

Artificial Intelligence Tools in English Writing Instruction: A Systematic Literature Review on Pedagogical Impacts and Challenges.

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Abstract. The rapid development of Artificial Intelligence (AI) technology has brought significant changes in various fields of education, including in the context of English Language Teaching (ELT). One of the areas that has undergone considerable transformation is the learning of writing skills, where various AI-based devices are starting to be used to support the learning process of students. Although a number of studies have addressed the use of AI in English writing instruction, studies that systematically integrate and analyze these findings are still relatively limited. The study came with a Systematic Literature Review (SLR) to identify the latest research developments, explore pedagogical impacts, as well as examine the various challenges that arise in the application of AI technology to improve the writing skills of students learning English as foreign language (EFL). This study was prepared with reference to the PRISMA guidelines to ensure that the process of searching, selection, and analyzing literature is carried out systematically and transparently. Data sources are obtained from academic databases including ERIC, ScienceDirect, and Google Scholar via Publish or Perish, focusing on peer-reviewed articles published between 2021 and 2026. The synthesis of the literature reveals that research predominantly focuses on generative AI to assist students in drafting, improving linguistic quality, and obtaining immediate, personalized automated feedback. However, implementation faces critical challenges, including academic integrity issues, technological over-reliance, and students' varying digital literacy levels. Consequently, these findings bear significant implications for EFL pedagogy; they underscore the urgent need for a balanced framework where AI tools serve as scaffolding rather than a replacement for cognitive engagement. Ultimately, this review offers actionable strategies for educators to design responsible, AI-assisted writing activities that safeguard students' critical thinking and deep learning.

Keywords: *Artificial Intelligence, Writing Instruction, English Language Teaching*

INTRODUCTION

The development of Artificial Intelligence (AI) in recent years has brought significant changes in various fields, including education. The presence of AI-based technology allows digital systems to perform a variety of functions that previously relied heavily on human cognitive abilities, such as generating information, providing recommendations, feedback, and assisting with the problem-solving process [1]. In the context of education, Artificial Intelligence in Education is not only concerned with the use of technology to support learning activities, but also drives changes in the way teachers teach, students learn, and the learning process is designed [2], [3]. Holmes et al. emphasize that the development of AI in education needs to be understood not only based on its technological potential, but also based on its implications for pedagogy, the role of teachers, learning, and educational goals [4]. Thus, AI integration requires educators to reconsider how technology can be used to support the learning process without reducing the role of humans in education.

In the context of English Language Teaching (ELT), the influence of AI is increasingly visible because various AI capabilities can directly support language learning, especially in activities that involve language production and processing [5], [6]. One of the skills that has undergone the most significant changes is writing. In contrast to speaking skills that still require direct language production by learners, generative AI technology can produce text in its entirety, provide alternative vocabulary and sentence structure, correct grammatical errors, provide feedback, and assist students in developing and revising ideas [7]. This condition makes AI not only a writing tool, but also a technology that has the potential to affect the entire writing instruction process. In this perspective, writing instruction no longer focuses only on the ability to produce accurate text, but how do students' process produce a piece of writing.

The integration of AI in writing instruction offers a variety of pedagogical potentials. AI can provide immediate and personalized feedback, help students generate and develop ideas, support the revision

process, reduce writing anxiety, and provide opportunities for students to interact with language more intensively [7], [8]. However, the use of AI also raises a number of pedagogical and ethical problems. Excessive reliance on AI can lead to cognitive offloading and reduce students' opportunities to develop writing skills independently [9]. In addition, the use of AI raises issues

regarding student agency, authorship, academic integrity, limited AI literacy for both students and teachers, and assessment validity because the written products produced do not always represent students' abilities as a whole [10], [11]. Therefore, teachers still have an important role as pedagogical guides who determine the goals, limits, and ways to use AI so that the technology functions as a scaffolding tool, not as a substitute for students' thinking and writing processes [12], [13].

Although research on AI in writing learning is developing rapidly, the available findings are still scattered across various types of AI tools, learning contexts, pedagogical objectives, and forms of intervention. In addition, research that simultaneously maps the types of AI tools used in writing instruction, the pedagogical impact they cause, and the challenges of their use still need to be synthesized systematically. Therefore, this Systematic Literature Review (SLR) is conducted to identify and map the types of AI tools used in writing instruction, analyze the pedagogical impact of their use on the writing process and learning, and identify various pedagogical and ethical challenges reported in previous research. The synthesis is expected to provide a more comprehensive picture of the position of AI in writing instruction as well as be the basis for the development of more effective, critical, and learner-centered pedagogical practices in the AI era.

METHODS

Study Area

This study uses the Systematic Literature Review (SLR) approach to identify, evaluate, and synthesize relevant research results related to the impact of AI tools on students' writing skills. This method was chosen because it is able to provide a comprehensive and structured picture of the development of research in a certain field. The design of this study refers to a systematic and transparent Systematic Literature Review procedure, following the main stages such as planning, literature search, study selection, data extraction, and synthesis of results [14]. The process also considers the principles of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure the quality and transparency of the research.

Procedures

The data source in this study comes from the database of reputable scientific journals, such as Google Scholar, SINTA, and Garuda. Article searches are carried out using relevant keywords, such as: "AI tools", "ChatGPT", "Grammarly", "QuillBot", "writing skill", "writing instruction". Keyword combinations are used with the help of Boolean operators (AND, OR) to obtain more specific and relevant search results.

In order to ensure the quality and relevance of the data, this study established the following inclusion and exclusion criteria:

Table 1. Inclusions and Exclusions Criteria

Inclusions	Exclusions
<ul style="list-style-type: none"> • Research articles that discuss the impact of AI tools in writing instruction. • Focus on writing skills and instruction as a key variable or one of the variables • Articles written in English • Articles published in the last 5 years (2021–2026) • Reputable articles/indexed by Sinta, Garuda and Google Scholar 	<ul style="list-style-type: none"> • Non-research articles (such as opinions, editorials, or non-systematic reviews) • Studies irrelevant to writing skills and instruction • Articles that are not available in full text • Articles published before 2021 • Non-reputable articles

The data collection process is carried out through several stages. First, articles obtained from search results will be selected based on titles and abstracts. Furthermore, articles that meet the initial criteria will be thoroughly reviewed to ensure their suitability. The selected data is then extracted and analyzed qualitatively by identifying several important aspects, such as the methods used, the number of participants, the main findings, and the limitations of the research. The results of the analysis are then synthesized to find existing research patterns, trends, and gaps.

From the total 1109 articles obtained through searches of various scientific databases, 785 articles were filtered by title and abstract and year of publication. After the initial screening process, 324 articles were selected for thorough review. Of these, 210 articles were issued because they were not open access journals, not reputable journals and not full text. Of the 114 articles obtained, 83 articles were expelled because they did not meet the inclusion criteria, such as not focusing on writing skills or instruction, not using AI tools as the main intervention and not writing English. A total of 31 articles were obtained and

then reviewed according to the specified criteria. Finally, as many as 17 articles were selected to be analyzed in this systematic literature review.

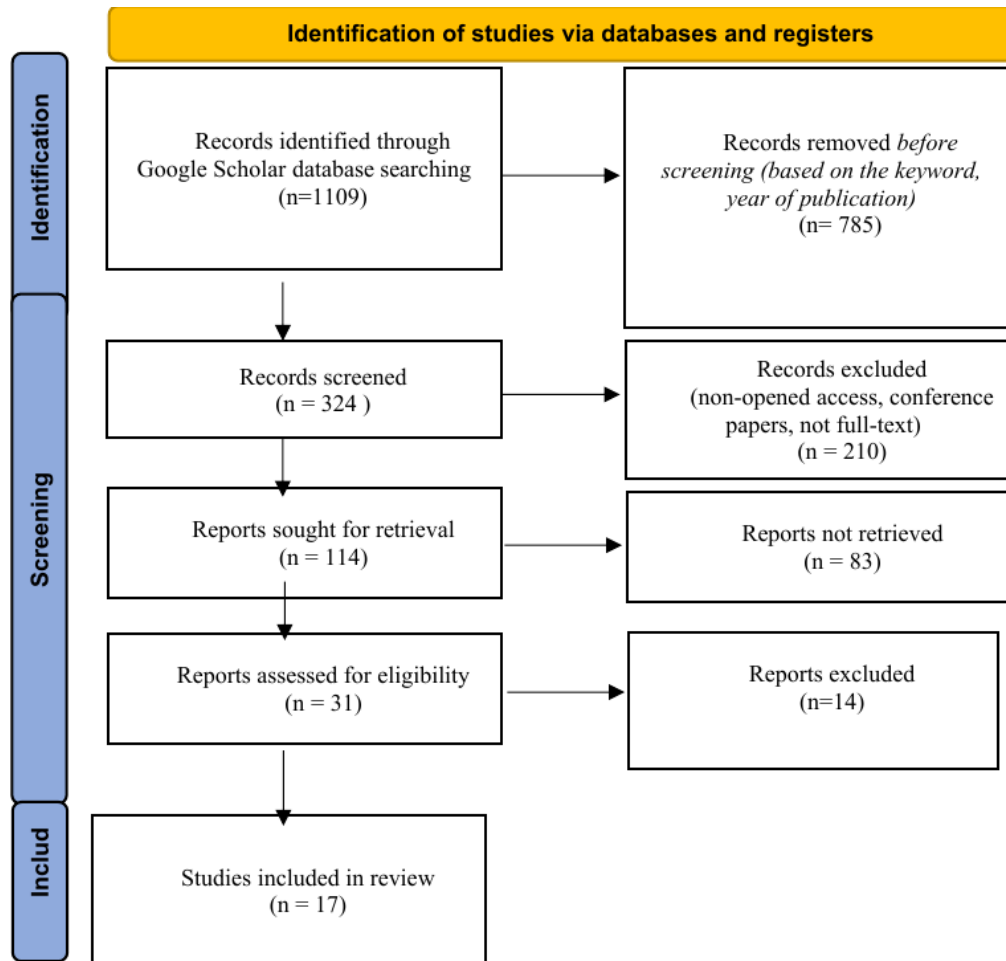


Figure 1. PRISMA Flow Diagram

Data Analysis

The data that has been collected will be synthesized using a descriptive-qualitative approach. This synthesis aims to group research findings based on certain themes, such as the impact on aspects of writing instruction, the type of AI tools used, and pedagogical impact and challenges. Thus, the results of the study can provide a comprehensive and structured picture of the effectiveness of the use AI tools in improving students' writing skills.

RESULTS AND DISCUSSION

Result

Based on the systematic literature review process, as many as 17 articles that met the inclusion criteria were analyzed to identify the use of artificial intelligence (AI) in writing instruction. The analysis focused on three main aspects, namely the type of AI tools used, the pedagogical impacts caused, and the challenges that arise in their application to writing instruction. The results of the extraction and synthesis of these articles are presented as follows.

Table 2. Result of Articles Analysis

No.	Author	Title	Finding
1	Gürbüz (2024)	The Impact of QuillBot as an Automated Writing Evaluation Tool on EFL learners	AI Tools: QuillBot Pedagogical Impact: this tool gives immediate feedback, error correction, motivation, enjoyment, more efficient writing process, fewer errors, and experimental group showed significantly higher improvement than control group. Challenges: it has limited content feedback, unclear or ambiguous feedback, inaccurate error detection, overly advanced translation, mobile limitations, so it might lead misinterpretation for students.
2	Sari & Ningsih (2026)	Artificial Intelligence in Academic Writing Instruction: Opportunities, Challenges, and Future Directions	AI Tools: ChatGPT, Grammarly, QuillBot, Wordtune, Paperpal Pedagogical Impact: it is good at giving feedback, revision, brainstorming, outlining, drafting, organizing, paraphrasing, language refinement, motivation, autonomy, self-efficacy, personalization, and reduced workload. Challenges: it might threaten academic integrity, authorship, over-reliance, cognitive offloading, reduced critical thinking, bias, unequal access, and teacher AI literacy.
3	Fitria (2021)	“Grammarly” as AI-powered English Writing Assistant: Students’ Alternative for English Writing	AI Tools: Grammarly Pedagogical Impact: language accuracy, error correction, dan learner self-correction. Challenges: it is not always providing accurate results. The tool can generate errors when dealing with certain constructions that are not well recognized. In addition, there are differences in capabilities between the free and premium versions.
4	Rahman et al. (2022)	Exploring Artificial Intelligence using Automated Writing Evaluation for Writing Skills	AI Tools: Grammarly Pedagogical Impact: It provides immediate feedback, so that students can find out mistakes and make revisions without always having to wait for teacher feedback. This supports self-assessment and self-revision. Challenges: It can change the intended meaning of the student, and the limitations in evaluating the content.

No.	Author	Title	Finding
5	Pratama et al. (2025)	The Impact of Quillbot, An Ai-Powered Writing Tool, on EFL Students' Argumentative Essay Writing Skills	AI Tools: QuillBot Pedagogical Impact: Provides significant improvements in argumentative essay writing, especially in coherence, argument structure, and grammatical accuracy. QuillBot also helps students self-revise and supports self-directed learning. Challenges: it can cause students to rely too much on AI.
6	Pujawiyanti & Fadhly (2025)	Exploring The Impact of Ai Writing Tools on University Students' Synthesis Skills in Academic Writing.	AI Tools: ChatGPT, Grammarly, and QuillBot Pedagogical Impact: It helps students improve clarity, organization, grammatical accuracy, and efficiency. ChatGPT can also be used to generate ideas, counterarguments, and help students examine logical connections in writing. Challenges: it can cause overreliance, loss of independent writing skills, superficial thinking, loss of writer's voice, academic originality, passive acceptance of AI corrections, and less AI literacy dan instructional guidelines.
7	Duncanson (2024)	Supporting L2 Writing Using QuillBot	AI Tools: QuillBot Pedagogical Impact: Improve students' ability to explore different ways of expressing ideas, understand vocabulary and phrasing, and increase awareness of genres and styles. Challenges: it has a risk of bias, stereotypes, misinformation, and plagiarism. There is also a risk that students use AI to generate overall assignments
8	Wakerkwa et al. (2025)	AI in academic writing: Concerns, classroom strategies, and pedagogical insights	AI Tools: Grammarly, QuillBot Pedagogical Impact: AI supports personalized learning, engagement, material preparation, topic/idea generation, outlining, mind mapping, formative feedback, grammar checking, paraphrasing, and teacher time management Challenges: it might cause plagiarism, reduced creativity, loss of authentic authorial voice, bias, inappropriate AI output, and inadequate prompting skills.

No.	Author	Title	Finding
9	Setiawan & Alkhowarizmi (2025)	Exploring an Artificial Intelligence as Automated Feedback Program in EFL Writing	AI Tools: Grammarly, QuillBot, Ginger Software Pedagogical Impact: AI feedback supports grammar, punctuation, clarity, coherence, paraphrasing, motivation, confidence, and independent revision. Grammarly was strongest for grammar, QuillBot for paraphrasing/coherence, while Ginger provided more limited feedback. Challenges: it causes Over-reliance, reduced critical thinking, inability to address complex sentence-level issues, difficulty understanding feedback, and occasional inaccurate suggestions.
10	Nhan, Hoa & Quang (2025)	Leveraging AI for Writing Instruction in EFL Classrooms	AI Tools: Grammarly, Write & Improve, ChatGPT, ProWritingAid, Wordtune, Writerly, Google Docs Pedagogical Impact: it offers personalized learning, instant feedback, learner autonomy, engagement, writing quality, and changes in the role of teachers. Challenges: it might cause an over-reliance, less independent writing, limitation of understanding cultural/contextual meaning, emotional tone, dan creativity.
11	Amyatun & Kholis (2023)	Can Artificial Intelligence (AI) like QuillBot AI Assist Students' Writing Skills?	AI Tools: QuillBot Pedagogical Impact: QuillBot is integrated directly into lesson plans and writing activities. Students create drafts, use QuillBot for review, and then analyze and correct mistakes.
12	Safrai & Orwig (2024)	Utilizing artificial intelligence in academic writing	AI Tools: ChatGPT & Grammarly Pedagogical Impact: It helps draft automation, summarization, translation, and speeds up the writing process. Challenges: it can cause factual inaccuracies, shallow content, outdated information, and inaccurate references.

No.	Author	Title	Finding
13	Zou (2026)	The Application of Artificial Intelligence Automated Evaluation Systems in English Writing Instruction: Scoring Accuracy, Feedback Effectiveness, and User Experience	AI Tools: ChatGPT Pedagogical Impact: It can improve writing proficiency when used with scaffolded instructional design, e.g. model essays, checklists, and multiple rounds of revision. Students appreciate the immediacy and interactivity of AI feedback. Challenges: the limitations of AI in assessing content, logic, and creativity, as well as lower levels of student trust in AI than teacher feedback for content aspects.
14	Aljuaid (2024)	The Impact of Artificial Intelligence Tools on Academic Writing Instruction in Higher Education: A Systematic Review	AI Tools: Grammarly, QuillBot, ChatGPT, AI Writer, Wordtune, Typeset, Trink AI, Writesonic, Jasper, dan Consensus. Pedagogical Impact: It can improve efficiency, automated feedback, accessibility, grammar/style correction, personalized learning, and help students overcome writer's block. Challenges: it might cause an overdependence, plagiarism or academic integrity, originality, creativity, and critical thinking.
15	Alghamdi & Madini (2026)	QuillBot as an AI Writing Support Tool in English Academic Writing: MA TESOL Students' Perceived Challenges and Solutions	AI Tools: QuillBot Pedagogical Impact: Students see QuillBot as an aid for grammar accuracy, vocabulary choice, clarity, fluency, and revision. AI is seen as a supplementary resource that can reduce cognitive load during drafting and revision. Challenges: it can cause an overreliance, semantic distortion, and academic integrity.
16	He (2025)	The Impact and Challenges of AI on Students' Writing Skills—Take ChatGPT for example	AI Tools: ChatGPT Pedagogical Impact: it improves writing efficiency, generation of ideas, research perspectives, framework construction, literature search, and writing output. Challenges: it might cause a blind dependence, weakening of independent thinking, homogenization of academic discourse, lack of originality, and academic self-regulation.

No.	Author	Title	Finding
17	Kamarullah et al. (2024)	AI Writing Tools in The Classroom: Investigating Usage, Challenges, and Adaptations by Rural English Teachers	AI Tools: ChatGPT, Grammarly, and QuillBot. Pedagogical Impact: It helps improving vocabulary, alternative phrases, grammar correction, and encourages students to explore different ways to convey ideas. Challenges: it can be unreliable internet, unequal student access, lack of formal teacher training, steep learning curve, and varying technological familiarity.

Types of AI Tools Used in Writing Instruction

The results of the article analysis show that various types of artificial intelligence (AI) tools have been used or discussed in the context of writing instruction. The three most dominant tools are QuillBot, Grammarly, and ChatGPT. In addition, several studies also report the use or discussion of Write & Improve, ProWritingAid, Wordtune, Writerly, Google Docs, Ginger, AI Writer, Typeset, Trinka AI, Writesonic, Jasper, and Consensus. Based on their functions, the tools found can be grouped into two main trends. First, AI writing assistants and automated writing evaluation tools, such as Grammarly, QuillBot, and Ginger, which are mainly used to provide support for linguistic aspects. The functions found include grammar checking, punctuation, vocabulary, paraphrasing, clarity, coherence, fluency, and error correction [15], [16], [17], [18], [19]. Setiawan and Alkhowarizmi, for example, show that there are differences in strength between tools such as Grammarly is stronger in grammar, QuillBot is stronger in paraphrasing and coherence, while Ginger provides more limited feedback [20].

Second, generative AI, especially ChatGPT, is used for a wider range of functions in the writing process. In addition to language refinement, ChatGPT is used for brainstorming, idea generation, outlining, drafting, counterargument development, logical connections examination, literature search, and research perspective development [21], [22], [23], [24], [25], [15]. The findings show that the use of AI in writing instruction has evolved from a relatively limited function, namely detecting and correcting language errors, to support that covers various stages of the writing process. AI is no longer only used after students complete the draft, but can also be used in the pre-writing, planning, drafting, and revision stages.

Pedagogical Impacts of AI in Writing Instruction

The results of the synthesis show that the use of AI has several main pedagogical impacts on writing instruction. These impacts include immediate feedback and revision, language accuracy and writing quality, idea generation and organization, learner autonomy, motivation and engagement, and changes in teacher roles.

A. Immediate Feedback and Revision

One of the most consistent impacts found is the ability of AI to provide immediate feedback. Grammarly and QuillBot allow students to identify grammatical, punctuation, vocabulary, and other linguistic aspects without having to constantly wait for feedback from teachers. Rahman et al. show that automated feedback allows students to find mistakes and make revisions independently, thus supporting self-assessment and self-revision. Similar findings were seen in the research of Amyatun and Kholis, who integrated QuillBot directly into lesson plans and writing activities [26]. Students drafted them, used QuillBot to review, and then analyzed and corrected the errors found. Thus, AI has the potential to make the writing process more iterative, because students can receive feedback and make revisions in a relatively short time. This process can also reduce students' dependence on teacher feedback for mechanical errors.

B. Language Accuracy and Writing Quality

The next findings show that AI can help improve various aspects of writing quality, especially grammatical accuracy, coherence, clarity, vocabulary, fluency, and argument structure. Pratama et al.'s research shows that QuillBot provides improvements in argumentative essay writing, especially in coherence, argument structure, and grammatical accuracy [27]. Gürbüz also reported that QuillBot provided immediate feedback and error correction, increased motivation and enjoyment, and made the writing process more efficient. The experimental group showed a higher improvement than the control group [19]. The findings suggest that AI has the potential to support students in improving surface-level aspects of writing, especially when they need help identifying language errors and improving writing readability.

C. Idea Generation, Organization, and Development

Generative AI such as ChatGPT provides a broader function than writing assistants that focus on language correction. Several studies show that ChatGPT can help students generate ideas, compile outlines, develop counterarguments, and examine logical relationships in writing. Pujawiyanti and Fadhly show that ChatGPT can help students generate ideas and counterarguments as well as examine logical connections in academic writing [21]. ChatGPT is also reported to help with framework construction, literature search, and the development of research perspectives. Thus, generative AI has the potential to provide support not only in the linguistic dimension, but also in several cognitive stages in the writing process.

D. Learner Autonomy, Motivation, and Engagement

AI also has an impact on learner autonomy, motivation, confidence, and engagement. Immediate feedback and the ability to revise independently allow students to have a more independent learning experience. Sari and Ningsih identified motivation, autonomy, self-efficacy, personalization, and reduced workload as some of the benefits of AI in academic writing instruction [15]. In addition, several studies have shown that AI can support personalized learning because students can use tools according to their writing needs. Thus, AI has the potential to support a shift from fully teacher-centered learning to more learner-centered learning.

E. Changes in the Teacher's Role

The results of the review also show indications of changes in the role of teachers in writing instruction. While AI can provide grammar checking, language correction, and initial feedback, some of the technical functions previously performed by teachers can be assisted by technology. Nhan, Hoa, and Quang specifically identified changes in the role of teachers as one of the pedagogical impacts of AI in EFL writing instruction [28]. These changes do not indicate that the role of teachers is becoming unimportant. Rather, the findings of the review indicate that teachers are increasingly needed to help students evaluate AI output, understand context, maintain writer's voice, and make decisions about AI-provided feedback.

Challenges of AI Use in Writing Instruction

Although various pedagogical benefits were found, almost all research groups also showed challenges in the use of AI. The main challenges that emerged were over-reliance, reduced independent thinking, academic integrity, inaccurate feedback, semantic distortion, bias, limited contextual understanding, and AI literacy and access issues.

A. Over-Reliance and Reduced Independent Writing

Over-reliance on AI is one of the most consistent challenges found. Pujawiyanti and Fadhly report on the risk of loss of independent writing skills, superficial thinking, loss of writer's voice, and passive acceptance of AI corrections [21]. He also pointed out that blind dependence on ChatGPT can weaken independent thinking and cause homogenization of academic discourse and reduced originality [23]. The findings show a paradox in the use of AI. Technology designed to help students become more efficient can, if used excessively, reduce students' opportunities to experience the process of thinking, drafting, revising, and problem solving independently.

B. Accuracy and Limitations of AI Feedback

AI feedback is also not always accurate. Gürbüz found QuillBot's limitations in content feedback, ambiguous feedback, inaccurate error detection, and translation [19]. Fitria also showed that Grammarly can provide inaccurate results on certain constructs that are not well recognized [29], [16]. In addition to the language aspect, the limitations of AI are also seen in the evaluation of content, logic, and creativity. Zou pointed out that AI has limitations in assessing these aspects and that students have a lower level of trust in AI than teacher feedback in the content aspect [30]. These findings show that AI feedback cannot be treated as final or authoritative feedback. Students still need the ability to evaluate whether AI suggestions match the intended meaning and context of the writing.

C. Academic Integrity, Originality, and Writer's Voice

Academic integrity is another important challenge. Several studies have identified plagiarism, authorship issues, loss of originality, and the use of AI to generate an entire assignment as a risk. Duncanson, for example, points out the risk of plagiarism and the possibility of students using AI to generate an entire assignment [17]. Sari and Ningsih also identified academic integrity, authorship, cognitive offloading, reduced critical thinking, and over-reliance as challenges [15]. This problem becomes very important in writing instruction because the goal of learning writing is not only to produce grammatically correct texts, but also to develop students' ability to produce, develop, and account for their own ideas.

D. Context, Bias, and Semantic Distortion

AI also has limitations in understanding cultural and contextual meaning, emotional tone, and creativity. Nhan et al. and Rahman identified these limitations as one of the AI challenges in EFL writing instruction [28], [31]. Alghamdi and Madini also pointed out that there is a risk of semantic distortion when QuillBot is used as a writing support tool [24]. This shows that writing cannot be reduced to a problem of grammatical correctness. A revision that looks better linguistically does not necessarily maintain the author's intention, tone, or voice.

E. Teacher AI Literacy and Unequal Access

The challenges of AI integration also come from human and institutional factors. Sari and Ningsih identified teacher AI literacy and unequal access as challenges. Kamarullah. also reported unreliable internet, unequal student access, lack of formal teacher training, steep learning curve, and varying technological familiarity [22]. Thus, the success of AI integration is not only determined by technological capabilities, but also by teacher readiness, student access, infrastructure, and the availability of instructional guidelines.

Discussion

The synthesis of a number of articles shows that the use of AI in writing instruction has shifted from language correction to broader writing support. Grammarly, QuillBot, and Ginger are primarily used to provide support for linguistic aspects, while ChatGPT has a broader range of functions, including brainstorming, outlining, argument development, and literature search [15], [16], [17], [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29], [30], [31]. This shift has significant pedagogical implications. If AI previously primarily served as a tool to help students find and correct mistakes, the development of generative AI allowed the technology to participate at an earlier stage in the writing process. In other words, AI is starting to move from post-writing correction to process-oriented writing support.

However, these changes also mean that the boundary between assistance and substitution is becoming increasingly important. While AI only helps find grammatical errors, students still have relatively much control over ideas and the content of writing [32]. Conversely, when AI is used to generate ideas, arguments, outlines, or even drafts, some of the cognitive processes in writing can be transferred to technology [33]. Therefore, these SLR findings indicate that the pedagogical value of AI is not solely determined by how much AI can help students produce better texts, but also by how far students remain engaged in the cognitive process of writing.

One of the most important findings of this review is the tension between AI-supported learning and learner independence. On the one hand, AI can increase efficiency, provide feedback quickly, support revisions, and help students overcome writing difficulties [31], [15]. On the other hand, overuse can lead to over-reliance, cognitive offloading, reduced critical thinking, and loss of independent writing skills [20], [21], [28], [18]. This shows that learner autonomy is not the same as independence from thinking. Students can become more independent in accessing feedback and improving writing, but not necessarily more independent in generating ideas and making linguistic decisions. Therefore, autonomy in AI-supported writing should be understood as the ability of students to use, evaluate, and control AI, not just the ability to use AI without the help of teachers.

In this context, AI is more appropriately positioned as a scaffold rather than a substitute. Students still need to generate initial ideas, determine arguments, evaluate AI suggestions, verify information, and account for revisions made. This approach allows the benefits of AI to continue to be obtained without eliminating the cognitive engagement that is at the core of learning writing.

Based on the findings of the review, the integration of AI into writing instruction requires changes in learning design. It is not enough for teachers to introduce tools to students, but they need to provide instructional guidelines on when, why, and how AI is used in the writing process. First, the use of AI needs to be integrated into activities that maintain

student agency [34]. For example, students may be asked to create an initial draft or idea before using AI, then compare their writing with the AI output and provide reasons for their chosen changes. Second, writing instruction needs to include AI literacy as part of writing competencies in the AI era. Students need to learn to evaluate the accuracy, relevance, bias, contextual appropriateness, and semantic accuracy of AI outputs [33]. This need arises because several studies have found that AI can provide inaccurate feedback, change intended meaning, or produce problematic information.

Furthermore, teachers need to maintain aspects of writing that are difficult to replace by AI, especially critical thinking, originality, creativity, argumentation, contextual understanding, and writer's voice [21]. Findings regarding AI's limitations in content, logic, creativity, contextual meaning, and authorial voice show that these aspects still require human involvement. Next, assessments in writing instruction need to

consider the process, not just the final product [34]. If students use AI during the writing process, evaluation of planning, drafting, revision decisions, reflection, and justification can help teachers assess students' cognitive engagement more authentically.

Overall, the results of the review show that effective AI integration is not an integration that gives AI the greatest role in the writing process, but an integration that utilizes the power of AI while maintaining students' cognitive responsibilities. Thus, the goal of writing instruction in the AI era is not to avoid AI completely or leave the writing process to AI, but to develop students' ability to become writers who are able to use AI critically, reflectively, and responsibly.

CONCLUSION

Based on systematic literature reviews of several articles, artificial intelligence (AI) has been used in writing instruction through various tools, especially QuillBot, Grammarly, and ChatGPT. Its use is no longer limited to grammar correction, but includes various stages of the writing process, such as brainstorming, outlining, drafting, paraphrasing, feedback, and revision. Pedagogically, AI shows the potential to improve language accuracy, writing quality, writing efficiency, learner autonomy, motivation, and provide immediate feedback that supports a more independent revision and learning process.

However, the use of AI also presents a number of challenges, especially over-reliance, reduced independent thinking and writing skills, academic integrity, loss of originality and writer's voice, as well as the limitations of AI in providing accurate feedback and understanding content, creativity, and contextual meaning. Therefore, AI in writing instruction should be positioned as a scaffold rather than a substitute. Effective AI integration requires pedagogical guidance and AI literacy so that students remain actively involved in the process of thinking, writing, evaluating AI output, and being responsible for their writing.

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