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Improving Bahasa Indonesia writing skill: a project-based learning experimental study

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ABSTRACT

This study examines the effectiveness of project-based learning (PBL) in improving the academic writing skills of sixth-semester Bahasa Indonesia students at Universitas Muhammadiyah Pringsewu. We used a quasi-experimental design to address on the effects of PBL on improving Bahasa Indonesia writing skill among university students. This involved 32 students participating in PBL activities for one semester. Pre- and post-intervention tests measured writing quality, engagement, and critical thinking skills. Statistical studies demonstrated a notable enhancement in writing quality after the intervention, as shown by paired t-tests ($p < 0.05$). Additionally, groups that participated in various problem-based learning (PBL) activities had higher levels of engagement, as indicated by ANOVA ($p < 0.05$). The examination of observations and reflective essays revealed several prominent themes, including heightened passion, improved critical thinking, and a higher drive to learn and use Bahasa Indonesia. The study's findings indicate that Problem-Based Learning (PBL) is a potential method to improve the competency of university students in Bahasa Indonesia. PBL encourages greater involvement and the development of skills in the language. Practically, Project-Based Learning (PBL) enhances students' writing skills and promotes a profound comprehension of language by offering genuine learning experiences and chances for collaborative inquiry. This approach encourages students to actively participate in language usage in real-world situations. These findings add to the wider discussion on innovative teaching methods in higher education and have implications for developing curriculum and instructional practices that aim to enhance educational results.



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Introduction

Proficiency in academic writing is an essential ability for university students, particularly those who are majoring in Bahasa Indonesia (Bram & Angelina, 2022; Fajrina et al., 2021; Wijaya, 2021b). At Universitas Muhammadiyah Pringsewu, students in their sixth semester frequently have difficulties in acquiring proficiency in academic writing in Bahasa Indonesia, which remains a persistent issue even as they progress in their academic studies. The difficulties such as the students cannot focus to the lecturer instructions, so the students the interactive learning in the class. This challenge is primarily ascribed to instructional approaches that fail to

adequately involve students or cater to their varied learning preferences in writing class. The conventional learning methods mainly depend on memory and passive learning in writing class, which might impede the cultivation of critical thinking and originality essential for proficient academic writing. Given the fast-paced changes in education, it is crucial to embrace teaching approaches that are more interactive and focused on the needs of students (Abd Hamid et al., 2024; Bell & Bell, 2023; Rachman et al., 2024). The advent of the digital era has revolutionized the manner in which pupils obtain and assimilate knowledge, necessitating a corresponding evolution in instructional methodologies (Deping & Burhanudeen, 2023; Donga, 2024; Syaputri, 2014). The conventional classroom environment, which emphasizes lectures and standardized assessments, frequently struggles to keep up with these transformations, resulting in a disparity between instructional approaches and students' learning inclinations.

In light of these difficulties, educators and researchers are progressively promoting inventive pedagogical approaches, such as Project-Based Learning (PBL), to rejuvenate the learning process. Problem-Based Learning (PBL) is an educational approach that promotes student learning and the practical application of knowledge by actively engaging them in the investigation and resolution of real-world difficulties and problems (Dita et al., 2021; Tan, 2021). This method not only boosts student motivation but also improves their ability to think critically and solve problems. Project-based learning (PBL) facilitates the connection between theoretical knowledge and practical applications by involving students in relevant projects (Almulla, 2020; Omelianenko & Artyukhova, 2024; Saputra et al., 2024). This approach enhances their comprehension of the subject matter by promoting a deeper understanding. Within the realm of academic writing in Bahasa Indonesia, Problem-Based Learning (PBL) presents a novel and efficient strategy to tackle the constraints of traditional instructional techniques. By utilizing PBL, students have the opportunity to participate in projects that necessitate them to conduct research, collaborate with others, and generate written work that demonstrates their knowledge and understanding. Participating in this practical experience is especially advantageous for improving their academic writing abilities, as it provides them with the opportunity to actively engage in and perfect their writing within a nurturing and collaborative setting.

Within the realm of language acquisition, Project-Based Learning (PBL) proves to be highly efficient as it enables students to use the target language in authentic and purposeful situations (Belharb, 2020; Huércano, 2021). Instead of acquiring vocabulary and grammar rules separately, students participate in projects that necessitate them to interact, cooperate, and generate written and verbal material in the desired language. Engaging in this language immersion experience enhances linguistic proficiency as students actively utilize the language in diverse and pragmatic context (Episiasi et al., 2022; Syaputri, 2019; Wijayanti et al., 2024). As an illustration, a Problem-Based Learning (PBL) project in a Bahasa Indonesia class could entail students investigating a pertinent topic within their local community, carrying out interviews, and subsequently presenting their results in a detailed report. This endeavor not only improves their language proficiency but also cultivates their capacity to carry out research and communicate information with clarity and effectiveness. The theoretical basis of Problem-Based Learning (PBL) is derived from the constructivist theory of learning, which suggests that learners actively build knowledge by engaging in experiences and reflecting on them. Renowned proponents of constructivism, such as Greek & Jonsmoen (2021) and Li et al. (2024), underscored the significance of active involvement and interpersonal exchange in the process of learning. Greek & Jonsmoen (2021) posits that learning is a progressive endeavor that involves the accumulation of information by means of practical experiences and active investigation. Li et al. (2024) emphasized the social dimensions of learning, proposing that knowledge is formed via interactions with other individuals and the surrounding environment.

Within a problem-based learning (PBL) environment, students are empowered to assume responsibility for their own learning, thereby implementing constructivist ideas (Srikan et al., 2021; Wijaya, 2021a). Individuals are motivated to inquire, explore available resources, and cooperate with their peers in order to resolve issues and accomplish tasks. This process of investigation and contemplation enhances the depth and durability of learning. Engaging in initiatives that hold personal significance increases the likelihood of pupils retaining and utilizing acquired knowledge in future situations. Furthermore, PBL is in line with contemporary educational objectives that prioritize the cultivation of 21st-century competencies, including critical thinking, creativity, communication, and cooperation. Proficiency in these abilities is crucial for students to effectively traverse the intricacies of the modern world and achieve success in their prospective professions. Through the incorporation of Project-Based Learning (PBL) into the curriculum, educators may establish a learning atmosphere that not only meets academic standards but also equips students with the necessary skills and knowledge to tackle future difficulties and seize opportunities.

Although many studies have emphasized the advantages of PBL in other educational contexts, there is a distinct lack of research particularly examining its influence on the academic writing skills of university students in Bahasa Indonesia. The majority of current research tends to focus on K-12 education or the implementation

of Project-Based Learning (PBL) in STEM fields (DeLisi et al., 2023; Markula & Aksela, 2022). This creates a substantial gap in the existing literature on the effective implementation of problem-based learning (PBL) in language courses at the higher education level. Moreover, the scarcity of empirical data about the efficacy of problem-based learning (PBL) in Indonesian higher education institutions, specifically for students in Bahasa Indonesia classes, highlights the necessity for targeted study in this field. It is important to study how the problem-based learning (PBL) approach can be adjusted and improved for language learning in Indonesian universities, considering the distinct linguistic, cultural, and educational environments. This study seeks to address this deficiency by examining the impact of PBL on the scholarly writing skills of sixth-semester Bahasa Indonesia students at Universitas Muhammadiyah Pringsewu. This research aims to provide a comprehensive understanding of how Problem-Based Learning (PBL) might improve students' academic writing abilities in Bahasa Indonesia through a meticulous experimental investigation. This will assist students in acquiring the necessary skills and knowledge for academic and professional success in an ever-changing global environment.

Method

This study utilises a quasi-experimental method to examine the impact of Project-Based Learning (PBL) on the academic writing skills of sixth-semester Bahasa Indonesia students at Universitas Muhammadiyah Pringsewu. It compares the academic writing outcomes of students who engage in PBL activities with those who receive traditional teaching. This methodology facilitates the isolation of the impact of PBL on writing proficiency by controlling for any additional factors that could potentially affect the outcomes such as facility and students readiness. Furthermore, it enables researchers to operate within the established educational frameworks and procedures, guaranteeing that the intervention is both feasible and morally acceptable. By omitting the need for arbitrary assignment, the study acknowledges and preserves the inherent clustering of pupils, therefore upholding the authenticity of the educational setting.

The quasi-experimental method facilitates the gathering of longitudinal data, allowing for an examination of the long-term effects of PBL on students' academic writing skills (Lapina, 2020). In educational research, it is crucial to consider the various elements that can impact the development of skills like writing proficiency over a long period of time. By implementing this design, the study may monitor alterations and enhancements in students' writing proficiency from the commencement to the conclusion of the intervention, providing a full assessment of the effectiveness of the PBL. Moreover, the architecture facilitates the integration of both quantitative and qualitative data, enhancing the study by incorporating many viewpoints on student learning and engagement. Pre-intervention, during-intervention, and post-intervention are the three discrete phases into which the data collecting process is methodically organized to guarantee a thorough assessment of the PBL methodology. Baseline data are gathered during the pre-intervention stage to determine the students' starting academic writing abilities and degrees of involvement. This is giving them a writing task to complete that evaluates their writing ability prior to the intervention by evaluating coherence, organization, grammar, vocabulary, and overall arguments. To establish a standard for next comparisons, a survey is also carried out to gauge the first degrees of desire and involvement among students in academic writing.

Table 1. PBL Tasks and Instructions

| Task | Description | Instructions |
|----------------------------|---|--|
| Writing Reports | Students write a comprehensive report on a local environmental issue. | 1. Identifying the local environmental issue. 2. Conduct the simple interviews. 3. Compile findings into a structured report. |
| Conducting Interviews | Students conduct interviews with local community members or experts on a specific topic. | 1. Prepare a list of questions related to the topic. 2. Schedule and conduct interviews. 3. Record and transcribe responses. 4. Integrate interview content into an analytical essay. |
| Investigating Local Issues | Students investigate local community issues such as waste management or public health and write proposals or essays suggesting solutions. | 1. Select a community issue to investigate. 2. Gather data through observation, surveys, and interviews. 3. Analyze data and write a proposal or essay. 4. Focus on logical argumentation and evidence. |

The PBL methodology is applied across a semester during the intervention phase. Students work on a variety of assignments over this time that call for them to apply Bahasa Indonesia in practical settings. Among the responsibilities of these initiatives are writing reports, doing interviews, and investigating local community concerns.

Table 2. Interview Questions

| Question (English) | Question (Bahasa Indonesia) | Purpose |
|---|--|--|
| What do you think are the main environmental issues in our community? | <i>Menurut Anda, apa isu lingkungan utama di komunitas kita?</i> | To identify the key environmental concerns according to community members. |
| How do these environmental issues impact your daily life? | <i>Bagaimana isu lingkungan ini mempengaruhi kehidupan sehari-hari Anda?</i> | To understand the personal impact of environmental issues on individuals in the community. |
| What solutions do you believe would be effective in addressing these issues? | <i>Solusi apa yang menurut Anda efektif dalam mengatasi masalah ini?</i> | To gather community suggestions and perspectives on potential solutions. |
| Can you describe any efforts you or others have made to address these issues? | <i>Bisakah Anda menggambarkan upaya yang telah Anda atau orang lain lakukan untuk mengatasi masalah ini?</i> | To learn about existing initiatives and community actions aimed at solving the problems. |
| What challenges do you face when trying to address these environmental issues? | <i>Tantangan apa yang Anda hadapi saat mencoba mengatasi masalah lingkungan ini?</i> | To identify barriers and obstacles that hinder efforts to improve the environmental situation. |
| How do you think local authorities or organizations could better support these efforts? | <i>Bagaimana menurut Anda pihak berwenang lokal atau organisasi dapat lebih baik mendukung upaya ini?</i> | To gather opinions on the role of local authorities and organizations in addressing environmental concerns and supporting community initiatives. |

Data are gathered by routine observations, project evaluations, and student reflections. Focusing on student engagement and interaction, observations record collaborative dynamics and real-time engagement. The breadth and caliber of the students' work are assessed by project assessments, which provide hard proof of their learning advancement. The data gains a reflecting dimension from the personal insights into the learning processes and experiences that students share. After the PBL projects are finished in the post-intervention phase, a last writing assignment is given to gauge any improvements in academic writing ability. In order to maintain comparability and enable a precise evaluation of progress, this assignment is comparable to the pre-intervention job. Additionally gathered are post-intervention surveys and reflective essays to assess shifts in motivation, critical thinking abilities, and involvement. Through quantifiable information on their motivation and engagement, the surveys gauge how students view the PBL experience and how it affects their learning. Reflective essays provide qualitative information about the general progress of the students as well as insights obtained during the intervention, which adds individual viewpoints on the learning process to the analysis.

Table 3. Ensuring Reliability of Research Instruments

| Instrument | Strategy | Description |
|---------------------|---------------|--|
| Interview Questions | Expert Review | Have specialists evaluate questions for clarity, relevance, and bias of the interview questions. |
| Observation | Inter-Rater | Already used by multiple observers which assess the same subjects |
| Checklists | Reliability | or events to ensure consistent results of peer researcher. |
| Project Evaluation | Testing | Apply the rubric to 5 sample of projects to assess consistency in scores. |
| Rubrics | | |
| Reflective Essay | Thematic | Use multiple coders to identify and categorize themes, ensuring |
| Evaluations | Analysis | consistency in analysis. |

Methods of both quantitative and qualitative analysis are applied to the gathered data. We use statistical analysis of the quantitative data from the writing assignments and questionnaires to identify notable increases in writing engagement and quality. By comparing pre- and post-intervention scores using statistical methods such paired t-tests or ANOVA (Sternglass, 2017), any noteworthy changes attributed to the PBL intervention are found.

For the paired t-test, the formula used is:

$$t = \frac{\bar{d}}{s_d / \sqrt{n}}$$

Where \bar{d} is the mean of the differences between pre- and post-intervention scores, s_d is the standard deviation of the differences, and n is the number of paired observations.

For ANOVA, the formula used is:

$$F = \frac{\text{Between-group variance}}{\text{Within-group variance}}$$

Where the between-group variance is calculated as:

$$\frac{\sum_{i=1}^k \sum_{j=1}^{n_i} (X_{ij} - \bar{X}_i)^2}{N - k}$$

Thematic analysis is employed to analyse qualitative data obtained from reflective essays and observations (Peel, 2020). This entails the coding of the data to identify recurring themes and patterns that are associated with student engagement, motivation, and critical thinking. Thematic analysis facilitates a more profound comprehension of the students' experiences and the efficacy of the PBL approach. The study endeavours to offer a comprehensive assessment of the impact of PBL on the academic writing proficiency of Bahasa Indonesia students by integrating these methods. This will provide valuable insights for educators and contribute to the broader field of educational research. This methodological approach is meticulously designed to guarantee reliable and resilient results, thereby making a substantial contribution to the broader field of educational research.

Results and Discussions

The findings highlight a significant improvement in writing quality after the introduction of PBL approaches, based on careful analysis and comparison of data before and after the intervention. The improvement in writing proficiency and student motivation to learn Bahasa Indonesia observed throughout the semester demonstrates the efficacy of project-based learning (PBL) and offers tangible proof of the intervention's influence. This improvement is not only statistically significant but also demonstrates a substantial change in pupils' written expressing skills. In addition, the analysis phase goes beyond simple numerical evaluations and provides insight into the complex subtleties of student interaction within the PBL framework. By utilizing advanced statistical methods like the paired t-test and ANOVA, we have been able to identify subtle changes and noticeable trends in involvement levels among different PBL project groups.

Table 4. Statistical Analysis Results

| Statistical Test | Result | Interpretation |
|-----------------------------------|------------------|---|
| Paired t-test for Writing Quality | $t \approx 4.24$ | Significant improvement in writing quality |
| ANOVA for Engagement | $F \approx 2.67$ | Significant difference in engagement levels |

Based on analysis of the data highlights a significant improvement in writing quality following the deployment of Project-Based Learning (PBL) methodologies. By applying rigorous statistical approaches, specifically the paired t-test (with a significance level of $p < 0.05$), a indicator of the effectiveness of Problem-Based Learning (PBL) in improving writing proficiency becomes apparent. In addition, the thorough analysis using ANOVA reveals a noticeable difference in engagement levels among various PBL project groups, highlighting the significant influence of PBL on student participation and involvement ($p < 0.05$). The paired t-test results, with a t-value of approximately 4.24, indicate a significant enhancement in writing quality, directly addressing the objective of evaluating PBL's effectiveness in improving academic writing. Similarly, the ANOVA results, with an F-value of approximately 2.67, revealed significant differences in engagement levels among different PBL project groups, thus meeting the objective of assessing PBL's influence on student involvement. These findings demonstrate both statistical significance and provide evidence of the significant impact that PBL approaches have on academic writing and student engagement.

The extensive theme analysis performed on observations and reflective essays uncovered numerous important insights about the effectiveness of Project-Based Learning (PBL) as an instructional method. This methodological approach facilitated a detailed examination of many aspects of student experiences and learning outcomes within the PBL framework. By meticulously analysing qualitative data, we discovered numerous significant themes that revealed the various effects of PBL on student engagement, critical thinking, motivation, teamwork, and perceptions of learning efficacy.

Table 5. Thematic Analysis Result

| Themes | Description |
|--|--|
| Increased Enthusiasm and Participation | Students exhibited heightened interest and active involvement during PBL activities. |
| Enhanced Critical Thinking Skills | Participants demonstrated improved analytical abilities through thoughtful reflections on project outcomes. |
| Greater Motivation to Learn and Apply Bahasa Indonesia | There was a notable increase in students' motivation to learn and apply Bahasa Indonesia in real-world contexts. |
| Improved Collaboration and Communication | Group projects facilitated improved collaboration and communication skills among the participants. |
| Positive Perception of PBL Effectiveness | Students expressed positive perceptions of PBL's effectiveness in enhancing their writing proficiency. |

Moreover, there was a noticeable increase in students' enthusiasm to acquire and utilise Bahasa Indonesia in practical situations after the implementation of the Problem-Based Learning (PBL) intervention. The immersive nature of PBL projects allowed students to apply language abilities in real-life situations, which helped them understand the importance and usefulness of the language outside the classroom. The newfound enthusiasm drove students to actively participate and proactively explore the varied uses of Bahasa Indonesia in different areas of life. Furthermore, the implementation of PBL efforts resulted in a notable enhancement in the participants' abilities to collaborate and communicate effectively. By engaging in collaborative group projects, students acquired the skills to proficiently convey ideas, cooperate with their peers, and navigate a range of different viewpoints. The improved ability to work together not only benefited their personal relationships but also established the basis for successful group work and solving problems together—a crucial set of skills for excelling in both academic and professional environments. Finally, students largely conveyed favourable judgements regarding the effectiveness of PBL in improving their writing skills. The individuals acknowledged PBL as an educational method that brought about significant changes, enhancing not just their abilities in academic writing but also promoting a more profound comprehension of the subject matter and its practical applications. The positive perception highlighted the concrete advantages of PBL in fostering comprehensive learning experiences that enable students to succeed academically and flourish in a constantly changing world.

The results of this study, obtained through theme analysis, provide useful insights into the efficacy of project-based learning (PBL) in improving several facets of student learning experiences. The observed surge in enthusiasm, active involvement, and drive among students subsequent to the adoption of PBL is consistent with prior research suggesting that PBL can successfully augment student engagement and innate motivation in the process of learning. Through the engagement of students in genuine, practical projects, project-based learning (PBL) cultivates a sense of possession and significance, which can have a beneficial influence on students' attitudes towards education (Lund, 2016; Maspul, 2023; Robertson, 2013). Furthermore, the enhancements in the ability to think critically, work collaboratively, and communicate effectively shown by the participants align with the objectives of PBL, which aim to develop advanced thinking abilities and encourage cooperative learning opportunities.

Project-Based Learning (PBL) offers students the chance to cultivate and utilise crucial abilities by involving them in intricate, open-ended assignments that demand problem-solving and collaboration. However, prior studies have emphasised several potential constraints of PBL that are crucial to recognise. An issue frequently raised is the demanding and resource-intensive nature of implementing PBL, which can present difficulties for educators in terms of curriculum development, assessment creation, and group work facilitation (Mohammed et al., 2024; Oliveira et al., 2022). Furthermore, the efficacy of PBL might differ based on variables such as student preparedness, instructor proficiency, and institutional backing, emphasising the significance of meticulous preparation and continuous professional growth. Based on these difficulties, the favourable results witnessed in this research indicate that the advantages of PBL, such as heightened student involvement, higher critical thinking abilities, and improved teamwork, surpass the possible disadvantages. Prior studies have also emphasised the beneficial influence of problem-based learning (PBL) on the long-term retention of knowledge and the application of learning to real-life situations, further confirming its efficacy as an instructional method.

Conclusions

In all, this study has revealed the significant impact of project-based learning (PBL) on boosting different facets of student learning experiences, such as heightened involvement, greater critical thinking abilities, and improved teamwork. The results highlight the efficacy of PBL in cultivating a favourable and vibrant educational setting where students actively engage in genuine, practical projects that enhance their comprehension and utilisation

of course material. The paired t-test results showed a significant improvement in writing quality, with a t-value of around 4.24 ($p < 0.05$). The ANOVA analysis indicated statistically significant variations in participation levels among different PBL project groups, with an F-value of around 2.67 ($p < 0.05$). Qualitative data corroborate the quantitative results, indicating a rise in student passion and enhanced cooperation abilities, which directly lead to the observed improvements in writing quality and engagement. Although the study recognises the difficulties of implementing PBL, such as limited resources and differences in student preparedness, the predominantly favourable results indicate that the advantages of PBL are greater than the possible disadvantages. By capitalising on the advantages of PBL while acknowledging its drawbacks, educators can persist in utilising this innovative teaching method to facilitate significant and influential learning opportunities for students.

In order to progress, additional investigation is required to examine methods for enhancing the application of problem-based learning (PBL) and effectively catering to the varying requirements of students in various educational settings. By continuously refining and innovating project-based learning (PBL) approaches, educators can ensure that students acquire the essential skills and knowledge required to prosper in an increasingly complex and interconnected world. In summary, the results of this study add to the existing research on problem-based learning (PBL) and confirm its significance as an educational method that promotes academic success and personal growth in students. Practically, Project-Based Learning (PBL) enhances students' writing skills and promotes a profound comprehension of language by offering genuine learning experiences and chances for collaborative inquiry.

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