



## ***EXPLORING STUDENTS' PERCEPTIONS OF ARTIFICIAL INTELLIGENCE IN THE WRITING PROCESS***

**Desta Ananda<sup>1</sup>, Fitri Wulandari<sup>2</sup>, Khusnul Khotimah<sup>3</sup>, Anida Faradila Safitri<sup>4</sup>**

<sup>1,2,3,4</sup> Faculty of Teacher Training and Education, University of Muhammadiyah Pringsewu

Email Correspondence: [fitriwulandari@umpri.ac.id](mailto:fitriwulandari@umpri.ac.id)

### ***Abstract***

*This study examines students' perceptions of the use of artificial intelligence (AI) across stages of the academic writing process. A mixed-methods approach with a sequential explanatory design was applied. Data were obtained from questionnaires administered to 58 students in the English Education Study Program at Muhammadiyah University Pringsewu and supported by semi-structured interviews. The results indicate that students generally perceive AI as supportive in planning, drafting, revising, and editing, particularly in organizing ideas, improving language accuracy, and enhancing writing quality. When used ethically, AI was also reported to increase students' confidence and efficiency in academic writing.*

**Keywords:** *Artificial Intelligence, Academic Writing, EFL Learners, Student Perceptions, Writing Process*

## **INTRODUCTION**

Artificial intelligence (AI) has increasingly been integrated into writing instruction, particularly through generative AI technologies that support idea generation, language accuracy, and feedback provision. In academic contexts, AI-based tools are commonly used to assist students in organizing ideas, improving grammatical accuracy, and refining writing style. Previous studies indicate that AI can enhance learning efficiency and support cognitive processes involved in academic writing (Li et al., 2021; Song & Song, 2023). These developments suggest that AI has become an influential component in contemporary writing pedagogy.

Academic writing in higher education is widely recognized as a complex skill requiring critical thinking, linguistic competence, and systematic organization of ideas. Students often encounter difficulties related to grammar, vocabulary, and coherence, particularly when writing in a second language (Luthfiyati, 2023; Baharudin et al., 2023).



Creation is distributed under the Creative Commons License Attribution Share Alike 4.0 International Published in <https://ejournal.umpri.ac.id/index.php/smart/index>  
SMART Journal: Journal of English Language Teaching and Applied Linguistics

As a result, many students turn to technological support, including AI tools, to overcome challenges throughout the writing process.

From a process-oriented perspective, writing involves several interconnected stages, namely planning, drafting, revising, and editing (Harmer, 2004). Recent research suggests that AI can function as both a technical and cognitive assistant across these stages, supporting activities such as brainstorming, outlining, paraphrasing, and language correction through Natural Language Processing (Sarker, 2022; Chen et al., 2024). Tools such as ChatGPT, Grammarly, and Quillbot have become widely adopted by students to facilitate various aspects of academic writing.

Although numerous studies have reported positive perceptions of AI-assisted writing, most focus on general attitudes toward AI or the quality of final written products. There remains limited research that examines how students integrate AI across each stage of the writing process, particularly within the Indonesian higher education context. This gap restricts a comprehensive understanding of the pedagogical role of AI throughout the entire writing workflow. Therefore, this study aims to explore students' perceptions of the integration of AI at each stage of the academic writing process, including planning, drafting, revising, and editing, in the context of English language learning at a private university in Indonesia.

## **RESEARCH METHOD**

This study employed a mixed-methods design with a sequential explanatory approach, in which quantitative data were collected first and followed by qualitative data to explain and enrich the survey findings (Creswell, 2019). The quantitative phase aimed to capture an overall picture of students' perceptions of Artificial Intelligence (AI) use in the academic writing process, while the qualitative phase provided deeper insights into students' experiences across writing stages.

The participants were 58 students from the English Education Study Program at Muhammadiyah University Pringsewu, selected through simple random sampling from a population of 71 students. Quantitative data were collected using an online questionnaire consisting of closed-ended items measured on a four-point Likert scale. The instrument was developed based on Harmer's (2004) writing process theory and the UTAUT framework

(Venkatesh et al., 2003), and adapted from relevant previous studies. Validity and reliability testing resulted in 34 valid items with a Cronbach's Alpha coefficient of 0.960. Descriptive statistics were used to analyze the quantitative data. Qualitative data were obtained through semi-structured interviews with six selected participants, each lasting approximately 20–30 minutes, and analyzed through thematic categorization aligned with the stages of the writing process. Ethical considerations were addressed by obtaining informed consent from all participants, ensuring voluntary participation, confidentiality, and anonymity throughout the research process.

## **FINDINGS AND DISCUSSION**

### ***Findings***

The results indicate that students generally reported positive perceptions of the integration of artificial intelligence (AI) in the academic writing process. Overall, the mean perception score was 12.67 (SD = 2.76), indicating a high level of agreement regarding the usefulness of AI in writing activities. Most responses clustered at medium to high score categories, while low scores appeared only in a small proportion of participants.

**Table 1** Students' Overall Perceptions of AI Use in the Writing Process

<b>Valid</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
4	3	5.2	5.2	5.2
8	1	1.7	1.7	6.9
9	1	1.7	1.7	8.6
10	1	1.7	1.7	10.3
11	6	10.3	10.3	20.7
12	14	24.1	24.1	44.8
13	9	15.5	15.5	60.3
14	8	13.8	13.8	74.1
15	7	12.1	12.1	86.2
16	8	13.8	13.8	100.0
Total	58	100.0	100.0	

At the planning stage, students reported a high mean score (M = 12.81, SD = 2.58). The majority of respondents indicated that AI assisted them in generating ideas and organizing outlines before writing.

**Table 2** Students' Perceptions of AI Use in the Planning Stage

<b>Valid</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
4	2	3.4	3.4	3.4
8	2	3.4	3.4	6.9

10	2	3.4	3.4	10.3
11	4	6.9	6.9	17.2
12	16	27.6	27.6	44.8
13	10	17.2	17.2	62.1
14	8	13.8	13.8	75.9
15	3	5.2	5.2	81.0
16	11	19.0	19.0	100.0
Total	58	100.0	100.0	

For the drafting stage, students also demonstrated positive perceptions ( $M = 12.86$ ,  $SD = 2.72$ ). Most participants agreed that AI supported sentence development and paragraph coherence during drafting.

**Table 3** Students' Perceptions of AI Use in the Drafting Stage

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
4	2	3.4	3.4	3.4
7	1	1.7	1.7	5.2
8	2	3.4	3.4	8.6
9	1	1.7	1.7	10.3
10	1	1.7	1.7	12.1
11	1	1.7	1.7	13.8
12	17	29.3	29.3	43.1
13	8	13.8	13.8	56.9
14	9	15.5	15.5	72.4
15	5	8.6	8.6	81.0
16	16	19.0	19.0	100.0
Total	58	100.0	100.0	

In the editing stage, the mean score was 3.17 ( $SD = 0.73$ ), indicating that students perceived AI as helpful in identifying grammatical errors, spelling, and sentence clarity.

**Table 4** Students' Perceptions of AI Use in the Editing Stage

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	3	5.2	5.2	5.2
2	2	3.4	3.4	8.6
3	35	60.3	60.3	69.0
4	18	31.0	31.0	100.0
Total	58	100.0	100.0	

At the final version stage, students reported a mean score of 6.47 ( $SD = 1.29$ ), suggesting that AI contributed to improving the overall structure, coherence, and consistency of their final drafts.

**Table 5** Students' Perceptions of AI Use in the Final Writing Stage

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
2	2	3.4	3.4	3.4
4	2	3.4	3.4	6.9

## *Exploring...*

5	1	1.7	1.7	8.6
6	26	44.8	44.8	53.4
7	14	24.1	24.1	77.6
8	13	22.4	22.4	100.0
Total	58	100.0	100.0	

Qualitative findings from interviews supported the quantitative results, showing that students perceived AI as helpful across all stages of the writing process, particularly in reducing uncertainty and facilitating task completion.

### ***Discussion***

The findings of this study indicate that students generally perceive artificial intelligence (AI) as a supportive tool throughout the academic writing process. Positive perceptions across planning, drafting, editing, and finalizing stages suggest that AI plays a meaningful role in assisting students with both linguistic and organizational aspects of writing. These results align with previous studies highlighting the potential of AI to support academic writing tasks efficiently (Kurniati & Fithriani, 2022; Song & Song, 2023).

At the planning stage, students perceived AI as particularly helpful for idea generation and outline development. This supports earlier research suggesting that AI can reduce cognitive load during the early stages of writing by providing scaffolding for brainstorming and structuring ideas (Friatin, 2025; Roman-Acosta, 2024). However, this also implies the need for instructional guidance to ensure that students continue to develop independent critical thinking skills.

During drafting, students viewed AI as beneficial for developing coherent paragraphs and improving sentence construction. This finding is consistent with Zhao and Wang (2021), who reported that AI-assisted writing tools facilitate fluency and coherence. Nevertheless, students emphasized the importance of revising AI-generated content to maintain originality and personal academic voice.

In the editing stage, AI was perceived as effective in improving grammatical accuracy and language clarity, supporting previous findings on the role of AI-based grammar checkers in enhancing language quality (Tuong & Tran, 2025). Despite these advantages, students acknowledged that AI outputs require careful review to avoid contextual inaccuracies.

Finally, at the final writing stage, students reported that AI contributed to improving coherence and overall text quality. This confirms that AI can function as a preliminary evaluator that supports refinement before final submission (Setiawan & Kusumah, 2024). However, concerns regarding overreliance and academic integrity remain important considerations.

Overall, this study suggests that AI can serve as a valuable pedagogical support in academic writing when used ethically and critically. To maximize its benefits, higher education institutions should integrate AI use with clear guidelines, ethical awareness, and pedagogical strategies that promote student autonomy and critical engagement.

## **CONCLUSION**

This study indicates that students generally hold positive perceptions of the integration of artificial intelligence (AI) in the academic writing process across all stages, including planning, drafting, editing, and finalizing. AI is perceived as supportive in idea development, text organization, and language accuracy, while also contributing to writing efficiency and confidence. However, the findings suggest that effective use of AI depends on students' ethical awareness and digital literacy to avoid overreliance and maintain originality. Therefore, AI may function as a supportive tool in writing instruction when accompanied by appropriate pedagogical guidance and clear academic guidelines in higher education.

## **REFERENCES**

- Alqahtani, N. (2024). Benefits, challenges, and attitudes toward ChatGPT in English writing courses at Saudi universities. *International Journal of Language and Literary Studies*, 6(2), 396–413. <https://doi.org/10.36892/ijlls.v6i2.1546>
- Andika, J. D., Andreevna, K. N., Herda, R. K., Savitskaya, E. S., Titania, F. N., & Ivashova, E. (2025). Investigating AI usage in English language learning: Frequency, preferences, and perceived effectiveness on speaking and writing skills. *Jurnal Wahana Pendidikan*, 12(2), 187–204. <https://doi.org/10.25157/jwp.v12i2.18734>
- Baharudin, F., Ramli, N. L., Habali, A. M., Azmi, A. A., & Rahmat, N. H. (2023). Process of writing: The challenges in writing skills among ESL learners. *International Journal of Academic Research in Business and Social Sciences*, 13(10), 33–52. <https://doi.org/10.6007/IJARBSS/v13-i10/19664>
- Chen, Y., Li, X., & Huang, J. (2024). Generative AI for academic writing assistance: A systematic review. *Computers in Human Behavior*, 152, 107596. <https://doi.org/10.1016/j.chb.2024.107596>

- Creswell, J. W. (2019). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (6th ed.). Pearson.
- Dewi, A., Silviany, I. Y., & Pratikno, H. (2023). Kemampuan bernalar dan pengembangan alinea dalam membuat wacana mahasiswa Universitas Islam Bandung. *Jurnal Bastrindo*, 4(2), 136–152. <https://doi.org/10.29303/jb.v4i2.1255>
- Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi. (2024). *Panduan pemanfaatan AI di pendidikan tinggi Indonesia*.
- Ejjami, R. (2024). The future of learning: AI-based curriculum development. *International Journal for Multidisciplinary Research*, 6(4). <https://doi.org/10.36948/ijfmr.2024.v06i04.24441>
- Fitria, T. N. (2024). Creative writing skills in English: Developing students' potential and creativity. *EBONY: Journal of English Language Teaching, Linguistics, and Literature*, 4(1), 1–17. <https://doi.org/10.37304/ebony.v4i1.10908>
- Friatin, L. (2025). Revolutionizing writing: The impact of technology on enhancing students' writing skills. *Journal of Applied Linguistics and Literacy*, 9(1). <https://doi.org/10.25157/jall.v9i1.17963>
- Khan, M., & Irfan, R. (2025). The role of artificial intelligence in academic achievement in the current scenario. *International Journal for Multidisciplinary Research*, 7(4). <https://doi.org/10.36948/ijfmr.2025.v07i04.49965>
- 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/s10639-024-12465-9>
- Kurniati, E. Y., & Fithriani, R. (2022). Post-graduate students' perceptions of QuillBot utilization in English academic writing class. *Journal of English Language Teaching and Linguistics*, 7(3), 437–451. <https://doi.org/10.21462/jeltl.v7i3.852>
- Leon, L. I. (2023). Teaching academic writing as a method of improving communication skills. *Acta Marisiensis. Philologia*, 5(5), 70–76. <https://doi.org/10.2478/amph-2023-0086>
- Li, R., Cao, Z., Ye, H., & Yue, X. (2021). Application and development trends of artificial intelligence in enterprise marketing. *Journal of Physics: Conference Series*, 1881(2), 022032. <https://doi.org/10.1088/1742-6596/1881/2/022032>
- Luthfiyati, D., Widyaaiswara, T., & Anggraini, Z. D. (2023). Students' grammar and vocabulary mastery: Does it correlate to students' writing skills? *Tarbiyah: Jurnal Ilmiah Kependidikan*, 12(1), 1–10. <https://doi.org/10.18592/tarbiyah.v12i1.7341>
- Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., & Darwis, A. (2023). Exploring artificial intelligence in academic essay writing: Higher education students' perspectives. *International Journal of Educational Research Open*, 5, 100296. <https://doi.org/10.1016/j.ijedro.2023.100296>
- Nenotek, S., Tlonaen, Z., & Manubulu, H. (2022). Exploring university students' difficulties in writing English academic essays. *Al-Ishlah: Jurnal Pendidikan*, 14(1). <https://doi.org/10.35445/alishlah.v14i1.1352>
- Ridho, M., Jaya, A., Chantavhong, S., & Rattanakosin, N. (2025). Analyzing the use of artificial intelligence in writing academic papers of students at Universitas PGRI Palembang. *Esteem Journal of English Education Study Programme*, 8(2). <https://doi.org/10.31851/esteem.v8i2.18732>

- Rizkiani, S., Maulana, A., Resmini, S., Satriani, I., & Siliwangi, I. (2025). Examining the use of AI tools in academic writing: Effects on EFL learners' critical thinking skills. *Journal of English Language Teaching, Literature, and Applied Linguistics*, 6(2). <https://doi.org/10.37742/jela.v6i2.155>
- Román-Acosta, D. (2024). Potential of artificial intelligence in textual cohesion, grammatical precision, and clarity in scientific writing. *LatIA*. <https://doi.org/10.62486/latia2024110>
- Sarker, I. H. (2022). AI-based learning: Impact of artificial intelligence on education. *arXiv*. <https://doi.org/10.48550/arXiv.2201.00056>
- 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, 1260843. <https://doi.org/10.3389/fpsyg.2023.1260843>
- Suhartono, A., Fitriani, R., & Lestari, I. (2022). The role of AI writing assistants in improving students' academic writing. *Biolinguistics*, 12. <https://doi.org/10.33369/biolinguistics.2022.12.x>
- Tuong, T., & Tran, T. (2025). The differential impact of AI tools among EFL university learners: A process writing approach. *International Journal of Learning, Teaching and Educational Research*, 24(5), 321–338. <https://doi.org/10.26803/ijlter.24.5.24>
- Zhu, D., Chen, J., Shen, X., Li, X., & Elhoseiny, M. (2023). MiniGPT-4: Enhancing vision-language understanding with advanced large language models. *arXiv*, 2304.10592. <https://doi.org/10.48550/arXiv.2304.10592>