

Artificial Intelligence (AI) for EFL Writing Skills: Systematic Literature Review

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ARTICLE INFO

ABSTRACT

Article history

Received: 16 August 2024

Revised: 10 September 2024

Accepted: 30 September 2024

Keywords

Artificial Intelligence

EFL Writing

Writing Skills

Creativity

Systematic Literature Review

This systematic literature review examines the role of Artificial Intelligence (AI) in enhancing English as a Foreign Language (EFL) writing skills. The study summarizes previous research to evaluate the effectiveness of AI-based tools such as ChatGPT, Grammarly, and Quillbot in supporting writing instruction. Several studies published between 2019 and 2024 were selected and analyzed. The findings show that AI tools can significantly help improve students' creativity, organization, and vocabulary usage in writing. They also assist in reducing writing anxiety and increasing confidence through instant feedback and idea suggestions. However, concerns remain regarding the risks of over-reliance, loss of originality, and limited contextual understanding by AI systems. This review emphasizes the importance of using AI critically and ethically, ensuring it complements rather than replaces human input. It highlights the need for developing students' critical thinking and digital literacy alongside AI integration. The insights provided in this review can serve as a valuable reference for future empirical research and classroom practice, especially in the context of EFL writing instruction in Indonesia.

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Introduction

The integration of Artificial Intelligence (AI) into education has brought significant changes to teaching and learning practices, particularly in language education. AI refers to the simulation of human intelligence by machines to perform tasks that typically require human cognitive functions, such as problem-solving, decision-making, and language understanding (Collins et al., 2021; Dong et al., 2020; Sarker, 2022). In educational settings, AI is applied through various technologies, including intelligent tutoring systems, automated feedback tools, and adaptive learning platforms that support language learning. Writing is a fundamental skill in language learning that demands idea development, vocabulary selection, and accurate grammar usage. For English as a Foreign Language (EFL) learners, writing is often challenging for EFL learners due to their limited access to real-life English usage and unfamiliarity with common academic writing patterns (Wahid et al.,

2024). These challenges often make it difficult for students to generate ideas, organize their writing, and use grammar accurately.

In response to these difficulties, a variety of AI-powered writing tools have been developed and adopted. ChatGPT, Grammarly, and Quillbot represent some of the most widely used platforms, each offering different forms of assistance. While ChatGPT generates ideas and sentence structures through conversational prompts, Grammarly improves grammar and style, and Quillbot supports paraphrasing and clarity improvement (Losi et al., 2024). These tools are powered by Natural Language Processing (NLP) technologies and provide learners with real-time and automated feedback. They help learners navigate the writing process more independently, potentially improving their creativity and confidence. At the same time, the rapid use of these technologies in EFL writing raises several important concerns. Teachers have questioned the accuracy of AI-generated output (Wang, 2024), the risk of reducing students' control over their own writing decisions (Zhai et al., 2024), and the ethical implications of relying on machine-generated content. In the Indonesian context, these issues are important to consider due to varied linguistic backgrounds and limited access to technology in some areas.

Therefore, understanding how teachers and students perceive the role of AI is essential to ensure its effective and responsible use in improving EFL students' writing abilities. This study also draws on Vygotsky's sociocultural theory, where AI is viewed as a form of scaffolding that supports learners in accomplishing writing tasks beyond their current capabilities. Additionally, the role of AI is explored within the broader perspective of technology-enhanced language learning, emphasizing its potential to mediate feedback, promote autonomy, and enhance creativity. This study aims to: (1) analyze the benefits and limitations of AI-based tools in EFL writing instruction, (2) explore the perceptions of teachers and students regarding AI's influence on creativity, and (3) provide recommendations for the effective use of AI in writing instruction within EFL classrooms.

Method

This review adopted the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure a systematic and comprehensive literature review process regarding the application of Artificial Intelligence (AI) technology in writing creativity among EFL (English as a Foreign Language) students in Indonesia. According to Carrera-Rivera et al. (2022), a Systematic Literature Review (SLR) is a research methodology used to collect, identify, and critically analyze available research studies (e.g., articles, conference proceedings, books, dissertations) through a structured procedure.

The topics discussed in this review were derived from a preliminary analysis using VOSviewer. This software was used to visualize keyword co-occurrence networks from the selected literature,

helping to identify common research themes related to the use of AI in EFL writing. The analysis revealed a growing trend in studies focusing on AI tools, particularly in connection with writing creativity and student engagement. These thematic clusters informed the direction of this review by highlighting the most frequently discussed dimensions of AI-assisted writing. The PRISMA flowchart in Figure 2 illustrates the systematic selection and screening of studies, beginning with 78 initial records and culminating in 9 selected articles that met the inclusion criteria. In addition, Figure 1 presents the VOSviewer visualization of keyword co-occurrences, revealing thematic clusters such as 'writing', 'creativity', 'ChatGPT', and 'perception', which inform the thematic coding process.

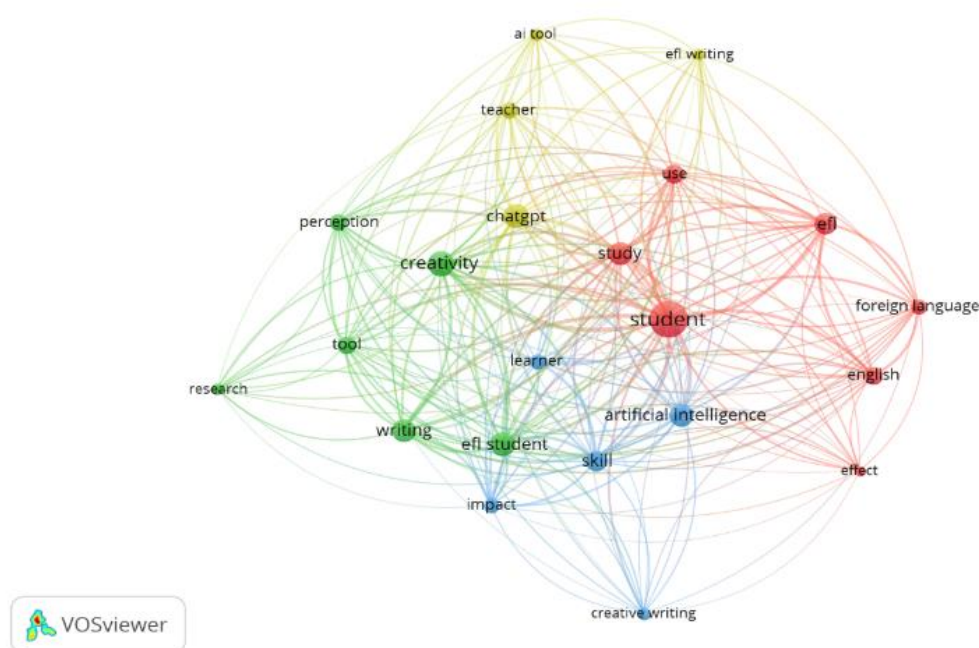


Fig. 2. VosViwer keyword co-occurrence map showing thematic clusters

The article search was conducted through three reputable academic databases: Scopus, Sinta, and Google Scholar. The keywords used included “AI” AND “Writing Creativity” AND “Student” AND “EFL” AND “Indonesia”. In the initial identification phase, 78 articles were retrieved. These articles were then screened by removing duplicates and reviewing titles and abstracts for relevance. Inclusion criteria were established to ensure the quality and focus of the studies: (1) empirical research published between 2019 and 2024, (2) studies examining the use of AI tools in EFL writing contexts, and (3) publications available in open-access formats. To further refine the dataset, exclusion criteria were also applied to eliminate studies that did not meet the research objectives. Articles were excluded if they were (1) not written in English, (2) purely theoretical or conceptual without data, or (3) unrelated to EFL writing instruction. After this process, 33 articles were retained for full-text screening. Each article was then evaluated for methodological rigor,

clarity of research objectives, and relevance to the topic. Ultimately, only 9 studies met all criteria and were included in the final review. The selection stages are clearly depicted in the PRISMA flow diagram (Figure 2).

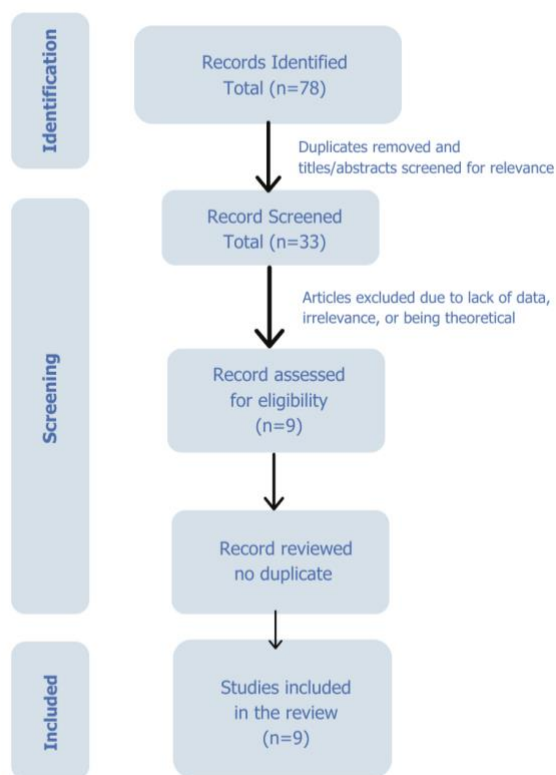


Fig. 1. PRISMA flow diagram of article selection process

From the final selection of 9 articles, data were extracted using a standardized form that included details such as study objectives, AI tools used, research methods, participant characteristics, and outcomes related to writing. A quality assessment was conducted to evaluate the reliability of each study by examining the clarity of its methods, the relevance of its findings, and how well it aligned with the goals of this review. This process ensured that only studies offering meaningful insights into the use of AI in EFL writing were included in the analysis.

Discussion

A. Findings

In the process described in the methodology stage, 9 articles were reviewed, as follows:

Table 1. Overview of Reviewed Articles on Artificial Intelligence and Writing Creativity

Author	Study Design	Participants	Findings
Moussa & Belhiah, (2024)	Quantitative with quasi-experimental	62 students	Results revealed positive outcomes in language proficiency, creativity, organizational skills, and vocabulary use with AI assistance, emphasizing the transformative impact of AI on writing.
Safitri & Fithriani, (2024)	Mixed-methods approach	20 students	The results indicated that EFL students perceive AIWTs (AI Writing Tools) as

			beneficial for improving writing quality, enhancing writing speed, and promoting creativity. However, students also expressed concerns about the potential limitations of AI on creativity.
Khuibut, W., Premthaisong, S., & Chaipidech, P. (2023)	Experimental design	64 students	The study found that the experimental group showed significant improvements in their creative writing abilities and had an increased perception of the benefits of technology-supported learning, particularly through ChatGPT.
Anis & Khalid (2024)	Quantitative with a survey approach	56 students and 5 teachers	The research findings show that the use of these AI tools can improve students' writing skills, with positive perceptions from teachers and students towards the benefits provided by the technology.
Chatti (2024)	quasi-experimental design with a quantitative approach	13 Master 1 (M1) EFL students	The study found significant improvements in the writing of the experimental group. ChatGPT helped students generate more ideas, expand sentence length, increase the overall word count, and articulate clearer explanations and exemplifications in their paragraphs. Most participants were able to add at least one more idea in the post-test compared to the pre-test, highlighting the potential of ChatGPT to enhance creativity and effectiveness in EFL writing.
Nasution et al. (2024)	Quantitative design using questionnaires	30 English literature students	The results showed that ChatGPT significantly enhanced creativity, with 60% of students noting faster writing, 46.67% reporting increased creativity, and 40% feeling more confident in their writing. Despite challenges such as the need for revisions (33.33%) and limited contextual understanding (46.67%), the overall sentiment was positive, with students appreciating ChatGPT's potential in supporting their creative autonomy and enriching their writing experience.
Sudrajad et al. (2024)	Survey and interviews to gather both quantitative and qualitative data	120 Indonesian university students	The findings revealed that ChatGPT is widely used for organizing ideas and speeding up the drafting process. However, opinions were mixed regarding its impact on reducing wordiness and maintaining originality. While some students appreciated the efficiency and structure ChatGPT provides, others expressed concerns about over-reliance and the potential loss of personal input.
Roisah et al. (2024)	Experimental quantitative method	60 eleventh-grade students	The study found a significant improvement in the writing skills of students who used ChatGPT compared to those who were taught with traditional methods. A p-value of 0.00 (< 0.05) indicated a significant difference in writing scores between the pre-test and post-test for the experimental group, confirming the positive impact of ChatGPT on students' writing abilities.

Supeno, S., Rosyada, A., & Haryanto, Y. (2024).	Experimental quantitative design	60 students	The data analysis revealed a significant effect of AI and creative thinking, both individually and combined, on students' writing skills in descriptive text. The study concluded that integrating AI and creative thinking into English Language Teaching provides numerous benefits, enhancing motivation and providing new learning experiences. It emphasized the importance of incorporating digital technology, like AI, to foster critical thinking and improve writing performance.
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B. Discussion

1. Benefits and Limitations of AI-Based Tools in EFL Writing Instruction

The integration of artificial intelligence (AI)-based tools such as ChatGPT, Grammarly, and Quillbot has brought notable advantages in the development of EFL students' writing skills. A primary benefit observed across multiple studies is the enhancement of students' language proficiency, idea generation, organizational ability, and vocabulary acquisition, which leads to improved writing quality and fluency. These tools offer immediate feedback and support, making the writing process more efficient and purposeful. Several studies support this view, emphasizing how AI tools contribute to faster writing, improved clarity, and increased learner autonomy (Wulandari et al., 2024; Rabbianty et al., 2023). From a theoretical perspective, these benefits can be linked to Vygotsky's (1978) concept of scaffolding, where external tools or guidance help learners perform tasks they may not yet be able to accomplish independently. AI tools, in this case, serve as a form of digital scaffolding that supports students' creative thinking and writing performance. They assist learners in the activities of writing.

However, as highlighted by Malik et al. (2023), the use of AI is not without limitations. One significant concern is the potential over-reliance on AI-generated suggestions, which may suppress students' ability to think independently or develop original ideas. This drawback aligns with Cognitive Load Theory from Sweller (1994), which suggests that excessive external input may hinder deep learning by overloading working memory. If learners become dependent on AI tools, they may skip the important mental process of building their own understanding, which can weaken long-term learning. Furthermore, AI tools often lack contextual awareness, which can result in suggestions that are irrelevant or even misleading. Septiani et al. (2023) note that while AI may assist in composing text, students frequently need to revise and refine outputs to match their personal style and intended meaning. Ethical concerns also emerge, particularly regarding plagiarism and authorship. Students must be trained not only to use AI tools effectively, but also ethically, ensuring their writing remains authentic and representative of their own thinking. Therefore, while AI tools offer meaningful support in EFL writing, their use must be strategically integrated and critically monitored. Teachers play a vital role in guiding students to treat AI as a

supplemental aid rather than a replacement for critical thinking and creativity.

2. Perceptions of Teachers and Students Regarding AI's Influence on Creativity in Writing

Teachers and students generally have positive views on the use of AI tools in writing activities. They believe tools like ChatGPT can help students think more creatively, especially when developing ideas or overcoming writer's block. Gultekin et al. (2023) found that AI tools support the writing process by giving useful suggestions, improving word choice, and making writing more organized and clear.

However, not all responses are fully positive. Some students and teachers point out that AI sometimes gives ideas that are too general or not relevant to the writing context (Chong et al., 2022). There is also a concern that AI makes writing feel more mechanical or repetitive, which might reduce students' personal creativity. When students rely too much on AI, they might stop thinking deeply about their ideas and write only what the tool suggests. This connects to constructivist learning theory (Bruner, 1966), which says students learn better when they build knowledge from their own thinking and experience. If AI is used too much, students might lose the chance to explore ideas on their own. Therefore, many teachers believe that AI should be used as a support tool, not something that replaces the student's role in creative writing.

3. Recommendations for Effective Integration of AI in Writing Instruction in EFL Classrooms

The successful integration of AI into EFL writing instruction requires clear pedagogical strategies and appropriate teacher support. AI tools such as ChatGPT and Grammarly should be introduced as complementary resources, not as replacements for students' critical thinking or personal voices (Isdayani et al., 2024). Educators must develop clear guidelines that help students understand when and how to use AI tools meaningfully, ensuring they support rather than hinder the learning process (Darwin et al., 2024).

A key recommendation is to include explicit digital literacy training in the curriculum. Students need to be taught how to evaluate AI-generated suggestions critically and to identify when revisions or personal input are necessary. This kind of training can help reduce over-reliance and promote independent thinking. In addition, teacher preparation programs should incorporate AI literacy to ensure that educators themselves are confident and competent in using AI tools effectively in writing instruction (Reis et al., 2023).

Ethical considerations also require serious attention. Curriculum designers should embed modules on plagiarism, authorship, and responsible use of AI into writing instruction. These discussions will strengthen academic integrity and make students more aware of potential misuses of generative technology (Zain et al., 2024). Furthermore, to ensure fair and inclusive implementation, policymakers and schools must consider infrastructural factors such as internet access, device availability, and cultural attitudes toward AI. Teacher training and support systems

must be localized and adaptable to specific school contexts, especially in diverse and resource-limited settings like Indonesia.

Finally, further empirical research is needed to explore the long-term effects of AI integration in various classroom environments (Aljuaid, 2024). Future studies could investigate the impact of AI on students' writing development, teacher practices, and classroom dynamics. Such evidence can inform best practices and help education stakeholders make informed decisions when integrating AI into EFL instruction.

4. Limitations

Despite applying a systematic and transparent review process, this study is limited by the relatively small number of articles included. Only nine articles met the inclusion criteria. This reflects the specific focus on AI-assisted writing in EFL contexts and the limited number of empirical studies available within the 2019–2024 publication. In addition, the search was restricted to open-access sources due to institutional access limitations, which may have excluded relevant but paywalled studies. As the field continues to develop, future researchers are encouraged to expand the scope by accessing a broader range of databases, including gray literature, extending the publication range, or including studies from diverse linguistic and regional contexts. Doing so may provide a more comprehensive picture of AI integration in EFL writing instruction.

Conclusion

AI-based tools are not meant to replace teachers or take over students' writing, but rather to support and enrich the writing process. This review of nine studies published between 2019 and 2024 shows that tools like ChatGPT, Grammarly, and Quillbot can help EFL students improve their ideas, structure their writing, and write more fluently. When used well, these tools can also boost student motivation and independence in writing. Nonetheless, how these tools are introduced in the classroom matters. Some risks, such as over-dependence, loss of originality, and plagiarism, need to be addressed. That's why students should be guided to use AI responsibly, supported by digital literacy training and clear instructions. Teachers also need to be prepared both in how to use the tools and how to teach with them. In the end, integrating AI into EFL writing instruction is not just about using new technology; it's about finding smart ways to improve how students learn to write. This review offers insights into both the benefits and challenges of AI use and calls for ongoing research to make sure these tools truly support meaningful learning.

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