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PROBLEM BASED LEARNING MODEL TO IMPROVE SCIENCE LEARNING OUTCOMES OF FOURTH GRADE SDN BANGUNHARJO

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ABSTRACT

This study applies the Problem Based Learning Model to improve the learning outcomes of science in the material Benefits of Diversity and Preserving Cultural Diversity in class IV SDN Bangunharjo. This study is a classroom action research with two cycles, consisting of one meeting each cycle and four stages: planning, implementation, observation, and reflection. The subjects of the study were 27 students of Class IV SDN Bangunharjo in the 2023/2024 Academic Year, with 15 male students and 12 female students. Data collection techniques include observation, interviews, tests, and documentation, and data analysis using qualitative descriptive methods. The results of this study aim to improve the learning outcomes of science in the material Benefits of Diversity and Preserving Cultural Diversity. This is evident from the initial condition of the percentage of student completion of 37.03% (10 out of 27 students completed learning) with an average class score of 62.22. In cycle I, the percentage of student completion was 62.96% (17 out of 27 students completed learning) with an average class score of 69.62. Meanwhile, in cycle II, the percentage of completion increased to 88.88% (24 out of 27 students completed learning) with a class average score of 77.03. Based on the results of this study, it can be concluded that the application of the *Problem Based Learning learning model* can improve the learning outcomes of Science in Class IV students of SDN Bangunharjo in the 2023/2024 Academic Year.

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1. INTRODUCTION

According to (Undang-Undang (UU) Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, 2003) Regarding the National Education System in Article 1 paragraph 1, it states "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual religious strength, self-control, personality, intelligence, noble morals, and the skills needed by themselves, society, nation and state . Education basically functions to help students in their self-development, namely the development of self-potential, skills, and personal characteristics in a positive direction, both for themselves and their environment. Education is not just about providing knowledge experience, values or training skills but developing potential and actual attitudes that students already have (Nurbaeti & Mutmainah, 2019).

According to Suyono (2017:9) learning is an activity to gain knowledge, improve skills, improve behavior, attitudes, and strengthen personality. Meanwhile, (Barrett, 2016; Davidson & Major, 2014) states that learning is an activity that can be done psychologically or physiologically. Psychological activities are related to activities that are mental processes, including thinking, understanding, concluding, listening, reviewing,

comparing, differentiating, expressing and analyzing (Ceylan & Vural, 2023; Gumuseli & Erylmaz, 2011; Maharani & Kurniaman, 2019). While physiological activities are related to activities that are the process of application or practice, including experimental or trial activities, training, creating works, and appreciation. Based on several expert opinions, it can be concluded that learning is a process of activities that are consciously carried out to gain knowledge, attitudes and skills so that there is a change in behavior or personality to remain good in thinking and acting according to their experiences.

(Hmelo-Silver & Eberbach, 2012) learning outcomes are changes in students, both concerning cognitive, affective and psychomotor aspects because of learning activities. Meanwhile, according to Rusman (2018:131) learning outcomes from the learning process are classified into 3 classifications based on Bloom's taxonomy. (Boud & Feletti, 2013) states that learning objectives are classified into three domains, namely: (1) Cognitive domain related to intellectual thinking abilities; (2) Affective domain related to emotional or attitudinal abilities; and (3) Psychomotor domain related to skill abilities. Based on the expert opinions above, it can be concluded that the classification of learning outcomes includes cognitive, affective and psychomotor abilities. The cognitive domain is related to knowledge, abilities, and intellectual skills. The affective domain is related to attitudes, feelings, values and interests. While the psychomotor domain is related to physical abilities.

Learning outcomes are an indicator of success in the educational process. Good learning outcomes indicate that students have succeeded in understanding the subject matter well. However, not all students can achieve optimal learning outcomes. Therefore, efforts need to be made to improve student learning outcomes. Improving learning outcomes can be done in various ways, such as using effective learning methods, providing adequate motivation and support, and improving the quality of educational facilities and infrastructure.

Science of Pen According to (Napitupulu et al., 2016) Problem-Based Learning is a learning model that utilizes real problem situations as the center of attention and as a means for students to acquire skills in solving problems, thinking critically and creatively, and gaining new knowledge through open-ended solutions. Students develop ideas or rules with previously acquired abilities and knowledge by integrating existing skills and knowledge (Gultom et al., 2020; Hurley, 1991). From several expert opinions above, it can be concluded that this learning model presents various real problems in students' lives (contextual) to stimulate students to learn.

Natural and Social Sciences (IPAS) is a science that studies living things and inanimate objects in the universe and their interactions, and studies human life as individuals as well as social beings who interact with their environment. In general, science is defined as a combination of various knowledge that is arranged logically and systematically by considering cause and effect (Anugrahana, 2013). This knowledge encompasses natural science and social science. IPAS includes learning about science and social science, which includes studies on nature, technology, environment, geography, history, and culture (Leny et al., 2021). This knowledge encompasses natural science and social science. IPAS helps students grow their curiosity about the phenomena that occur around them. This curiosity can trigger students to understand how the universe works and interacts with human life on earth.

Based on the results of pre-cycle observations conducted by researchers, it shows that the learning outcomes of Class IV students of SDN Bangunharjo are still below the specified KKM, which is 70. The learning outcomes of students in the IPAS learning material on the Benefits of Diversity and Preserving Cultural Diversity show a percentage of student completion of 37.03% (10 out of 27 students completed learning) with an average class score of 62.22 which is below the KKM. This occurs due to the lack of student interest in the learning model used by the teacher and the lack of use of learning media that stimulate curiosity, so that student learning outcomes are low.

Based on these problems, a teacher must be able to determine a learning model that suits the characteristics and needs of students. Can use the Problem Based Learning learning model which is a learning model that begins with problems found in a work environment to collect and integrate new knowledge developed by students independently (Aslan, 2021). With a learning model that links problems, students will find ways to solve the problem.

2. RESEARCH METHODS

This research employs a collaborative classroom action research (CAR) design, where the researcher works closely with the supervising teacher to identify, reflect on, and resolve learning problems directly within the classroom (Scanlon, 2018). The primary objective of CAR is to enhance teaching and learning by engaging in a cyclical process of planning, implementation, observation, and reflection. In this study, the research team focused on improving Indonesian language learning outcomes for fifth-grade students at SDN 1 Palembang. Collaborative classroom action research is particularly well suited for this context because it allows the teacher and researcher to test and refine instructional strategies in real-time, ensuring that the interventions are both practical and responsive to the dynamic needs of the classroom.

During the initial planning phase, the research team identified key issues affecting student performance in Indonesian language lessons. Observations and preliminary assessments revealed that the traditional lecture-based approach was limiting student engagement, resulting in low learning outcomes. To address these challenges, the team decided to implement the Problem-Based Learning (PBL) model. This innovative model emphasizes active student participation by engaging learners in investigating real-life problems that are connected to the subject matter. The intention was to shift the focus from passive reception of information to active, inquiry-based learning where students collaboratively explore issues, construct knowledge, and apply what they have learned in a practical context.

The research involved a group of 30 fifth-grade students, evenly divided between boys and girls, selected from SDN 1 Palembang. These students represented a diverse range of academic abilities and learning styles, which made them an ideal sample for studying the impact of the PBL model on language acquisition. In addition to the students, the classroom teacher played an integral role as a co-researcher. The teacher's active involvement ensured that the strategies implemented were grounded in the realities of the classroom, and provided continuous support throughout the research cycles.

Throughout the research process, a variety of instruments were employed to collect both qualitative and quantitative data in a comprehensive and integrated manner. The development of detailed lesson plans was an essential component of the intervention, ensuring that the PBL model was consistently applied across different teaching sessions. These lesson plans were meticulously designed to align with the fifth-grade Indonesian language curriculum while incorporating authentic problems that resonated with the students' daily experiences. Student worksheets served as both a guide for the activities and a means to capture their thought processes and learning progress. Observation sheets and field notes were used concurrently by both the researcher and the teacher to record classroom dynamics, student engagement, group interactions, and overall behavioral responses to the new teaching model. Furthermore, learning outcome tests were administered at various points during the research cycles to quantify the cognitive gains achieved by students. In addition to these instruments, semi-structured interviews were conducted with both students and the teacher to gather in-depth insights regarding their experiences, perceptions of the learning activities, and suggestions for improvement. All of these instruments were integrated seamlessly into the research design to provide a holistic view of the classroom environment and learning outcomes.

Data analysis was undertaken using both qualitative and quantitative approaches to ensure a comprehensive evaluation of the intervention's impact. The qualitative analysis involved a careful examination of the observation notes, field records, and interview transcripts. This analysis sought to identify recurring themes and patterns that signified changes in student engagement, critical thinking, and problem-solving skills. The insights drawn from these qualitative sources provided a detailed understanding of how students interacted with the PBL approach and how the classroom dynamics evolved over time. In parallel, quantitative data from the learning outcome tests were analyzed to measure the extent of cognitive improvement in Indonesian language proficiency. Comparative analyses were carried out by looking at pre-test and post-test scores across the different research cycles. Statistical methods were used to calculate mean scores and track changes in performance levels over time, thereby providing empirical evidence of the effectiveness of the PBL model. The convergence of qualitative insights and quantitative results offered a robust evaluation framework, ensuring that conclusions were drawn from multiple perspectives and grounded in solid data.

Throughout the research cycles, the observations and subsequent reflections enabled the team to refine the instructional strategies continuously. Feedback from students and the teacher played a crucial role in shaping subsequent cycles, as the research team made adjustments to the lesson plans and teaching methods based on observed outcomes (Abzalov, 2016). This iterative process of planning, action, and reflection is at the heart of classroom action research and underscores its value in fostering continuous improvement in educational settings. The overall goal was not only to enhance students' academic performance in Indonesian language lessons but also to foster a more dynamic, interactive, and engaging learning environment where students could develop essential 21st-century skills.

3. RESULTS AND DISCUSSION

A. Pre Cycle

The low learning outcomes of Grade IV students in the subject of Social Sciences on the material of the Benefits of Diversity and Preserving Cultural Diversity can be seen from the average pre-cycle score of 62.22, which means it is still below the passing score (KKM ≥ 70). At the pre-cycle stage, there were 10 students or 37.03% who got scores above KKM. These data show that the learning that was implemented was less successful in improving learning outcomes. The explanation is in the following table:

Table 4.1 Student Learning Outcomes (Pre-Cycle)

No.	Achievement	Learning outcomes
1.	Lowest value	40
2.	The highest score	90
3.	Students who do not complete	17
4.	Students who have completed	10
5.	Average	62.22
6.	Classical completion percentage	37.03%

This is because many students complain about the difficulty, boredom, and uninterestingness of learning science on the material of the Benefits of Diversity and Preserving Cultural Diversity, causing student learning outcomes to be still low. Reflection from this pre-cycle stage is the basis for compiling improvements to the next cycle of learning.

B. Cycle 1 Results

Data analysis of student learning outcomes in the subject of Social Sciences, material on the Benefits of Diversity and Preserving Cultural Diversity in cycle I can be seen in the following table:

Table 4.2 Student Learning Outcomes (Cycle I)

No.	Achievement	Learning outcomes
1.	Lowest value	50
2.	The highest score	100
3.	Students who do not complete	10
4.	Students who have completed	17
5.	Average	69.95
6.	Classical completion percentage	62.96%

Based on table 4.2, the test scores for learning science on the material of the Benefits of Diversity and Preserving Cultural Diversity for students of Class IV SDN Bangunharjo in cycle I showed that out of 27 students, the lowest score was 50, the highest score was 100, and the class average was 69.62. The classical completion of science learning was 62.96% or 17 students completed it and 10 students scored below the KKM (≥70) or had not completed it.

C. Cycle 2 Results

Data analysis of student learning outcomes in the subject of Social Sciences, material on the Benefits of Diversity and Preserving Cultural Diversity in cycle II can be seen in the following table:

Table 4.3 Student Learning Outcomes (Cycle II)

No.	Achievement	Learning outcomes
1.	Lowest value	60
2.	The highest score	90
3.	Students who do not complete	3
4.	Students who have completed	24
5.	Average	77.03
6.	Classical completion percentage	88.88%

Based on table 4.3, the test scores for learning science on the material of the Benefits of Diversity and Preserving Cultural Diversity for students of Class IV SDN Bangunharjo in cycle II showed that out of 27 students, the lowest score was 60, the highest score was 90, and the class average was 77.03. The classical

completion of science learning was 88.88% or 24 students completed it, and 3 students scored below the KKM (≥70) or had not completed it.

D. Discussion

The results of the research conducted in cycle I and cycle II showed that student learning outcomes increased. Where at the beginning (pre-cycle) student learning outcomes that reached KKM were 10 students with an average of 62.22 and a percentage of completion of 39.29% of the total number of Class IV students. After cycle I was implemented, there was an increase in the completion of learning outcomes, namely 17 students completed with an average of 69.62 and the percentage of completion became 62.96%. In cycle II, the completion increased to 24 students completed with an average of 77.03 and the percentage of completion became 88.88% of the total number of students. The data can be seen in the table below:

Table 4.4 Analysis of Student Learning Outcomes

No.	Achievement	Learning outcomes		
		Pre Cycle	Cycle I	Cycle II
1.	Lowest value	40	50	60
2.	The highest score	90	100	90
3.	Students who do not complete	17	19	3
4.	Students who have completed	10	17	24
5.	Average	62.22	69.62	77.03
6.	Classical completion percentage	37.03%	62.96%	88.88%

From the table data above, it can be clarified with the following diagram of student learning outcomes completion:

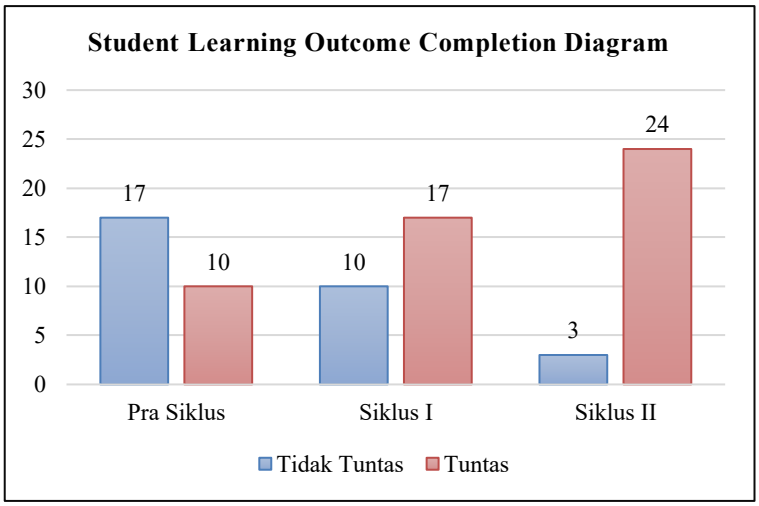

Figure 4.1 Diagram of Student Learning Outcome Completion

From the results of the research that has been conducted about Natural Sciences, the material on the Benefits of Diversity and Preserving Cultural Diversity in Class IV of SDN Bangunharjo using the *Problem Based Learning learning model,* it shows that the level of activity and student learning outcomes have increased from each cycle to the next (Widiastuti et al., 2023).

4. CONCLUSION

Based on the results of the research that has been carried out by the researcher, it can be concluded that the use of the Problem Based Learning learning model can improve the learning outcomes of science in the material on the Benefits of Diversity and Preserving Cultural Diversity of Class IV students of SDN Bangunharjo in the 2023/2024 Academic Year. The results of the research conducted in cycles I and II showed that student learning outcomes had increased. Where at the beginning (pre-cycle) the learning outcomes of students who achieved the KKM were 10 students with an average of 62.22 and a percentage of completion of

37.03% of the total number of 27 Class IV students. After cycle I was carried out, there was an increase in the completion of learning outcomes, namely 17 students completed with an average of 69.62 and the percentage of completion became 62.96%. In cycle II, the completion increased to 24 students completed with an average of 77.03 and the percentage of completion became 88.88%.

So it can be concluded that the increase in learning outcomes of Class IV students of SDN Bangunharjo in the subject of Science on the Benefits of Diversity and Preserving Cultural Diversity is due to the use of the Problem Based Learning learning model which makes learning fun and improves critical thinking skills that are centered on students.

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