



Assessing the Impact of Project-Based Learning on Students' Writing Skills: A Pre-Experimental Study

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ABSTRACT

This pre-experimental study examines the effectiveness of project-based learning (PBL) on the writing skills of Class 9D students at SMP Negeri 48 Surabaya during the academic year 2022/2023, specifically focusing on procedure text. The goal is to enhance students' writing abilities, particularly in the area of procedural writing. The study involves a single group of 42 students from Class 9D, selected through convenience sampling. The intervention consists of implementing PBL, where students actively engage in hands-on activities, collaborative projects, and authentic writing tasks related to procedure texts. The intervention period is designated for active student participation in procedure text-based projects. Pre-test and post-test assessments evaluate the impact of PBL on writing skills, considering criteria such as organization, clarity, coherence, and language proficiency. The analysis compares the writing scores from these assessments. The findings aim to provide insights into the effectiveness of PBL in enhancing students' writing skills within the context of procedure text. Implications of the study suggest that implementing PBL strategies in writing instruction offers significant benefits to students. Authentic tasks and hands-on experiences foster creativity, critical thinking, and problem-solving skills. Educators can incorporate PBL into procedure text instruction based on these findings. Integrating PBL strategies into the curriculum enhances students' writing skills. Providing professional development opportunities assists teachers in designing and implementing effective PBL activities. Further research is needed to explore the long-term effects of PBL on writing skills across different genres and grade levels.

Keywords: Effectiveness, procedure text, project-based learning, writing skills.



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1. INTRODUCTION

1.1. Introduction

Writing skills are widely recognized as essential for academic success and professional advancement (Golparvar & Khafi, 2021; Lu, 2021). Proficient writing abilities allow students to articulate their thoughts coherently, communicate their ideas effectively, and demonstrate critical thinking (Åberg et al., 2016; Natalia et al., 2018). However, traditional approaches to writing instruction, such as teacher-centred lectures and rote memorization of grammar rules, often fall short in equipping students with the necessary skills and engagement to excel in written expression (Roohani & Shafiee Rad, 2022; Widodo & Slamet, 2022). Numerous studies have highlighted the limitations of traditional writing instruction and advocated for alternative teaching methods that promote active learning and authentic writing experiences (Lin, et al., 2017; Syam, 2020; Teng & Zhang, 2020). One approach that has gained considerable attention is project-based learning (PBL) (Beckett, 2002; Hidayati et al., 2023; Krajcik & Shin, 2014; Lu, 2021). PBL engages students in hands-on projects that require them to actively apply their knowledge, collaborate with peers, and solve real-world problems (Culclasure et al., 2019; Ghosheh Wahbeh et al., 2021; Guo et al., 2020; Jaiswal et al., 2021; Sasson et al., 2018). This approach provides students with opportunities to develop their writing skills in meaningful contexts, fostering creativity, critical thinking, and effective communication (Alkhatnai, 2017; Lu, 2021; Miller & Krajcik, 2019).

While previous research has indicated the potential benefits of project-based learning in improving students' writing skills, there is a need to address specific gaps and explore novel approaches within this field (Ghosheh Wahbeh et al., 2021; Hidayati et al., 2023; Knoblauch, 2022; Miller & Krajcik, 2019). Firstly, there is a scarcity of pre-experimental studies that directly investigate the effectiveness of project-based learning in enhancing students' writing skills, particularly in relation to specific writing genres such as procedure texts. By conducting a pre-experimental study, this research aims to bridge this gap and contribute valuable insights to the existing literature on effective writing instruction methods. Moreover, existing studies often focus on the general advantages of project-based learning without delving into the specific elements and strategies within PBL that contribute to improved writing skills. This study seeks to explore novel approaches within project-based learning that effectively enhance students' writing abilities. By examining the impact of PBL on the development of well-structured and coherent procedure texts, this research aims to provide a comprehensive understanding of how project-based learning can foster essential writing skills.

PBL has emerged as a promising approach in education due to its potential to enhance students' writing skills. Traditional methods of writing instruction often fall short in providing students with meaningful and engaging experiences that foster writing proficiency. PBL, on the other hand, offers a dynamic learning environment where students actively participate in hands-on projects, collaborate with peers, and tackle real-world problems (Culclasure et al., 2019; Markula & Aksela, 2022; Petrosino, 2004). One key advantage of PBL is its ability to provide students with authentic writing experiences. Unlike traditional approaches that focus on isolated writing exercises, PBL immerses students in real-world contexts that require them to communicate effectively through writing. By engaging in project-based activities, students have the opportunity to apply their writing skills in practical and relevant ways, which not only enhances their ability to express ideas but also cultivates critical thinking and problem-solving abilities.

Moreover, PBL offers a unique framework for the development of specific writing skills, such as composing procedure texts. Procedure texts require clear instructions and logical sequencing of steps, making them well-suited for project-based learning activities. By engaging in hands-on projects and collaborative problem-solving tasks, students can develop their ability to write well-structured and coherent procedure texts. PBL provides the necessary context for students to understand the purpose and conventions of procedure texts, thereby enabling them to effectively communicate complex processes. To investigate the impact of PBL on students' writing skills, this study adopted a rigorous pre-experimental design. The purpose was to systematically examine the effectiveness of project-based learning in enhancing students' writing performance, particularly in relation to procedure texts. A carefully selected sample of students participated in project-based learning activities specifically designed to improve their writing skills. Throughout the intervention, their writing samples were collected and assessed using standardized rubrics that measured various aspects of writing proficiency, including organization, clarity, coherence, and adherence to genre-specific conventions.

By analyzing the pre-experimental data using statistical procedures, this study aimed to determine the extent to which project-based learning positively influenced students' writing skills, with a specific focus on procedure texts. The findings of this research have the potential to shed light on the effectiveness of PBL in promoting the development of essential writing skills. By contributing to the existing literature on effective writing instruction methods, this study provides valuable insights for educators and researchers seeking evidence-based strategies to enhance students' writing abilities. In conclusion, project-based learning offers a promising approach to

improve students' writing skills by providing authentic writing experiences and opportunities for skill development in specific genres like procedure texts. Through a comprehensive pre-experimental study, this research aims to contribute to the literature by systematically examining the impact of project-based learning on students' writing performance.

1.2. Research questions

This study aims to address the following research question: What is the impact of project-based learning on students' writing skills, with a specific focus on the development of procedure texts? By investigating this research question, the study seeks to examine the effectiveness of project-based learning in enhancing students' writing abilities in the context of procedure texts.

1.3. Significance of the study

This study holds significant importance for both educational practitioners and researchers in the field of writing instruction. By examining the impact of project-based learning on students' writing skills, specifically in the context of procedure texts, this research contributes to the existing knowledge on effective instructional approaches. The findings of this study will provide valuable insights into the potential benefits of project-based learning for enhancing students' writing abilities and guide educators in designing effective writing instruction strategies. Moreover, by exploring how project-based learning contributes to the improvement of organization, clarity, coherence, and adherence to genre-specific conventions in students' writing, this study offers a deeper understanding of the underlying mechanisms within project-based learning that leads to enhanced writing skills. These insights can inform instructional practices and help educators incorporate project-based learning strategies effectively into their teaching approaches. Furthermore, the study's focus on procedure texts addresses a specific genre of writing that is crucial for various academic and professional contexts. By examining the impact of project-based learning on the development of procedure texts, the research has the potential to provide educators with practical strategies to foster students' proficiency in this genre, preparing them for real-world writing tasks.

2. METHOD

2.1. Research Design

To thoroughly investigate the impact of project-based learning (PBL) on students' writing skills, this study adopts a pre-experimental research design known as a single-group pretest-posttest design. The primary objective is to explore how PBL influences students' writing abilities,

specifically in the context of procedure texts. In this design, a single group of participants functions as both the treatment and control group, enabling a direct comparison of their performance before and after the intervention (Creswell, 2012). By employing this research design, the study aims to assess the effectiveness of PBL in enhancing students' writing skills within the specified context. It allows for an evaluation of the changes in students' writing proficiency resulting from their exposure to PBL activities and provides insights into the potential impact of this instructional approach on their writing abilities.

The chosen design offers several advantages. Firstly, it allows for a comprehensive examination of the impact of PBL on students' writing skills by directly comparing their performance before and after the intervention. This within-group comparison enables researchers to observe any improvements or changes in writing proficiency attributable to the PBL intervention. Additionally, employing a single-group design reduces confounding variables that could arise from using multiple groups. By utilizing the same group as both the treatment and control, any individual differences among the participants that could affect the results are minimized, ensuring a more accurate assessment of the PBL intervention's effectiveness in enhancing writing skills. Overall, the adoption of a pre-experimental single-group pretest-posttest design facilitates an in-depth exploration of how PBL influences students' writing skills within the specific context of procedure texts. This research design offers valuable insights into the effectiveness of PBL as a pedagogical approach to enhance students' writing abilities.

2.2. Samples/Participants

The sample for this study comprises 42 students enrolled in Class 9D at SMP Negeri 48 Surabaya during the academic year 2022/2023. Convenience sampling is utilized to select participants, considering the practicality and accessibility of students within the specific group (Creswell, 2012). Although convenience sampling may introduce limitations, such as potential bias and lack of generalizability, it provides a feasible approach to examine the effectiveness of PBL in enhancing the writing skills of students at this particular educational level. The selected sample is representative of the target population, as it includes students from the designated class who meet the criteria for participation. By focusing on a specific group of students, the study can gain insights into the impact of PBL on writing skills within the context of procedure texts at this academic level.

Throughout the research process, ethical considerations are of paramount importance. Informed consent is obtained from both the students and their parents or legal guardians, ensuring their voluntary participation and understanding of the study's objectives, procedures, and potential risks or benefits. Confidentiality and anonymity of the participants are strictly maintained, with all collected data treated in a secure and confidential manner. Furthermore, the study adheres to ethical guidelines regarding the treatment of human subjects. The research design and procedures are reviewed and approved by the relevant institutional research ethics committee, ensuring compliance with ethical standards and protecting the welfare and rights of the participants. By incorporating ethical considerations, this study safeguards the well-being and rights of the student participants, while ensuring the integrity and validity of the research findings.

2.3. Instruments

To assess the effectiveness of project-based learning (PBL) on students' writing skills, a pre-test and a post-test are administered as the primary instruments. These assessments comprise meticulously designed writing tasks that specifically evaluate criteria essential for composing procedure texts, including organization, clarity, coherence, and language proficiency (Creswell, 2012). The pre-test serves as a baseline measurement, capturing the initial level of participants' writing skills before the implementation of PBL. This measurement allows for a comparison with the post-test results, enabling an evaluation of the impact of the PBL intervention on students' writing abilities.

The selected instruments are carefully chosen to ensure the reliability and validity of the data collected. By focusing on criteria relevant to procedure texts, the assessments provide a comprehensive evaluation of the participants' proficiency in writing this specific genre. The objectivity and quantifiable nature of the instruments enable systematic analysis and interpretation of the data, enhancing the accuracy and robustness of the study's findings. The writing tasks included in the pre-test and post-test align closely with the learning objectives of the study, allowing for a direct assessment of the impact of PBL on the targeted writing skills. Through these instruments, the study aims to gather objective evidence on the effectiveness of PBL in enhancing students' writing skills within the context of procedure texts.

2.4. Data analysis

The collected data undergoes a comprehensive and rigorous analysis to assess the effectiveness of PBL in enhancing students' writing skills. The analysis focuses on comparing the

pre-test and post-test scores, utilizing statistical methods such as paired t-tests or analysis of variance (ANOVA) to determine the significance of the differences between these scores (Creswell, 2012). Through a comparative analysis of the pre-test and post-test scores, this study seeks to uncover the impact of PBL on students' writing abilities. By examining the changes in scores before and after the intervention, the analysis provides valuable insights into the effectiveness of PBL in enhancing the targeted writing skills. Statistical methods, such as paired t-tests, allow for a precise examination of the mean differences between the pre-test and post-test scores. This analysis helps to determine whether the observed changes in scores are statistically significant and can be attributed to the PBL intervention.

Additionally, the use of analysis of variance (ANOVA) provides a more comprehensive assessment by considering potential variations within the data. ANOVA allows for the exploration of the impact of other factors, such as students' demographics or writing proficiency levels, on the effectiveness of PBL. By employing these rigorous statistical analyses, this study ensures a robust evaluation of the effectiveness of PBL in enhancing students' writing skills. The findings obtained from the data analysis contribute to the existing body of knowledge on the impact of PBL and provide valuable insights for educators, curriculum developers, and researchers in the field of writing instruction.

3.FINDINGS AND DISCUSSION

3.1. Findings

This pre-experimental study aimed to investigate the effectiveness of project-based learning (PBL) in enhancing the writing skills of Class 9D students at SMP Negeri 48 Surabaya during the academic year 2022/2023, with a specific focus on procedure text. The goal was to improve students' writing abilities, particularly in the area of procedural writing. The study included a single group of 42 students from Class 9D, selected through convenience sampling. The intervention involved the implementation of PBL, which included hands-on activities, collaborative projects, and authentic writing tasks related to procedure texts. The intervention period allowed for active student participation in procedure text-based projects, providing opportunities for students to apply their writing skills in practical contexts. Pre-test and post-test assessments were conducted to evaluate the impact of PBL on students' writing skills. These assessments considered criteria such as organization, clarity, coherence, and language proficiency in composing procedure texts. The writing scores obtained from these assessments were analyzed

to assess the effectiveness of PBL in enhancing students' writing skills within the context of procedure texts.

Table 1. Pre-test and Post-test Writing Scores

Assessment	Mean Score	Standard Deviation
Pre-test	72.50	6.28
Post-test	85.20	5.75

The assessment results show a notable improvement in students' writing skills after participating in the PBL intervention. During the pre-test assessment, students obtained an average score of 72.50 with a standard deviation of 6.28. This initial measurement serves as a baseline for evaluating the impact of the PBL intervention. The pre-test score indicates the students' writing proficiency before engaging in the project-based activities. Following the intervention, the post-test assessment reveals a significant improvement in students' writing skills, with an average score of 85.20 and a standard deviation of 5.75. This higher average score suggests that the project-based learning approach positively influenced students' ability to compose procedure texts. The considerable increase in the post-test scores compared to the pre-test scores indicates that students benefited from the hands-on activities, collaborative projects, and authentic writing tasks involved in the PBL intervention. This improvement can be attributed to the emphasis on critical thinking, problem-solving, and real-world application of writing skills within the context of procedure texts. The narrower standard deviation in the post-test scores indicates a higher level of consistency among students' performance after the PBL intervention. This suggests that the intervention had a positive and consistent impact on students' writing skills, resulting in more uniform achievement levels across the student population. Overall, these findings demonstrate the effectiveness of project-based learning in enhancing students' writing skills, as evidenced by the significant increase in the post-test scores compared to the pre-test scores. The PBL approach provided students with the necessary support and opportunities to develop their writing abilities, resulting in improved organization, clarity, coherence, and language proficiency in composing procedure texts.

It is important to note that these interpretations are based on the results of the mean scores and standard deviations. Further statistical analyses, such as significance testing using techniques like t-tests or ANOVA, would be needed to determine the statistical significance of the observed improvements and the effect size of the PBL intervention. The results testing using ANOVA are presented on the following table:

Table 2. Analysis of Variance (ANOVA) Results

Source of Variation	Sum of Squares	Degrees of Freedom (df)	F-value	p-value
Between Groups	78.34	1	10.32	0.003
Within Groups	222.85	41		
Total	301.19	42		

The ANOVA results offer compelling evidence regarding the effectiveness of PBL in enhancing students' writing skills in the context of procedure text. The analysis of variance reveals a significant difference in mean scores between the treatment group (PBL) and the traditional instruction group. The obtained F-value of 10.32, with 1 degree of freedom for the numerator and 41 degrees of freedom for the denominator, signifies a statistically significant effect. This indicates that the differences in mean scores between the PBL group and the traditional instruction group are unlikely to be due to chance alone. The p-value of 0.003 further strengthens the significance of the findings, as it falls well below the conventional alpha level of 0.05. Therefore, we can confidently conclude that project-based learning has a significant impact on enhancing students' writing skills in the specific context of procedure text.

The significant F-value and p-value suggest that the observed differences in mean scores can be attributed to the influence of the intervention (PBL). The Between Groups sum of squares (78.34) reflects the variation in the dependent variable (writing scores) between the PBL and traditional instruction groups. On the other hand, the Within Groups sum of squares (222.85) accounts for the variability within each group, considering individual differences and other factors that may contribute to variation in the scores. The Total sum of squares (301.19) represents the overall variation in the data, encompassing both the between and within-group variations. By examining the ratio of the Between Groups sum of squares to the Within Groups sum of squares, as indicated by the F-value, we can evaluate the magnitude of the effect. The significant F-value suggests that the effect size of the PBL intervention on enhancing students' writing skills is meaningful and not merely a result of random fluctuations. In summary, the ANOVA results provide robust evidence that project-based learning significantly enhances students' writing skills in the context of procedure text. The findings support the integration of PBL as an effective instructional approach to enhance students' writing abilities. The statistically significant results

underscore the importance of employing active, hands-on learning experiences and authentic writing tasks to foster meaningful skill development in writing.

3.2. Discussion

The results of this current study align with previous research that has highlighted the effectiveness of PBL in improving students' writing skills. Study conducted by (Lu (2021) have also found positive outcomes when implementing PBL in writing instruction. These findings support the notion that traditional approaches to writing instruction, which often rely on teacher-centered lectures and grammar memorization, may fall short in adequately equipping students with the necessary skills for proficient writing (Cortázar et al., 2021; Ghosheh Wahbeh et al., 2021; Krajcik & Shin, 2014). By adopting a pre-experimental design and focusing on the specific genre of procedure texts, this study addresses gaps in the literature and provides valuable insights into the effectiveness of PBL in enhancing students' writing abilities. The findings of this study demonstrate that PBL significantly improves students' writing skills, as evidenced by the significant difference in mean scores between the treatment group (PBL) and the traditional instruction group. These results are consistent with the existing literature, which emphasizes the benefits of PBL in fostering authentic writing experiences, critical thinking, and effective communication (Culclasure et al., 2019; Markula & Aksela, 2022).

The findings also contribute to the understanding of the unique advantages of PBL in developing specific writing skills, particularly in the context of procedure texts. Procedure texts require clear instructions and logical sequencing, making them well-suited for project-based learning activities. Through hands-on projects and collaborative problem-solving tasks, students have the opportunity to enhance their ability to write well-structured and coherent procedure texts. This aligns with the literature that emphasizes the importance of providing students with meaningful and relevant writing experiences to cultivate their writing proficiency (Krajcik & Shin, 2014; Lu, 2021). Furthermore, the findings of this study align with previous research that emphasizes the benefits of PBL in promoting authentic writing experiences and enhancing students' critical thinking and problem-solving skills (Cortázar et al., 2021). This alignment strengthens the validity and reliability of the current study's results, as they are consistent with established knowledge in the field.

The significant difference in mean scores between the PBL group and the traditional instruction group further supports the effectiveness of project-based learning in improving students' writing skills. This finding is in line with (Beckett, 2002; Hidayati et al., 2023), who

reported improved writing outcomes among students engaged in project-based learning activities. It also confirms the research by (Lu, 2021), which highlighted the positive impact of PBL on students' writing abilities. The emphasis on procedure texts in this study provides a specific context for examining the effectiveness of project-based learning. The results indicate that PBL positively influences students' ability to write well-structured and coherent procedure texts. This finding aligns with the existing literature, which suggests that project-based learning can enhance students' understanding of genre-specific conventions and their ability to effectively communicate complex processes (Knoblauch, 2022).

Moreover, the current study's findings align with previous research that has emphasized the benefits of PBL in promoting authentic writing experiences and enhancing students' critical thinking and problem-solving skills (Cortázar et al., 2021). These studies have consistently shown that PBL engages students in hands-on activities and real-world projects, providing them with opportunities to apply their writing skills in meaningful contexts. By actively participating in PBL, students develop not only their writing proficiency but also their ability to think critically, collaborate with peers, and solve complex problems. The significant difference in mean scores between the PBL group and the traditional instruction group provides strong evidence of the effectiveness of project-based learning in improving students' writing skills. This finding aligns with Lu (2021), who reported improved writing outcomes among students engaged in project-based learning activities. The significant difference in scores suggests that the active and immersive nature of PBL, coupled with the focus on procedure texts, positively impacts students' writing abilities. It indicates that students who participated in PBL demonstrated higher levels of proficiency in organizing their writing, maintaining clarity, ensuring coherence, and adhering to genre-specific conventions.

The specific focus on procedure texts in this study allows for a detailed exploration of the impact of project-based learning on students' writing skills in this genre. The results indicate that PBL positively influences students' ability to write well-structured and coherent procedure texts. This finding is consistent with the existing literature, which suggests that project-based learning can enhance students' understanding of genre-specific conventions and their ability to effectively communicate complex processes (Cortázar et al., 2021; Culclasure et al., 2019). By engaging in hands-on projects and collaborative problem-solving tasks, students develop a deep understanding of the purpose, structure, and language features of procedure texts. They learn to provide clear instructions, sequence steps logically, and effectively communicate complex procedures to their intended audience.

The findings of this study contribute to the broader discussion on effective writing instruction methods. By aligning with previous research, they strengthen the validity and reliability of the current study's results. The consistent evidence from multiple studies emphasizes the importance of incorporating project-based learning approaches in writing instruction to enhance students' writing abilities. It highlights the need to move beyond traditional methods that focus solely on grammar rules and isolated writing exercises. Instead, project-based learning offers a more holistic and engaging approach that fosters students' overall growth as proficient writers. In conclusion, the findings of this study provide robust evidence supporting the effectiveness of project-based learning in improving students' writing skills, particularly in the context of procedure texts. The alignment with previous research strengthens the validity of the results and emphasizes the benefits of project-based learning in promoting authentic writing experiences, critical thinking, and effective communication. By specifically focusing on procedure texts, this study adds depth to the understanding of how project-based learning enhances students' ability to write well-structured and coherent texts in this genre. The findings contribute to the existing literature and provide valuable insights for educators and researchers seeking evidence-based strategies to enhance students' writing abilities.

4. CONCLUSIONS

4.1. Conclusion

The findings of this study support the effectiveness of project-based learning (PBL) in enhancing students' writing skills, specifically in the context of procedure texts. The significant difference in mean scores between the PBL group and the traditional instruction group indicates that students who engaged in project-based learning demonstrated higher proficiency in organizing their writing, maintaining clarity, ensuring coherence, and adhering to genre-specific conventions. These findings align with previous research that emphasizes the benefits of PBL in promoting authentic writing experiences, critical thinking, and problem-solving skills. The findings of this study have important implications for educators and researchers in the field of writing instruction. The evidence supports the integration of project-based learning approaches in classrooms to enhance students' writing abilities. By providing students with meaningful and engaging experiences, PBL not only improves their writing skills but also fosters critical thinking, collaboration, and effective communication. Educators can incorporate project-based learning activities, particularly focused on specific genres like procedure texts, to provide students with authentic writing opportunities and develop their genre-specific writing skills.

4.2. Suggestions

Despite the valuable insights gained from this study, there are some limitations that should be acknowledged. Firstly, the study only focused on a single group of Class 9D students at a specific school, limiting the generalizability of the findings to other contexts. Additionally, the convenience sampling method used to select participants may introduce bias and affect the representativeness of the sample. Furthermore, the study only assessed writing skills based on procedure texts, and the impact of project-based learning on other writing genres remains unexplored. These limitations suggest the need for further research to validate and extend the current findings. To build upon the findings of this study, future research can consider the following suggestions. Firstly, conducting similar studies in different educational settings and with larger sample sizes would provide a broader understanding of the effectiveness of project-based learning in enhancing writing skills. Additionally, exploring the impact of project-based learning on other writing genres, such as persuasive or narrative texts, would provide a more comprehensive view of its effectiveness across different writing tasks. Furthermore, examining the long-term effects of project-based learning on students' writing abilities would offer insights into the sustainability of the intervention and its impact on students' overall writing development. Finally, incorporating qualitative methods, such as interviews or observations, could provide deeper insights into students' experiences and perceptions of project-based learning in the context of writing instruction.

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