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The Influence of The Problem-Based Learning (PBL) Model on The Learning Outcomes of Fourth Grade Students in Social Studies at SD N 040457 Berastagi

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Abstract
This research examines the impact of the Problem Based Learning (PBL) model on the learning outcomes of fourth-grade students in social studies at SD N 040457 Berastagi. Utilizing a quasi-experimental design, the study compares PBL-based learning methods with conventional teaching approaches. The findings reveal that students engaged in PBL-based learning demonstrate significantly improved academic performance compared to those using traditional methods. These results provide valuable insights for educators and policymakers, highlighting the effectiveness of PBL in enhancing students' understanding of social studies content. By focusing on the local context of SD N 040457 Berastagi, this research contributes to the development of teaching practices that meet students' specific needs. Furthermore, the study encourages future research to explore the potential of the PBL model across diverse educational settings, enriching the understanding of the most effective teaching methods. The primary objective of this study is to evaluate the effectiveness of the PBL model in improving students' academic achievement and to offer recommendations to educators and policymakers regarding the use of PBL as an approach to enhance the quality of learning in schools, particularly in social studies.
Keywords: *IPS; Learning Outcomes; PBL.*

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Introduction
The education system in Indonesia is undergoing significant changes, with a shift towards a more student-centered learning approach. This approach aims to develop essential skills such as critical thinking, problem solving and collaboration, which are urgently needed to face the global challenges of the 21st century. One method that is now popular is Problem Based Learning (PBL), which has been widely recognized globally for its effectiveness in improving student learning outcomes. Through PBL, students are engaged in solving real problems, which not only strengthens their critical thinking skills, but also creativity and communication abilities. However, although PBL has been proven successful in various countries, its implementation in Indonesia is still limited, especially at the primary school level. There is a lack of in-depth research on the effectiveness of PBL in the Indonesian educational context, especially in developing critical thinking and problem-solving skills. Therefore, further research is needed to explore the impact of PBL on student learning outcomes in Indonesia, given that the adoption of this method is still in its early stages at various levels of education.

Based on the results of the tests conducted in the fourth grade, only 10 students scored above the KKM, which means they passed, while the other 16 students scored below the KKM and did not pass. The percentage of students who have not met the KKM indicates that student learning outcomes are still relatively low. This situation reflects a gap in students' understanding of the material taught, as well as the lack of effectiveness of the learning methods used in achieving the expected learning targets. **Other factors, such as traditional teaching approaches, lack of active student interaction during the learning

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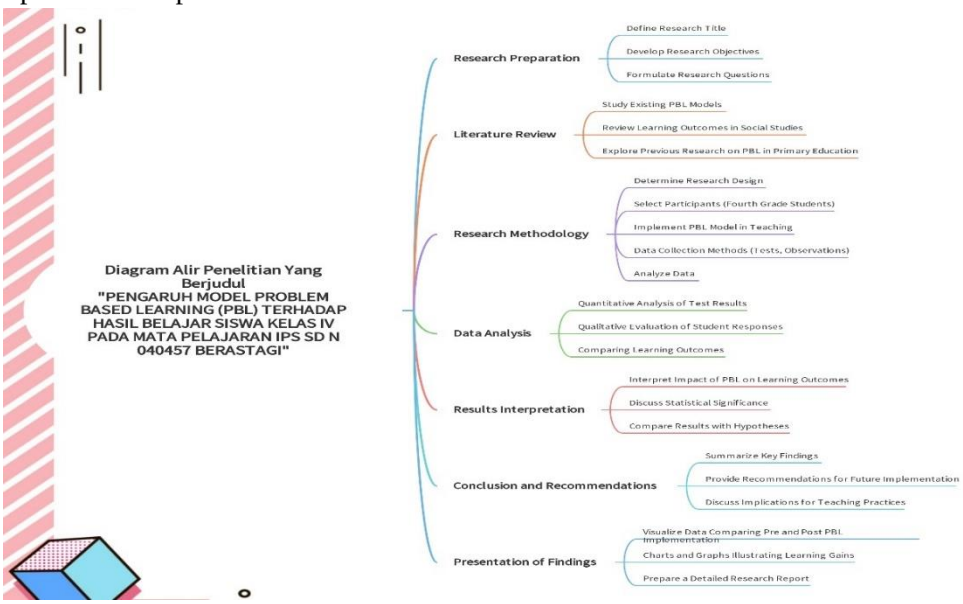
process, and limited use of innovative learning strategies, may contribute to these low learning outcomes. Therefore, strategic efforts are needed to improve teaching methods, such as implementing more interactive and participatory learning models, to increase student engagement and encourage them to be more critical and active in the learning process.

Given this issue, the researcher plans to apply the Problem Based Learning (PBL) model in Social Studies. Through PBL, students will broaden their knowledge and become more active in the learning process, making it more effective and enjoyable. (Nicholus et al., 2023) argue that the PBL model is highly useful for developing higher-order thinking in problem-oriented situations, including learning how to learn effectively. Problem Based Learning (PBL) is a student-centered teaching method in which complex real-world problems are used to stimulate students' thinking and problem-solving skills throughout the teaching and learning process (Wei et al., 2024). Chan et al. (2024) also describe PBL as a student-centered method where real-world problems are used to foster critical thinking and problem-solving abilities during the learning process.

Parlaungan et al. (2022) state that PBL has shown positive effects in improving academic achievement, attitudes toward learning, problem-solving abilities, critical and creative thinking, and process skills. According to Laine & Mahmud (2022), PBL is more effective than traditional teaching methods in terms of long-term information retention, conceptual understanding, and independent learning. Students involved in PBL show higher levels of satisfaction and better engagement in the learning process compared to traditional teaching methods (Ishizuka et al., 2023).

Method

This type of research is quantitative research using an experimental method. According to Sugiyono (2017), quantitative research is research that utilizes statistical tools for data analysis, so the data obtained and the results produced are in numerical form. The research design used is a pre-experimental design, specifically the One Group Pretest-Posttest Design. This design involves only one class, where both a pretest and a posttest are administered.



Gambar 1. Diagram Alir Penelitian

Result and Discussion

This research aims to determine the effect of the Problem Based Learning (PBL) model on the learning outcomes of fourth-grade students in Social Studies (IPS) at SD Negeri 040457 Berastagi. The study was conducted over a period of two months, following the stages outlined in the research proposal. The following is a summary of the research findings achieved.

The sample size for this study consisted of 26 fourth-grade students. A pretest was administered before the implementation of the PBL model to assess the students' initial abilities. After the application of the PBL model, a posttest was conducted to measure the improvement in learning outcomes.

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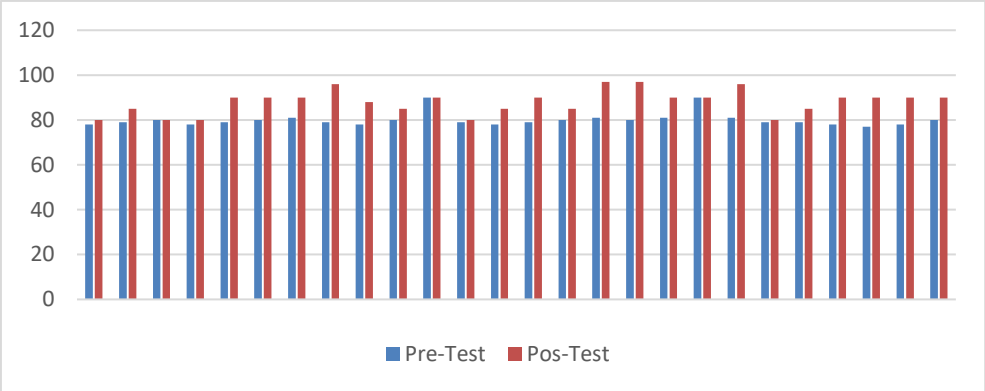
1. Data Analysis Results

a) Description of Pre-Test Learning Outcomes Data and Post-Test Learning Outcomes Data

Tabel 1. Pre-Test and Post-Test Score Data

CategorY	Score	Average
Pre-Test	78, 79, 80, 78, 79, 80, 81, 79, 78, 80, 90, 79, 78, 79, 80, 81, 80, 81, 90, 81, 79, 79, 78, 77	80,07
Post-Test	80, 85, 80, 80, 90, 90, 90, 96, 88, 85, 90, 80, 85, 90, 85, 97, 97, 90, 90, 96, 80, 85, 90, 90	88,03

From the data in Table 1 above, it is evident that there is a consistent improvement in student scores following the implementation of the PBL Model. The post-test results show a significant increase compared to the pre-test scores, indicating that the PBL Model has a positive impact on enhancing students' understanding and skills. With an average pre-test score of 80.07 and an average post-test score of 88.03, it can be concluded that the application of the PBL Model has a positive effect on student learning outcomes. The increase in the average score by 7.96 demonstrates the effectiveness of the PBL Model in improving the quality of learning and student comprehension.



Gambar 2. Comparison of Pre-Test and Post-Test Scores

The graph above illustrates the comparison between the Pre-Test and Post-Test scores of students who participated in the Problem Based Learning (PBL) model. The data displayed includes two sets of scores for each student: the scores before (Pre-Test) and after (Post-Test) following this teaching method. Pre-Test scores ranged from 77 to 90, with most students falling within the 78 to 81 range. This indicates that prior to the implementation of the PBL model, the majority of students had relatively stable abilities but still had room for improvement.

After the PBL model was applied, Post-Test scores showed a significant increase, ranging from 80 to 97. It is evident that most students achieved scores above 85, with some even reaching perfect scores of 90 and 97. The improvement from Pre-Test to Post-Test is quite apparent. Students who initially scored between 78 and 81 in the Pre-Test mostly experienced increases to scores between 85 and 97 in the Post-Test. For instance, a student who scored 78 in the Pre-Test improved to 80, 85, or even 90 in the Post-Test. Similarly, a student who scored 90 in the Pre-Test was able to maintain their high score and even increased it to 97 in the Post-Test.

The Problem Based Learning (PBL) model has proven effective in enhancing students' understanding and academic achievement. The consistent increase in Post-Test scores compared to Pre-Test scores indicates that this method helps students grasp the material better and apply the knowledge they have acquired effectively.

The implementation of the PBL model not only encourages score improvement but also motivates students to be more active and critical in the teaching and learning process. Therefore, this learning model is highly recommended as an innovative and effective teaching strategy across various levels of education.

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b) Normality Test

Tabel 2. Normality Test

	Shapiro-Wilk		
	Statistic	df	Sig.
Konvensional	.632	26	<,001
Model PBL	.886	26	.008

The normality test is an important step in data analysis to determine whether the data follows a normal distribution. In this study, the normality test was conducted using the Shapiro-Wilk test. Below are the results of the normality test for two data groups: the Conventional group and the PBL (Problem-Based Learning) group.

In the Conventional group, the Shapiro-Wilk statistic value is 0.632 with 26 degrees of freedom (df). The significance value (Sig.) obtained is less than 0.001 (< 0.001). This result indicates that the data in the Conventional group does not follow a normal distribution, as the significance value is below the alpha level of 0.05 (5%).

Next, for the PBL group, the Shapiro-Wilk statistic value is 0.886 with the same degrees of freedom, which is 26. The significance value (Sig.) obtained is 0.008. This also indicates that the data in the PBL group does not follow a normal distribution, as the significance value is below 0.05.

Overall, the results of the Shapiro-Wilk test show that both the Conventional group and the PBL group have non-normal data distributions. This is important to consider in the next steps of analysis, as the statistical methods to be used may require the assumption of normal distribution or may need to use non-parametric alternatives if the data is not normal.

c) Hypothesis Test

Tabel 3. Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Significance	
					.05% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Test Prestes - Test Postest	-7.96154	5.48803	1.07629	-7.96222	-7.96086	-7.397	25	<,001	<,001

For the paired data being compared, specifically between the pretest and posttest results (Pair 1), the mean difference is -7.96154. This indicates that, on average, the posttest scores are higher by 7.96154 compared to the pretest scores. The standard deviation of this difference is 5.48803, with a standard error of the mean (Std. Error Mean) of 1.07629. The 0.05% Confidence Interval of the Difference shows the lower and upper bounds of this difference, which are -7.96222 and -7.96086, respectively.

The obtained t-value (t) is -7.397 with 25 degrees of freedom (df). The one-sided significance value (One-Sided p) and two-sided significance value (Two-Sided p) are both less than 0.001 (< 0.001). This result indicates that there is a statistically significant difference between the pretest and posttest results, with a very small p-value, far below the alpha level of 0.05 (5%). Overall, the analysis of the paired sample test shows that the intervention or treatment applied resulted in a significant improvement in posttest outcomes compared to pretest results.

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2. Discussion of Research Results

The Problem Based Learning (PBL) model is a student-focused teaching method, using real-world problems as a context for learning the concepts and principles of the subject matter. In this study, PBL was applied to social studies subjects in grade IV of SD N 040457 Berastagi to evaluate its impact on student learning outcomes. Before further analysis, a normality test was conducted to determine data distribution. The Shapiro-Wilk test results showed that both the conventional and PBL groups had non-normal data distribution. The Shapiro-Wilk statistic for the conventional group was 0.632 with a significance value <0.001. Meanwhile, the PBL group showed a value of 0.886 with a significance of 0.008. Since the significance value is below 0.05, it can be concluded that the data in both groups are not normally distributed. This makes it important to consider the appropriate method of analysis in this study.

The results of several other studies also support these findings and show that PBL is effective in improving learning outcomes. Research by Lisnawati et al. (2022) shows that the application of PBL has a positive effect on students' social studies learning outcomes. This model facilitates different learning styles, both for introverted and extroverted students. The study found that the combination of PBL with appropriate learning styles can significantly improve students' understanding of the material. In addition, Syafaat et al. (2023) revealed that PBL assisted by poster session was also effective in increasing students' interest and learning outcomes. Visual media in PBL helps students solve problems better. Therefore, PBL not only serves as a teaching method, but also increases students' participation in learning. This shows the great potential of PBL in the educational context.

A paired sample test was conducted to compare the pretest and posttest results of students in the PBL group at SD N 040457 Berastagi. The results of the analysis showed a significant difference between the two measurements, with a mean difference of -7.96154 and a t-value of -7.397 at 25 degrees of freedom. The one-sided and two-sided significance values were less than 0.001, indicating an increase in student learning outcomes after the application of the PBL model. This finding is in line with research by Hendriana (2018), which shows that PBL is effective in improving the learning outcomes of students with an auditorial learning style. However, the effect on the auditorial group was still in the medium category. Nonetheless, this result confirms the importance of a student-centered approach in the learning process. In addition, this data can be used as a basis for improving existing teaching methods. Therefore, these pretest and posttest results provide concrete evidence of the effectiveness of PBL.

Furthermore, Mardani et al. (2021) found that PBL not only had a significant impact on learning outcomes, but also increased students' motivation to learn social studies. The MANOVA test results in the study showed a simultaneous effect between motivation and learning outcomes with a Wilks' Lambda F value of 20.462 and a significance of 0.000. High motivation plays an important role in increasing student engagement, making the learning process more meaningful. When students feel engaged, they are more likely to apply social studies concepts in everyday life. This suggests that PBL can create a more interactive and responsive learning environment. In addition, increased motivation can contribute to better learning outcomes. This emphasizes the importance of choosing appropriate teaching methods to increase student motivation. Thus, PBL can be an effective option in education.

Based on these findings, it can be concluded that the application of the PBL model has a positive and significant effect on student learning outcomes in social studies subjects. The PBL model encourages students to be actively involved in the learning process, which develops critical thinking skills. In addition, this model improves students' problem-solving ability in a context that is relevant to their lives. When students are faced with real problems, they are more motivated to understand and remember the concepts taught. Therefore, schools and teachers are advised to consider implementing PBL more widely in their curriculum. Training and workshops for teachers on PBL implementation can help maximize the effectiveness of this method. Further research with larger samples and diverse subjects is also recommended to strengthen these findings. Continuous evaluation of teaching methods can provide important insights for the development of better teaching strategies in the future.

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Conclusion

The research on the impact of the Problem Based Learning (PBL) model on the learning outcomes of fourth-grade students in the Social Studies subject at SD N 040457 Berastagi demonstrates significant findings. The application of the PBL model has led to a notable improvement in students' posttest scores compared to their pretest scores, indicating a positive influence on their understanding and mastery of the material. The study reveals that PBL encourages active engagement, critical thinking, and enhanced problem-solving skills among students, making the learning process more relevant and motivating. Furthermore, the statistical analysis shows a significant difference in performance, underscoring the effectiveness of PBL as an instructional strategy. Based on these results, it is recommended that educators and policymakers consider the broader implementation of PBL in the curriculum. Providing training for teachers on PBL methodologies can further enhance its effectiveness. Future research with larger sample sizes and diverse subjects could reinforce these findings and contribute to the ongoing development of effective teaching strategies in primary education. Overall, the PBL model proves to be a valuable approach for improving student learning outcomes in the classroom.

References

Chan, S. C. C., Gondhalekar, A. R., Choa, G., & Rashid, M. A. (2024). Adoption of Problem-Based Learning in Medical Schools in Non-Western Countries: A Systematic Review. *Teaching and Learning in Medicine*, *36*(2), 111–122. https://doi.org/10.1080/10401334.2022.2142795

Hendriana, E. C. (2018). Pengaruh Model Pembelajaran Problem Based Learning dan Gaya Belajar Auditorial terhadap Hasil Belajar IPS di Sekolah Dasar. *JPDI (Jurnal Pendidikan Dasar Indonesia)*, *3*(1), 1-8.

Hmelo-Silver, C. (2004). Problem-Based Learning: What and How Do Students Learn? *Ducational Psychology Review*, *16*, 245–266. https://doi.org/https://doi.org/10.1023/B:EDPR.0000034022.16470.F3.

Ishizuka, K., Shikino, K., Tamura, H., Yokokawa, D., Yanagita, Y., Uchida, S., Yamauchi, Y., Hayashi, Y., Kojima, J., Li, Y., Sato, E., Yamashita, S., Hanazawa, N., Tsukamoto, T., Noda, K., Uehara, T., & Ikusaka, M. (2023). Hybrid PBL and Pure PBL: Which one is more effective in developing clinical reasoning skills for general medicine clerkship?—A mixed-method study. *PLoS ONE*, *18*(1 January), 1–15. https://doi.org/10.1371/journal.pone.0279554

Laine, C. E., & Mahmud, M. S. (2022). The Influence of Problem-Based Learning (PBL) on Mathematics Learning: Systematic Literature Review. *International Journal of Academic Research in Progressive Education and Development*, *11*(3), 1120–1137. https://doi.org/10.6007/ijarped/v11-i3/15033

Lisnawati, T., Suroyo, S., & Pribadi, B. A. (2022). Efektivitas model pembelajaran kelompok dan problem based learning pada studi sosial terhadap hasil belajar siswa berdasarkan gaya belajar siswa sekolah dasar. *Jurnal basicedu*, *6*(2), 2912-2921.5

Mardani, N. K., Atmadja, N. B., & Suastika, I. N. (2021). Pengaruh Model Pembelajaran Problem based learning (PBL) terhadap Motivasi dan hasil belajar IPS. *Jurnal Pendidikan IPS Indonesia*, *5*(1), 55-65.

Nicholus, G., Muwonge, C. M., & Joseph, N. (2023). The Role of Problem-Based Learning Approach in Teaching and Learning Physics: A Systematic Literature Review. *F1000Research*, *12*, 1–24. https://doi.org/10.12688/f1000research.136339.2

Parlaungan, M. D., Firdaus, I., Padila, P., Nazaruddin, N., Amergus, C., Sodikin, S., & Zulfah, Z. (2022). Meta Analisis: Problem Based Learning (PBL). *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan*, *1*(1), 27–32. https://doi.org/10.31004/jerkin.v1i1.4

Syafaat, F. M., Roslaeny, B., & Muslimin, A. (2023). Pengaruh Model Pembelajaran Berbasis Masalah Berbantuan Poster Session Terhadap Minat dan Hasil Belajar IPS Siswa Kelas V. *Jurnal Pendidikan Glasser*, *7*(1), 160-172.

Wei, B., Wang, H., Li, F., Long, Y., Zhang, Q., Liu, H., Tang, X., & Rao, M. (2024). Effectiveness of Problem-Based Learning on Development of Nursing Students' Critical Thinking Skills: A Systematic Review and Meta-analysis. *Nurse Educator*, *49*(3), E115–E119. https://doi.org/10.1097/NNE.0000000000001548