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The Implementation of the Problem-Based Learning Model to Improve the Learning Outcomes of Natural and Social Sciences (IPAS) for Grade IV Students of SDN 31 Cakranegara

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Abstract: This study aims to improve the learning outcomes of Natural and Social Sciences (IPAS) through the implementation of the Problem-Based Learning model for Grade IV students of SDN 31 Cakranegara. The type of research used is classroom action research, with 25 students as the subjects of the study. The method used in this research was descriptive, with data collection techniques consisting of tests and observations. The results of the study show that, in Cycle I, 19 students achieved mastery while 8 students did not, and in Cycle II, 23 students achieved mastery while 2 students did not. The classical mastery learning rate of the students was 70% with a classical absorption rate of 76.4% in Cycle I. In Cycle II, the classical mastery learning rate was 92%, with a classical absorption rate of 91.6%. Based on the data analysis obtained from the implementation of actions from Cycle I to Cycle II, it can be concluded that the application of the Problem-Based Learning model can improve the learning outcomes of IPAS for Grade IV students of SDN 31 Cakranegara.

Keywords: Problem-Based Learning, Learning Outcomes

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Introduction

Education is a conscious and planned effort undertaken to realize the learning process; therefore, students actively develop their potential to possess spiritual religious strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, society, the nation, and the state, as stated in Law Number 20 of 2003 concerning the National Education System. Within education, there is a learning process. Learning is the teaching and learning activity conducted by students and teachers to achieve a specific goal.

Learning is the process of transferring knowledge from the teacher, as the facilitator, to the students, who are the recipients of that knowledge. Teachers play an essential role in the learning process, in transferring knowledge to students, and instilling positive attitudes in them (Zaki, 2020). Currently, students tend to trust what is conveyed by their teachers more than what is said by their parents and the community around them. Therefore, the role of the teacher is crucial in developing knowledge and keeping up with the times in the era of globalization and Industry 4.0, where technology is rapidly advancing. As time progresses, students will become more critical and their way of thinking will be based on HOTS (Higher-Order Thinking Skills) with the knowledge they acquire outside of the learning process.

IPAS, which stands for *Ilmu Pengetahuan Alam dan Sosial* (Natural and Social Sciences), is an integrated subject designed to help students develop critical and analytical thinking skills. This subject combines elements from both the natural and social sciences to

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provide a holistic approach to education. The goal of learning through IPAS is to enhance students' skills and offer them valuable experiences. IPAS aims to stimulate curiosity, interest, and active participation, while also fostering the potential to advance knowledge and abilities in both scientific and social contexts.

IPAS learning, as a subject taught in schools, can be applied in students' daily lives. Through IPAS education, students can develop citizenship attitudes, such as instilling values, morals, and a sense of patriotism, as reflected in the content taught in IPAS. However, in reality, this subject is still not very popular among students. This can be observed during field observations at SDN 31 Cakranegara, where it was found that the teaching methods used by the teacher for IPAS were still based on lecture, memorization, and question-and-answer techniques. As a result, students' ability to actively engage in the learning process has not developed effectively. In the teaching and learning process, students are expected to experience a learning environment that will allow them to actively explore their abilities. However, in reality, although the learning environment is quite good and conducive, with many students being active, the teacher has not yet been able to fully engage all active students, given the limited teaching time. Another consequence of the teacher's inability to effectively handle the active students is that many students seek ways to channel their activity on their own, which disrupts the class environment and the learning process, making it less conducive.

One of the learning models that can be applied is the Problem-Based Learning (PBL) model. The Problem-Based Learning model is a teaching approach that presents students with real-world problems to initiate learning, and it is one of the innovative learning models that can provide an active learning environment for students. The Problem-Based Learning model is characterized by using real-life problems as something that students must learn. The implementation of this learning model is expected to help students develop more understanding of concepts rather than simply memorizing knowledge (Samadun & Dwikoranto, 2022). The Problem-Based Learning model emphasizes problem-solving, which is provided by the teacher based on the information that students possess, specifically for IPAS learning. In IPAS learning, students are required to develop process skills to understand the material in detail, as IPAS is a type of learning that connects students' surrounding environment with the material being taught.

Method

Classroom Action Research (CAR) methodology, aimed at studying the learning process in the classroom, is used in this research. The action research cycle model by Kemmis and McTaggart was chosen for the study. The cycle in the Kemmis and McTaggart model consists of four components: planning, acting, observing, and reflecting.

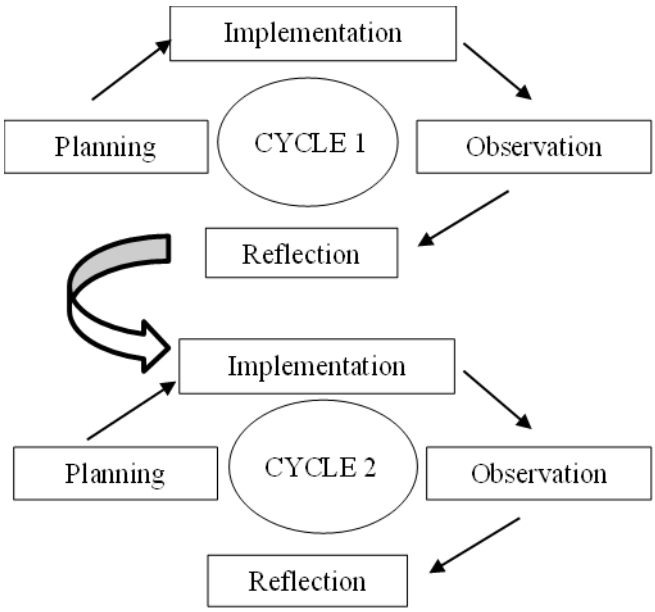

Figure 1. Classroom Action Research Cycle

This research utilizes the Kemmis and McTaggart model, allowing the data to reflect the level of success of the actions taken in addressing the issues encountered. The stages outlined in the Kemmis and McTaggart model are simple and easy to understand, can be completed, and are mostly aligned with the final outcomes of the classroom action research to be conducted. The subjects of the research are the Grade IV students of SDN 31 Cakranegara, with 25 students in total. The researcher in this study is a PPL PPG student, and the research process is assisted by two participants serving as observers.

Classroom action research was conducted using test and observation techniques to collect research data. The test consisted of 10 multiple-choice questions used as an evaluation of learning outcomes, and it was administered to students at the end of each cycle. The test was conducted to assess the students' learning outcomes. Meanwhile, observation was carried out to monitor the activities of both the teacher and the students during the learning process in both Cycle I and Cycle II.

The data analysis used in this study for the students' learning outcomes test involved analyzing the aspects of classical learning mastery (KBK) and classical absorption (DSK). Meanwhile, the data analysis used for observing the activities of the teacher and students employed descriptive analysis, which involved

interpreting the observation results in terms of the average percentage across the following categories: very poor (0–20), poor (21–40), fair (41–60), good (61–80), and very good (81–100). The indicators of success for this classroom action research are an improvement in students' learning outcomes, with individual absorption reaching 65%, classical learning mastery reaching 85%, and the average percentage of teacher and student activity falling within the good category.

Results and Discussion

Classroom Action Research (CAR) was conducted using the Problem-Based Learning (PBL) model to improve the learning outcomes of IPAS for Grade IV students of SDN 31 Cakranegara. This classroom action research was conducted over two cycles, with each meeting allocated 2 x 35 minutes. The implementation of the classroom action research in each cycle consisted of planning, action implementation, observation, and reflection.

Table 1. Teacher Activity

No.	Observed Indicator	Score	
		Cycle I	Cycle II
1	Providing apperception	3	3
2	Providing motivation	3	3
3	Stating learning objectives	3	4
4	Ability to deliver lesson material	3	3
5	Ability to organize students	2	4
6	Ability to guide students in discussion	2	4
7	Ability to ask questions to students	2	4
8	Ability to provide students with opportunities to ask questions	2	3
9	Ability to give reinforcement to students	2	4
10	Ability to guide students in summarizing the material learned	3	4
11	Ability to provide evaluation	3	4
12	Ability to assign tasks to students	2	3
13	Ability to manage time	3	4
14	Ability to close the learning session	2	4
Total Score			34
Maximum Score			56
Percentage (%)			60.7%

The classroom action research was carried out with the researcher as the person implementing the actions. During the learning activities, the researcher was assisted by colleagues consisting of Observer I, who was responsible for observing the teacher's activities, and Observer II, who was responsible for observing the students' activities. Evaluation sheets, teacher activity observation sheets, student activity observation sheets, and documentation from each meeting served as data sources for the research. Observation and documentation activities were conducted during the learning process, and the evaluation sheets were given to the students at the end of each meeting in every cycle.

Table 1 shows the results of observing the teacher's activities, with an average percentage of 60.7% in Cycle I, categorized as good, and an average percentage of 89.2% in Cycle II. Based on these observations, the teacher's activities improved in each cycle.

Table 2. Student Activity

No.	Observed Indicator	Score	
		Cycle I	Cycle II
1	Entering class on time	**3**	4
2	Preparing learning materials	**3**	3
3	Not engaging in other activities that could disrupt the learning process	**2**	4
4	Listening attentively to all information provided by the teacher	**3**	4
5	Asking questions	**2**	3
6	Responding to what the teacher says	**2**	3
7	Sharing opinions during group discussions	**2**	3
8	Completing the provided worksheets	**3**	4
9	Participating in group discussions until the designated time limit	**2**	4
10	Presenting the results of group discussions	**2**	3
11	Completing the evaluation/assessment tasks	**3**	4
12	Summarizing the material learned	**2**	4
Total Score			29
Maximum Score			48
Percentage (%)			60.4%

Table 2 shows the results of observing student activities, with an average percentage of 60.4% in Cycle I, categorized as fair, and an average percentage of 89.5% in Cycle II, categorized as good. Based on these observations, student activities showed improvement in each cycle.

Table 3. IPAS Learning Outcomes of Student

No.	Observed Indicator	Score	
		Cycle I	**Cycle II**
1.	Highest score	90	100
2.	Lowest score	40	70
3.	Number of students	25	25
4.	Number of students who passed	19	23
5.	Number of students who did not pass	8	2
6.	Classical learning mastery	70%	92%
7.	Classical absorption	76,4%	91,6%

Table 3 shows the learning outcomes of the students based on the evaluation results conducted with a total of 25 students. In Cycle I, the highest score was 90, the lowest score was 40, with 19 students passing, resulting in a classical learning mastery (KBK) of 70% and a classical absorption (DSK) of 76.4%. In Cycle II, the highest score was 100, and the lowest score was 70, with 23 students passing, resulting in a classical learning mastery (KBK) of 92% and a classical absorption (DSK) of 91.6%. The implementation of the Problem-Based Learning (PBL) model can improve the IPAS learning outcomes of Grade IV students at SDN 31 Cakranegara. This can be seen from the increase in classical learning mastery from Cycle I to Cycle II.

Cycle I

Based on the results of observing the teacher's activities during the learning process in Cycle I, the activity was still categorized as fair, with an average percentage of 60.7%. The teacher's activities were considered fair because not all of the indicators monitored by the observers during the learning process were fully implemented. Meanwhile, the observation of student activities during the learning process in Cycle I showed an average of 60.4%, also categorized as fair. This was because, during the learning process, the teacher's activities were dominated over the students' activities. The learning outcomes of the students, when applying the PBL model in Cycle I, showed that 19 students passed and 8 students did not pass, with a classical learning mastery of 70%. The classical absorption achieved was 76.4%.

Based on the results of the observations and reflections from Cycle I, the researcher implemented Cycle II to improve the learning process by maximizing the application of the learning model and the teacher's teaching skills. In Cycle II, the teacher focused on correcting the shortcomings of the previous cycle by reflecting on the results of Cycle I. The teacher needed to enhance skills in guiding students during discussions, assigning tasks, classroom management, giving assignments, and providing reinforcement to motivate students to actively participate in the learning process.

Cycle II

Based on the results of observing the teacher's activities during the learning process, Cycle II showed significant improvement with an average percentage of 89.2%, categorized as excellent. This can be seen from all the indicators, which were all achieved. The teacher's activities during the learning process, such as providing ice-breaking activities, helped keep the students focused and motivated to learn. Meanwhile, the observation of student activities during the learning process in Cycle II showed an average of 89.5%, categorized as excellent, and demonstrated significant improvement from Cycle I to Cycle II. This was evident from the fulfillment of all the observed indicators during the learning process. The students followed the lessons well, answered questions, asked questions, and actively participated in discussions, as seen from their engagement levels. Additionally, the students were easily managed because the teacher provided ice-breaking activities during the learning process.

The learning outcomes of the students with the implementation of the Problem-Based Learning model, after improvements were made in Cycle II, showed that 23 students passed and 2 students did not pass, with a classical learning mastery of 92%. All the predetermined indicators were met, and there was an improvement from the previous cycle. Meanwhile, the classical absorption achieved was 91.6%, meeting all the specified indicators and showing improvement from the previous cycle. Based on the learning mastery results in the IPAS subject during Cycle II, the improvements in the learning process are considered successful. Therefore, the improvements made during Cycle II, which applied the Problem-Based Learning model, were able to enhance the IPAS learning outcomes of Grade IV students at SDN 31 Cakranegara.

Conclusion

Based on the data analysis obtained during the implementation of the actions from Cycle I to Cycle II, it can be concluded that the application of the Problem-Based Learning (PBL) model can improve the IPAS learning outcomes of Grade IV students at SDN 31 Cakranegara. This conclusion is supported by the results of data analysis carried out in each cycle, showing progressive improvement in students' understanding and engagement. In Cycle I, the classical learning mastery reached 70%, with a classical absorption rate of 76.4%. Meanwhile, in Cycle II, the mastery increased to 92%, with a classical absorption of 91.6%, indicating a

significant enhancement in students' learning achievement.

The improvement in learning outcomes demonstrates that the implementation of the Problem-Based Learning model encourages students to take a more active role in the learning process. Through analyzing real-world problems, discussing possible solutions, and working collaboratively, students became more motivated and responsible for their own learning. Therefore, the PBL model proves to be an effective and engaging instructional approach that not only improves academic performance but also fosters students' critical thinking and problem-solving skills.

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