learn actively, independently, and collaboratively, ensuring consistent improvement in both learning processes and outcomes.

CONCLUSION

This classroom action research demonstrates that the implementation of the Problem-Based Learning (PBL) model consistently improved the learning activities and learning outcomes of fourth-grade students at SD Negeri 077786 Tuhembaruzo. Learning activity, which was initially low (53% in Cycle I), increased to 83% in Cycle II, indicating that students became more engaged in reading problems, participating in discussions, expressing ideas, and completing group tasks. This increased participation occurred because PBL provides opportunities for students to think critically and work collaboratively through contextual and relevant problem situations.

Students' learning outcomes also showed a significant improvement, as reflected in the increase in average scores from 58.3 in the pre-action stage to 83.8 in Cycle II, along with a rise in mastery level from 22% to 83%. These

findings reinforce that PBL is not only effective in fostering active learning processes but also has a direct impact on students' conceptual understanding. Therefore, PBL is recommended as a sustainable instructional innovation at SD Negeri 077786 Tuhembaruzo, as it has been proven to enhance learning quality, student independence, and problem-solving abilities.

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