

The role of AI in academic writing: Unveiling strategies among EFL students

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ABSTRACT

Artificial Intelligence (AI) has received many positive perceptions for improving the quality of students' academic writing, especially in the realm of English as a Foreign Language (EFL). However, the strategies students use to integrate AI into academic writing remain largely underexplored, especially in the Indonesian context. This study aims to unveil students' strategies in utilizing AI to improve the quality of their academic writing. It employed the qualitative case study design. The participants consisted of four EFL undergraduate students who were purposively selected based on three main criteria: 1) having completed an academic writing course, 2) using AI to assist their academic writing process, and 3) producing good academic writing outcomes. Data were collected through semi-structured interviews and user walkthroughs, and the transcripts were then analyzed thematically. The findings show that AI can assist students in four stages of the academic writing process, namely planning, drafting, revising, and editing. It supports idea generation, grammar correction, and improves writing style by promoting an academic tone. Students also report higher motivation and perceived improvements in writing performance. However, students felt less confident as they were worried that AI might reduce originality in their writing. Hence, this study provides insights into the use of AI in EFL students' academic writing strategies and highlights the importance balanced AI use to preserve originality, academic integrity, and critical thinking skills.

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INTRODUCTION

The integration of Artificial Intelligence (AI) has advanced in recent years. AI refers to a machine or program that is used to solve human cognitive problems, such as learning, decision-making, and judgment (Zhang & Lu, 2021). Since the emergence of AI in the mid-20th century, AI has been viewed as a symbol of human intellectual progress and was expected to bring significant changes to human life (Jiang et al., 2022; Xu et al., 2021). To understand its role in academic writing, the process writing framework emphasizes iterative stages that require the active author's involvement. At the same time, the AI-in-learning framework highlights the scaffolding and adaptive feedback that can support each stage (Holmes et al., 2019; Luckin & Holmes, 2016). From this perspective, AI is not merely a technical tool but also a mediator that can facilitate students in the academic writing process.

In English as a Foreign Language (EFL) setting, AI is seen as an effective tool to help students with academic writing (Al-Raimi et al., 2024; Song & Song, 2023). Some AI tools make the writing process easier by producing ideas, improving content, and giving real-time feedback to students (Safitri & Fithriani, 2024). The differences among AI tools also determine their functions, such as using Grammarly to provide feedback on grammar, QuillBot to help students paraphrase their writing, and other AI platforms with the same potential (Pitrianti & Gasanti, 2020). These tools can support students in overcoming linguistic barriers while developing their writing competence.

At the same time, academic writing itself is considered one of the most challenging aspects for EFL learners, particularly in higher education, where students are expected to have the ability to communicate ideas clearly and critically in a formal context (Syahnaz & Fithriani, 2023). According to Tompkins & Hoskisson's (1995) process writing model, producing high-quality writing requires several key stages, such as planning, drafting, revising, and editing. However, many students may struggle with these stages due to their lack of proficiency in grammar, vocabulary, and structure (Malik et al., 2023). In line with this, Fathimatuzahro & Rizkiyah (2025) identified other challenges, which are related to idea development and word choice or phrasing. Therefore, it is important to find an effective approach or the best aids to help students improve their academic writing, including the use of AI as a supportive tool.

In line with that, recent studies have highlighted the role of AI in enhancing academic writing. For instance, AI tools enable students to brainstorm many new ideas for writing more easily and to improve their creativity in writing (Darwin et al., 2024; Kim et al., 2025). Students also tend to perceive AI positively, as it provides direct feedback and expands their vocabulary (Alammar & Amin, 2023). Besides, teachers share similar perspectives, recognizing that AI can facilitate proper feedback and assessment (Werdiningsih et al., 2024). This also aligns with findings from Siregar &

Hz (2025), who stated that AI tools can be efficient ideational partners in addressing challenges in academic writing. This is evidence that AI itself can play a powerful role as an ideal partner in guiding the writing process.

However, the use of AI also presents problematic aspects that require careful consideration. Key risks include plagiarism, loss of originality, and diminished authorial voice (Sriram, 2025). Furthermore, scholars also warn that extensive reliance on AI could weaken the author's academic identity (Asamoah et al., 2024; Hanafi et al., 2025). Another equally significant risk is the tendency toward dependency, where students rely too heavily on AI suggestions, potentially reducing their critical thinking skills.

Despite the growing body of research, research gaps remain. Most studies highlight the benefits of AI, from idea generation and brainstorming to rapid feedback and language improvement (Alammar & Amin, 2023; Darwin et al., 2024; Kim et al., 2025; Siregar & Hz, 2025; Werdiningsih et al., 2024). In contrast, few examine how students strategically use AI tools throughout the writing process. Existing studies often focus on isolated stages, such as revision or editing, or they emphasize potential dependency on AI without addressing more comprehensive strategies in academic writing.

Therefore, this research aims to address these gaps in current research by examining undergraduate students' strategies in the Indonesian EFL context across all stages of writing, ranging from planning, drafting, revising, and editing, without limiting the research to just one type of AI. It also investigates the impact of AI on students' motivation and writing performance, as well as ethical considerations surrounding its use in academic writing. Thus, this research offers a practical contribution to the ethical integration of AI in EFL academic writing. In line with these aims, the following research questions were formulated:

1. What strategies do EFL students use when using AI to improve their academic writing?
2. How do EFL students perceive the impact of AI on their motivation and performance in academic writing?

RESEARCH METHODOLOGY

This section provides a detailed explanation of the methodology used in this research, including the research design, participants, instruments, data collection, and data analysis techniques.

Research Design

To address the research questions, this study adopted a qualitative case study design. This study was chosen to explore in-depth the strategies used by students in utilizing AI-based platforms during the academic writing process, as well as how these impact their motivation and performance. Case studies allow researchers to understand phenomena contextually and comprehensively regarding real-world phenomena or situations (Yin, 2018). In this study, a small information-rich sample (n=4) was purposively selected to enable intensive within-case analysis and cross-case comparison. By exploring the experiences of these participants who actively use AI to assist their writing, this study offers context-rich insights into the role of AI in supporting the process and output of students' academic writing.

Participants

The participants were four undergraduate students from a reputable private university in Malang City. They were purposively selected based on three main criteria: 1) having completed an academic writing course, 2) actively using AI to assist the academic writing process (e.g., ChatGPT, Grammarly, Gemini), and 3) producing good academic writing output as reflected in their grades. These criteria ensured that participants had relevant experience using AI-based platforms and were able to integrate them appropriately into their academic writing process.

Table 1. Demographic Information

Participants	Gender	Academic Writing Course Grade	Experiences in Using AI (year)	AI Tools Used Regularly
P1	Male	A	> 2	ChatGPT, Grammarly
P2	Female	A	> 2	ChatGPT, Grammarly
P3	Male	A	> 3	ChatGPT, Bing AI, Gemini
P4	Female	A	> 2	ChatGPT, WordTune, QuillBot

Instruments

To collect data, this study used two instruments: interview guidelines and task scenarios. The interview guidelines contained questions aimed at exploring students' experiences and perceptions of using AI to assist academic writing. Furthermore, the task scenarios were structured based on a writing stages framework, from planning to editing, allowing participants to demonstrate the practical use of AI at each stage. To ensure the validity of the instrument, both the interview guide and task scenarios were

validated by an expert in the field of ELT and educational technology, ensuring adequate content validity.

Data Collection

Prior to data collection, the researchers ensured the research was conducted ethically. Before the interviews, all four participants received informed consent forms outlining the study's objectives, methods, and their rights. Upon agreeing to participate, they signed the consent forms, and the research process began.

Data collection was conducted using two methods: semi-structured interviews and user walkthroughs. Semi-structured interviews were conducted face-to-face in a comfortable setting to encourage open dialogue, lasting approximately thirty minutes each, and were recorded with the participants' consent. Through these interviews, participants were asked to share in-depth experiences and perceptions of using AI to assist with academic writing.

Additionally, user walkthroughs were conducted for approximately thirty minutes. During this stage, participants were asked to directly demonstrate their strategies for utilizing AI at various stages of academic writing, such as planning, drafting, revising, and editing. During these sessions, the researchers documented participants' activities by taking screenshots of their prompts and AI outputs. These screenshots served as visual evidence of interaction patterns and were used to corroborate the interview data.

Data Analysis

The data were analyzed using thematic analysis by Fereday & Muir-Cochrane (2006). After the interviews were transcribed verbatim, the analysis process began with developing initial themes aligned with the research framework, namely the writing model by Tompkins (2004). Next, the researchers developed a coding scheme to organize the data and systematically coded them. These codes were grouped into themes aligned with the theoretical framework.

To add depth to the analysis, screenshots from user walkthroughs were integrated as supplementary data to triangulate interview findings and provide visual confirmation of practices reported by participants. Before reporting the findings, the researchers conducted a peer review with an expert to minimize bias. Furthermore, data validity was maintained through member checking with the participants.

FINDINGS

The research findings are organized into two sections. Firstly, the strategies among EFL students when using AI to improve their academic writing. Secondly, EFL students' perception of the impact of AI on their motivation and performance in academic writing.

Strategies Among EFL Students

The first section of this finding shows the strategies of EFL students in using AI to improve their academic writing. Students' responses to findings are in line with the process writing model by Tompkins (2004), with 4 writing stages such as planning, drafting, revising, and editing.

Planning

All four participants use AI tools, mostly ChatGPT, to refine and validate their ideas, especially when developing topics and titles. The pattern that appears is that students first brainstorm independently, then consult with AI for input. This approach helps ensure that their original ideas remain intact and authentic.

For example, P1 uses ChatGPT to ensure whether a title is sufficiently concise, while P2 utilizes ChatGPT to obtain feedback after generating the initial idea independently. Similarly, P3 and P4 describe a "50:50" strategy: starting with their own ideas, then matching them with AI suggestions. This indicates that all participants employ a hybrid strategy to maintain originality while utilizing AI for tailored feedback and suggestions.

Excerpts:

"Usually, I'm still not confident with my title, and my previous title was kind of long. And... I often go to ChatGPT to make sure whether my title is good enough or not." (P1)

"To plan a topic or theme, I go to ChatGPT. Usually, to Bing AI too, but more often to ChatGPT. But I first think about the topic, after that I go to ChatGPT to give me some ideas or feedback." (P2)

"I usually use it to plan my writing. For example, to find a title or topic for my writing. I use ChatGPT, maybe... 50:50. I start by thinking about the topic first, then I will go to AI to brainstorm." (P3)

"I often use AI to plan my writing, but only 50:50. So I think about it first, and then I cross-check it with the AI like ChatGPT. Because sometimes I am concerned with the title, whether it is good or not..." (P4)

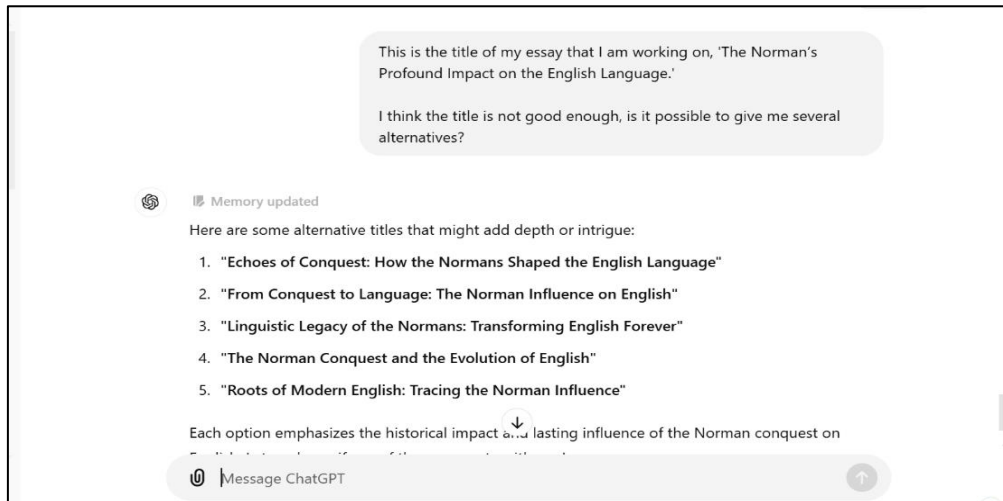


Figure 1. P1's Planning Strategy

Figure 1 exemplifies how this strategy worked. P1 drafted a title for the essay and then asked ChatGPT to suggest alternatives. ChatGPT provided several title options with varying emphases on the same topic. This process gave P1 multiple perspectives to consider and helped them weigh whether to retain or revise the initial title. This visual evidence demonstrates the role of AI in supporting the planning stage of academic writing, particularly in providing students with options that they can evaluate against their initial ideas.

Drafting

In the drafting stage, students mostly use ChatGPT to develop their ideas and structure their writing. Typically, they start with a basic idea and then use ChatGPT or other AI tools to expand the content, suggest a logical flow, or summarize relevant information to integrate more easily into their drafts.

P1, for example, explains that he begins with a simple contrast, and after consulting with ChatGPT, he gains additional ideas to refine the structure and enrich the content. In addition, P2 also uses ChatGPT to elaborate on writing topics and create a more suitable outline, resulting in a clearer and more focused flow. P3 finds ChatGPT helpful for proposing initial structural ideas, while P4 uses AI to summarize content from several websites, making it easier to highlight important points in a paragraph and develop them independently.

Excerpts:

"Well... I use AI to generate ideas. Initially, I talk about the contrast of my essay, but not too deeply. Then I look for information about it on ChatGPT. Then I wrote it again according to the ideas given." (P1)

"I use AI to develop ideas from the topic I discussed earlier... I use ChatGPT to develop my ideas and give me some suggestions for the outline." (P2)

"I ask the AI to give me background ideas and also a structure for my essay. If I don't write at the beginning, I won't start writing for the next paragraphs, so this is quite helpful." (P3)

"I usually use AI to give ideas for points in writing. For example, here I want to think about ideas for my paragraph structure, I look for a website about my essay topic, then I write the link and ask for the summary." (P4)

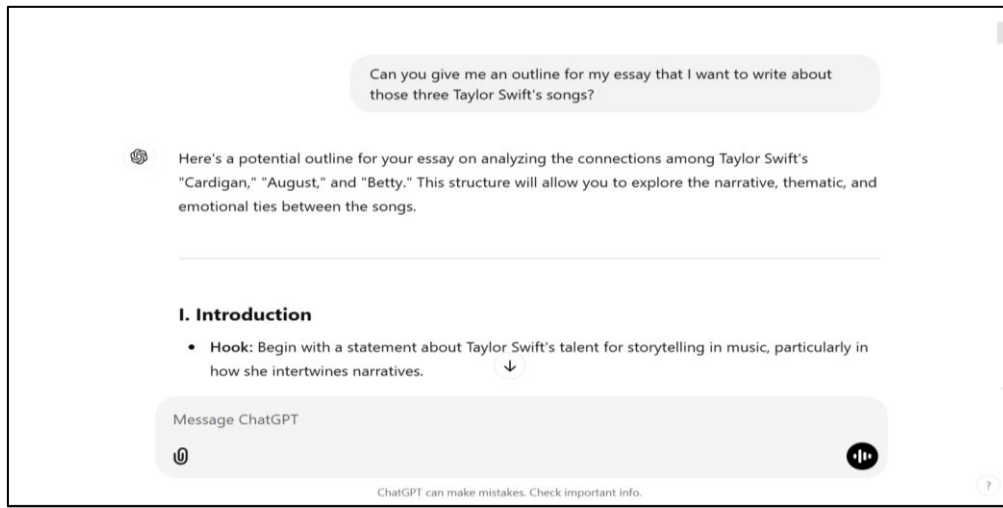


Figure 2. P2's Drafting Strategy

As shown in Figure 2, P2 used ChatGPT to create an essay outline about a song. The AI then provided a writing framework consisting of an introduction, body, and conclusion. This visual evidence demonstrated how AI facilitated the development of a more focused draft, moving to a more systematic writing. With AI support, the drafting process was faster, and students could proceed more confidently with their academic writing.

Revising

In the revising stage, all participants use AI to improve their writing. For instance, P1 uses AI to combine previously existing ideas in order to improve sentence structure. Likewise, P2 uses AI to re-check the overall ideas and request additional suggestions to enhance quality. P3 asks AI for topic-related suggestions but still selects only those that best fit the text. Finally, P4 used AI to review the main ideas and to generate short paragraphs that provide additional input for revision.

Excerpts:

"I ask for AI's help to give me ideas, like combining my ideas into a more fitting sentence." (P1)

"Maybe... like checking again for the outline or the overall idea... if I feel it's still lacking, I go to AI for more ideas." (P2)

"I ask AI to make a brief paragraph about my topic. If there are new ideas, I'll improve my writing again." (P3)

"I used AI to give me some ideas about my topic. If the recommendation is good, I add it to my writing." (P4)

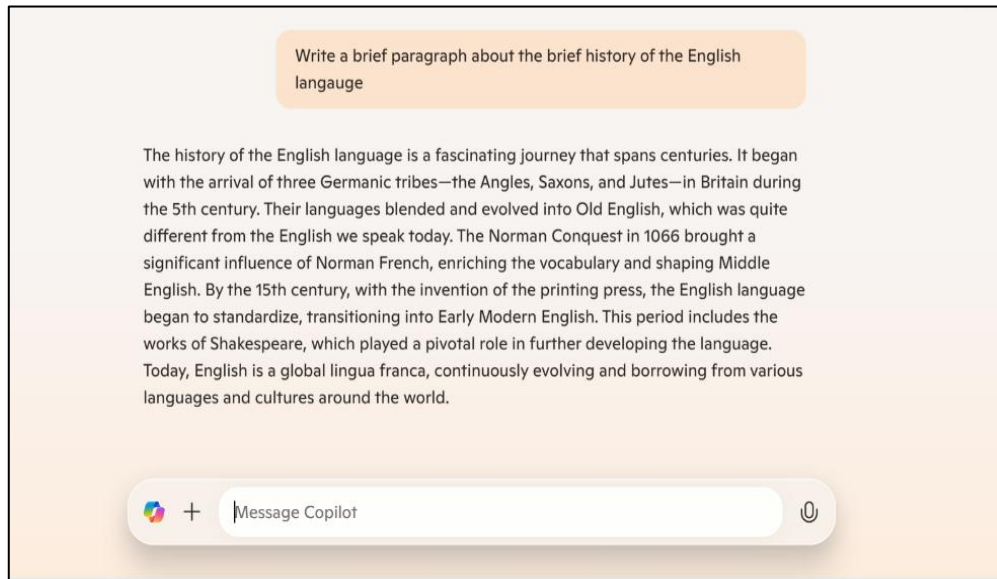


Figure 3. P3's Revising Strategy

As shown in Figure 3, P3 used Bing AI to create a summary that helped refine ideas and highlight key points. The resulting output was a summary containing points relevant to the topic. This visual evidence illustrates that students use AI not only to check sentences but also to enrich ideas by filtering new information for addition to their writing. This process made the revision stage more focused, as students could immediately review a summary of ideas that they selected and integrated as needed.

Editing

In the editing stage, all participants use AI tools to check for grammatical errors and make their writing more academic in style. P1 relies on Grammarly to detect and correct errors. P2 also uses Grammarly, then adjusts the recommendations as appropriate to make her writing style more formal and consistent. In addition, P3 uses ChatGPT to check grammar and suggest gradual style improvements. Then, P4 uses two AI tools, which are QuillBot and WordTune, to improve grammar and select more precise wording for clearer and more concise sentences.

Excerpts:

"I usually go straight to Grammarly. If there is a suggestion from Grammarly, I usually just click it." (P1)

"I just copy and paste my writing there, then adjust the writing style, maybe make it more academic. I'll use the appropriate suggestions from Grammarly." (P2)

"I check for grammatical errors with AI, usually using ChatGPT, and fix my writing little by little." (P3)

"I use QuillBot and WordTune to fix my grammar and choose more appropriate words." (P4)

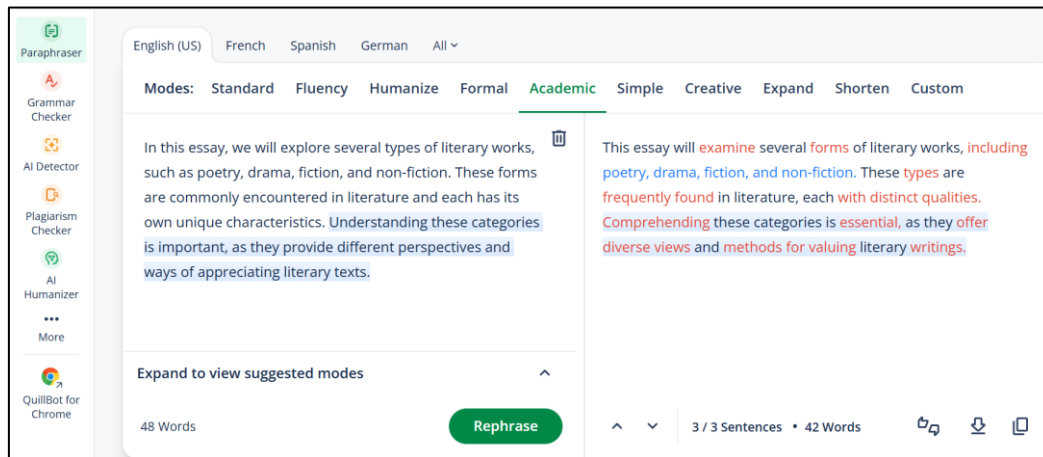


Figure 4. P4's Editing Strategy

As shown in Figure 4, P4 used QuillBot to clarify sentences and make them more academic. Comparing the original paragraph on the left with the paraphrased version on the right highlights changes in phrasing and sentence structure, revealing areas where the diction was condensed or altered. This visual evidence shows that during the editing stage, AI was utilized to make targeted adjustments to style and accuracy, resulting in more formal, consistent, and comprehensible sentences without altering the author's main ideas.

Perception of the Impact on Performance and Motivation

The second section of the research findings shows the impact of AI on EFL students' performance and motivation in academic writing. Students' responses to these findings included performance, motivation, and confidence in the usage of AI.

Improvement in Students' Performance

All participants state that AI use significantly improved their academic writing performance, although the extent of the improvement varies. For instance, P1 reflects on how AI improves his writing style. In addition, P2 describes AI as both a mentor

that provides direction and a companion to discuss ideas and topics. P3 explains that AI offers various recommendations to speed up the revision process. On the other hand, P4 limits AI to certain sections to avoid altering the original work too much. Accordingly, P4 judges the improvement as noticeable but not drastic.

Excerpts:

"If I look back at my writing last semester, I think my writing style was better. I used more varied diction, and my writing style was more pleasant to read. But there is still much to learn." (P1)

"Yes... I feel like I have someone to guide me and give me directions. Like where the idea is to be taken, AI usually gives some recommendations on the topic, and we can discuss a lot of things." (P2)

"The AI gave me vocabulary recommendations and underlined the vocabulary that could be improved. So, with AI, I can improve my performance in a fairly fast way too." (P3)

"In terms of performance enhancement, maybe yes... but not really. Maybe just because I only use AI in a few sections and I set my boundaries, so the result was just so-so to me." (P4)

Norman's Profound Impact on the English Language.

Stating that the English and French languages are similar might seem implausible to many people. After all, the two languages are indeed very different. For instance, French employs the concept of grammatical gender, whilst Modern English does not. In French, the word friend is *ami* (masculine) or *amie* (feminine). A similar pattern is also applied in other nouns, i.e., *l'infirmier* (masculine) or *l'infirmière* (feminine) which means nurse and *le coiffeur* (masculine) or *la coiffeuse* (feminine) which means hairdresser (BBC, n.d.) (b). The two languages belong to different language families. English is categorized under the West Germanic family (which includes Dutch and German), and French as a Romance language (derived from Latin) alongside Italian, Portuguese, Romanian, and Spanish. So, how did the French become a part of English and shape the English we know today?

French was integrated into English through slow and gradual progress over the years. However, there was one defining moment of a sudden influx of French language influence into the English language. That moment was when Duke William of Normandy conquered the Kingdom of England, and it happened in 1066.

The year 1066 was not the best year for the Kingdom of England as it faced a lot of turmoil, and the cause was that the reigning King of England, the last Anglo-Saxon king, Edward

Figure 5. Sample of Student's Academic Writing

As shown in Figure 5, a sample from P1, the findings indicated an improvement in academic writing quality. A more coherent paragraph structure and more precise diction demonstrated how the final product, after going through the AI-assisted

process, appears neater and easier to follow. This visual evidence aligned with P1's report of improved writing style and illustrated that AI support can contribute to readability and the quality of argument presentation, without changing the author's underlying substance.

Boosting Motivation

The findings show that AI not only improves the participants' academic writing but also increases their motivation to persist with academic writing. For instance, P1 reports that AI provides feedback that is similar to the suggestions given by lecturers. Feedback provided by AI can increase motivation because it offers opportunities to keep learning from the various word choices and suggestions given.

Similarly, P2 finds AI motivating because it improves writing quality, particularly grammar. P3 notes that AI reduces the pressure of academic writing. According to P3, academic writing, which had previously been a stressful task, became more manageable with AI-generated suggestions and ideas. Finally, P4 explains that AI provides ideas and topics that sustain motivation.

Excerpts:

"...Because AI can also give feedback that we sometimes find from our lecturers. It's also motivating because I feel like I can learn from AI, and... it produces sentence structures that are different from mine. So, I can take its style and also diction. It makes me interested." (P1)

"I feel motivated in academic writing because I got a lot of help from AI. For example, if I ask AI to fix my grammar, my writing can be even better. Or... when my writing is still messy, with the help of AI, it can be more structured." (P2)

"Definitely motivated... Previously, I felt pressured in academic writing. However, because AI helps me, I feel like I have my assistant to brainstorm some ideas, and my pressure in academic writing is reduced." (P3)

"Regarding motivation, yes, I think AI can motivate me because AI tells me what the options are when I want to write something." (P4)

Confidence in AI Usage

Although AI is often regarded as capable of significantly improving writing skills, the findings indicate that participants show different levels of confidence in using AI. For example, P1 notes that while using Grammarly does not cause much guilt, using ChatGPT often causes anxiety and discomfort.

In practice, P1 drafts the content first and then compares it with AI suggestions, which helps maintain the originality of ideas and topics developed from the outset. P2 also

expresses a lack of confidence in the final output. Similarly, P3 also feels less confident because the final result of the writing blends numerous AI suggestions with personal ideas. In line with P1, P4 also worries about the loss of originality when relying too much on AI across all stages of the writing process.

Excerpts:

"With Grammarly, I don't really feel guilty. But when it comes to ChatGPT... sometimes I feel like "Who did this?", even though when I do it, I tend to type my writing first and then put it in there to compare." (P1)

"Well... I am not really confident because it's not purely my work, there is AI's involvement." (P2)

"I feel less confident because the results will be mixed between my ideas and the AI. Sometimes, I also feel the results are lacking because there are some mixtures from the AI." (P3)

"I am not that confident because if I use this fully, I will lose my originality. I know that AI can open a lot of opportunities, but I am worried if I am not careful enough." (P4)

DISCUSSION

The findings of this study indicate that EFL students use AI across all stages of academic writing, from planning and drafting to revising and editing, following a relatively consistent pattern. During the planning stage, students use AI as a partner or assistant to validate and test the feasibility of ideas, particularly when selecting topics and titles. The "50:50" strategy demonstrates critical awareness of maintaining a balance between originality and technological assistance, indicating that students do not blindly accept AI suggestions but maintain their intellectual identity.

In the drafting stage, AI helps participants expand content and suggest a flow and framework for their writing. However, despite its usefulness at this stage, students express concerns about overreliance, which may limit independent idea development. In the revising stage, AI is used to check coherence and add new perspectives, but input is not accepted blindly; it is screened according to the writing's purpose. Then, in the editing stage, AI tools such as Grammarly, QuillBot, Wordtune, and ChatGPT improve grammar, diction, and stylistic consistency. In terms of perceptions, students report increased motivation toward academic writing but remain cautious about the authenticity of their writing when AI assistance is fully generative.

These findings suggest two main explanations. First, AI can help reduce cognitive load in typically challenging phases of academic writing, such as initiating a topic, developing an outline, and establishing flow, which makes the writing process more

structured and focused (Malik et al., 2023; Utami & Winarni, 2023). Second, rapid and interactive feedback provides scaffolding that can increase clarity of next steps and foster confidence, thereby increasing writing motivation (Guo et al., 2024; Wang, 2025). Furthermore, easing the pressure of academic writing with AI support is associated with reduced stress and higher motivation (Barton & McCulloch, 2018; Hawanti & Zubaydullovna, 2023). At the same time, students set limits on their use of AI and adopt only suggestions that are deemed safe and aligned with their initial ideas.

Compared with previous research, these findings align with the process writing model, which comprises a cycle of planning, drafting, revising, and editing, with active author involvement (Tompkins & Hoskisson, 1995). In the initial phase, the findings support evidence that AI is useful for brainstorming, saving time, and generating ideas (Lavrič & Škraba, 2023; Marzuki et al., 2023) and for helping organize outlines (Talayhan et al., 2023). In the revision and editing phases, the findings are consistent with reports that AI enhances coherence and sentence structure without replacing the author's thinking, since suggestions are critically evaluated and selectively adopted (Baidoo-anu & Owusu Ansah, 2023; Khalifa & Albadawy, 2024). The preference for proofreading tools during editing also accords with evidence that Grammarly and QuillBot improve language quality and academic style (Raheem et al., 2023; Yan, 2023).

On the other hand, the improved performance and decreased anxiety in academic writing reported by participants are consistent with findings that AI accelerates writing and helps improve vocabulary, grammar, and outlining (Dai & Liu, 2024; Tumiran et al., 2024). Conversely, doubts about authenticity and concerns about reduced critical thinking are also noted in several previous studies (Aljuaid, 2024; Zhao et al., 2025). Thus, the findings not only confirm the benefits of AI but also emphasize the importance of ethical use, namely, maintaining balance in adopting suggestions. This includes an affective dimension in which students may feel anxious and less confident when combining personal ideas with AI suggestions. These concerns connect to debates about academic integrity and the ethics of AI use. Consistent with Malik et al. (2023), students need to balance AI use to avoid dependence.

Overall, this study concludes that AI serves as an assistant or dialogue partner that clarifies next steps and polishes language toward an academic goal, rather than a substitute for the author's voice (Gayed et al., 2022; Khamis & Yusof, 2024). Accordingly, the findings highlight the importance of ethical use that preserves originality, academic integrity, and critical thinking (Werdiningsih et al., 2024). By engaging in a hybrid approach, in which students start from their own ideas, use AI gradually at each writing stage, and critically filter suggestions. Through this approach, students can improve writing quality while maintaining academic integrity.

However, limitations of this study should be noted. First, the number of participants is small ($n=4$), which constrains generalizability. In addition, this study does not fully document prompt logs or revision histories, which may omit aspects of the decision-making process. Future studies are recommended to expand the sample size and collect complete prompt or version logs to more robustly clarify how AI use shapes the academic writing process and outcomes.

CONCLUSION

This study unveils students' strategies for using AI in various writing stages, such as planning, drafting, revising, and editing. The findings indicate that AI can help students plan their writing, provide writing ideas, improve paragraph structure, and revise various writing errors, especially in grammar and vocabulary selection. Additionally, the findings show that the use of AI can improve students' performance and motivation in academic writing as it provides fast feedback and serves as an assistant for discussion. However, almost all participants felt less confident with the findings of their own academic writing because they believed that the writing produced reflected the intervention of AI tools.

This study is expected to provide in-depth insight into how students utilize AI to improve the quality of their academic writing in a balanced way, maintaining the originality of students' work while depending on their critical thinking. In addition, this study also opens up opportunities for future researchers to explore policies related to the ethics of using AI in academic writing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

AUTHOR(S) CONTRIBUTION

Putri, B.G.: conceptualization (lead), methodology (lead), writing–original draft (lead), review and editing (supporting); *Suryati, N.:* conceptualization (lead), methodology (supporting), writing–original draft (supporting), review and editing (lead). *Ivone, F.M.:* conceptualization (supporting), methodology (supporting), writing–original draft (supporting), review and editing (lead). *Hayati, N.:* conceptualization (supporting), methodology (supporting), writing original draft (supporting), review and editing (lead).

REFERENCES

- Al-Raimi, M., Mudhsh, B. A., Al-Yafaei, Y., & Al-Maashani, S. (2024). Utilizing artificial intelligence tools for improving writing skills: Exploring Omani EFL learners' perspectives. *Forum for Linguistic Studies (Transferred)*, 6(2), 1177. <https://doi.org/10.59400/fls.v6i2.1177>
- Alammar, A., & Amin, E. A.-R. (2023). EFL students' perception of using AI paraphrasing tools in English language research projects. *Arab World English Journals*, 14(3), 166–181. <https://doi.org/10.24093/awej/vol14no3.11>
- Aljuaid, H. (2024). The impact of artificial intelligence tools on academic writing instruction in higher education: A systematic review. *Arab World English Journal (AWEJ) Special Issue on ChatGPT*, 1(1), 26–55. <https://doi.org/10.24093/awej/ChatGPT.2>
- Asamoah, P., Zokpe, D., Boateng, R., Marfo, J. S., Boateng, S. L., Asamoah, D., Muntaka, A. S., & Manso, J. F. (2024). Domain knowledge, ethical acumen, and query capabilities (DEQ): A framework for generative AI use in education and knowledge work. *Cogent Education*, 11(1), 2439651. <https://doi.org/10.1080/2331186X.2024.2439651>
- Baidoo-anu, D., & Owusu Ansah, L. (2023). Education in the Era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning - education in the era of generative artificial intelligence (AI): Understanding the potential benefits. *Journal of AI*, 7(1), 52–62. <https://doi.org/10.61969/jai.1337500>
- Barton, D., & McCulloch, S. (2018). Negotiating tensions around new forms of academic writing. *Discourse, Context & Media*, 24, 8–15. <https://doi.org/10.1016/j.dcm.2018.01.006>
- Dai, K., & Liu, Q. (2024). Leveraging artificial intelligence (AI) in English as a foreign language (EFL) classes: Challenges and opportunities in the spotlight. *Computers in Human Behavior*, 159, 108354. <https://doi.org/10.1016/j.chb.2024.108354>
- Darwin, Rusdin, D., Mukminatien, N., Suryati, N., Laksmi, E. D., & Marzuki. (2024). Critical thinking in the AI era: An exploration of EFL students' perceptions, benefits, and limitations. *Cogent Education*, 11(1), 2290342. <https://doi.org/10.1080/2331186X.2023.2290342>
- Fathimatuzahro, M., & Rizkiyah, F. (2025). AI-driven feedback in EFL students' writing: Does it enhance their skills? *Celtic: A Journal of Culture, English Language Teaching, Literature and Linguistics*, 12(1 SE-Articles), 637–657. <https://doi.org/10.22219/celtic.v12i1.40594>
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80–92.

- <https://doi.org/10.1177/160940690600500107>
- Gayed, J. M., Carlon, M. K. J., Oriola, A. M., & Cross, J. S. (2022). Exploring an AI-based writing assistant's impact on English language learners. *Computers and Education: Artificial Intelligence*, 3, 100055. <https://doi.org/10.1016/j.caeai.2022.100055>
- Guo, K., Pan, M., Li, Y., & Lai, C. (2024). Effects of an AI-supported approach to peer feedback on university EFL students' feedback quality and writing ability. *The Internet and Higher Education*, 63, 100962. <https://doi.org/10.1016/j.iheduc.2024.100962>
- Hanafi, A. M., Al-mansi, M. M., & Al-Sharif, O. A. (2025). Generative AI in academia: A comprehensive review of applications and implications for the research process. *International Journal of Engineering and Applied Sciences-October 6 University*, 2(1), 91–110. <https://doi.org/10.21608/ijeasou.2025.349520.1041>
- Hawanti, S., & Zubaydulloevna, K. M. (2023). AI chatbot-based learning: Alleviating students' anxiety in English writing classroom. *Bulletin of Social Informatics Theory and Application*, 7(2), 182–192. <https://doi.org/10.31763/businta.v7i2.659>
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education promises and implications for teaching and learning*. Center for Curriculum Redesign.
- Jiang, Y., Li, X., Luo, H., Yin, S., & Kaynak, O. (2022). Quo vadis artificial intelligence? *Discover Artificial Intelligence*, 2(1), 4. <https://doi.org/10.1007/s44163-022-00022-8>
- Khalifa, M., & Albadawy, M. (2024). Using artificial intelligence in academic writing and research: An essential productivity tool. *Computer Methods and Programs in Biomedicine Update*, 5, 100145. <https://doi.org/10.1016/j.cmpbup.2024.100145>
- Khamis, N. Y. H., & Yusof, N. (2024). Artificial intelligence revolutionising writing assessments. *International Journal of Language Education and Applied Linguistics*, 14(2 SE-Articles), 1–6. <https://doi.org/10.15282/ijleal.v14i2.11444>
- Kim, J., Yu, S., Detrick, R., & Li, N. (2025). Exploring students' perspectives on Generative AI-assisted academic writing. *Education and Information Technologies*, 30(1), 1265–1300. <https://doi.org/10.1007/s10639-024-12878-7>
- Lavrič, F., & Škraba, A. (2023). Brainstorming will never be the same again—a human group supported by artificial intelligence. In *Machine Learning and Knowledge Extraction* (Vol. 5, Issue 4, pp. 1282–1301). <https://doi.org/10.3390/make5040065>
- Luckin, R., & Holmes, W. (2016). *Intelligence unleashed: An argument for AI in education*. UCL Knowledge Lab.
- Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., Darwis, A., & Marzuki. (2023). Exploring Artificial Intelligence in Academic Essay: Higher

- Education Student's Perspective. *International Journal of Educational Research Open*, 5, 100296. <https://doi.org/10.1016/j.ijedro.2023.100296>
- Marzuki, Widiati, U., Rusdin, D., Darwin, & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. *Cogent Education*, 10(2), 2236469. <https://doi.org/10.1080/2331186X.2023.2236469>
- Pitrianti, S., & Gasanti, R. (2020). Analisis kesulitan menulis karya ilmiah siswa sma terbuka. *Literasi: Jurnal Bahasa Dan Sastra Indonesia Serta Pembelajarannya*, 4(2), 91–96. <https://doi.org/10.25157/literasi.v4i2.4283>
- Raheem, B. R., Anjum, F., & Ghafar, Z. N. (2023). Exploring the profound impact of artificial intelligence applications (Quillbot, Grammarly and ChatGPT) on English academic writing: A systematic review. *International Journal of Integrative Research (IJIR)*, 1(10), 599–622. <https://doi.org/10.59890/ijir.v1i10.366>
- Safitri, M., & Fithriani, R. (2024). Exploring higher education EFL students' perception of AI writing tools in the 5.0 era. *Cetta: Jurnal Ilmu Pendidikan*, 7(1), 267–276. <https://doi.org/10.37329/cetta.v7i1.3158>
- Siregar, A. R. F., & Hz, B. I. R. (2025). Undergraduate students' perceptions on utilizing Deepseek AI as a tool in writing journal articles. *Celtic: A Journal of Culture, English Language Teaching, Literature and Linguistics*, 12(2 SE-Articles), 713–729. <https://doi.org/10.22219/celtic.v12i2.41375>
- Song, C., & Song, Y. (2023). Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students. *Frontiers in Psychology*, 14(December), 1–14. <https://doi.org/10.3389/fpsyg.2023.1260843>
- Sriram, N. (2025). Harmonizing Innovation and Integrity: Ethical perspectives on artificial intelligence (AI) in academic writing. *International Journal of Pharmaceuticals and Health Care Research*.
- Syahnaz, M., & Fithriani, R. (2023). Utilizing artificial intelligence-based paraphrasing tool in EFL writing class: A focus on Indonesian university students' perceptions. *Scope: Journal of English Language Teaching*, 7(2), 210–218. <https://doi.org/10.30998/scope.v7i2.14882>
- Talayhan, Ö. G., Babayiğit, M., & Öğrenci, Y. (2023). The influence of AI writing tools on the content and organization of students' writing: A focus on EFL instructors' perceptions. *CUDES Current Debates in Social Sciences*, 6(2), 83–93. <https://doi.org/10.29228/cudes.71701>
- Tompkins, G. E. (2004). *Teaching writing: Balancing product and process*. Merrill/Prentice Hall.
- Tompkins, G. E., & Hoskisson, K. (1995). *Language arts: content and teaching strategies*. Prentice-hall, inc.
- Tumiran, M. A., Mohammad, N., & Bahri, S. (2024). Implications of leveraging AI in students' academic writing: a review analysis. *Malaysian Journal of Social*

- Sciences and Humanities (MJSSH), 9(8 SE-Articles).
<https://doi.org/10.47405/mjssh.v9i8.2954>
- Utami, S. P. T., & Winarni, R. (2023). Utilization of artificial intelligence technology in an academic writing class: How do Indonesian students perceive?
Contemporary Educational Technology, 15(4), ep450.
- Wang, C. (2025). Exploring students' generative AI-assisted writing processes: perceptions and experiences from native and nonnative english speakers.
Technology, Knowledge and Learning, 30(3), 1825–1846.
<https://doi.org/10.1007/s10758-024-09744-3>
- Werdiningsih, I., Marzuki, Indrawati, I., Rusdin, D., Ivone, F. M., Basthomi, Y., & Zulfahreza. (2024). Revolutionizing EFL writing: unveiling the strategic use of ChatGPT by Indonesian master's students. *Cogent Education*, 11(1), 2399431.
<https://doi.org/10.1080/2331186X.2024.2399431>
- Werdiningsih, I., Marzuki, & Rusdin, D. (2024). Balancing AI and authenticity: EFL students' experiences with ChatGPT in academic writing. *Cogent Arts & Humanities*, 11(1), 2392388. <https://doi.org/10.1080/23311983.2024.2392388>
- Xu, Y., Liu, X., Cao, X., Huang, C., Liu, E., Qian, S., Liu, X., Wu, Y., Dong, F., & Qiu, C.-W. (2021). Artificial intelligence: A powerful paradigm for scientific research. *The Innovation*, 2(4), 1–20. <https://doi.org/10.1016/j.xinn.2021.100179>
- Yan, D. (2023). Impact of ChatGPT on learners in a L2 writing practicum: An exploratory investigation. *Education and Information Technologies*, 28(11), 13943–13967. <https://doi.org/10.1007/s10639-023-11742-4>
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods*. SAGE Publication.
- Zhang, C., & Lu, Y. (2021). Study on artificial intelligence: The state of the art and future prospects. *Journal of Industrial Information Integration*, 23, 100224.
<https://doi.org/10.1016/j.jii.2021.100224>
- Zhao, C. Q., Cao, J., Chen, E., Koedinger, K. R., & Lin, J. (2025). Slideitright: Using AI to find relevant slides and provide feedback for open-ended questions. *International Conference on Artificial Intelligence in Education*, 378–392.
<https://doi.org/10.48550/arXiv.2505.04584>