

NAVIGATING THE AI FRONTIER: EVALUATING THE IMPACT OF GENERATIVE AI FEEDBACK ON EFL STUDENTS' ACADEMIC WRITING PROFICIENCY

Rosnani Abdul Rahman¹, Fauzan Hidayatullah², Sartika Sari Wardanhi Dh Pasha³, Savira Widya Puspitasari⁴

fauzan.hidayatullah@unm.ac.id

¹Universitas Sulawesi Barat, ^{2,4}Universitas Negeri Makassar, ³Universitas Hasanuddin

ABSTRACT

Academic writing remains a major challenge for students in English as a Foreign Language (EFL) contexts because it requires not only linguistic accuracy but also rhetorical organization, coherence, and critical argumentation. Although teacher feedback is central to writing instruction, its effectiveness is often constrained by limited time, heavy workload, and the difficulty of providing individualized and timely responses. In this context, Generative Artificial Intelligence (GenAI) has emerged as a potential form of digital scaffolding that can offer immediate, adaptive, and interactive feedback during the writing process. This study evaluated the impact of GenAI-assisted feedback on EFL students' academic writing proficiency compared with conventional peer and teacher feedback. Using a quasi-experimental design, the study involved 60 Indonesian university students assigned to an experimental group and a control group. The experimental group received GenAI-assisted feedback, whereas the control group received traditional feedback. Data were collected through pre- and post-tests and a student perception questionnaire. The results of an independent-samples t-test showed that the experimental group significantly outperformed the control group ($p < 0.001$), with a large effect size (Cohen's $d = 1.98$). The most substantial improvements were found in grammatical accuracy, lexical resource, and rhetorical cohesion. However, qualitative findings also indicated that a small number of students became overly dependent on AI-generated suggestions. These findings suggest that GenAI can serve as an effective pedagogical support tool for enhancing academic writing proficiency, learner autonomy, and revision practices.

Keywords: Generative AI, EFL academic writing, Academic writing proficiency, Digital scaffolding, AI-assisted feedback

INTRODUCTION

In globalized higher education, academic writing in English has become an essential competence for students, particularly for learners in English as a Foreign Language (EFL) contexts. Academic writing is not limited to grammatical accuracy, but also involves the ability to organize ideas logically, develop arguments, use appropriate academic vocabulary, and communicate meaning according to disciplinary conventions. For EFL students, these demands are often challenging because they have to construct academic ideas through a language that is not used as their primary means of communication. Consequently, many EFL students experience difficulties in producing coherent, accurate, and persuasive academic texts.

These writing difficulties are commonly related to both linguistic and psychological factors. Linguistically, students often struggle with grammar, sentence structure, vocabulary choice, coherence, cohesion, and argument development. Psychologically, they may experience writing anxiety, low confidence, and fear of negative evaluation, which can reduce their willingness to revise and improve their writing (Nugraheni, 2023; Ruslan, 2025). These problems indicate that academic writing instruction should not only focus on final written products, but also on the process of drafting, receiving feedback, revising, and

developing writing autonomy. Feedback plays a central role in academic writing development because it helps students identify weaknesses and improve the quality of their drafts. However, in many EFL classrooms, providing detailed, individualized, and timely feedback remains difficult. Teachers often face large classes, heavy workloads, and limited time to respond to each student's writing. Peer feedback can support the writing process, but its effectiveness may be limited by students' uneven linguistic competence, lack of confidence, and uncertainty in evaluating others' work (Yu, 2021). As a result, students may not receive sufficient formative feedback during the writing process, even though feedback is essential for improving academic writing proficiency.

Recent developments in generative artificial intelligence (GenAI) offer new possibilities for addressing these challenges. Unlike earlier automated writing tools that mainly focused on grammar correction, GenAI can provide broader feedback on grammar, vocabulary, organization, clarity, tone, and argument development. In language education, GenAI has attracted attention because it can provide immediate, interactive, and revision-oriented support. Godwin-Jones (2022) explains that AI-supported language learning has developed from limited tools such as machine translation and automated correction into more flexible systems that can support multiple aspects of language learning and communication. From a pedagogical perspective, GenAI can function as digital scaffolding in academic writing instruction. It can assist students during planning, drafting, revising, and editing by offering suggestions that are immediate and context-sensitive. This support is particularly important for EFL students who need continuous guidance but may not always receive sufficient feedback from teachers. GenAI can also encourage learner autonomy because students can revise their writing independently, compare alternative expressions, and reflect on language choices. Therefore, GenAI has the potential to strengthen both writing performance and self-regulated learning in academic writing contexts.

However, the use of GenAI in writing education remains a debated issue. On the one hand, GenAI may improve linguistic accuracy, writing confidence, revision practices, and access to feedback. On the other hand, it raises concerns about overreliance, inaccurate feedback, reduced critical thinking, authorship, and academic integrity. Su and Yang (2023) emphasize that the use of generative AI in education requires clear pedagogical frameworks so that AI supports learning rather than replacing students' own thinking and writing processes. This means that GenAI should be integrated carefully, with teacher guidance, ethical awareness, and clear boundaries for academic use. Although research interest in GenAI-assisted writing has increased rapidly, the empirical evidence remains limited. Much of the existing literature has focused on students' perceptions, general attitudes, or conceptual discussions about AI in education. Recent studies indicate that AI-generated feedback is often perceived as fast, practical, and useful for improving grammar, vocabulary, and text structure. However, stronger empirical evidence is still needed to examine whether GenAI feedback actually improves broader dimensions of academic writing quality, especially linguistic accuracy, rhetorical organization, and argumentative development (Karagoz, 2025). This indicates an important research gap: existing studies have not sufficiently examined GenAI feedback through performance-based writing outcomes in EFL academic writing classrooms.

This gap is particularly relevant in Indonesian EFL higher education. Indonesian students often face challenges in academic writing due to limited exposure to academic English, varying levels of digital literacy, and limited access to sustained writing feedback. At the same time, the use of GenAI among students is increasing, but its pedagogical impact

on actual writing performance remains underexplored. Without empirical investigation, GenAI use may remain informal, unguided, or even problematic in academic settings. Therefore, research is urgently needed to examine how GenAI feedback can be used ethically and effectively to support students' academic writing development.

The novelty of this study lies in its focus on the impact of GenAI-assisted feedback on three specific dimensions of academic writing proficiency: linguistic accuracy, rhetorical organization, and argumentative development. Unlike studies that focus mainly on students' perceptions of AI tools, this study emphasizes actual writing performance. By examining how students' writing changes after receiving GenAI feedback, the study provides more direct empirical evidence of the role of AI in academic writing instruction. Therefore, this study aims to evaluate the impact of generative AI feedback on the academic writing proficiency of EFL students. Specifically, it investigates whether GenAI-assisted feedback improves students' linguistic accuracy, rhetorical organization, and argumentative development. The findings are expected to contribute to the development of ethical, evidence-based, and pedagogically meaningful AI integration in EFL academic writing classrooms. Practically, this study may help lecturers design more effective feedback practices. Theoretically, it may extend current understanding of how human-AI interaction reshapes feedback, learner agency, and writing development in EFL higher education.

METHODS

To investigate the impact of Generative Artificial Intelligence (GenAI) feedback on EFL students' academic writing proficiency, this study employed a quantitative, quasi-experimental research design. This methodology was considered appropriate because the participants could not be randomly assigned individually to groups; instead, intact classes were used. The study aimed to compare the effectiveness of GenAI-assisted feedback and conventional feedback in improving students' academic writing performance.

1. Research Design

This study employed a quantitative quasi-experimental design using a nonequivalent control group design. This design was selected because the participants were assigned based on existing classroom groups rather than random assignment. The study involved two groups: an experimental group and a control group. The experimental group used Generative Artificial Intelligence (GenAI) feedback, specifically ChatGPT-4o, during the revision process of academic writing, while the control group received conventional feedback from peers and the lecturer. The study was conducted over eight weeks to examine whether GenAI-assisted feedback significantly influenced students' academic writing proficiency compared with conventional feedback practices. The main focus of the study was to measure students' improvement in academic writing, particularly in linguistic accuracy, rhetorical organization, and argumentative development.

Table 1. Research Design

Group	Treatment	Purpose
Experimental group	GenAI-assisted feedback using ChatGPT-4o	To examine the effect of AI-generated feedback on students' academic writing proficiency

Control group	Peer and teacher feedback	To compare GenAI-assisted feedback with conventional feedback practices
Duration	Eight weeks	To observe students' writing development after the intervention

2. Participants / Subjects

The participants were 60 fourth-semester students enrolled in the English Education Study Program at a public university in Makassar. Their English proficiency was estimated to be at the B1–B2 level of the Common European Framework of Reference (CEFR). All participants had previously completed an introductory academic writing course, which means they had basic knowledge of essay writing, paragraph development, and academic writing conventions. The participants were divided into two intact classes. Class A, consisting of 30 students, was assigned as the experimental group, while Class B, consisting of 30 students, was assigned as the control group. The use of intact classes was intended to maintain the natural classroom setting and reflect authentic instructional conditions.

Table 2. Participants of the Study

Aspect	Description
Total participants	60 students
Study program	English Education Study Program
Semester	Fourth semester
Institution	Public university in Makassar
Estimated proficiency level	B1–B2 CEFR
Experimental group	Class A, 30 students
Control group	Class B, 30 students
Sampling/class arrangement	Intact classes

3. Instruments

Three main instruments were used in this study: writing prompts, a writing assessment rubric, and a perception questionnaire. The first instrument was a writing prompt. Students were required to write an argumentative essay of approximately 500–700 words. The topics were selected from contemporary global issues, such as climate change, digital literacy, education, and technology use. Equivalent prompts were used for the pre-test and post-test to ensure that both writing tasks had comparable levels of difficulty and rhetorical demand. The second instrument was a writing assessment rubric adapted from the IELTS Writing Band Descriptors. The rubric assessed four major criteria: task response, coherence and cohesion, lexical resource, and grammatical range and accuracy. This rubric was used because it provides a comprehensive framework for evaluating both linguistic and rhetorical aspects of academic writing. The third instrument was a five-point Likert scale questionnaire administered to the experimental group. The questionnaire was used to examine students' perceptions of GenAI-assisted feedback. It focused on the usefulness, clarity, immediacy, accessibility, and overall effectiveness of AI-generated feedback during the revision process.

4. Data Collection Procedure

The data collection was conducted over eight weeks and consisted of three main stages: pre-test, treatment, and post-test. In the first week, both the experimental and control groups completed a pre-test. The students were asked to write an argumentative essay individually without using external digital tools. The purpose of the pre-test was to identify students' initial academic writing proficiency before the intervention. The treatment phase was conducted from Week 2 to Week 7. During this period, the experimental group used ChatGPT-4o as a GenAI feedback tool. Students were first introduced to how to use GenAI responsibly and how to write effective prompts to obtain relevant feedback. They used GenAI feedback to revise aspects of their writing, including grammar, vocabulary, organization, clarity, coherence, and argument development. Students were required to revise their drafts at least twice based on the feedback generated by ChatGPT-4o. Meanwhile, the control group received conventional writing instruction. Students participated in peer-review sessions and received written feedback from the lecturer. This procedure represented common feedback practices in academic writing classes. In Week 8, both groups completed a post-test by writing another argumentative essay on a topic of equivalent difficulty. The post-test was used to measure students' writing development after the intervention. After the post-test, students in the experimental group completed the perception questionnaire to provide their responses toward the use of GenAI-assisted feedback.

Table 3. Data Collection Procedure

Week	Activity	Group Involved
Week 1	Pre-test argumentative essay	Experimental and control groups
Weeks 2–7	GenAI-assisted feedback using ChatGPT-4o	Experimental group
Weeks 2–7	Peer and lecturer feedback	Control group
Week 8	Post-test argumentative essay	Experimental and control groups
Week 8	Perception questionnaire	Experimental group

5. Data Analysis

The data obtained from the pre-test and post-test were analyzed quantitatively. Before conducting the main analysis, normality and homogeneity tests were performed to determine whether the data met the assumptions for parametric statistical testing. These preliminary tests were necessary to ensure that the statistical procedures were appropriate. To examine students' improvement within each group, a paired-samples t-test was used to compare the pre-test and post-test scores of the experimental group and the control group. This analysis was conducted to determine whether each group showed significant progress during the treatment period. To compare the writing performance between the experimental and control groups after the intervention, an independent-samples t-test was conducted using the post-test scores. This analysis was used to determine whether students who received GenAI-assisted feedback performed significantly better than those who received conventional feedback. The questionnaire data were analyzed descriptively using percentages and mean scores. The results were

used to describe students' perceptions of the usefulness, clarity, immediacy, and effectiveness of GenAI-assisted feedback in supporting academic writing revision.

RESULTS AND DISCUSSION

Result

The findings of this study are presented in three main parts: (1) comparison of overall writing performance between the experimental and control groups, (2) analysis based on writing components, and (3) students' perceptions of GenAI-assisted feedback. All statistical analyses were conducted using SPSS version 27.0.

1. Overall Writing Performance

Before the main analysis, tests of normality and homogeneity were conducted to ensure that the data met the assumptions for parametric analysis. The Shapiro–Wilk test indicated that the data were normally distributed. ($p > 0.05$), while Levene's test confirmed homogeneity of variance ($F = 0.421, p = 0.518$). These results justified the use of the t -test for further analysis.

Table 4. Descriptive Statistics of Pre-test and Post-test Scores

Group	Stage	N	Mean	SD	Gain
Experimental (GenAI)	Pre-test	30	65.40	6.22	17.30
	Post-test	30	82.70	4.15	—
Control (Traditional)	Pre-test	30	64.80	5.85	8.10
	Post-test	30	72.90	5.30	—

As shown in Table 4, both groups started from a comparable level of academic writing proficiency. The experimental group obtained a mean pre-test score of 65.40 ($SD = 6.22$), while the control group scored 64.80 ($SD = 5.85$). After the intervention, the experimental group achieved a mean post-test score of 82.70 ($SD = 4.15$), whereas the control group reached 72.90 ($SD = 5.30$). The experimental group's gain score (17.30) was more than twice that of the control group (8.10), indicating substantially greater improvement among students who received GenAI-assisted feedback.

Table 5. Independent Samples t -test Result on Post-test Scores

Variable	t	df	p-value	Mean Difference	Cohen's d
Post-test Scores	7.95	58	< 0.001	9.80	1.98

As presented in Table 5, the independent samples t -test revealed a statistically significant difference between the experimental and control groups on the post-test scores, $t(58) = 7.95, p < 0.001$. The effect size was very large ($d = 1.98$), indicating that GenAI-assisted feedback had a strong positive impact on students' academic writing proficiency.

2. Analysis Based on Writing Components

A more detailed analysis was conducted based on the four writing components adapted from the IELTS rubric: Task Response, Coherence and Cohesion, Lexical Resource, and Grammatical Range and Accuracy.

Table 6. Comparison of Writing Component Scores

Writing Component	Experimental Group	Control Group
Task Response	7.9	7.4
Coherence and Cohesion	8.0	7.1
Lexical Resource	8.2	7.0
Grammatical Range and Accuracy	8.5	7.2

Table 6 shows that the experimental group outperformed the control group across all four writing components. The largest difference was observed in Grammatical Range and Accuracy, indicating that GenAI feedback was particularly effective in helping students identify and correct complex grammatical structures. Significant improvement was also found in Lexical Resource, where students demonstrated more precise and formal vocabulary use. In addition, improvements in Coherence and Cohesion suggest that AI-assisted feedback helped students produce more logically structured and connected ideas. By contrast, the difference in Task Response was relatively smaller. This finding suggests that while GenAI effectively supports linguistic and organizational aspects of writing, the development of ideas and argument depth remains largely dependent on students' own cognitive engagement.

3. Students' Interaction and Perceptions of GenAI Feedback

Observational data during the intervention indicated that students in the experimental group gradually developed more sophisticated interaction patterns with GenAI. Initially, many students used simple prompts such as "fix my grammar." However, after receiving guidance on effective prompting strategies, they began to use more specific and analytical prompts, such as requesting feedback on coherence or suggestions for academic vocabulary. This shift indicates a transition from passive correction to a more reflective, strategic engagement in the writing process.

Table 7. Students' Perceptions of GenAI-assisted Feedback

Statement	Percentage
AI feedback helped me understand grammatical errors independently	93%
AI feedback increased my confidence in writing	87%
I sometimes accepted AI suggestions without fully understanding them	15%

As shown in Table 4, the majority of students responded positively to the use of GenAI-assisted feedback. A total of 93% agreed that AI helped them understand grammatical errors more independently, while 87% reported increased confidence in their academic writing. These findings indicate that GenAI not only supports writing improvement but also enhances learner autonomy and confidence. However,

approximately 15% of students admitted to occasionally accepting AI-generated suggestions without fully understanding the underlying rationale. This finding highlights a potential risk of overreliance on AI, suggesting that the use of GenAI should be accompanied by appropriate instructional guidance to ensure that students remain critical and reflective writers. Overall, the findings demonstrate that GenAI-assisted feedback significantly improves EFL students' academic writing proficiency, particularly in linguistic accuracy and rhetorical organization. In addition to measurable performance gains, the use of GenAI also promotes more active revision practices and positive learner perceptions. However, the results also indicate the importance of integrating AI literacy and teacher guidance to prevent excessive dependence on AI-generated feedback.

Discussion

The findings of this study demonstrate that the integration of Generative Artificial Intelligence (GenAI) into the writing revision process significantly improved EFL students' academic writing proficiency. The experimental group, which used GenAI-assisted feedback through ChatGPT-4o, achieved a substantially higher gain score of **17.30 points**, while the control group, which received conventional peer and teacher feedback, gained only **8.10 points**. The statistical result showed a significant difference between the two groups ($p < .001$) with a very large effect size ($d = 1.98$). These findings provide strong empirical evidence that GenAI is not merely a surface-level correction tool, but can function as an effective form of digital scaffolding in academic writing instruction.

From a theoretical perspective, this finding supports Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD), which explains that learners can reach higher levels of performance when they receive appropriate support. In this study, GenAI functioned as a digital More Knowledgeable Other (MKO) by offering immediate, context-sensitive, and revision-oriented feedback. Unlike traditional teacher feedback, which is often delayed due to time constraints and workload (Lee, 2017), GenAI provided real-time responses that allowed students to revise their writing while their cognitive engagement was still active. This immediacy likely contributed to the greater improvement in the experimental group, supporting the view that timely and iterative feedback can sustain learning momentum and improve writing development (Hattie & Timperley, 2007; Kohnke, 2023).

The detailed analysis of writing components further confirms the effectiveness of GenAI-assisted feedback. The most substantial improvements were found in **Grammatical Range and Accuracy** and **Lexical Resource**. This indicates that students who used GenAI feedback were better able to improve grammatical precision, sentence variety, vocabulary choice, and academic word use. These improvements are important because linguistic accuracy and lexical control are essential elements of successful academic writing, particularly for EFL learners who often struggle with grammar and formal vocabulary (Hyland, 2019). GenAI feedback helped students notice errors, compare alternative expressions, and revise their drafts more independently.

In addition to improving linguistic accuracy, GenAI also supported rhetorical development. The improvement in **Coherence and Cohesion** suggests that GenAI helped students organize ideas more logically, use transitions more effectively, and improve paragraph flow. This shows that GenAI feedback was not limited to micro-level corrections, but also supported macro-level writing organization. This finding is consistent with Su and Yang (2023), who argue that generative AI has broader discourse-level capabilities compared to earlier Automated Writing Evaluation systems, which tended to focus mainly on surface-level error detection (Stevenson & Phakiti, 2014).

However, the improvement in **Task Response** was relatively smaller than the improvement in grammar, vocabulary, and organization. This suggests that while GenAI can help students refine language and structure, it has a more limited effect on the development of original ideas, argument depth, and critical reasoning. Academic writing is not only a linguistic activity but also a cognitive and epistemic process that requires independent thinking, argument construction, and intellectual engagement (Flower & Hayes, 1981; Hyland, 2019). Therefore, GenAI can support the writing process, but it cannot replace students' responsibility to develop meaningful content and critical arguments. The findings also reveal important affective benefits. The questionnaire results showed that **93%** of students felt that AI helped them understand grammatical errors independently, while **87%** reported increased confidence in writing. These results suggest that GenAI-assisted feedback can reduce writing anxiety and promote learner autonomy. Unlike teacher or peer feedback, which may cause students to feel judged, GenAI offers a more private and low-pressure environment for revision. This condition allows students to experiment with language, revise repeatedly, and learn from feedback without fear of negative evaluation. This finding aligns with Krashen's (1982) view that a low-anxiety learning environment supports language acquisition and with Little's (1991) concept of learner autonomy, in which students gradually take control of their own learning process.

Despite these positive outcomes, the study also identified a critical concern related to overreliance on AI. Approximately **15%** of students reported that they sometimes accepted AI-generated suggestions without fully understanding them. This indicates the possibility of passive learning, reduced critical engagement, and cognitive offloading. This concern is consistent with recent discussions on AI in education, which warn that excessive dependence on AI tools may weaken students' critical thinking and independent problem-solving skills (Kasneji et al., 2023; Su & Yang, 2023). The relatively smaller improvement in Task Response also supports this concern, as the ability to generate strong ideas and arguments still depends heavily on students' own intellectual engagement. Therefore, the role of the teacher remains essential in GenAI-supported writing instruction. Teachers should not be replaced by AI; instead, they need to act as facilitators of AI literacy. Students need guidance on how to write effective prompts, evaluate AI-generated feedback, decide which suggestions to accept or reject, and maintain their own authorial voice. This aligns with Godwin-Jones (2023), who emphasizes the importance of critical AI literacy in language education. Without teacher guidance, students may use GenAI only as a shortcut for correction rather than as a tool for meaningful learning and revision.

Pedagogically, the findings suggest that GenAI-assisted feedback can serve as a valuable complement to conventional feedback practices in academic writing classes. It can increase feedback accessibility, support iterative revision, and help students improve linguistic and rhetorical aspects of writing more efficiently. This supports previous research indicating that technology-enhanced feedback can improve the efficiency of writing instruction (Hockly, 2018). However, its integration must be carefully designed. Students need both technical training and critical evaluation skills so that they can use GenAI responsibly, ethically, and productively. This study has several limitations. First, the intervention lasted only eight weeks, so the study could not determine whether the improvement in writing proficiency would be sustained over a longer period. Second, the participants came from one institutional context and consisted of fourth-semester English Education students at a public university in Makassar, which may limit the generalizability of the findings to other EFL contexts, proficiency levels, or academic disciplines. Third, the study focused mainly on writing performance and students' perceptions, while issues such as academic integrity, authorship, plagiarism, and ethical decision-making in AI use were not examined in depth. Fourth, although GenAI feedback was found to be useful, the study did not fully investigate how students cognitively processed, accepted, rejected, or modified AI-generated suggestions during revision.

As a follow-up, future research should adopt longitudinal designs to examine the long-term impact of GenAI-assisted feedback on academic writing proficiency. Further studies should also involve larger and more diverse samples from different universities, disciplines, and proficiency levels to strengthen the generalizability of findings. In addition, future research should investigate students' revision behavior more closely by analyzing draft changes, prompt history, AI feedback logs, and students' reflection notes. This would provide a deeper understanding of how students interact with GenAI during the writing process. Future studies should also explore ethical dimensions of GenAI use, including academic integrity, authorship, transparency, and responsible AI literacy. Finally, research comparing different models of feedback, such as teacher-only feedback, peer feedback, GenAI feedback, and blended human-AI feedback, would be useful for determining the most effective and pedagogically sound approach to integrating GenAI into EFL academic writing instruction.

Overall, the findings confirm that GenAI-assisted feedback offers significant pedagogical benefits for EFL academic writing. It improves students' linguistic accuracy, lexical resource, coherence, cohesion, confidence, and revision autonomy. However, its benefits are most meaningful when supported by teacher guidance, critical AI literacy, and ethical use. GenAI should therefore be understood not as a replacement for human feedback, but as a complementary digital scaffold that can enhance academic writing instruction when integrated thoughtfully and responsibly.

CONCLUSION

This study concludes that GenAI-assisted feedback, particularly through ChatGPT-4o, significantly improves EFL students' academic writing proficiency. The

experimental group achieved a higher gain score than the control group, indicating that GenAI feedback was more effective than conventional peer and teacher feedback in supporting writing revision. The improvement was especially evident in grammatical range and accuracy, lexical resource, and coherence and cohesion. These findings show that GenAI can function as a useful digital scaffold that provides immediate, context-sensitive, and revision-oriented feedback during the writing process. The study also shows that GenAI feedback supports students' confidence and learner autonomy. Most students reported that AI helped them understand grammatical errors independently and increased their confidence in writing. However, the findings also reveal the risk of overreliance, as some students accepted AI suggestions without fully understanding them. Therefore, teacher guidance remains essential to help students evaluate AI-generated feedback critically and maintain their own authorial voice. Although GenAI offers strong pedagogical benefits, this study has limitations, including its short intervention period, limited institutional context, and lack of deeper analysis of academic integrity issues. Future research should use longitudinal designs, involve broader samples, and examine students' revision behavior, prompt use, and ethical awareness. Overall, GenAI should be used as a complementary tool that strengthens, rather than replaces, human feedback in academic writing instruction.

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