JPPIPA 11(2) (2025)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

The Implementation of a Problem-Based Learning (PBL) Model Assisted by Wordwall Media in the IPAS Subject to Enhance Students' Learning Outcomes

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Received: October 08, 2024
Revised: January 21, 2025
Accepted: February 25, 2025
Published: February 28, 2025

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DOI: 10.29303/jppipa.v11i2.9373

Abstract: The Problem Based Learning (PBL) instructional model is an approach used to address problems encountered in real-world activities. It is a learning model that also considers deep thinking styles and skillful problem formulation to help students gain an understanding of the main topics and key concepts. This study aims to evaluate the implementation of the Problem Based Learning (PBL) model, supported by Wordwall media, in improving the learning outcomes of fourth grade students in the IPAS subject at SD Negeri 1 Bayung Lencir. The research employed a Classroom Action Research (PTK) method over four cycles. The study involved 21 fourth grade students, and data were collected through tests, observations, interviews, and documentation. The results indicated a significant improvement in students' learning outcomes from the pre-test to the post-test. Before the model was applied, only one student achieved mastery. After implementing the PBL model with Wordwall media, the number of students reaching mastery increased to 11 out of 12. The use of PBL and Wordwall media proved effective in enhancing student motivation and learning outcomes, as well as in supporting active student engagement in the learning process. The study recommends that teachers adopt a problem-based learning model supported by interactive media to further improve student learning outcomes.

Keywords: IPAS; Learning outcomes; Problem based learning; Wordwall

Introduction

Education is a process or effort undertaken by an individual to develop oneself in order to achieve balance and perfection within society. Of course, in the realm of education, one must study. Learning is an activity experienced by every person, both physically and spiritually (Efendy, 2023; Leu, 2022). In this case, the result achieved is the rebirth of the soul and the transformation of human strength. The learning process in educational institutions occurs through meetings in which teachers and students share the same objectives (Fernandes et al., 2020; Syukron et al., 2023). In the learning process, the teacher ensures that students understand the learning activities that have been carried out. The students then listen to and pay attention to the activities explained by the teacher (Pradiani et al., 2023; Septya et al., 2022). This activity is carried out to help students acquire knowledge that they did not previously have.

The learning activities conducted in the classroom are carried out using instructional models tailored to the needs of the students. Teachers must be able to accommodate the diverse needs of their students, ranging from the materials used to the media employed (Fadil et al., 2024; Ulfa et al., 2020). In the learning process, there are various types of instruction that the teacher imparts to the students, such as science and technology education. Science is the field of study that examines phenomena in nature, both living and non-living (Friska et al., 2023; Hidayatulloh, 2020).

How to Cite:
Ariyani, A., Nazurty, N., & Sukendro, S. (2025). The Implementation of a Problem-Based Learning (PBL) Model Assisted by Wordwall Media in the IPAS Subject to Enhance Students' Learning Outcomes. *Jurnal Penelitian Pendidikan IPA*, *11*(2), 602–606. https://doi.org/10.29303/jppipa.v11i2.9373

In the realm of elementary school learning tools, science and technology refer to technologies that enable us to study our surroundings systematically, and while making discoveries and engaging in scientific practice, we not only obtain facts but also various forms of knowledge and conceptual thinking (Elmanisar et al., 2024; Kusumawati, 2022). Therefore, science can be used to observe, experiment, draw conclusions, and summarize an understanding of natural events and the environment so that students are well-organized and possess personal insights and reasoning that assist their comprehension (Jeti et al., 2022). The information around you is obtained from activities conducted through processes that involve scientific endeavors.

In fact, in the IPAS subject for fourth grade at SD Negeri 1 Bayung Lencir, the level of knowledge and understanding among students regarding the material taught is still very low. Even after listening to the teacher's explanations and participating in continuous learning activities, students' knowledge indicates that the learning process remains the same as before, when the teacher was the standard. In acquiring knowledge, students rely solely on the information they receive from their teacher, which reduces their ability to comprehend the textbooks used by the teacher, ultimately resulting in a low level of academic success. Some students still appear passive in the learning process because the teacher continues to lead the learning activities. It is observed that in every process of teaching scientific material, the teacher often uses methods and textbooks that are considered monotonous, thereby reducing the students' interest and motivation in the learning process.

Of course, regardless of the teaching model you use, teachers must remember that the chosen model should not only focus on the teacher but, first and foremost, on the students. One form of instructional model used is Problem Based Learning (PBL). This is because the problem-based learning (PBL) model can equip students with critical thinking skills and enhance their problem-solving abilities, enabling them to achieve success and increase their learning activities (Sholeh, 2019; Yunus et al., 2023). The Problem Based Learning (PBL) model is one of the instructional models used by teachers in elementary school IPAS classes. One supporting tool in learning activities that utilize the PBL model is the Wordwall media, which can enhance the learning process.

According to Oktari et al. (2023), the Wordwall application is a web-based interactive platform that allows teachers to create various practice exercises for students. In this application, a variety of features are available, such as quizzes, word searches, chase labyrinths, true or false games, matching games, sentence correction, and many more. Wordwall itself is a learning tool that can be used in learning activities such as those currently being implemented (Aidah et al., 2022).

Therefore, based on the research conducted and the observations made by the author during the learning process, there are several factors that contribute to the decline in students' learning outcomes. For instance, students still lack confidence in expressing their opinions. I understand that there is a related issue: you will notice that there are still students who do not participate actively in the learning environment. It is also observed that students become engrossed in talking, especially when the teacher gives them time to ask questions about the material being taught. In my view, the way the learning activities are implemented results in students' inability to fully understand the material provided by the teacher, which in turn leads to adverse consequences. Some students still feel that IPAS learning is difficult because the teacher explains using monotonous or traditional teaching methods, which results in low learning ability and low satisfaction with the outcomes achieved by the students.

Method

In this research, the method used is Classroom Action Research (CAR). CAR is an approach undertaken by researchers or teachers when carrying out an activity, with a focus on the conditions present during the activity. This research provides a learning experience based on observation and personal experience, as if the researcher were an actual teacher. By applying CAR, the researcher can monitor every step of the learning process to identify both the shortcomings and strengths of the teaching and learning activities. This allows the researcher to take corrective measures so that the teaching and learning process can be more optimal. CAR is carried out in several cycles, with each cycle consisting of four stages.

The research was conducted at SD Negeri 1 Bayung Lencir, located in Bayung Lencir District, Musi Banyuasin Regency, South Sumatra Province. The study was implemented in a fourth-grade class for the subject IPAS during the first semester of the 2024/2025 academic year, involving 12 subjects—12 students in total, all of whom are female. This research in the fourth grade was undertaken because observations showed that several students had not yet achieved the expected learning targets and had difficulties expressing their opinions during discussions. This was due to the learning media being not engaging enough and the teaching model not being well-suited to the students' needs, resulting in learning outcomes that were still below the average minimum completeness criteria (70). Therefore, improvements in learning outcomes are necessary. Through the actions taken in the cycle, it is

hoped that there will be an improvement in student learning outcomes so that they can meet the criteria for mastery in the learning activities.

The data collection techniques used included various activities to obtain information. In the data collection process, the researcher selected methods to gather both quantitative and qualitative data. Data were obtained through tests and non-test methods. Test data were collected by administering test questions to the students, while non-test data were gathered through observation, interviews, and documentation.

Results and Discussion

This research aims to implement learning by using the problem-based learning (PBL) model with Wordwall media in the IPAS subject for Grade IV at SDN 1 Bayung Lencir. It is expected that the increase in students' learning interest can be influenced by several factors, including the teacher's method of delivering the material, the learning model, and the media used. The researcher's observations involved 12 students. The factors contributing to the decline in students' learning interest include boring lessons and unengaging content that fail to capture their attention, resulting in the students not understanding the material taught by the teacher.

Classroom Action Research (CAR) by applying the problem-based learning model supported by Wordwall media has overall had a positive impact on the enhancement of learning motivation and learning outcomes in the IPAS subject for Grade IV at SDN 1 Bayung Lencir. This positive influence is evident from the data obtained during the implementation of Cycle I through Cycle II. After completing two action cycles, the research objectives were achieved in terms of both the process and the final outcomes. The presentation of the process results encompasses three main activities: student activities, learning outcomes, and interviews. Data collected during the teaching and learning process include observations of student activity, the achievement of learning outcomes, and interviews with students. These observations, cognitive learning outcomes, and interviews serve to demonstrate the achievement of the set objectives following the implementation of the steps.

Complete data from the classroom action research tests conducted from the initial test to the final test are shown in Table 1. The students' learning outcomes from the classroom behavior tests indicate that during pretesting, out of a total of 12 students, only four achieved competency in the test. However, after two cycles of instruction, the results were as follows. In Cycle 1, there were 5 students who did not achieve competency and 7 who did. Cycle 2 resulted in 3 students not achieving competency and 9 achieving it. In the post-test, 11 students obtained scores in the "competent" category, and 1 student failed to complete the task, although their score improved compared to before the intervention.

Table 1. IPAS Learning Outcomes for Grade IV

Action	Number of students	
	Competent	Not Competent
Pre Test	4 students	8 students
Cycle 1	7 students	5 students
Cycle 2	9 students	3 students
Post Test	11 students	1 student

Interview results with several students revealed that when we first implemented the problem-based learning model with Wordwall media, the students were very enthusiastic about the learning process because they experienced something new, even though it was unfamiliar. The students appeared very eager to participate in the learning process. However, their response was somewhat slow, so I did not obtain any significant outcomes at that time.

After obtaining the research results, a paired sample T-test was subsequently conducted, as shown in Table 2.

Table 2. Paired Sample T Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T	df	Sig. (2-tailed)
Pair 1	Pre-test Post-test	-13.690	16.300	2.841	-22.509	-7.870	-5.180	27	.000

Based on the table above, the paired sample t-test results showed a significance value of 0.000 < 0.05, which means that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. Thus, it can be concluded that the Problem Based Learning (PBL) model can improve student learning outcomes when implemented using Wordwall media, allowing students to explore independently while remaining active participants in their learning. This enables students to continue thinking critically and creatively, thereby reducing feelings of drowsiness and boredom during lessons.

In this classroom action research, we successfully engaged students in the learning process by applying

the problem-based learning model with Wordwall media. As a result, students were able to achieve good grades because they actively participated in the learning process. The instruction was not one-way; students studied independently with the teacher's support in solving problems, which facilitated their memorization of the material. This approach trains students not only to memorize lessons but also to be directly involved in the problem-solving process.

This research builds upon previous studies, such as the one conducted by Kistian (2019) on the application of the Problem Based Learning (PBL) model to improve the learning outcomes of Grade IV students at SD Negeri Ujong Tanjong, Aceh Barat Regency. It also references the study by Fistanti et al. (Fistanti et al., 2024) on the implementation of the Problem Based Learning (PBL) model supported by Wordwall media on the topic of probability to improve learning outcomes of students at SMA Negeri 9 Surabaya, as well as the study by Melindawati (2023) in 2023 on the application of the Problem Based Learning model with Wordwall media to enhance the learning outcomes of students in the Economics subject.

This research provides a benchmark for the use of the problem-based learning model supported by Wordwall media to improve student learning outcomes. The implication is that it can be recommended to teachers for implementation in their teaching processes. The problem-based learning model supported by Wordwall media emphasizes the development of students' critical thinking skills in collaboration with their peers and other groups to solve problems.

Conclusion

This research shows that the implementation of the Problem Based Learning (PBL) model supported by Wordwall media significantly improved the learning outcomes of fourth-grade students in the IPAS subject at SD Negeri 1 Bayung Lencir. Before applying this model, the students' performance showed a low level of proficiency. However, after implementing the PBL model over two cycles, there was a clear improvement in the students' learning outcomes, with the number of students achieving proficiency increasing from one student in the pre-test to eleven students in the post-test. The Wordwall media played a role in enhancing students' motivation and engagement, making them more active in the learning process and better at problem-solving.

Acknowledgments
I would like to express my gratitude to everyone who was involved in my research, including the educational institution from my university, Universitas Jambi, and my workplace. I would also like to thank my two supervising professors, Prof. Dr. Dra. Nazurty, M.Pd and Prof. Dr. Drs. Sukendro, M.Kes AIFO. Additionally, I extend my thanks to my parents, family, and relatives for their prayers and invaluable support.

Author Contributions
The research team contributed to the writing of this scholarly work as follows: idea generation, conception, data collection, analysis and interpretation of the results, and manuscript drafting (DP); article writing supervision (ZKP and JJ); and funding acquisition (DP and ANS).

Funding
Funding for this research came from the independent funds of each researcher.

Conflicts of Interest
The authors declare that there are no conflicts of interest in the publication of this article.

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