

The Influence of Problem-Based Learning Model to Indonesian Language Primary Classrooms: A Meta-Analysis

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Abstrak

Bahasa Indonesia merupakan mata pelajaran yang harus diajarkan di tingkat sekolah dasar, dan banyak penelitian telah dilakukan untuk mengevaluasi bagaimana penerapan model dan strategi pembelajaran tertentu mempengaruhi proses belajar mengajar untuk meningkatkan kemampuan berbahasa Indonesia siswa. Studi meta-analisis ini dimaksudkan untuk mengkaji efek dari Pembelajaran Berbasis Masalah (PBM) terhadap pencapaian pembelajaran bahasa Indonesia di sekolah dasar di Indonesia. Studi ini menggunakan metodologi meta-analisis dengan menganalisis data literatur penelitian, khususnya hasil pembelajaran yang dihasilkan dari implementasi PBM dalam mata pelajaran bahasa Indonesia di tingkat sekolah dasar. Data untuk penelitian ini dikumpulkan melalui teknik studi dokumenter, yang melibatkan pengumpulan artikel elektronik yang terkait dengan penggunaan PBM dalam mata pelajaran bahasa Indonesia di tingkat sekolah dasar dari jurnal-jurnal terindeks seperti Google Scholar dan Sinta. Berdasarkan hasil meta-analisis yang dilakukan terhadap 9 artikel penelitian, dapat disimpulkan bahwa model PBM mampu meningkatkan hasil pembelajaran kognitif siswa, dengan skor perbedaan rata-rata antara pretes dan postes sebesar 18,8. Selanjutnya, berdasarkan uji t, jelas bahwa H1 diterima, menunjukkan bahwa model pembelajaran PBM memiliki dampak signifikan terhadap hasil pembelajaran bahasa Indonesia pada siswa sekolah dasar, sebagaimana dibuktikan oleh nilai signifikansi sebesar $0,00 < 0,05$.

Kata Kunci: Dampak, Model Pembelajaran Berbasis Masalah, Hasil Pembelajaran Bahasa Indonesia.

Abstract

Indonesian language is a subject that must be taught at the elementary school level, and many studies have been conducted to evaluate how the application of certain learning models and strategies influences the teaching and learning process to improve students' Indonesian language skills. This meta-analysis study is intended to examine the effects of Problem Based Learning (PBM) on Indonesian language learning achievement in elementary schools in Indonesia. The study utilized meta-analysis methodology by analyzing research literature data, specifically the learning outcomes resulting from the implementation of PBL in Indonesian language subject at the elementary school level. The data for this study were collected through documentary study technique, which involved gathering electronic articles related to the utilization of PBL in Indonesian language subjects at the elementary school level from indexed journals such as Google Scholar and Sinta. Based on the results of the meta-analysis conducted on 9 research articles, it can be concluded that the PBL model is capable of enhancing students' cognitive learning outcomes, with an average difference score between pretest and posttest of 18.8. Furthermore, based on the t-test, it is evident that H1 is accepted, indicating that the PBL instructional model has a significant impact on Indonesian language learning outcomes in elementary school students, as evidenced by a significance value of $0.00 < 0.05$.

Keyword: Impact, Problem-Based Learning Model, Indonesian Language Learning Outcome.

INTRODUCTION

Nowdays, educators are strongly encouraged to incorporate innovative learning models into their teaching practices in many educational institutions. Merely relying on a single model is insufficient; teachers should possess the capability to become proficient in various models to address students' learning

needs effectively (INDONESIA, n.d.). With this competence, teachers can easily select an appropriate model based on students' characteristics, leading to a more effective learning process.

Problem-Based Learning (PBL) model is one of innovative learning models that prioritizes active involvement from students. Initially applied in the medical field (Schmidt, 1983), its application expanded to various disciplines, including the teaching of Indonesian language in elementary schools (Dochy dkk., 2003). The purpose of incorporating PBL in these contexts is to enhance students' critical thinking abilities within real-life learning scenarios (Yew & Goh, 2016). Through the implementation of PBL, students assume greater responsibility for addressing problems raised by both teachers and their peers (Schmidt, 1983). As a result, PBL serves as a student-centered learning model that supports and facilitates student engagement.

The utilization of Problem-Based Learning model offers several benefits. Firstly, it shifts the focus of learning from being teacher-centered to being student-centered, allowing students to actively participate in teaching and learning activities (Ak\ino\uglu & Tando\ugan, 2007). Secondly, it facilitates the development of collaborative skills as students are encouraged to work together in groups (Kolodner dkk., 2003). Lastly, PBL enables students to tackle problems from diverse sources, enhancing their problem-solving abilities (Masrinah, 2019). With these advantages, teachers opt for the PBL model as a means to achieve learning objectives or to enhance student performance, such as in the context of Indonesian language learning.

Numerous studies have been conducted by previous researchers to investigate how the implementation of the PBL model can improve outcomes in Indonesian language learning. Considering the extensive research literature available, there is a need for a comprehensive analysis of the application of PBL model, particularly through meta-analysis, to assess the collective impact of the findings from each study on the overall enhancement of Indonesian language learning.

Previous researchers have conducted meta-analysis studies on the application of the Problem-Based Learning model in various subjects and learning areas in elementary schools. Specifically, these meta-analyses have been conducted on mathematics (Arifin dkk., 2021; Dewi & Wardani, 2021; Hendra, 2021), science (Jorina dkk., 2022; Kristiana & Radia, 2021; Siregar dkk., 2022), and Islamic Religious Education (Hasrah, 2023). Additionally, there have been meta-analyses exploring the effectiveness of PBL in improving cognitive learning outcomes for fourth-grade students (Susilowati, 2021), enhancing critical thinking skills in elementary school students (Nugrahani & Hardini, 2021; Rossytasari & Setyaningtyas, 2021), and assessing the impact of PBL on the metacognition of elementary school students (Ramdoniati, 2021). However, there has been no meta-analysis conducted specifically on the application of PBL in Indonesian language lessons in elementary schools. Therefore, it is imperative to carry out a meta-analysis study to address this gap in research.

The upcoming meta-analysis on the use of PBL model in elementary school, specifically Indonesian language learning aims to provide a comprehensive understanding of its application. The study's results can serve as a valuable resource for educators, including teachers and other professionals, offering them a broader perspective on the implementation of PBL in elementary schools and its impact on enhancing language skills in the context of Indonesian language instruction. The analysis specifically focus on evaluating improvements measured by pretest and posttest scores. Moreover, this research can serve as a reference for future researchers interested in conducting similar meta-analyses.

METHODS

This research utilizes a quantitative approach with a meta-analysis research design. The chosen research method is documentary study. The data collected for this study include grade records indicating the pre-implementation and post-implementation outcomes of applying the PBL model in Indonesian language lessons at elementary schools in Indonesia. These data were extracted from 9 action research articles obtained from indexed journals on Google Scholar. The search process on Google Scholar was conducted using specific keywords, and the metadata of the research was retrieved through the Publish or Perish application. The selected keywords for the search process are as follows.

Table 1 Keyword Search Formula

Keywords
"PBL learning model" OR "problem based learning" AND "Indonesian language lessons" OR "writing" OR "reading" OR "listening" OR "speaking" AND "elementary school"

The search using the Publish or Perish application and the formulated keywords generated a total of 1600 articles. Subsequently, a filtering process was conducted by assessing the titles and contents of the research based on various indicators, as shown in Table 2 presented below.

Table 2 Data Collection Criteria

	Indicator
Theme	Articles related to elementary school learning
Novelty	Articles published between the years 2018 and 2023
Context	Articles focus on the application of PBL in Indonesian language learning (writing, reading, listening, and speaking)
Language	Indonesian language
Research Type	Article based research

The inclusion of article criteria in this study serves the purpose of preventing research data errors, such as ensuring that the research topics are focused on elementary school settings, the relevance of the research to the present time by including articles published within the past 5 years, and the specific context of the research, which involves the application of PBL in Indonesian language learning, encompassing various language skills such as writing, reading, listening, and speaking. Furthermore, the study also limits the selection to articles written in Indonesian, specifically research articles rather than theses or dissertations, and with specific criteria such as the inclusion of pretest and posttest scores. The following are the search results obtained using the formulated keywords. The presentation of data includes article metadata such as the title, author, year of publication, pretest score, and posttest score. The full titles of the articles are not displayed to avoid plagiarism. Each subsequent research article is assigned a code to facilitate data retrieval during the analysis process.

Table 3 Research Data

Code	Title	(Author, Year)
A1	Peningkatkan Hasil ...	(Astuti dkk., 2022)
A2	Implementasi Model ...	(Rahmatiah & Besse Syukuroni, 2022)
A3	Peningkatan Ketelitian ...	(Priyanasari dkk., 2021)
A4	Peningkatan Keterampilan ...	(Nugraha dkk., 2019)
A5	Penerapan Model ...	(Sofiya, 2023)
A6	Model Problem ...	(Yusita dkk., 2021)
A7	Upaya Peningkatan ...	(Illahi, Ekowati, & ..., 2023)
A8	Implementasi Model ...	(Wahyuni dkk., 2021)
A9	Penerapan Model ...	(Yunita, 2021)

The collected data in this study were subjected to analysis using a comparative method, specifically comparing the results before and after the implementation of the PBL model. The analysis of the research data involved several stages, outlined as follows: Firstly, the researcher analyzed the research data to identify the pretest and posttest scores, which constituted the stage of analyzing the results before and after the implementation. Secondly, the researcher examined the relationship between the pretest and posttest scores by calculating the difference to determine the extent of improvement. The third stage involved calculating the averages of the scores before and after the implementation of the PBL model, as well as the difference between the two. Additionally, standard deviation, standard error mean, and t-test was performed during this stage. The SPSS application was utilized to aid in these calculations.

RESULT AND DISCUSSION

Result

A total of 9 articles related to the utilization of the PBL method in improving Indonesian language learning outcomes were analyzed to determine the difference in improvement between pretest and posttest scores. The results of this analysis are presented in the following Table 4.

Table 4 Mean Score and Improvement

Code	Pre Test Score	Post Test Score	Increase
A1	61,20	81,46	20,26
A2	63	78,92	15,92
A3	59	76,5	17,5
A4	61,4	75,6	14,2
A5	59,53	79,92	20,39
A6	59,46	79,82	20,36
A7	59,46	79,82	20,36

A8	59,09	75,9	16,81
A9	60	84	24
Mean	60,2	79,1	18,8

Table 4 above presents the results of nine studies examining the utilization of the PBL model in improving Indonesian language learning outcomes. The average scores indicate an overall improvement in learning outcomes. In data A1, there was a 20.26 increase in Indonesian language learning outcomes in the reading skill of third-grade students at Karanggedong Public Elementary School. Data A2 showed a 15.92 improvement in Indonesian language learning outcomes for fifth-grade students at 11th Public Elementary School in Soppeng. In data A3, there was a 17.5 increase in Indonesian language learning outcomes, specifically in writing skills, for fifth-grade students at Cangkringan 1 Public Elementary School. Data A4 involved fourth-grade students at 3rd Public Elementary School in Sejambe, showing a 14.2 improvement in Indonesian language learning outcomes in descriptive writing.

In data A5, the utilization of the PBL model proved effective in improving Indonesian language learning outcomes for second-grade students at Manukan Kulon Public Elementary School in Surabaya. Specifically, there was a 20.39 increase in reading comprehension skills, particularly in extracting information from fairy tales. Data A6 demonstrated an improvement in learning outcomes for third-grade students in Class B at 12th Public Elementary School in Kesiman. The focus was on reading skills, with a notable increase of 20.36. In data A7, there was an increase in learning outcomes for first-grade students at Purwantoro 1 Public Elementary School in Malang, specifically in speaking skills, with a significant improvement of 20.36. Data A8 indicated an increase in learning outcomes for third-grade students at 2nd Public Elementary School in Sanur, with a value of 16.81 in reading skills. Lastly, in data A9, there was an improvement in learning outcomes for fourth-grade students at Jatiroto 4 Public Elementary School, with a score of 24 in reading skills.

Based on Table 5, it can be determined that the average pre-test score conducted before the implementation of the PBL model was 60.2, while the average post-test score after the application of the PBL model was 79.1. This indicates a mean difference of 18.8, demonstrating that the PBL model successfully improved Indonesian language learning outcomes, particularly in reading and writing skills. To further examine the students' learning improvement, a paired sample t-test was conducted, as presented below.

Table 5 Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE TEST	60.2378	9	1.34738	.44913
	POST TEST	79.1044	9	2.75161	.91720

Table 5 above provides a summary of descriptive statistical analysis results for both the pre-test and post-test samples, obtained through calculations using the SPSS software. The data demonstrates an improvement in Indonesian language learning outcomes following the implementation of the PBL teaching model, as evidenced by the increase in the mean pre-test score from 60.2 to 79.1 in the post-test assessment. The table also displays the standard deviation, with a value of 1.3 for the pre-test phase and 2.7 for the post-test phase. The standard error of the mean is 0.44913 for the pre-test and 0.91720 for the post-test.

The pre-test and post-test results were further examined using the T-test in the SPSS software to determine the acceptance of the hypothesis based on the Sig. (2-tailed) value. The complete results of the T-test are presented and discussed as follows.

Tabel 6 Paired Samples Test

				Paired Differences			95% Confidence Interval of the Difference
				Mean	Std. Deviation	Std. Error Mean	
Pair 1	PRE TEST- TEST	POST TEST		-18.86667	2.99231	.99744	-21.16676

Tabel 6 Paired Samples Test (continue)

				Paired Differences	t	Df	Sig. (2-tailed)

	PRE TEST	TEST - POST TEST	95% Confidence Interval of the Difference			
			Upper			
Pair 1			-16.56657	-18.915	8	.000

The Paired Samples Test is a method used to determine the acceptance or rejection of hypotheses. In this research, there are two hypotheses. Firstly, the null hypothesis (H₀) states that there is no influence of the PBL model on Indonesian language learning outcomes. Secondly, the alternative hypothesis (H₁) suggests that there is an influence of the PBL teaching model on Indonesian language learning outcomes in elementary school students. The decision criteria for accepting or rejecting hypotheses are based on the Sig. value. H₀ is accepted if the Sig. value is greater than 0.05, indicating no significant influence of the PBL teaching model on Indonesian language learning outcomes. H₁ is accepted if the Sig. value is less than 0.05, indicating a significant influence of the PBL teaching model on Indonesian language learning outcomes in elementary school students.

Table 6 above displays the results of the Paired Samples Test conducted on the pre-test and post-test scores. The data shows a Sig. (2-tailed) value of (0.00), which is less than the significance level α (0.05). This indicates that the PBL model has a significant influence on Indonesian language learning outcomes in elementary school students both before and after the intervention. Therefore, the results of the Paired Samples Test reject the null hypothesis (H₀) and accept the alternative hypothesis (H₁).

DISCUSSION

The meta-analysis in this study revealed that there were 9 action research studies focusing on the implementation of the PBL model to enhance Indonesian language learning outcomes in elementary school students, with the following details: 1 study conducted in grade 1, 1 study conducted in grade 2, 3 studies conducted in grade 3, 4 studies conducted in grade 4, and 2 studies conducted in grade 5. The data indicates that PBL can be applied in Indonesian language learning, particularly in elementary schools, either in lower grades such as grade 1 (Illahi, Ekowati, & Nugraheni, 2023) or upper class such as in grade 5 (Priyanasari dkk., 2021; Rahmatiah & Besse Syukuroni, 2022).

The meta-analysis of the 9 research articles found that the PBL model is capable of improving Indonesian language learning outcomes of elementary school students, with an average increase of 18.8. The study with the lowest increase value of 14.2 focused on PBL implementation in the writing skill aspect of grade 2 students (Nugraha dkk., 2019). The study with the highest increase value of 20.39 focused on PBL in the reading skill of grade 2 students (Sofiya, 2023). These results demonstrate the significant impact of PBL on improving Indonesian language learning outcomes in elementary school students. Similar improvements have also been observed in meta-analyses of other subjects using PBL, such as mathematics education (Arifin dkk., 2021; Dewi & Wardani, 2021; Hendra, 2021), science education (Jorina dkk., 2022; Kristiana & Radia, 2021; Siregar dkk., 2022), and Islamic religious education (Hasrah, 2023).

Based on the t-test, null hypothesis (H₀ = no influence of PBL on improving Indonesian language learning outcomes in elementary school) was rejected, while the alternative hypothesis (H₁ = there is an influence of PBL on improving Indonesian language learning outcomes in elementary school) was accepted. This decision was based on the Sig. (2-tailed) value: (0.00) < α (0.05), indicating that the Sig. (2-tailed) value is smaller than 0.005.

With an average score of 79.1, it can be concluded that all students achieved learning mastery in Indonesian language in the targeted aspect of instruction. Thus, the PBL model can be recommended for educators facing challenges in teaching Indonesian language. PBL has proven to enhance student engagement in learning through a problem-solving approach embedded within the PBL model.

CONCLUSION

This study regarding the influence PBL toward Indonesian language learning outcomes in elementary schools successfully gathered 9 relevant articles as the final result of data screening. Based on the conducted meta-analysis on these 9 articles, it can be revealed that the average pretest score of students, which was 60.2, significantly increased to an average score of 79.1, with a mean difference of 18.1. The t-test yielded a Sig. (2-tailed) value of 0.00, which is smaller than 0.05. This value indicates that PBL has a significant impact on improving elementary school students' Indonesian language learning outcomes.

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