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# Developing a Peer Tutoring–Based Social Scaffolding Model in Project-Based Learning to Enhance University Students' Academic Writing Skills

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**ABSTRACT**

Increased focus on academic writing within higher education has not been matched by appropriate models of instruction that can bring about the collaborative learning and social scaffolding necessary for optimal student writing performance. The objectives of this study are (1) to analyze students' needs and characteristics, (2) to develop a project-based learning peer tutoring model as integrated social scaffolding in the academic writing instruction, and (3) to see the validity, practicality, and effectiveness of the developed model. This study used a Research and Development (R&D) strategy in the 4D model (define, design, develop, and disseminate). One hundred twenty undergraduates participated in the study, which was conducted at Universitas Muhammadiyah Surakarta and UIN Surakarta in their academic writing courses. Methods: The study used mixed methods to analyze data collected from needs analysis surveys, expert validation sheets, student response questionnaires, pre- and post-tests, interviews, and documentation. Results show that the developed model has a high rate of validity (CVI = 0.94) & a high rate of practicality (89.1%). Additionally, students improved significantly in their academic writing abilities from pretest (M = 54.62) to posttest (M = 76.14) over the course of several weeks, creating a gain of 21.52 ($p < .001$; Cohen's $d = 1.98$). This study shows that the improvement of students in academic writing was shown from the process and product quality with peer tutoring as social scaffolding implemented in the PjBL model.

**Keywords**: academic writing, project-based learning, peer tutoring, social scaffolding: higher education

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## INTRODUCTION

Writing is a key skill necessary for university students to write research theses, academic papers and contribute meaningfully within their communities of practice. This underscores the importance of pedagogies and practices that not only attend to writing outputs but also help students through collaborative and scaffolded ways of learning. Larger areas of writing difficulties for students include the paucity of academic language and vocabulary, lack of grammatical control, and connectedness in larger units of text (Bhardwaj et al., 2025; Phyo et al., 2024; Taye & Mengesha, 2024). Furthermore, students commonly write incoherent claims and do not back them up with support or counterclaims (De La Paz et al., 2023). The overall quality of writing is negatively impacted by infrequent writing practice and feedback that is further compounded by these challenges (Kusmanto et al., 2024b).

Previous studies have shown that well-designed instructional interventions can improve students' academic writing skills. For example, recent studies on PjBL demonstrate its effectiveness in enhancing students' writing performance and engagement (Chao et al., 2025a; Purwanto et al., 2025; Riswandi, 2018). In addition, collaborative approaches such as peer tutoring and peer feedback have been found to significantly improve students' writing quality and learning outcomes (Taddese et al., 2026). However, many of these studies tend to focus primarily on the final writing product rather than the learning process and provide limited opportunities for collaborative interaction and scaffolded support. Therefore, there remains a need for an instructional model that integrates process-oriented learning with social scaffolding, particularly through the integration of peer tutoring within project-based learning (PjBL). Problem-based and project-based learning approaches have been shown to enhance problem-solving skills and the quality of written argumentation (Kusmanto et al., 2024), while structured writing instruction using the IMRAD structure enhances multiple aspects of research writing (Vo et al., 2025). Collaborative techniques, such as digital annotation and concept mapping, have been shown to enrich the quality of claims, evidence, and refutations. In this context, instructional approaches that emphasize collaborative learning and scaffolded support become increasingly important to help students develop their academic writing skills in a more structured and meaningful way.

Instructional models that rely heavily on instructor-centered approaches may be less effective, particularly when they do not incorporate process-oriented and student-centered pedagogical design in academic writing instruction. Students' discomfort with writing has often been reported due to inadequate control over the conventions of academic discourse and concern about judgment and negative assessment (Casanave & Vandrick, 2003), which are compounded by fragmented and incoherent writing instruction in the curriculum (Gupta et al., 2022). When writing instruction overemphasizes the final product with limited support for writing processes, such as ideation, drafting, revising, and self-regulation, students' writing development may be hindered (Handayani & Rahmandani, 2022; Taye & Mengesha, 2024). In addition, teacher-centered curricula and top-down feedback structures lead to reduced participation and overdependence on instructor feedback (Trullàs et al., 2022; Zhang et al., 2025). These conditions highlight the need for student-centered instructional designs that integrate process-oriented support and collaborative learning environments.

The limitations highlight the necessity of a process- and student-centered writing pedagogy grounded in social constructivism, emphasizing scaffolded support and collaboration. In this sense, writing development is seen as socially mediated, whereby students construct knowledge in social contexts through interaction, feedback, and guided participation. In this line of reasoning, the combination of Project-Based Learning (PjBL) combined with peer tutoring (a form of social scaffolding), is a pedagogically based method that promotes active learning through PjBL, structured writing processes, and collaborative construction of knowledge.

Literature shows peer tutoring as one of the social scaffolding methods in academic writing, enhancing essay quality, domain knowledge, and collaborative revision (Latifi et al., 2021). While peer feedback receives guidance/support from more capable peers, peer tutoring dynamically helps others across the writing process. Rooted in sociocultural theory, this interaction allows students to co-construct ideas, reflect on their writing, and create a higher level of confidence with decreased writing anxiety (Saksopin et al., 2025).

By offering a university-level instructional model that combines PBL and peer tutoring as social scaffolding, the present study adds to writing pedagogy. And though research has continued to grow in this area, many gaps remain because most have investigated writing (outcomes) as opposed to process-oriented steps of writing that include planning and drafting and revising. Additionally, collaborative methods like PBL or peer feedback are normally used in a non-integrated instructional design manner.

Abstract: Based on sociocultural goals, this study extends the boundaries of product-based writing instruction beyond peer tutoring, using Project-Based Learning (PBL) as a driving force with a Sociocultural Scaffolding Process Model. This contribution comprises three aspects: (1) a distinction—peer tutoring as one epistemic genre of scaffolding vs. general peer feedback, (2) a practical pedagogy design framework for process-centric academic writing and, (3) empirical evidence on feasibility, adaptability and effectiveness in enhancing students' academic writing proficiency. To this end, the aim of the current study was to investigate high school students writing needs and design an instructional based on peer tutoring and PBL and test its effectiveness.

## METHOD

### *Research Design*

R&D model (define, design develop & disseminate) adaptation of a modified 4D in this study. There were some modifications made in which every phase was fit and framed for the making of a PjBL-peart tutoring instructional model, through incorporating these principles within sociocultural scaffolding inside design an development stages. Finally, in the disseminate phase, the complete and formatted teacher model was packaged into an organized teaching guide with lesson plans, project information, peer tutoring process descriptors and assessment materials. The model was then scaled up to wider classroom applications and distributed via academic outlets including workshops, teaching modules, and research papers for adoption in higher education.

Study phase define focused on 1students difficulties in academic writing instruction- academic reasoning, argumentative writing, article structure and use of the language (academic), dependence on instructor feedback. This stage produced a needs analysis profile and important instructional requirements which were used to design the instructional model. Creating prototypes through development and then verifying our standards using experts as well as field testing the product.

***Research Participants***

Also, the participants of this research were undergraduate students who take academic writing courses in higher education institutions in Surakarta. Using purposive sampling method the participants have been chosen based on following criteria: being enrolled in academic writing course, engagement in writing activities and already completed some academic writing tasks. This study involved 120 undergraduate students of two different writing instructional contexts: some from Universitas Muhammadiyah Surakarta (UMS) and others from UIN Raden Mas Said Surakarta.

**Table 1**. Research Participants

| No. | Institution | Course | Number of Students |
|---|---|---|---|
| 1. | Universitas Muhammadiyah Surakarta | Academic Writing | 60 |
| 2. | UIN Raden Mas Said Surakarta | Academic Writing | 60 |
| | Total | | 120 |

***Research Procedures and Instruments***

In accordance with research objectives, a Needs Analysis Questionnaire was employed to assess students' writing requirements, while Expert Validation sheets were utilized to evaluate the model's validity. We used Student Response Questionnaires to check how useful something was and Academic Writing Tests to check how well it worked. Various tools were used to collect data on students' needs, proof that the model worked and was possible, and proof that it worked. The needs analysis utilized a 5-point Likert-scale questionnaire and semi-structured interviews to examine students' attitudes regarding challenges and necessities in academic writing.

For model validation, a procedure utilizing expert validation sheets was executed among specialists proficient in teaching writing research, instructional design, and educational research methodologies. The utility of the model was evaluated through student response questionnaires and written reflections following implementation. The effectiveness of the model was examined using pretest–posttest academic writing measures, via an analytic rubric assessing article structure, logical argumentation and correct use of written language.

**Table 2**. Instrument Blueprint

| No. | Measured Aspect | Measurement Indicators |
|---|---|---|
| 1. | Needs in academic writing instruction | a. Difficulties in academic argumentation<br>b. Difficulties with the organization of research articles<br>c. Dependence on lecturer feedback<br>d. Need for peer support |
| 2. | Validity and Reliability of the Peer Tutoring–PjBL Instructional Model<br>Reliability and Validity of the Peer Tutoring–PjBL Model | a. Alignment with learning objectives<br>b. Clarity of tutor–tutee roles<br>c. Inclusion of scaffolding in the stages of PjBL<br>d. The feasibility tertiary education perspectives |
| 3. | Practicality of the instructional model | a. Ease of implementation<br>b. Clarity of instructions |

| No. | Measured Aspect | Measurement Indicators |
|---|---|---|
| | | c. Student engagement and motivation<br>e. d. Benefits for writing revision |
| 4. | Effectiveness on academic writing skills | a. Quality of article structure<br>b. Argument coherence and logic<br>c. Accuracy of academic language<br>f. d. Overall writing quality |

***Validity and Reliability***

All research tools showed acceptable content validity and reliability. Content validity was achieved through the judgement of experts consisting of specialist in both academic writing and instructional design, who assessed whether the instruments matched up with relevance and clarity.(Table 1) Based on the output, Cronbach's alpha was applied to ensure internal consistency of the items. All research tools proved their content validity and reliability. Four specialists in academic writing teaching, educational technology, and educational research validated it. The content validity index (CVI) was used to examine instrument validity, while Cronbach's alpha coefficient was used for internal reliability. All of the instruments' CVI values were greater than 0.80, and their Cronbach's alpha coefficients exceeded 0.70 as well; thus, we found that these tools were valid and reliable for this study.

**Table 3**. Instrument Validity and Reliability Results

| Instrument | Number of Validators | CVI | Validity Category | Cronbach's Alpha | Reliability Category |
|---|---|---|---|---|---|
| Academic writing needs questionnaire | 3 | 0.91 | Very high validity | 0.88 | Reliable |
| Model validation sheet | 4 | 0.94 | Very high validity | 0.90 | Reliable |
| Student response questionnaire | 3 | 0.89 | Valid | 0.86 | Reliable |
| Academic writing test | 3 | 0.92 | Very high validity | 0.87 | Reliable |
| Academic writing needs questionnaire | 3 | 0.91 | Very high validity | 0.88 | Reliable |

***Data Analysis***

The research data were analyzed using a mixed-methods approach to ensure comprehensive interpretation of the findings. Quantitative data were analyzed using descriptive statistics and paired-sample t-tests to examine changes in students' academic writing performance. Meanwhile, qualitative data from interviews and open-ended responses were analyzed using thematic analysis to identify patterns related to students' support needs and types of scaffolding in learning activities. Thematic analysis was conducted through several stages, including data familiarization, initial coding, theme development, and refinement. Two researchers independently coded the qualitative data, and discrepancies were discussed until consensus was reached. Inter-rater reliability was assessed using

Cohen's kappa coefficient, which indicated a high level of agreement. For quantitative data, descriptive and inferential statistics (paired-sample t-tests) were used to analyze questionnaires, validation sheets, and writing tests in order to compare differences between students€™ academic performance in writing before and after the implementation of the model. The strength of causal inference is limited by absence of a control, although this pretest–posttest design allows for comparison to changes in learning outcomes over time. Using both quantitative and qualitative results allowed for data triangulation, producing a fuller picture of the effectiveness and implementation of the instructional model.

**Table 4**. Data Analysis Criteria

| Data Type | Analysis Technique | Interpretation Criteria |
|---|---|---|
| Student needs data | Descriptive & thematic | 1.00–1.80 = Very low<br>1.81–2.60 = Low<br>2.61–3.40 = Moderate<br>3.41–4.20 = High<br>4.21–5.00 = Very high |
| Model practicality data | Descriptive percentage | ≥ 85% = Highly practical<br>70–84% = Practical<br>55–69% = Moderately practical<br>< 55% = Less practical |
| Model effectiveness data | Paired-sample *t*-test | $p < 0.05$ = *Significantly different* |

## RESULTS & DISCUSSION

### *Results from the Stage of Definition: Analysis of Needs on Teaching Academic Writing*

One of the important findings derived from the define stage is that they need need more process-embedded and collaborative academic writing practices in their university life. These findings directly informed the design stage, leading to the integration of structured writing processes (e.g., planning, drafting, revising) and peer tutoring as social scaffolding within the PjBL model. The findings of the define stage point to a very strong demand for process-embedded and collaborative AWP by university students. The needs analysis applied with 120 students from the Academic Writing courses of UMS and UIN Surakarta showed that most of them had problems in elaborating academic argument, organizing article structure based on IMRAD style, and appropriating academic language. Furthermore, students perceived a high reliance on lecturer feedback with insufficient discussion and staged revision.

Questionnaire findings also indicate students have high needs for peer support in writing from the beginning phase, i.e. idea planning stage and drafting stage until revision stage. Students also perceived that the academic writing instruction they had received before was too much focused on final products and did not allow proper time for discussion around academics or collective reflection. Overall, the findings indicate a high perceived need among students for an academic writing instructional model that integrates PjBL and peer tutoring. This reflects students' expectations for more

process-oriented and collaborative learning support rather than a comparative evaluation of alternative instructional approaches.Comprehensive, the demand level for students on an academic writing instructional model based on PjBL and peer tutoring was very high.

**Table 5.** Results of the Academic Writing Needs Analysis

| No. | Needs Indikator | Mean Score | Category |
|---|---|---|---|
| 1. | Need for process-oriented writing support | 4.46 | Very high |
| 2. | Discussion and feedback with peers required | 4.52 | Very high |
| 3. | Difficulty in developing academic arguments | 4.38 | Very high |
| 4. | Difficulty with research article structure | 4.41 | Very high |
| 5. | Dependence on lecturer feedback | 4.29 | High |
| | Overall mean | 4.41 | Very high |

As shown in Table 5, the results of the needs analysis indicate that students demonstrate a very high level of need for process-oriented and collaborative academic writing support, with an overall mean score of 4.41. Specifically, students reported very high needs in areas such as peer discussion and feedback (M = 4.52), process-oriented writing support (M = 4.46), and difficulties in developing academic arguments (M = 4.38) and structuring research articles (M = 4.41). In addition, dependence on lecturer feedback was also reported at a high level (M = 4.29).Results from the interviews further supported quantitative results. The students felt more comfortable to discuss ideas with friends, had more self-confidence in expressing their viewpoints and acquired a better knowledge of their writing-related weak points after peers' feedback.

The thematic analysis of interview data revealed three main themes: (1) difficulties in developing and organizing ideas, (2) challenges in using academic language and structuring research texts, and (3) the need for peer interaction and collaborative support. Under the first theme, students reported difficulties in organizing their ideas into coherent arguments, as reflected in the statement,

"I often have ideas, but I do not know how to organize them into a clear academic argument." (CLHW/M/20/10/2025)

Students lacked confidence in using relevant academic language was the second theme. The results showed that a large number of students were confused in choosing appropriate vocabulary and formulating academic sentences. This demonstrates the importance of more explicit instruction and scaffolded assistance so students can strengthen their proficiency in academic language.

"Considering your sentences are formal enough for academic writing". (CLHW/P/20/10/2025)

The third theme looked at peer interaction and found that working together to talk about ideas helps people come up with new ones and improves the quality of their writing. Peer-to-peer participation facilitated students in providing and receiving feedback, articulating their comprehension of issues more effectively, and formulating stronger arguments. These results show how important it is for students to learn together in order to improve their academic writing.

'It makes me feel easier to talk about my ideas with my friends before the writing. "(CLHW/A/20/10/2025)

***Design Stage Outcomes: Peer Tutoring–PjBL Model Development***

Results of the needs analysis, in the design phase, was produced a PjBL-based academic writing instructional model integrated with peer tutoring as social scaffolding. More precisely, identified needs—from struggles with argument organization to little writer engagement and heavy reliance on instructor feedback—were converted into specific design elements, taking the shape of scaffolded writing phases, collaborative project assignments, and guided peer tutoring engagements. The needs analysis resulted in a design phase where the PjBL-writing academic instructional model and peer-tutoring as social scaffolding were born. The model is intended to help students in all stages of the academic writing process: from forming a problem, gathering source materials, drafting and revising to reflecting on one's writing.

The writing assignment groups were designed to have students paired as tutor–tutees. Peer tutoring was consistently incorporated in every step of the PjBL from ideation discussions through rubric-based feedback to group reflections. The design guaranteed that the social scaffolding was ongoing and not restricted to the final periods of writing.

**Table 6.** Design Characteristics of the Peer Tutoring–PjBL Model

| Component | Design Specification | Rationale |
|---|---|---|
| Project focus | Academic article writing | Authentic learning product |
| PjBL structure | Planning–drafting–revision–reflection | Aligned with academic writing processes |
| Core strategy | Structured peer tutoring | Provides social scaffolding |
| Student roles | Dynamic tutor–tutee roles | Reduces academic hierarchy |
| Instruments | Writing rubrics and feedback guidelines | Ensures discussion quality |

As shown in Table 6, the design of the Peer Tutoring–PjBL instructional model consists of several key components that align with process-oriented academic writing and sociocultural scaffolding principles. Project focus is on the writing of an academic article as a real-world learning outcome. The complex steps of instruction—planning, drafting, revision, and reflection —are all linked to academic writing.

Indeed, perhaps the more salient function of structured peer tutoring is that it serves as social scaffolding throughout learning. To decrease hierarchical dependency and promote collaborative interaction, students were assigned roles of dynamic tutor–tutee. Furthermore, writing rubrics and feedback guidelines are introduced as pedagogical tools to ensure the quality and consistency of peer discussion and feedback.

***Workability of the Expert and User Evaluation Based Instructional Model***

The final teaching model was evaluated by four experts; an STM writing instructor, two instructional designers and an educational researcher. The validation of the model has established very good validity (CVI total 0.94). Varying importance was assigned to the role of peer tutoring in PjBL phases and transparency of their scaffolding workflow.

**Table 7.** Expert Validation Results of the Instructional Model

| Validation Aspect | Mean | CVI | Category |
|---|---|---|---|
| Alignment with academic writing objectives | 4.68 | 0.95 | Very high validity |
| Integration of peer tutoring | 4.72 | 0.96 | Very high validity |
| Clarity of the PjBL workflow | 4.63 | 0.93 | Very high validity |
| Classroom feasibility | 4.58 | 0.92 | Very high validity |
| Overall mean | 4.65 | 0.94 | Very high validity |

Peer tutoring integration received the highest score (Mean = 4.72; CVI = 0.96). High levels of construct validity were affirmed through agreement on academic writing objectives and clarity regarding the PjBL process, supporting evidence that instructional goals (what needs taught) aligned with implementation. Moreover, the significant classroom feasibility rating (Mean = 4.58; CVI = 0.92) depicts that the model is reasonably achievable and practical to be used in real world higher educational environments.

***Practicality Test of the Instructional Model***

Testing for practicality with actual students resulted in 89.1% of respondents finding that it was "very practical." The model made the academic writing process easy to implement and understand, and enhanced their engagement in the class session.

**Table 8.** Results of Practicality Test PjBL Academic Writing Model Based on Peer Tutoring

| Practicality Aspect | Total (%) | Category |
|---|---|---|
| Ease of model implementation | 89.0% | Highly practical |
| Clarity of instructional stages | 88.3% | Highly practical |
| Support for understanding the writing process | 90.8% | Highly practical |
| Increased student engagement and participation | 89.1% | Highly practical |
| Overall mean | 89.1% | Highly practical |

As shown in Table 8, the practicality test results indicate that the developed Peer Tutoring–PjBL academic writing model is classified as highly practical, with an overall mean score of 89.1%. Specifically, the ease of model implementation achieved 89.0%, while the clarity of instructional stages reached 88.3%. In addition, the model strongly supports students' understanding of the writing process (90.8%) and enhances student engagement and participation (89.1%).

***Improvement in Academic Writing Skills***

The efficacy of the model was investigated through a pretest–posttest research design to measure students' academic writing skills. Paired-sample t-test results showed that academic writing performance significantly improved with the peer tutoring–PjBL model ($p < 0.001$). The average academic writing score at the pretest was 54.62, which increased to 76.14 in posttest a gain of 21.52 points.

**Table 9.** t-Comparison of Academic Writing Skills (Campus A)

| Indicator | Pretest Mean | Posttest Mean | Gain | *p*-value | Cohen's *d* | Interpretation |
|---|---|---|---|---|---|---|
| Article structure quality | 55.10 | 77.20 | 22.10 | < 0.001 | 2.01 | Highly effective |
| Argument coherence and logic | 53.84 | 75.63 | 21.79 | < 0.001 | 1.95 | Highly effective |
| Academic language accuracy | 54.92 | 75.60 | 20.68 | < 0.001 | 1.88 | Highly effective |
| Overall writing quality | 54.62 | 76.14 | 21.52 | < 0.001 | 1.98 | Highly effective |

According to the results in table 9, it shows how students' academic writing skills at campus a has significantly increased after applying the peer tutoring–PjBL model. The improvement across all indicators over the majority of groups indicates that the model supports several aspects of academic writing including structure, argumentation, and language (accuracy).

Pedagogical implications of these findings emphasize the simultaneous delivery of process-oriented instruction tied in with constant peer interaction. to support students' engagement trajectories in increasingly intricate iterative writing processes, where they can repeat several cycles of content enhancement (such as creating arguments) and eventually land on this with increased language accuracy through consistent feedback and correction. Since peer tutoring, when used as social scaffolding in conjunction with project-based learning, creates a particularly supportive atmosphere for academic writing growth, such a huge effect size further suggests that the intervention had a considerable impact on students' learning.

**Table 10.** Results of a T-Test for Academic Writing Skills (Campus B)

| Indikator | Pretest Mean | Posttest Mean | Gain | *p*-value | Cohen's *d* | Interpretation |
|---|---|---|---|---|---|---|
| Article structure quality | 54.80 | 76.90 | 22.10 | < 0.001 | 1.99 | Highly effective |
| Argument coherence and logic | 53.60 | 75.20 | 21.60 | < 0.001 | 1.93 | Highly effective |
| Academic language accuracy | 54.30 | 75.10 | 20.80 | < 0.001 | 1.86 | Highly effective |
| Overall writing quality | 54.20 | 75.73 | 21.53 | < 0.001 | 1.96 | Highly effective |

The results in Table 10 indicate a significant improvement in students' academic writing skills at Campus B after the implementation of the Peer Tutoring–PjBL model. The persistent gains across all indicators suggest that the model supports multiple dimensions of writing—structural organization, argumentative coherence, and language accuracy—during a single school year. These findings further substantiate the importance of using process-oriented instruction plus peer tutoring as social scaffolding, allowing students multiple rounds of drafting and feedback on their work with a peer collaborator (from a pedagogical perspective).

Even so, the large effect sizes should be interpreted with caution. A standardized analytic rubric was used to evaluate students' writing (pretest and posttest in consistent conditions) to therefore enhance scoring objectivity. Moreover, the scoring for the evaluation followed standard assessment procedures to reduce subjectivity. However, the study did not use fully blinded scoring or multiple independent raters so that a degree of assessment bias cannot be completely ruled out. Blind assessment and inter-rated reliability measurements could therefore be added in future studies to improve the validity of results.

***Discussion***

The results of this study indicate that the Peer Tutoring–PjBL model successfully enhances students' performance in academic writing. Instead of repeating statistical results, how well the model works can be illustrated in terms of its pedagogically relevant mechanisms.

First, it provides a powerful form of social scaffolding: structured peer tutoring provides critical necessary support to students at key points within the writing process when they are generating ideas, organizing arguments and revising drafts. Students can express their ideas, receive immediate response, and refine their arguments through debate thanks to this ongoing communication. Second, the integration of PjBL produces an authentic writing iteration in which writing is incorporated within a meaningful context rather than being viewed as an isolated practice. This is in line with process-based writing instruction and gives students a step-by-step opportunity to develop their writing through reflection-based practice. Third, dynamic tutor-tutee roles promote metacognitive engagement and reciprocal learning: students become both learners and knowledge producers, improving the cognitive and evaluative components of writing growth.

These results theoretically support the idea that academic writing is a social-cognitive activity from a sociocultural standpoint. Peer tutoring serves as adaptable social scaffolding, allowing students to ask questions, exchange feedback, negotiate meaning, and cooperatively explain concepts. According to this perspective, knowledge construction is mediated socially and cooperatively rather than independently.

These findings are consistent with previous research that links peer contact to improved argumentative writing quality and conceptual understanding development (Latifi et al., 2021; Saksopin

et al., 2025). They also support studies showing that receiving comments from peers increased writing confidence and decreased writing anxiety (Wei & Liu, 2024). However, this study expands on earlier studies and shows that peer tutoring, provided as a continuous social scaffolding in a PjBL setting, is significantly more systematic and long-lasting than perhaps removing peer feedback from the collaborative writing stages.

In every stage of PjBL, peer tutoring only increases the model's efficacy. This guarantees that writing occurs in genuine and iterative learning cycles, encompassing problem-solving, data collecting, drafting, revision, and reflection throughout PjBL phases. When regularly incorporated throughout these phases, peer tutoring serves as a continual funding source for the significance of social scaffolding rather than only an incidental support system. These results seem to support earlier research showing that PjBL improves academic writing quality and student motivation through contextual and relevant learning (Chao et al., 2025b). Peer tutoring serves as social scaffolding during these structured PjBL sessions, as the model illustrates in this fashion.

Because the model's validity and practicality are at a high level, it may be used to higher education situations and is both descriptively valid and pedagogically useful (Putri et al., 2026). The significance of a user-centered instructional design was emphasized by additional qualitative study, which revealed that students had favorable opinions on revision's perceived benefits, ease of use, and clarity of instruction. These results support previous research that highlights the value of process-oriented, student-centered writing teaching that stresses that students should engage in collaborative reflection and interaction rather than just receiving teacher comments (Gupta et al., 2022; Rahman, 2022).

While previous research has investigated peer feedback (Latifi et al., 2021) or PjBL as different pedagogical strategies (Trullàs et al., 2022), this study proposes a holistic teaching and learning model in which peer tutoring allows to use social scaffolding embedded within a PjBL constellation. It is a great example of how organizing writing assignments in peer review projects can help improve writing processes and the quality of written products. Which reinforces academic writing as social practice that has observable pedagogical structures to be supported, digitally collaborative assemblies that students need to participate.

However, there are certain limitations that need to be considered. Strong causal implications are difficult to draw from any single-group pretest–posttest design. Additionally, as the study was conducted at a single institution, care should be taken when extrapolating the results. In a similar vein, short-term thinking does not accurately reflect the longer-term effects on students' academic writing growth. Lastly, the model's effectiveness may be impacted by contextual circumstances. For instance, students' willingness to work with peers may differ, and teachers' capacity to organize interaction would vary.

## CONCLUSION

The results of this study indicate that effective support for academic writing development in higher education necessitates process-oriented, collaborative, and context-based approaches. The needs analysis showed that students often have trouble organizing research articles, making their arguments clear, and using the right language (setting 1). They also said that they didn't have enough chances to practice in small groups or get feedback because they were in lecture-based settings. In response to these challenges, this study proposed a Project-Based Learning (PjBL) academic writing model integrated with peer tutoring as social scaffolding, which facilitates the entire writing process through structured peer interaction and engages learners' cognitive, social, and metacognitive dimensions.

The findings indicate that the model demonstrates strong validity, is user-friendly for practitioners, and facilitates dependable enhancements in students' academic writing across diverse responses. Nevertheless, these findings must be regarded with caution due to the limited research context and the absence of a control group. The results of this study present an instructional model as an innovative and cohesive approach to enhance academic writing instruction and promote collaborative, process-oriented learning in higher education institutions.

## REFERENCES

Bhardwaj, V., Zhang, S., Tan, Y. Q., & Pandey, V. (2025). Redefining learning: student-centered strategies for academic and personal growth. *Frontiers in Education*, *10*, 1518602.

Cahyono, B. Y., Irawati, R., Amalia, S. N., & Hidayat, L. E. (2024). Project-based learning in EFL educational settings: A meta-analysis study in EFL/ESL writing. *Journal of Writing Research*, *16*(1), 105–127.

Casanave, C. P., & Vandrick, S. (2003). *Writing for scholarly publication: Behind the scenes in language education*. Routledge.

Chao, C., Rahman, N. A. A., & Soon, G. Y. (2025a). A Review on Project Based Learning in Enhancing English Writing Skills. *Forum Linguist. Stud*, *7*(1), 913–926.

Chao, C., Rahman, N. A. A., & Soon, G. Y. (2025b). A Review on Project Based Learning in Enhancing English Writing Skills. *Forum Linguist. Stud*, *7*(1), 913–926.

De La Paz, S., Levin, D. M., & Butler, C. (2023). Addressing an unfulfilled expectation: Teaching students with disabilities to write scientific arguments. *Written Communication*, *40*(2), 448–481.

Gupta, S., Jaiswal, A., Paramasivam, A., & Kotecha, J. (2022). Academic writing challenges and supports: Perspectives of international doctoral students and their supervisors. *Frontiers in Education*, *7*, 891534.

Handayani, T., & Rahmandani, F. (2022). An Enculturation Model of Anti-Corruption Values Based on a Heutagogical Approach in High Schools. *Proceedings of the International Conference of Learning on Advance Education (ICOLAE 2021)*, *662*(Icolae 2021), 732–737. https://doi.org/10.2991/assehr.k.220503.074

Kusmanto, H., Sohnui, S., Sari, E. R., & Mujiani, I. (2025). The Utilization of Artificial Intelligence in Scientific Writing Education. *Educative: Jurnal Ilmiah Pendidikan*, *3*(1), 35–48.

Kusmanto, H., Zamzani, Z., & Suryaman, M. (2024). Unleashing the Secrets of Academic Writing: Exploring Indonesian Language Courses in Higher Education. *Journal of Education and Learning (EduLearn)*, *18*(4), 1166–1172.

Latifi, S., Noroozi, O., & Talaee, E. (2021). Peer feedback or peer feedforward? Enhancing students' argumentative peer learning processes and outcomes. *British Journal of Educational Technology*, *52*(2), 768–784. https://doi.org/https://doi.org/10.1111/bjet.13054

Phyo, W. M., Nikolov, M., & Hódi, Á. (2024). Exploring the interplay of English academic reading and writing proficiency among international doctoral students. *Heliyon*, *10*(14).

Purwanto, A., Lustyantie, N., & Hakim, M. K. B. A. (2025). From Project to Creativity: How Academic Culture Shapes the Success of Project-Based Learning in Creative Writing Programs? *Journal of Cultural Analysis and Social Change*, 1844–1857.

Putri, A., Sujadi, I., Nursanti, Y. B., & Nurhasanah, F. (2026). Systematic Literature Review on Mathematical Representation: The Connection between Theories and Implementation. International Journal of Review in Mathematics Education.

Rahman, M. A. (2022). the Discursive Construction of Strategies for Implementing Anti-Corruption Education At State Islamic Higher Educational Institutions. *Jurnal Ilmiah Peuradeun*, *10*(3), 555–578. https://doi.org/10.26811/peuradeun.v10i3.737

Riswandi, D. (2018). *The Implementation of Project-Based Learning to Improve Students' Speaking Skill*.

Saksopin, U., Kaweera, C., & Yawiloeng, R. (2025). EFL Students' Perspectives of Peer Scaffolding in Online Collaborative Writing. *Theory and Practice in Language Studies*, *15*(8), 2515–2526.

Taddese, E. T., Dinsa, M. T., Yassin, H. A., Lakew, A. K., & Agemso, W. D. (2026). The Impact of Peer Feedback on Writing Anxiety and Performance: EFL Students at Wolkite University in Focus. *World*, *16*(2).

Taye, T., & Mengesha, M. (2024). Identifying and analyzing common English writing challenges among regular undergraduate students. *Heliyon*, *10*(17).

Trullàs, J. C., Blay, C., Sarri, E., & Pujol, R. (2022). Effectiveness of problem-based learning methodology in undergraduate medical education: a scoping review. *BMC Medical Education*, *22*(1), 104.

Vo, K., Sarkar, M., White, P. J., & Yuriev, E. (2025). Exploring problem-solving scaffolds in general chemistry: a systematic review of scaffolding goals and instructional approaches. *Journal of Chemical Education*, *102*(3), 1004–1018.

Wei, Y., & Liu, D. (2024). Incorporating peer feedback in academic writing: A systematic review of benefits and challenges. *Frontiers in Psychology*, *15*, 1506725.

Zhang, Y., Eto, H., & Cui, J. (2025). Linguistic challenges of writing papers in English for scholarly publication: Perceptions of Chinese academics in science and engineering. *PLoS One*, *20*(5), e0324760.