



Enhancing the Academic Writing Process Using Artificial Intelligence: A Bibliometric

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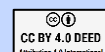
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ABSTRACT

This systematic literature review (SLR) examines the limitations of Artificial Intelligence (AI) writing assistant tools and their implications for education. The study identifies six critical shortcomings: (1) lack of academic rigor, (2) insufficient knowledge base, (3) inability to synthesize complex ideas, (4) absence of human cognitive abilities, (5) limited adaptability, and (6) questionable originality. The review highlights the challenges of engaging students with diverse emotional and cognitive characteristics, supported by statistical insights into emotional and cognitive engagement. It explores the ethical considerations and potential impacts of AI technologies on academic integrity and credibility. The findings also encompass a comparative analysis of AI models like Gemini and ChatGPT, their applications in various educational contexts, and their effectiveness in tasks such as feedback mechanisms and assessment techniques. Findings underscore the tools' potential to enhance engagement and comprehension while emphasizing the need for balanced integration with human input to preserve academic credibility. This research highlights AI's transformative yet limited role in education, advocating for responsible use and continuous evaluation.

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1. Introduction

The integration of Artificial Intelligence (AI) in educational settings has gained significant attention, particularly through the development of writing assistant tools (Nor Hazimah Wan Azib et al., 2024). These technologies promise to enhance academic writing and support students in various learning processes (Kharchenko & Babenko, 2024). However, as their adoption grows, it becomes crucial to critically evaluate their limitations and the potential consequences for education (Li et al., n.d.). This systematic literature review (SLR) aims to explore the shortcomings of AI writing tools, focusing on six key areas: the lack of academic rigor, insufficient knowledge bases, the inability to synthesize complex ideas, and the absence of human cognitive abilities. Additionally, it addresses the limited adaptability of these tools and raises concerns about their originality (Nor Hazimah Wan Azib et al., 2024).

Moreover, the successful integration of AI in educational technology hinges on engaging students with diverse emotional and cognitive characteristics (Nazari et al., 2021). This review incorporates statistical analyses to highlight the significance of

emotional and cognitive engagement in the learning process (Nazari et al., 2021). By examining the ethical implications and potential impacts of AI on academic integrity and credibility (Dergaa et al., 2023), this study seeks to provide a comprehensive understanding of the role of AI in education. Through a comparative analysis of prominent AI models, including Gemini and ChatGPT, and their applications across various educational contexts, this review aims to shed light on the current landscape of AI technologies in learning environments, while emphasizing the need for careful consideration of their limitations and ethical considerations (Rane, 2024; Rane et al., 2024). Consequently, there is a need for research that offers practical insights into recognizing objects and texts in the academic writing process by using AI (Lingard, 2023; Rizky Ananda & Salmiah, 2024). This study, therefore, aims to address the following questions:

- 1) What are the key limitations of AI writing assistant tools identified in recent literature, and how do these limitations affect their integration into educational settings?
- 2) How has the scholarly discourse around ethical considerations and the impact of AI on academic integrity evolved in the context of educational technology?

2. Method

This section comprises: (a) the review process (Avramovic & Avramovic, n.d.); (b) the database (Leschanowsky et al., 2024); (c) the key search (Challco et al., 2024); (d) the selection criteria (Conde & Rodríguez-Sedano, 2024); and (e) the data analysis (Tusquellas et al., 2024).

2.1. The Review Process

This study adopted a systematic review as its methodological framework. Such a review is known for its rigor, clarity, and accountability (Nor Hazimah Wan Azib et al., 2024). It was employed here to aggregate and synthesize findings from earlier studies, thereby enhancing readers' understanding (Hung et al., 2020). The review process involved applying specific inclusion and exclusion criteria aligned with the main research question (Altynbassov et al., 2024). Following this, an appropriate database was searched, and the relevance of articles was assessed based on their titles and abstracts (Baig & Yadegaridehkordi, 2024). Additionally, VOSviewer software (version 1.6.20.0) was utilized to identify the most frequently occurring relevant terms.

2.2. Database

The articles were sourced from Crossref by using Publish or Perish, which is the largest database of peer-reviewed literature (Agbo et al., 2024). They were subsequently exported as a "ris" file for analysis using VOSviewer.

2.3. Key Search

"Wan Nor Hazimah Wan Azib" OR "Mimi Zazira Hashim" OR "Khadijah Abdul Rahman" OR "Fadhilah Mohd Ishak" OR "Yuslina Yusoff" OR "Nur Shaliza Sapiai" OR "Nabi Nazari" OR "Muhammad Salman Shabbir" OR "Roy Setiawan" OR "Ismail Dergaa" OR "Karim Chamari" OR "Piotr Zmijewski" OR "Helmi Ben Saad" OR "LORELEI LINGARD" OR "Nitin Liladhar Rane" OR "Saurabh P. Choudhary" OR "Jayesh Rane" OR "Dr. Zuhair Dawood Zaghlool" OR "Dr. Mohamad Ahmad Saleem Khasawneh" OR "Joan Li" OR "Nikhil Jangamreddy" OR "Ruchita Bhansali" OR "Ryuto Hisamoto" OR "Luke Zaphir" OR

"Amalie Dyda" OR "Mashhuda Glencross" OR "Sanja Avramovic" OR "Ivan Avramovic"
OR "Theodore W. Frick" OR "Melissa A. Kacena" OR "Lilian I. Plotkin" OR "Jill C.
Fehrenbacher" OR "Dhio Rizky Anandaa" OR "Maryati Salmiah" OR "Yuliia V.
Kharchenko" OR "Olena M. Babenko" OR "Tonja.

2.4. Selection Criteria

The two types of selection criteria were inclusion and exclusion. Sources for inclusion were limited to: (a) publication between 2013 and 2023; (b) articles; (c) language studies: (d) Artificial Intelligence (AI), Writing Assistance, Educational Technology, and Ethical Consideration (e) the English language; and (7) journals. The exclusion criteria that served to disqualify articles were: (a) Gemini and (b) explicitly on quantitative and qualitative methods (Figure 1).

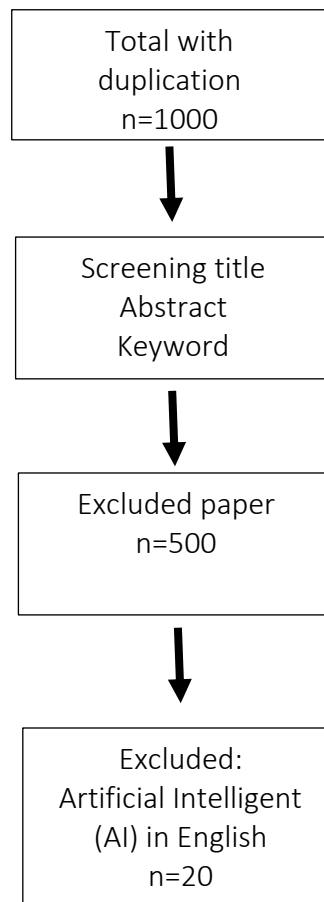


Figure 1. Inclusion and exclusion criteria for the selection of the article

2.5. Data Analysis

Article analysis was carried out based on the objectives of the study. The first objective was addressed using a systematic review a qualitative and quantitative approach. Each article was analysed in terms of (a) author; (b) sample; (c) teaching level; (d) setting; (e) AI Item in English learning; (f) method/design; (g) duration; and (h) assessment. The second objective was addressed using the VOSviewer software tool (version 1.6.20.0).

3. Results and Discussion

AI for teaching English is an artificial intelligence-based designed to enhance the learning and teaching experience of the English language (Jacobi & Sag, n.d.).

One of the most effective T&L methods in e-learning in English learning is technology-based learning (Lingard, 2023); (Frick, 2024); (Rane, 2024; Rane et al., 2024); (Jacobi & Sag, n.d.); (Avramovic & Avramovic, n.d.); (Rizky Ananda & Salmiah, 2024); (Kharchenko & Babenko, 2024).

Table 1. Details of the studies included in the systematic literature review

Author	Artificial Intelligent (AI) Items
Lorelei Lingard (2023)	In this journal the writer's craft section we offer simple tips to improve your writing in one of three areas: (1) Energy, (2) Clarity, and (3) Persuasiveness. Each entry focuses on a key writing feature or strategy, illustrates how it commonly goes wrong, teaches the grammatical underpinnings necessary to understand it, and offers suggestions to wield it effectively.
Theodore W. Frick (2023)	This journal explores AI <i>systems that</i> do not understand well, if at all, the meanings of those signs that we associate with our human experience of the world and our culture (i.e., in the AI <i>negasystem</i>). Similarly, we humans do not understand well the inner workings of an AI <i>system</i> (its neural network). Teachers and students in education must be very careful and cautious when using such AI <i>systems</i> . Are we dupes? Or not?
Nitin Liladhar Rane (2024)	Generative AI (like ChatGPT) to revolutionize Human Resource Management such as (1) Generative AI is a game-changer for HRM, (2) Benefits across recruitment, training, and communication: The research focuses on how AI can streamline recruitment (reducing bias and improving efficiency). (3) Challenges exist: While beneficial, the abstract acknowledges concerns like data privacy, algorithmic bias, and the need for continuous monitoring and adaptation of AI systems. (4) Balancing automation and human touch (5) The research offers solutions. In addition, it presents Generative AI as a powerful tool for HRM with immense potential, but it also acknowledges the need for careful planning and ethical considerations to ensure successful implementation.
Tonja & Matthew (2024)	Talk about AI esp ChatGPT, and the rapid advancement and public acceptance of Generative AI, particularly following the launch of ChatGPT. It discusses the mixed reactions to this technology, ranging from admiration for its creative capabilities to concerns about its potential negative impacts on education and society. It emphasizes that many of the controversies surrounding AI are not solely technological but also reflect existing social issues and cultural biases. As an example, it points to the recent controversy over overly "woke" representations of historical figures, which illustrates how AI debates often mirror underlying social problems rather than purely technical ones.

Sanja & Ivan (2024)	In this study, the authors used artificial intelligence (AI) text generation in undergraduate and graduate classes to test the potential benefits of incorporating AI tools into the curriculum, including its ability to provide correct answers to sophisticated questions.
Dhio & Maryati (2024)	Gemini is an AI tool that can answer questions in an informative way, even when the questions are open-ended, challenging, or strange. The purpose of this research is to see students' perceptions of the use of Gemini as an auxiliary tool in the English Writing process.
Yuliia & Olena (2024)	Considering that the current stage of development of pedagogical science in the world is characterized by an intensive search for new ways to improve the quality of education, information, and communication technologies have become powerful tools in this process [1]. Various forms of information and communication technologies (ICTs) have found active application in education, ranging from electronic textbooks [2], to online learning technologies

Student engagement and AI performance in English learning can be improved through the use of Gemini and ChatGPT (Rizky Ananda & Salmiah, 2024);(Jacobi & Sag, n.d.; Rane, 2024; Rizky Ananda & Salmiah, 2024). A major challenge in educational technology integration is to engage students (Nazari et al., 2021). Additionally, Teachers and students in education must be very careful and cautious when using such AI systems (Frick, 2024).

Researchers of AI have focused on the implementation of writing assistant tools n = 4 articles, i.e., (Avramovic & Avramovic, n.d.; Dergaa et al., 2023; Nor Hazimah Wan Azib et al., 2024; Sholeh et al., 2024); The advantage of AI in academic ai consider the impact they may have on the authenticity and credibility of academic work writing (Dergaa et al., 2023) help teachers and students to (Nazari et al., 2021): (a) engage; (b) explore; (c) explain; (d) elaborate; and (e) evaluate (Li et al., n.d.). The first level refers to the involvement of students, who play an active role in their learning and have their interest stimulated by using Gemini and ChatGPT (Rane et al., 2024). The second level allows the students to explore the topic they are studying in recognizing objects and texts in the writing process (Rizky Ananda & Salmiah, 2024). It provides an opportunity for them to understand relevant ideas and concepts (Nor Hazimah Wan Azib et al., 2024). The third level Teachers and students in education must be very careful and cautious when using such AI systems (Frick, 2024). Finally, the evaluation of student findings is useful for the writing process and students' level of understanding of the relevant concepts and knowledge. Another implementation of AI in the writing process that has been discussed by some researchers is the AI Gemini and chatGPT= 7 articles, i.e., (Altynbassov et al., 2024; Jacobi & Sag, n.d.; Rane, 2024; Rane et al., 2024; Rizky Ananda & Salmiah, 2024; Sholeh et al., 2024).

The conclusion drawn is the significant role of AI in enhancing academic writing processes for both teachers and students. AI-based tools, such as Gemini and ChatGPT, offer various advantages, including fostering engagement, exploration, explanation, elaboration, and evaluation during the writing process. These technologies actively involve students in their learning, stimulate interest, and support the recognition of

relevant objects and texts, enabling a deeper understanding of concepts. Additionally, AI tools provide opportunities for evaluating students' comprehension and refining their academic work.

However, the text also underscores the need for caution when integrating AI in education to maintain the authenticity and credibility of academic outputs. The findings suggest that AI has the potential to transform the writing process by making it more interactive and insightful, but it requires responsible and careful application to avoid unintended consequences. This research illustrates AI's dual role as a facilitator of creativity and a subject of scrutiny in academic contexts.

The terms most associated with the writing process by using AI in the 20 articles analyzed were "AI" (occurrences = 28; relevance = 0.13), "Writing process" (occurrences = 20; relevance = 0.14), "study" (occurrences = 30; relevance = 0.15), and "teacher" (occurrences = 46; relevance = 0.13). All four terms only appeared in articles published between 2017 and 2018 (Figure 2).

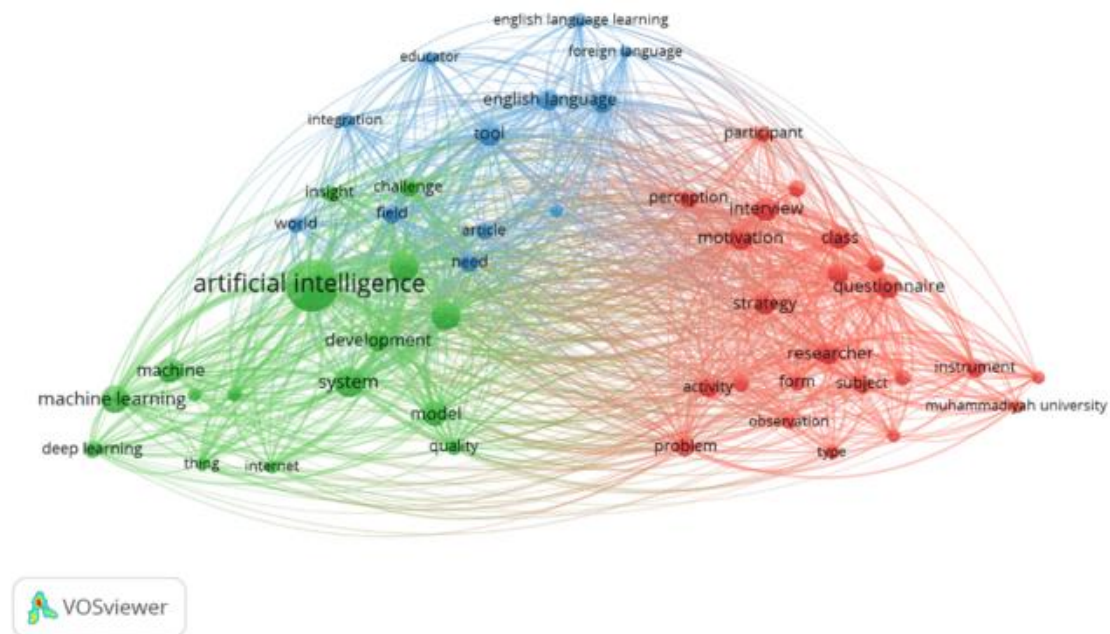


Figure 2. Network Visualization of Artificial Intelligent

Figure 3 displays the prevalence of relevant terms based on the years of publication. Figure 4 is a network visualization of AI terms.

integrated into education, it is crucial to critically assess their impacts on learning outcomes. The findings emphasize the need for ongoing evaluation and adaptation of these tools, ensuring that they complement rather than replace human cognitive processes. Balancing automation with human input will be vital for fostering meaningful educational experiences and maintaining academic standards.

References

- Agbo, B., Morris, C., Osman, M., Basketts, J., & Kyriacou, T. (2024). A systematic literature review on software applications used to support curriculum development and delivery in primary and secondary education. *International Journal of Educational Research Open*, 7. <https://doi.org/10.1016/j.ijedro.2024.100385>
- Altynbassov, B., Bayanbayeva, A., Tolegen, M., & Zhamankarin, M. (2024). A comprehensive bibliometric analysis of trends in higher education leadership in the Global South, 2013-2023: Contemporary perspectives and developments. *International Journal of Educational Research*, 127. <https://doi.org/10.1016/j.ijer.2024.102421>
- Avramovic, S., & Avramovic, I. (n.d.). *An Examination of ChatGBT's Performance on Assessments 193 Exploring the Potential Benefits and Limitations of Using an AI Text-Generation Tool in Education: An Examination of ChatGPT's Performance on Assessments*.
- Baig, M. I., & Yadegaridehkordi, E. (2024). ChatGPT in the higher education: A systematic literature review and research challenges. *International Journal of Educational Research*, 127. <https://doi.org/10.1016/j.ijer.2024.102411>
- Challco, G. C., Silva, W. V. da, Setton Gonçalves, B., de Almeida Levino, N. D., Bittencourt, I. M., Kaczam, F., de Oliveira, E. H. T., Martins, F. P., de Lima Filho, W. A., de Araújo, R. F., Bittencourt, I. I., & Paiva, R. O. A. (2024). Blended learning and media centers: A bibliometric analysis. *Social Sciences and Humanities Open*, 10. <https://doi.org/10.1016/j.ssaho.2024.100919>
- Conde, M., & Rodríguez-Sedano, F. J. (2024). Is learning analytics applicable and applied to education of students with intellectual/developmental disabilities? A systematic literature review. *Computers in Human Behavior*, 155. <https://doi.org/10.1016/j.chb.2024.108184>
- Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. Ben. (2023). From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing. *Biology of Sport*, 40(2), 615–622. <https://doi.org/10.5114/BIOLSPORT.2023.125623>
- Frick, T. W. (2024). Are We Dupes? Limitations of AI Systems: What Should Educators Do with Them? *TechTrends*, 68(1), 14–26. <https://doi.org/10.1007/s11528-023-00893-3>
- Hung, K., Yeung, A. W. K., Tanaka, R., & Bornstein, M. M. (2020). Current applications, opportunities, and limitations of AI for 3D imaging in dental research and practice. In *International Journal of Environmental Research and Public Health* (Vol. 17, Issue 12, pp. 1–18). MDPI AG. <https://doi.org/10.3390/ijerph17124424>
- Jacobi, T., & Sag, M. (n.d.). *We are the AI problem*. <https://arxiv.org/pdf/1609.07236.pdf>
- Kharchenko, Y. V., & Babenko, O. M. (2024). *Advantages and limitations of large language models in chemistry education: A comparative analysis of ChatGPT, Gemini and Copilot*. <https://scholar.google.com.ua/citations?user=zYiU4iMAAAJ>

- Leschanowsky, A., Rech, S., Popp, B., & Bäckström, T. (2024). Evaluating privacy, security, and trust perceptions in conversational AI: A systematic review. *Computers in Human Behavior*, 159. <https://doi.org/10.1016/j.chb.2024.108344>
- Li, J., Jangamreddy, N., Bhansali, R., Hisamoto, R., Zaphir, L., Dyda, A., & Glencross, M. (n.d.). AI-assisted marking: Functionality and limitations of ChatGPT in written assessment evaluation. In *Australasian Journal of Educational Technology* (Vol. 2024, Issue 4).
- Lingard, L. (2023). Writing with ChatGPT: An Illustration of its Capacity, Limitations & Implications for Academic Writers. In *Perspectives on Medical Education* (Vol. 12, Issue 1, pp. 261–270). Ubiquity Press. <https://doi.org/10.5334/pme.1072>
- Nazari, N., Shabbir, M. S., & Setiawan, R. (2021). Application of Artificial Intelligence powered digital writing assistant in higher education: randomized controlled trial. *Heliyon*, 7(5). <https://doi.org/10.1016/j.heliyon.2021.e07014>
- Nor Hazimah Wan Azib, W., Zazira Hashim, M., Abdul Rahman, K., Mohd Ishak, F., Yusoff, Y., Shaliza Sapiai, N., Kelantan, C., Azib, W., Rahman, A., & Ishak, M. (2024). highlighting the artificial intelligence (ai) limitations as writing assistant tools in producing academic writing outputs: a narrative review. *Journal of Islamic, Social, Economics and Development*, 128–1755. <https://doi.org/10.55573/JISED.096434>
- Rane, N. (2024). Role and challenges of ChatGPT, Gemini, and similar generative artificial intelligence in human resource management. *Studies in Economics and Business Relations*, 5(1), 11–23. <https://doi.org/10.48185/sebr.v5i1.1001>
- Rane, N., Choudhary, S., & Rane, J. (2024). Gemini versus ChatGPT: applications, performance, architecture, capabilities, and implementation. *Journal of Applied Artificial Intelligence*, 5(1), 69–93. <https://doi.org/10.48185/jaai.v5i1.1052>
- Rizky Ananda, D., & Salmiah, M. (2024). *Linguistics and English Language Teaching Journal Students' Perceptions on AI Technology: Gemini as a Writing Assistant Tool*. 12(1).
- Sholeh, M., Rusydiyah, E. F., & Abu Bakar, M. Y. (2024). Integration of AI Chatbots in Islamic Religious Education: Potential and Challenges from a Doctoral Student Perspective. *AL-ISHLAH: Jurnal Pendidikan*, 16(2). <https://doi.org/10.35445/alishlah.v16i2.5409>
- Tusquellas, N., Palau, R., & Santiago, R. (2024). Analysis of the potential of artificial intelligence for professional development and talent management: A systematic literature review. *International Journal of Information Management Data Insights*, 4(2). <https://doi.org/10.1016/j.jjime.2024.100288>