
Examining the Impact of Project-Based Learning on Students' Academic Writing Development in Indonesian Language Education

Taufik^{1)*}, Diana Purwati²⁾, Muhammad Rizkan³⁾

¹⁾Department of Indonesian Language and Literature Education, STKIP Yapis Dompus, Dompus, Indonesia

²⁾Department of English Language Education, STKIP Yapis Dompus, Dompus, Indonesia

³⁾Department of Economics, National Dong Hwa University, Hualien, Taiwan

*Correspondence: taufikbima25@gmail.com

ABSTRACT

The development of students' academic writing skills remains a persistent challenge in language education, particularly in fostering meaningful learning engagement and process-oriented writing practices. This study analyzes the impact of Project-Based Learning on students' academic writing skills in Indonesian language education. The study employed an explanatory sequential mixed methods design involving 29 eighth-grade students. Quantitative data were obtained through pre-test and post-test writing assessments and analyzed using a paired sample t-test, while qualitative data were collected through classroom observations and semi-structured interviews and analyzed thematically. The quantitative results indicated a significant improvement in students' writing performance after the implementation of PjBL. The qualitative findings showed that this improvement was associated with increased student engagement, a more structured writing process, and collaborative learning experiences that supported idea development and writing quality. These findings suggest that improvements in writing skills are influenced not only by instructional design but also by participation and interaction during the learning process. This study contributes to an integrated understanding of how PjBL supports academic writing development through a mixed methods approach. The findings emphasize the importance of process-oriented, collaborative, and authentic writing instruction. Overall, the study confirms the potential of PjBL to foster meaningful and sustainable development of students' writing skills.

Keywords: Project-Based Learning; Academic Writing; Writing Skill Development; Indonesian Language Education

This is an open access article under the CC - BY license.



INTRODUCTION

Academic writing has increasingly been positioned as a core competency in twenty-first century education, not merely as a means of communication but as a central mechanism for knowledge construction, critical thinking development, and academic reflection (Ferreira et al., 2025; Flowerdew & Flowerdew, 2019). Writing functions as an epistemic tool through which students organize ideas, construct logical arguments, and articulate understanding within the framework of academic literacy (Henderson, 2020). Despite its centrality, fostering students' academic writing remains a persistent challenge, particularly in designing learning experiences that effectively integrate higher-order thinking with meaningful and contextually grounded writing practices (T. Siregar, 2025).

In the context of Indonesian language education at the junior secondary level, writing constitutes a fundamental component of text-based learning, requiring students to produce structured, coherent, and argumentative texts (Bila et al., 2024). The national curriculum places strong emphasis on literacy as a primary learning outcome, positioning writing ability as a key indicator of educational quality (Malpique et al., 2023). However, empirical evidence suggests that students' academic writing skills remain underdeveloped, particularly in idea generation, textual organization, and the use of appropriate academic language (Phillips Galloway et al., 2020). This condition reflects a persistent gap between curricular expectations and classroom practices.

Such challenges are closely associated with the dominance of teacher-centered instruction, which limits students' opportunities to actively engage in authentic writing processes. Students often struggle to develop ideas, structure their texts, and express arguments critically due to limited exposure to contextual and collaborative learning experiences (Sarwari & Kakar, 2023). Furthermore, low levels of student engagement in writing activities indicate that writing is not yet fully enacted as a meaningful cognitive and social process

(Jin et al., 2024). These issues underscore the need for more innovative, participatory, and experience-oriented pedagogical approaches.

Within this framework, Project-Based Learning (PjBL) offers a theoretically grounded and pedagogically relevant alternative (Asfihana et al., 2022). Rooted in constructivist learning theory, PjBL emphasizes learning through authentic experiences, inquiry, and collaboration. Through project-based activities, students are engaged in iterative processes of idea exploration, drafting, revision, and reflection, all of which are essential to writing development. This approach not only promotes student-centered learning but also situates writing as a contextualized, collaborative, and product-oriented process (Chen et al., 2026; Meikayanti et al., 2026).

Nevertheless, existing research reveals several limitations. Most studies on PjBL in language learning primarily focus on general learning outcomes and student engagement, with limited attention to academic writing as a complex cognitive and process-oriented activity (Chen et al., 2026; Song et al., 2024). In addition, the predominance of quantitative approaches has constrained deeper understanding of how students' learning experiences contribute to writing development. Within the context of Indonesian junior secondary education, studies integrating writing outcomes with students' learning experiences through mixed methods approaches remain scarce. This study offers three main contributions to the existing literature. First, it specifically examines academic writing development within Indonesian junior secondary language education, a context that remains underrepresented in Project-Based Learning research. Second, unlike previous studies that primarily focus on general learning outcomes, this study investigates academic writing as a process-oriented and socially mediated practice. Third, the study integrates quantitative writing improvement with qualitative learning experiences through an explanatory sequential mixed methods design, thereby providing a more comprehensive understanding of how Project-Based Learning facilitates writing development.

Addressing this gap, the present study aims to examine the impact of Project-Based Learning on students' academic writing development while also exploring how students' learning experiences during PjBL contribute to such development. Conducted with eighth-grade students at SMPN 1 Woja, this study employs an explanatory sequential mixed methods design to integrate quantitative and qualitative findings in a comprehensive manner. Specifically, the study investigates whether PjBL significantly improves students' academic writing, how students experience project-based writing instruction, and how these experiences explain the observed development in writing ability.

METHOD

This study employed an explanatory sequential mixed methods design, in which quantitative data were collected and analyzed first, followed by qualitative data to further explain the quantitative findings (Creswell & Creswell, 2023). The study was conducted at SMPN 1 Woja and involved one eighth-grade class consisting of 29 students. The participants were selected through purposive sampling based on the class's suitability for the implementation of Project-Based Learning (PjBL) in Indonesian language instruction. The students represented diverse levels of initial writing ability.

The research instruments included a writing test, an academic writing assessment rubric, interviews, and classroom observations. The writing test was administered as a pre-test and post-test to examine changes in students' academic writing performance following the implementation of PjBL. Students' writing was assessed using an analytic rubric covering idea development, organization, language use, and writing mechanics. Semi-structured interviews were conducted to explore students' learning experiences, while classroom observations were used to document instructional activities and student participation during the learning process.

Data collection was conducted in two sequential phases. During the quantitative phase, students completed a pre-test before the instructional intervention and a post-test after the intervention. The PjBL intervention was implemented over eight weeks in Indonesian language classes. The instructional process involved several stages, including topic selection, collaborative project planning, information gathering, drafting, peer discussion, revision, and final text presentation. Students worked both individually and collaboratively throughout the writing process. During the qualitative phase, interviews and classroom observations were conducted to obtain deeper insights into students' experiences during project-based writing activities and to explain the quantitative findings more comprehensively.

Quantitative data were analyzed using a paired sample t-test to determine differences in students' academic writing performance before and after the intervention at a significance level of 0.05. Meanwhile,

qualitative data were analyzed using thematic analysis, involving coding, categorization, and theme development. The qualitative findings were used to provide deeper explanations of the quantitative results. Instrument validity was established through expert judgment, while the reliability of writing assessment was ensured through inter-rater reliability (Coleman et al., 2021). The trustworthiness of qualitative data was maintained through methodological triangulation and member checking. Ethical approval was obtained from the school, and all participants were involved voluntarily, with confidentiality of data strictly maintained.

RESULTS AND DISCUSSION

Quantitative and qualitative findings were analyzed following the explanatory sequential mixed methods design to examine the impact of Project-Based Learning (PjBL) on students' academic writing development. The quantitative findings are presented first to identify changes in students' writing performance after the implementation of PjBL, followed by qualitative findings that provide deeper insights into students' learning experiences underlying such improvement. The findings are discussed in an integrated manner to explain how project-based learning contributed to students' academic writing development.

Improvement of Students' Academic Writing Performance

Quantitative analysis was conducted to examine changes in students' academic writing performance before and after the implementation of Project-Based Learning (PjBL), which was carried out over an eight-week period. Overall, the findings indicate a substantial improvement in students' writing performance following the intervention. Descriptive statistics were first calculated to provide an overview of students' writing achievement before and after the implementation of PjBL. The results of the descriptive analysis are presented in Table 1.

Table 1. Descriptive Statistics of Academic Writing Scores

Test	N	Mean	SD	Min	Max
Pre-test	29	65.21	6.45	54	75
Post-test	29	78.34	5.98	68	88

As shown in Table 1, the mean score increased from 65.21 in the pre-test to 78.34 in the post-test, indicating an average gain of 13.13 points. Improvements were also observed in both minimum and maximum scores, suggesting that students across different achievement levels benefited from the implementation of PjBL. The slight reduction in standard deviation further indicates a more balanced distribution of writing performance after the intervention. To determine whether the observed improvement was statistically significant, a paired sample t-test was conducted. The results of the paired sample t-test, including the mean difference, t-value, degrees of freedom, and significance level, are presented in Table 2.

Table 2. Paired Sample t-test Results

Variable	Mean Difference	t	df	Sig. (p)
Pre-Post Writing	-13.13	-11.27	28	0.000

The findings revealed a statistically significant difference between pre-test and post-test scores ($p < 0.05$), indicating that PjBL contributed positively to students' academic writing development. The large effect size (Cohen's $d = 2.09$) further demonstrates that the improvement was not only statistically significant but also pedagogically meaningful in the context of writing instruction.

These findings suggest that project-based learning provides students with meaningful opportunities to develop ideas, organize arguments, and engage in recursive writing practices such as drafting and revising. This supports constructivist perspectives emphasizing that learning occurs more effectively when students actively participate in authentic and inquiry-based tasks (Rhodes, 2023; Sitotaw Goshu & Ridwan, 2024). The findings are also consistent with previous studies reporting that PjBL enhances student engagement and language learning outcomes (Zhang & Ma, 2023; Andargie et al., 2025).

However, unlike many previous studies that mainly focus on general academic achievement, the present study demonstrates that writing improvement is closely associated with process-oriented learning experiences. The findings indicate that the effectiveness of PjBL may depend not only on project completion, but also on students' active involvement in structured writing activities and collaborative interaction throughout the learning process.

From a pedagogical perspective, these findings imply that writing instruction in Indonesian language classrooms may benefit from moving beyond product-oriented practices toward more collaborative and process-oriented approaches. The structured stages within PjBL appear to support students in planning, developing, revising, and refining their written work more systematically.

Student Engagement in Project-Based Learning

Qualitative findings revealed that one of the most significant changes during the implementation of PjBL was the increased level of student engagement in classroom learning activities. Most students became more actively involved in classroom discussions, particularly during topic exploration, planning, and collaborative project activities. Compared to previous instructional practices, students appeared more confident in expressing ideas and participating in learning activities.

This pattern is reflected in the following student statements:

“Now I participate more in discussions, so I’m not just listening like before.”

(ENG-S3)

“Working on projects makes me more motivated because we get to choose the topic ourselves.”

(ENG-S11)

The increased engagement observed in this study supports student engagement theory, which emphasizes the importance of active participation in improving learning outcomes (Lan & Hew, 2020; X. Xu et al., 2023). The findings also align with constructivist perspectives suggesting that authentic and student-centered learning activities promote deeper cognitive involvement and motivation.

In addition, these findings are consistent with previous studies reporting that PjBL enhances student participation and learning engagement (Zhang & Ma, 2023). However, the present study further demonstrates that engagement in project-based activities contributes not only to classroom participation, but also to the development of academic writing practices. Students became more actively involved in generating ideas, discussing arguments, and refining written texts throughout the learning process. Despite these positive outcomes, engagement levels were not entirely uniform. Some students initially required time to adapt to collaborative and project-based learning environments. This finding suggests that the effectiveness of PjBL may also depend on students’ readiness and prior learning experiences.

Development of Students’ Writing Process (DWP)

Another important finding relates to changes in students’ writing processes. Most students demonstrated a shift from spontaneous and unstructured writing toward a more systematic writing process involving planning, drafting, revising, and editing.

This development is illustrated in the following excerpts:

“Before, I used to write directly, but now I follow steps, so it is easier to develop my ideas.”

(WPD-S7)

“When I revise, I can see which parts are unclear and fix them.”

(WPD-S15)

“I used to be confused about how to start, but now I usually make an outline first before writing.”

(WPD-S21)

This shift indicates that students gradually internalized process-oriented writing strategies. The findings support writing process theory, which conceptualizes writing as a recursive and developmental activity rather than a one-time product (Chauke, 2025; Krisbiantoro, 2025). Through project-based activities, students were encouraged to continuously develop, review, and improve their written work. The findings also extend previous research on PjBL by demonstrating that writing improvement is closely associated with students’ engagement in recursive writing practices. Unlike studies that mainly emphasize achievement scores, the present study highlights how structured writing stages contribute to improved organization, coherence, and idea development in students’ academic writing.

From a pedagogical perspective, these findings suggest that writing instruction may benefit from integrating explicit process-writing activities into project-based learning environments. Supporting students through stages of planning, drafting, and revising may help them develop stronger academic writing skills more systematically.

Collaboration Experience (COL)

Collaboration emerged as another important aspect of the learning process. Most students reported that group discussions and peer feedback helped them develop ideas and improve the quality of their writing. This is reflected in the following statements:

“Discussing with my friends helps me find ideas and improve my writing.”

(COL-S12)

“If something is missing, my friends usually give suggestions, so the writing becomes better.”

(COL-S18)

“Sometimes my friends’ ideas actually help me understand the topic more deeply.”

(COL-S25)

These findings reflect principles of social learning theory, which emphasizes that learning occurs through interaction, feedback, and shared knowledge construction (T. E. Siregar et al., 2024). Collaborative learning activities created opportunities for students to exchange perspectives, negotiate meaning, and refine their ideas through peer interaction.

The findings are also consistent with previous studies highlighting the importance of collaboration in project-based learning environments. However, the present study further indicates that collaborative interaction contributes specifically to academic writing development by supporting both content generation and language use. Nevertheless, some students initially experienced difficulties in collaboration, particularly in task distribution and expressing opinions within groups. Over time, however, most students gradually adapted to collaborative learning dynamics and became more actively engaged in group interaction. Overall, the integration of quantitative and qualitative findings indicates that the improvement in students’ academic writing was not solely influenced by the structural implementation of PjBL, but also by the meaningful learning experiences that emerged throughout the instructional process. The findings suggest that academic writing development should be understood as a cognitive, behavioral, and socially mediated process shaped through active participation, recursive writing practices, and collaborative learning interaction.

Despite these findings, several limitations should be acknowledged. This study was conducted within a single class with a relatively small sample, which may limit the generalizability of the findings. The duration of the intervention was also limited and may not fully capture long-term writing development. In addition, the study was situated within a specific educational context, which may influence the transferability of the findings. Future studies may address these limitations by involving larger samples, longer intervention periods, and more diverse educational settings to further validate and extend these findings.

CONCLUSION

This study demonstrates that Project-Based Learning (PjBL) contributes positively to students’ academic writing development in Indonesian language education. The findings indicate that writing improvement is associated not only with instructional intervention, but also with students’ active engagement in process-oriented and collaborative learning experiences. Through project-based activities, students became more actively involved in idea development, drafting, revision, and peer interaction, which collectively supported the improvement of their academic writing skills. This study also contributes to the existing literature by providing integrated quantitative and qualitative evidence of how PjBL facilitates writing development within the context of Indonesian junior secondary education.

From a pedagogical perspective, the findings suggest that writing instruction should emphasize authentic, collaborative, and process-oriented learning environments rather than solely focusing on final written products. Despite these contributions, this study was limited to a single classroom context with a relatively small sample and a limited intervention period. Therefore, future studies are recommended to involve

larger samples, longer implementation periods, and more diverse educational settings to further examine the effectiveness of PjBL in supporting academic writing development.

References

- Andargie, A., Amogne, D., & Tefera, E. (2025). Effects of Project-Based Learning on EFL Learners' Writing Performance. *Plos One*, 20(1), 1–16. <https://doi.org/10.1371/journal.pone.0317518>
- Asfihana, R., Saliha, K., Iskandar, & Garim, I. (2022). Students' English Learning Experiences on Virtual Project-Based Learning Instruction. *International Journal of Language Education*, 6(2), 196–209. <https://doi.org/10.26858/ijole.v6i2.20506>
- Bila, Y. S., Oktarina, E., Putri, R. Z., & Hasibuan. (2024). The Implementation Of Text-Based Approach Within The Merdeka Curriculum In Senior High School. *JKIP : Jurnal Kajian Ilmu Pendidikan*, 5(1), 74–80. <https://doi.org/https://doi.org/10.55583/jkip.v5i1.941>
- Castillo-Martínez, I. M., & Ramírez-Montoya, M. S. (2021). Research Competencies to Develop Academic Reading and Writing: A Systematic Literature Review. *Frontiers in Education*, 5(January), 1–12. <https://doi.org/10.3389/educ.2020.576961>
- Chauke, E. (2025). Exploring Teaching Approaches Suitable for Teaching Grade 4 Essay Writing. *Twist*, 20(2), 441–452. <https://doi.org/10.5281/twist.10049652>
- Chen, X., Shu, D., & Barrot, J. S. (2026). Teacher Beliefs About e-Assessment for Learning in English as a Foreign Language Writing: an Ecological Perspective. *Computer Assisted Language Learning*, 3(1), 1–32. <https://doi.org/10.1080/09588221.2026.2612993>
- Coleman, P., N, D., Ed, C., & RMN. (2021). Validity and Reliability within Qualitative Research in the Caring Sciences. *International Journal of Caring Sciences*, 14(3), 2041–2045.
- Creswell, J. W., & Creswell, J. D. (2023). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (T. Buyan (ed.); 7th ed.). SAGE Publications India Pvt. Ltd.
- Ferreira, J. M., Zabolotna, K., & Lee, S. (2025). Teaching twenty-first-century skills: examining collaborative learning in initial teacher education in Finnish universities. *Scandinavian Journal of Educational Research*, 69(7), 1319–1340. <https://doi.org/10.1080/00313831.2024.2419078>
- Flowerdew, L., & Flowerdew, L. (2019). Studies in Higher Education The Academic Literacies approach to scholarly writing : a view through the lens of the ESP / Genre approach The Academic Literacies approach to scholarly writing : a view through the lens of the ESP / Genre approach. *Studies in Higher Education*, 45(3), 579–591. <https://doi.org/10.1080/03075079.2019.1576165>
- Henderson, J. (2020). Styling writing and being styled in university literacy practices. *Teaching in Higher Education*, 25(1), 1–17. <https://doi.org/10.1080/13562517.2018.1527765>
- Jin, X., Jiang, Q., Xiong, W., Feng, Y., & Zhao, W. (2024). Effects of Student Engagement in Peer Feedback on Writing Performance in Higher Education. *Interactive Learning Environments*, 32(1), 128–143. <https://doi.org/10.1080/10494820.2022.2081209>
- Juan Carlos González-Salamanca, Agudelo, O. L., & Salinas, J. (2020). Key competences, education for sustainable development and strategies for the development of 21st century skills. A systematic literature review. *Sustainability (Switzerland)*, 12(24), 1–17. <https://doi.org/10.3390/su122410366>
- Krisbiantoro, B. (2025). The Impact of Process-Product Approach on EFL Students' Critical Thinking in Academic Report Writing. *SAGA: Journal of English Language Teaching and Applied Linguistics*, 6(2), 193–205. <https://doi.org/10.21460/saga.2025.62.251>
- Lan, M., & Hew, K. F. (2020). Examining Learning Engagement in MOOCs: A Self-Determination Theoretical Perspective Using Mixed Method. *International Journal of Educational Technology in Higher Education*, 17(1), 2–24. <https://doi.org/10.1186/s41239-020-0179-5>
- Malpique, A. de A., Valcan, D., Pino-Pasternak, D., & Ledger, S. (2023). Teaching Writing in Primary Education (Grades 1–6) in Australia: A National Survey. *Reading and Writing*, 36(1), 119–145. <https://doi.org/https://doi.org/10.1007/s11145-022-10294-2>

- Meikayanti, E. A., Pratiwi, Y., & Harsiati, T. (2026). Integrating Information Literacy into Project-Based Learning: An Ethnographic Study of Indonesian Language Teachers' Planning Challenges. *Architectural Image Studies*, 7(1), 2087–2096. <https://doi.org/https://doi.org/10.62754/ais.v7i1.1172>
- Pearson, W. S. (2024). Affective, Behavioural, and Cognitive Engagement With Written Feedback on Second Language Writing: A Systematic Methodological Review. *Frontiers in Education*, 9(1), 1–15. <https://doi.org/10.3389/educ.2024.1285954>
- Phillips Galloway, E., Qin, W., Uccelli, P., & Barr, C. D. (2020). The Role of Cross-Disciplinary Academic Language Skills in Disciplinary, Source-Based Writing: Investigating the Role of Core Academic Language Skills in Science Summarization for Middle Grade Writers. *Reading and Writing*, 33(1), 13–44. <https://doi.org/10.1007/s11145-019-09942-x>
- Purwoto, S., & Kurniawan, G. F. (2025). Integration of Digital Storytelling in Project-Based Learning to Develop Students Historical Literacy: Literature Review Integrasi. *Jurnal Pendidikan IPS*, 15(3), 668–680. <https://doi.org/https://doi.org/10.37630/jpi.v15i3.3236>
- Rhodes, E. W. (2023). The Effectiveness of Project-Based Learning in Developing Critical Thinking Skills among High School Students. *European Journal of Education*, 1(1), 167–186. <https://doi.org/1014049202>
- Rustam, & Priyanto. (2022). Critical thinking assessment in the teaching of writing Indonesian scientific texts in high school. *Jurnal Penelitian Dan Evaluasi Pendidikan*, 26(1), 12–25. <https://doi.org/10.21831/pep.v26i1.36241>
- Sarwari, K., & Kakar, A. F. (2023). Developing Students' Critical Thinking Skills through Contextual Teaching and Learning. *Journal of Cognition, Emotion & Education*, 1(1), 340–351. <https://doi.org/10.31849/lectura.v14i2.15030>
- Sinnema, C., Nieveen, N., & Priestley, M. (2020). Successful futures, successful curriculum: What can Wales learn from international curriculum reforms? *The Curriculum Journal*, 31(2), 181–201. <https://doi.org/10.1002/curj.17>
- Siregar, T. (2025). Lecturers' Pedagogical Practices in Higher Education: Determining the Counter-Balance Between Higher and Lower Order Thinking Skills. *Preprints.Org (Www.Preprints.Org)*, 1231(6), 1–39. <https://doi.org/10.20944/preprints202510.1231.v1>
- Siregar, T. E., Luali, N., Vinalistyosari, R. C., Hanurawan, F., & Anggraini, A. E. (2024). Implementation of Vygotsky's Constructivism Learning Theory Through Project Based Learning (PjBL) In Elementary Science Education. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, 18(4), 2586–2607. <https://doi.org/http://dx.doi.org/10.35931/aq.v18i4.3620>
- Sitotaw Goshu, B., & Ridwan, M. (2024). Exploring the Role of Project-Based Learning in Fostering Critical Thinking Skills. *Britain International of Linguistics, Arts and Education Science Journal*, 6(3), 149–166. <https://doi.org/https://doi.org/10.33258/biolae.v6i3.1201149>
- Wahyurianto, I., & Sylvia, S. (2024). Collaborative Learning Strategy for Better Reading Comprehension in EFL University Courses. *Journal of English for Academic and Specific Purposes (JEASP)*, 7(2), 127–139. <https://doi.org/10.18860/jeasp.v7i2.29674>
- Xu, T., & Jumaat, N. F. (2025). Enhancing Critical Thinking in EFL Writing Through an AI-Supported Blended Learning Model. *International Journal of Academic Research in Progressive Education and Development*, 14(1), 1975–1994. <https://doi.org/10.6007/ijarped/v14-i1/24850>
- Xu, X., Shi, Z., Bos, N. A., & Wu, H. (2023). Student Engagement and Learning Outcomes: An Empirical Study Applying a Four-Dimensional Framework. *Medical Education Online*, 28(1), 1–14. <https://doi.org/10.1080/10872981.2023.2268347>
- Zhang, L., & Ma, Y. (2023). A Study of the Impact of Project-Based Learning on Student Learning Effects: A Meta-Analysis Study. *Frontiers in Psychology*, 14(July), 1–14. <https://doi.org/10.3389/fpsyg.2023.1202728>