

## The Influence of Problem-Based Learning on Student's Writing Skills

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**Abstract.** This study examined the effectiveness of problem-based learning to improve students' writing skills. The study involved 20 seventh-grade students and used a pretest-posttest design. The findings confirm that problem-based learning improves overall writing skills but also helps develop critical thinking skills and systematic organization of ideas. The results showed a significant improvement in students' writing skills, with the mean score increasing from 56.15 on the pretest to 77.55 on the posttest, reflecting an increase of 21.4 points. The homogeneity test showed a significant value between the pretest and posttest groups of 0.179 ( $p > 0.05$ ). The paired t-test resulted in a t-value of -11.059 and was significant ( $p < 0.05$ ). Although effective, this study has limitations in sample size and non-normal distribution of posttest scores. Recommendations for future research include the development of scaffolding models to support students with low adaptation, exploring the use of technology, and analyzing different types of texts. This study contributes to innovative writing teaching strategies in English education.

**Keyword:** Problem Based Learning; Writing Skills; Critical Thinking

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### INTRODUCTION

Writing skills are important abilities that involve mastering grammar and vocabulary and conveying ideas clearly and structured (Ilham, 2024; Ilham et al., 2025). In education, writing acts as a means of academic communication and becomes one of the indicators of student success. However, many students face difficulties in improving this skill. Obstacles often arise, including a lack of ideas, difficulty organizing logical arguments, and a lack of helpful learning strategies (Ilham et al., 2020; Ilham, 2022). As a result, the quality of students' writing tends to be low, affecting their learning outcomes. This problem indicates the need for a more effective and relevant learning approach. With the right strategy, students can more easily overcome these obstacles. Innovative approaches combining idea development, logic, and writing techniques are urgently needed to help students improve their writing skills (Murtadho, 2021). One such

approach is problem-based learning, which encourages students to address real-world problems by applying critical thinking, organizing their ideas systematically, and clearly expressing their solutions in writing.

Problem-based learning is a learning strategy that can improve the quality of writing learning at various levels of education (Oktavia et al., 2023). This approach trains writing skills and encourages students to think critically and analytically (Elsabrina et al., 2022). Students are involved in understanding the problem, formulating solutions, and structuring ideas in writing. In addition, this approach is relevant to real-world contexts so that it can increase student motivation and engagement. Thus, this method improves writing skills and supports the development of higher-order thinking skills (Puspita et al., 2024).

Studies have shown that different approaches can improve students' writing skills, although the results vary depending on the context. For example, the inquiry method did not significantly affect academic writing skills when viewed based on grade level and parental background (Tambak et al., 2021). On the other hand, Researchers have shown that formative assessment effectively improves students' writing skills, with teachers and students showing positive attitudes toward its use (Trismayanti, 2021). In addition, innovative learning methods, such as problem-based learning (PBL), can significantly improve students' motivation and writing skills, as indicated by the increase in learning outcome scores (Mairani, 2022). Conversely Abbasian (2022) found significant improvements in coherence, organization, and narrative skills in EFL. However, consistently applying these methods in various educational contexts still faces challenges that we can overcome.

Problem-based learning (PBL) effectively improves students' cognitive skills, such as critical and analytical thinking, by encouraging engagement and collaboration (Mufarrohah & Setyawan, 2024). Studies show that the Digital Project-Based Blended Learning model significantly increases students' critical thinking scores, with N-Gain reaching 66.79% (Kurniawan et al., 2024). Interactive technology such as Assemblr Edu also strengthened problem-based learning skills with an N-Gain of 0.7 in the experimental group (p novela et al., 2024). Research also shows this approach significantly improves argumentative essay writing skills (Sori, 2021). However, structured support is still needed to ensure the success of this method.

Research shows that problem-based learning (PBL) can improve critical thinking and writing skills. Rumabutar and Hidayati (2021) found that PBL improved students' argumentative essay writing and critical thinking abilities. Similarly, Ilham (2023) reported that problem-based learning is needed to improve students' understanding and writing skills. Nurfidah et al (2022) reported increased student activity and learning outcomes in a writing skills course using PBL. This study suggests that PBL can be a practical approach to integrating problem-solving and writing instruction. This method encourages analytical thinking and reflection, critical to problem-solving and writing (Rashtchi & Khoshnevisan, 2020).

Although various studies have demonstrated the effectiveness of problem-based learning (PBL) in improving students' critical thinking (Abdullah & Munawwaroh, 2024) and writing skills (Nurfaizin & Astuti, 2024), there is a gap in the literature that integrates both aspects in an integrated learning framework. Most research focuses on developing each skill separately without exploring how PBL can be designed to improve critical thinking and writing skills simultaneously. In addition, although PBL has been applied at various levels of education, limited research examines its effects in the context of problem-solving-based writing learning at specific levels.

This study employs the following questions: How effective is problem-based learning in improving students' writing skills? It aims to analyze the effectiveness of problem-based learning on students' writing skills, focusing on the integration of critical thinking development and writing skills. The study expects to make theoretical and

practical contributions to developing a problem-based learning model that effectively improves students' writing skills and is relevant to modern educational needs.

## METHOD

This study uses a quantitative approach with a pre-experimental research type, which aims to objectively measure the effect of problem-based learning on students' writing skills through data collection in the form of numbers and statistical analysis. The research subjects were 20 students from 7th B grade of Miftahul Falah Junior High School, who were selected based on similar characteristics in their initial writing skills, so the research results should be able to represent the conditions of the population. Therefore, The research design used was a one-group pretest-posttest, where students received a pretest to measure their initial writing ability and then completed a series of problem-based writing exercises as an intervention. After completing the intervention process, the students took a posttest to assess the improvement in their writing skills. This design allows researchers to compare pretest and posttest results to determine the effectiveness of the intervention.

The research instrument used in this study was a writing test specifically designed to measure students' writing skills before and after the intervention using problem-based writing exercises. Before being used, this instrument was checked for validity and reliability to ensure the measurement results were accurate, consistent, and scientifically accountable. The data obtained from the pretest and posttest results were then analyzed with a statistical test, namely a paired sample t-test, to determine whether there was a significant difference between the pretest and posttest results. The researchers conducted the study using statistical software to increase the accuracy of calculations and ensure the objective interpretation of results according to the research objectives.

## RESULTS AND DISCUSSION

In this study, researchers used two types of tests, namely pretest and posttest, to measure students' writing skills. This was done to answer the research question of how effective problem-based learning is in improving students' writing skills. The results of the two types of tests were then analyzed using statistical analysis.

The findings of this study demonstrate the effectiveness of problem-based learning in improving students' writing skills. The pretest and posttest data analysis reveals significant improvements in students' writing performance after these exercises.

**Table 1** Descriptive statistics

hasil	hilai	Statistic	Std. Error
pretest	Mean	56.15	2.787
	95% Confidence Interval for Lower Bound	50.32	
	Mean Upper Bound	61.98	
	5% Trimmed Mean	55.83	
	Median	55.00	
	Variance	155.397	
	Std. Deviation	12.466	
	Minimum	40	
	Maximum	78	
	Range	38	
	Interquartile Range	24	
	Skewness	.195	.512
	Kurtosis	-1.197	.992

posttest	Mean	77.55	2.273
	95% Confidence Interval for Lower Bound	72.79	
	Mean	Upper Bound	82.31
	5% Trimmed Mean	77.28	
	Median	76.50	
	Variance	103.313	
	Std. Deviation	10.164	
	Minimum	60	
	Maximum	100	
	Range	40	
	Interquartile Range	10	
	Skewness	.923	.512
	Kurtosis	.880	.992

Based on Table 1, The pretest results showed that the students' mean score before treatment was 56.15, with scores between 40 and 78. The high variance of 155.397 and standard deviation of 12.466 indicated considerable variation in students' initial writing ability. In contrast, the posttest results showed significant improvement, with the mean score increasing to 77.55. The range of posttest scores was 60 to 100, with a minor variance of 103.313 and a standard deviation of 10.164, reflecting a more homogeneous student performance. The skewness value 0.923 shows a positive slope, indicating that more students scored higher. The kurtosis value of 0.880 indicates that the distribution of posttest scores is close to normal.

**Table 2** Tests of Normality

nilai	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
hasil pretest	.137	20	.200*	.926	20	.130
posttest	.205	20	.028	.888	20	.024

Based on Table 2, the normality test results show that the pretest data is normally distributed (Sig. = 0.130), while the posttest data is not normally distributed (Sig. = 0.024), which may be due to the high scores of some participants after the treatment.

**Table 3** Test of Homogeneity of Variance

hasil	Based on	Levene Statistic		
		df1	df2	Sig.
Based on Mean	1.878	1	38	.179
Based on Median	1.457	1	38	.235
Based on Median and with adjusted df	1.457	1	37.934	.235
Based on trimmed mean	1.763	1	38	.192

Although the posttest data are not distributed normally, Based on Table 3, The result of the homogeneity of variance test shows that the significance value is 0.179 (based on Mean), which is greater than 0.05. This data indicates that the variance between the pretest and posttest groups is homogeneous. Therefore, this supports the

validity of parametric statistical analysis, such as the t-test, in this study. The assumption of homogeneity of variance was met, so the mean difference between the pretest and posttest groups can be attributed more convincingly to the treatment, namely problem-based writing exercises.

**Table 4** Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 pretes postes	-21.400	8.654	1.935	-25.450	-17.350	-11.059	19	.000

Based on Table 4, The results of the paired t-test showed a t-value of -11.059 with a degree of freedom (df) of 19 and a significance level of 0.000 ( $p < 0.05$ ). This value confirms a statistically significant difference between the pretest and posttest results, allowing us to conclude that the problem-based writing method effectively improves students' writing skills.

Based on the results of this study, problem-based learning helps develop students' critical thinking skills, which are necessary for producing good writing. This method engages students in analytical and creative thinking processes, improving their writing quality (Pentury et al., 2020). Furthermore, the more uniform distribution of posttest scores (with more minor standard deviations than the pretest) indicates that this method offers consistent gains across student samples.

This finding aligns with other findings that collectively indicate that problem-based learning can be valuable for educators who want to improve students' writing skills at various levels of education and disciplines. Mairani, (2022) states that Problem-based learning (PBL) can also significantly improve students' motivation and writing skills, as shown by increased learning outcomes. Problem-based learning has significantly improved students' writing skills in various contexts, such as descriptive tasks, procedure text, argumentative essays, and critical thinking skills (Rumabutar & Hidayati, 2021). Problem-based learning encourages analytical thinking and reflection, which are essential to problem-solving and writing (Rashtchi & Khoshnevisan, 2020).

Overall, this study's results indicate that problem-based learning is a practical approach to improving students' writing skills. This approach can be integrated into the writing learning curriculum in the English Education study program to support the achievement of more optimal learning outcomes.

## CONCLUSION

This study found that problem-based learning effectively improved students' writing skills. It showed an increase in the average score of 21.4 points between the pretest and posttest, where the pretest average score was 56.15, and the posttest reached 77.55. The homogeneity of variance test also showed a significant value of 0.179, greater than 0.05, and the Paired T-Test results ( $t = -11.059$ ,  $p < 0.05$ ), confirming a statistically significant difference. However, some gaps need further investigation, such as the limited sample size of only 20 students and the non-normal distribution of posttest scores, indicating that some students need additional support to optimize this method.

In addition, this study has not explored the potential integration of interactive technology in strengthening the effectiveness of this method. Therefore, further research should take place to develop a scaffolding model that supports students with low adaptability. Important future research topics include the effectiveness of problem-based learning with interactive technology, the effects of this method on different types of texts, comparative analysis with other learning approaches, and exploration of contextual factors that influence the success of this method. Further research can expand theory and practice in the development of writing skills in the field of English language education.

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