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Boosting Fourth Graders' Achievement in IPAS Using Problem-Based Learning on "My Region and Its Natural Resources"

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Abstract

This study aims to enhance fourth-grade students' learning outcomes in Natural and Social Sciences (IPAS), particularly in the topic "My Region and Its Natural Resources," through the implementation of the Problem-Based Learning (PBL) model. The research employed Classroom Action Research (CAR) using the Kemmis and McTaggart spiral model, consisting of planning, action, observation, and reflection stages conducted over three cycles. The participants were 26 fourth-grade students at SDN Balimester 03 Petang in the second semester of the 2024/2025 academic year. Data were collected through achievement tests, observation sheets, and field notes, and were analyzed using descriptive quantitative and qualitative techniques. The findings revealed a substantial improvement in students' learning outcomes, with mastery learning increasing from 27% in the pre-cycle stage (mean score = 59.19) to 81% in Cycle III (mean score = 82.12). These results indicate that the systematic implementation of PBL effectively enhances students' engagement, critical thinking skills, and academic achievement in IPAS.

Kata kunci: *Classroom Action Research, Learning Outcomes, Problem Based Learning, Science and Social Studies*

1 INTRODUCTION

Student-centered learning has become an essential approach in elementary education, as it supports the development of students' critical thinking, collaboration, and problem-solving skills. One learning model that aligns with these objectives is Problem-Based Learning (PBL), which emphasizes learning through authentic problems that encourage students to actively construct knowledge.

In the context of Indonesian elementary schools, IPAS integrates natural and social science perspectives to help students understand their environment holistically. However, preliminary observations in grade IV of SDN Balimester 03 Petang revealed that students' learning outcomes in the topic *"My Region and Its Natural Resources"* were relatively low. Only 27% of students achieved the minimum mastery criteria, indicating the need for instructional improvement.

In addition to cognitive challenges, students also experienced difficulties in actively participating in classroom activities. Many students tended to rely heavily on the teacher's explanations, showed limited confidence in expressing their ideas, and were less engaged in collaborative learning. These conditions suggested the need for an instructional approach that actively involves students in meaningful learning experiences.

According to Yudha (2019), innovative learning models such as project- and problem-based learning play a crucial role in improving students' learning motivation, collaboration skills, and conceptual understanding. This view highlights the importance of applying PBL to create a more interactive and student-centered learning environment. Several previous studies have also confirmed that PBL contributes positively to students' higher-order thinking skills and learning outcomes (Hmelo-Silver, 2004; Savery, 2015). Therefore, this

study applies PBL as an alternative strategy to address learning challenges in IPAS and enhance students' academic achievement.

2 RESEARCH METHODS

This study employed Classroom Action Research (CAR) using the spiral model proposed by Kemmis and McTaggart, which consists of four stages: planning, action, observation, and reflection. The research was conducted in three cycles at SDN Balimester 03 Petang during the second semester of the 2024/2025 academic year.

The participants were 26 fourth-grade students. Data were collected through learning achievement tests to measure students' cognitive outcomes, observation sheets to assess learning activities, and field notes to document classroom dynamics. Data analysis was carried out using descriptive quantitative and qualitative techniques, focusing on mastery learning percentages and mean scores in each cycle.

To ensure the validity and richness of the data, multiple techniques were employed, including tests, observations, interviews, field notes, and documentation. Tests were used to assess students' cognitive learning outcomes related to conceptual understanding (Arikunto, 2019). Observations and field notes captured students' affective and psychomotor engagement, including motivation, teamwork, and participation during group discussions (Sugiyono, 2017; Sanjaya, 2013). Interviews with the classroom teacher provided contextual insights into student challenges, while documentation such as photographs, lesson plans, and score records strengthened data credibility (Moleong, 2017).

To further ensure data credibility, this study applied triangulation of techniques and sources by comparing information obtained from different methods and perspectives. In addition, reflective discussions with the collaborator were conducted after each cycle to confirm interpretations and maintain consistency (Moleong, 2017). Quantitative data from tests were analyzed descriptively using percentages to determine individual and class mastery based on the ≥75 achievement criterion (Sudjana, 2009). Qualitative data were analyzed using the Miles and Huberman (1992) framework, which involves data reduction, data display, and conclusion drawing. The research was considered successful when at least 75% of students achieved mastery and demonstrated clear improvements in engagement, collaboration, and learning motivation (Trianto, 2010; Arikunto, 2019).

To strengthen the validity of the findings, this study also emphasized the importance of reflective practice throughout the research cycles. After each cycle, the researcher and collaborator conducted reflective discussions to evaluate the effectiveness of instructional strategies, classroom management, and student engagement. These reflections served as the basis for revising lesson plans and improving learning activities in subsequent cycles, ensuring that the implementation of Problem-Based Learning was continuously refined to meet students' needs.

3 RESULT AND DISCUSSION

3.1 Results Subsection

3.1.1 Description of Pre-Action Results

During the pre-action stage, the learning outcomes of fourth-grade students at SDN Balimester 03 Petang in the Integrated Natural and Social Sciences (IPAS) subject particularly in the topic "My Region and Its Natural Wealth" were still considerably low. Out of 26 students, only 7 students (27.00%) achieved the Minimum Mastery Criteria (KKTP) score of 75, while 19 students (73.00%) did not meet the required standard. This data indicates that most students experienced difficulties in understanding the learning material. Observations also revealed that the previously used instructional approach was primarily teacher-centered, with limited student

participation and minimal opportunities for collaborative learning. Consequently, students were less motivated, tended to be passive, and struggled to connect the concepts taught with real-life situations. These findings highlighted the need for a more engaging and student-centered learning model. Therefore, the Problem-Based Learning (PBL) model was introduced as an alternative strategy to enhance students' understanding, engagement, and overall learning outcomes.

3.1.2 Description of Cycle I Results

The first cycle showed a slight improvement compared to the pre-action stage, though the progress remained modest. From the total of 26 students, 8 students (31.00%) successfully reached the mastery threshold of 75, while 18 students (69.00%) were still below the criterion. The improvement, although limited, suggested that the initial implementation of PBL began to have a positive effect on students' comprehension. The problem scenarios encouraged small-group discussions, which helped some students participate more actively. However, several students were still hesitant to express opinions and found it difficult to connect contextual problems with the theoretical concepts of "My Region and Its Natural Wealth." Moreover, classroom observations revealed that discussion management and instructional media were not yet fully effective in sustaining engagement. Therefore, modifications were planned for Cycle II, focusing on improving group management, enhancing the clarity of instructions, and incorporating more visual and interactive learning media to stimulate student interest.

3.1.3 Description of Cycle II Results

Cycle II demonstrated a more significant improvement in students' learning outcomes compared to Cycle I. Of the 26 students, 14 students (54.00%) achieved mastery, while 12 students (46.00%) still fell below the minimum criterion. This represents a 23.00% increase from the previous cycle. The improvement can be attributed to several strategic adjustments made during instruction. Teachers applied more structured group management, clearer guidance during the problem-analysis stage, and utilized learning materials closely related to students' daily experiences. These enhancements helped students grasp key concepts more effectively and increased their participation in class discussions. Observations also noted that students became more confident in sharing ideas and proposing problem-solving strategies. Despite these positive outcomes, some students continued to struggle, especially when analyzing complex problems or drawing logical conclusions. Consequently, additional support and focused concept reinforcement were planned for Cycle III to ensure deeper understanding among all learners.

3.1.4 Description of Cycle III Results

In Cycle III, student performance showed a highly significant improvement compared to previous cycles. Out of 26 students, 21 students (81.00%) achieved mastery, surpassing the 75% class mastery target, while only 5 students (19.00%) remained below the standard. This 27.00% increase from Cycle II indicates that the Problem-Based Learning (PBL) model had become highly effective in improving students' comprehension and engagement. During this cycle, students demonstrated greater independence and confidence in analyzing problems, formulating solutions, and presenting results. Group collaboration also improved noticeably, with students showing mutual respect, active participation, and responsibility in completing tasks. They were able to connect contextual issues related to their regional environment with the scientific and social concepts taught in the lesson. Additionally, classroom observations highlighted a dynamic learning atmosphere—students were enthusiastic, interactive, and motivated throughout the process. Thus, Cycle III met the success criteria, confirming that the

systematic application of PBL effectively enhanced students' cognitive, affective, and psychomotor domains in IPAS learning.

3.1.5 Recapitulation of Learning Outcomes from Pre-Action to Cycle III

A comprehensive overview of students' learning progress across the three cycles is summarized in the following table:

Tabel 1. Rekapitulasi Hasil Belajar Siswa Pra-Siklus, Siklus I, II, dan III

No	Ketuntasan	Pra Tindakan	Siklus 1	Siklus 2	Siklus 3
1	Tuntas	27,00%	31,00%	54,00%	81,00%
2	Belum Tuntas	73,00%	69,00%	46,00%	19,00%

The table clearly shows a consistent upward trend in students' learning achievement from the pre-action stage to Cycle III. Initially, only 27% of students met the mastery standard. Through gradual refinement of instructional strategies—focusing on collaborative problem-solving, student inquiry, and reflection—the proportion of students meeting the criterion rose to 81%. This steady improvement underscores the significant impact of PBL in fostering deeper understanding and long-term retention of knowledge.

3.1.6 Histogram of Learning Outcome Recapitulation from Pre-Action to Cycle III

The following histogram visually represents the improvement in students' learning outcomes over the course of the research cycles:

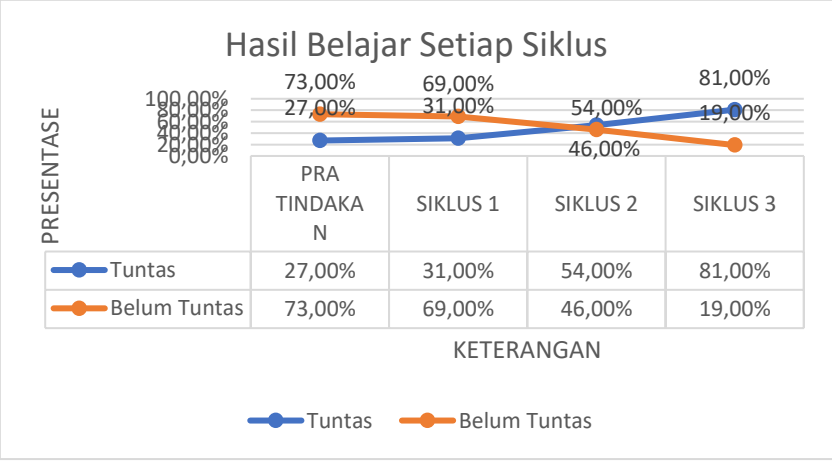

Figure 1. Histogram of Learning Outcomes from Pre-Action to Cycle III

The histogram illustrates a clear and progressive enhancement in students' mastery of IPAS concepts through the three cycles of action. Each phase of implementation contributed to better engagement, comprehension, and performance. The shift from a teacher-centered approach to a student-centered PBL environment enabled learners to actively construct knowledge through inquiry, exploration, and collaboration. Consequently, the PBL model not only improved academic achievement but also developed essential 21st-century skills such as critical thinking, communication, and teamwork.

Overall, the research findings confirm that the Problem-Based Learning (PBL) model is highly effective in improving students' learning outcomes in IPAS for fourth-grade students

at SDN Balimester 03 Petang. The systematic and reflective implementation of the model successfully transformed classroom dynamics, increased motivation, and met the predetermined success criterion of at least 75% class mastery..

3.2 Discussion Subsection

The discussion in this study aims to analyze the effectiveness of implementing the Problem-Based Learning (PBL) model in improving students' learning outcomes in Integrated Natural and Social Sciences (IPAS) on the topic *"My Region and Its Natural Wealth"* among fourth-grade students at SDN Balimester 03 Petang. The learning process was conducted in three cycles, beginning with a pre-action stage to identify students' initial learning conditions, followed by the implementation of actions and reflections in each cycle.

During the pre-action stage, students' learning outcomes were notably low, with only 7 out of 26 students (27%) achieving the Minimum Mastery Criteria (KKTP). This result indicated that the conventional teaching methods previously applied were less effective in facilitating students' conceptual understanding. Field observations revealed that most students were passive, rarely asked questions, and demonstrated low enthusiasm and participation during lessons. These conditions reflected a lack of engagement and ownership in the learning process.

In Cycle I, after the introduction of the PBL model, a modest improvement was observed. The percentage of students achieving mastery increased to 31% (8 students). This result suggested that the PBL approach began to have a positive effect, particularly in encouraging students to participate in group discussions and problem-solving activities. However, the results were not yet optimal, as 18 students (69%) had not met the minimum criteria. Observations showed that some students were still hesitant to express their opinions, group collaboration was not yet well coordinated, and the learning media used were less engaging and required further improvement.

In Cycle II, students' mastery improved significantly to 54% (14 students), representing a 23% increase compared to Cycle I. This improvement was attributed to refined instructional strategies, including clearer instructions, better group management, and the use of more relevant and contextual learning media. Observations indicated that students' participation improved notably—students became more active, more confident in sharing their ideas, and more engaged in deeper discussions. Nevertheless, 12 students (46%) still experienced difficulties in analyzing problems and drawing logical conclusions, indicating that their higher-order thinking skills were still developing.

By Cycle III, the level of student mastery rose dramatically to 81% (21 students), surpassing the minimum standard of classical mastery (75%). Students demonstrated higher levels of confidence, critical thinking, and the ability to relate contextual problems to scientific concepts. They collaborated more effectively, asked more analytical questions, and proposed creative solutions during group tasks.

From a pedagogical perspective, the success of the PBL model in this study demonstrates the importance of contextual and experiential learning in elementary education. When students are actively involved in identifying problems related to their real-life environment, they tend to develop stronger learning motivation and deeper conceptual understanding. This finding supports the argument of Yudha (2019) that innovative, student-centered learning models not only improve academic achievement but also foster essential social and collaborative skills required in 21st-century learning.

Overall, the findings confirm that the Problem-Based Learning (PBL) model effectively enhances both individual and group learning outcomes. PBL fosters students' active engagement, critical thinking, and conceptual understanding, making the learning process more interactive, enjoyable, and meaningful. This aligns with the theoretical framework suggesting that student-centered learning models, such as PBL, can transform traditional classrooms into active environments that nurture problem-solving and lifelong learning skills.

4 CONCLUSION

Based on the results of the Classroom Action Research conducted over three cycles, it can be concluded that the implementation of the Problem-Based Learning (PBL) model is effective in improving students' learning outcomes in the Integrated Natural and Social Sciences (IPAS) subject, particularly on the topic *"My Region and Its Natural Wealth,"* among fourth-grade students at SDN Balimester 03 Petang.

The improvement is evident from the significant increase in students' mastery levels across the three learning cycles. During the pre-cycle stage, only 7 out of 26 students (27%) achieved the Minimum Mastery Criteria (KKTP). After the application of the PBL model in Cycle I, mastery increased slightly to 31% (8 students). Through instructional refinement and improved classroom management in Cycle II, student mastery rose to 54% (14 students). The highest achievement occurred in Cycle III, with 81% (21 students) reaching mastery, surpassing the minimum research success criterion of 75%.

In addition to cognitive improvement, the PBL model also had a positive impact on students' affective and psychomotor domains. Students became more engaged in discussions, more confident in expressing their opinions, and demonstrated better collaboration within groups. The learning atmosphere shifted from teacher-centered to student-centered, where learners actively explored, analyzed, and solved real-world problems. This engagement fostered not only conceptual understanding but also critical thinking, communication, and teamwork skills—key competencies aligned with the goals of 21st-century education.

In conclusion, the Problem-Based Learning (PBL) model, when applied systematically and continuously, effectively enhances both students' learning outcomes and the quality of classroom instruction. It encourages active participation, deeper understanding, and meaningful learning experiences, making it a suitable approach for improving IPAS learning in elementary education contexts.

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