

THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE DEVELOPMENT OF
WRITING SKILLS

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Artificial intelligence plays an increasingly significant role in developing writing skills in modern education. This article examines the potential of AI-powered tools to improve grammatical accuracy, vocabulary, coherence, and academic writing proficiency. The study analyzes existing research on automated writing evaluation, personalized feedback, and generative AI applications. The findings indicate that artificial intelligence can support independent learning, facilitate text revision, and enhance students' writing performance. However, excessive reliance on AI may negatively affect creativity and critical thinking. The article emphasizes the importance of integrating AI technologies with teacher guidance, ethical considerations, and independent writing practice to ensure effective learning outcomes.

Introduction

Writing is one of the most essential and complex language skills, requiring the integration of linguistic knowledge, critical thinking, creativity, and effective communication. The development of writing proficiency involves grammatical accuracy, appropriate vocabulary selection, logical organization, coherence, and the ability to express ideas clearly. In contemporary education, improving students' writing skills remains an important objective, particularly in foreign language learning and academic communication. Traditional writing instruction generally relies on teacher explanations, classroom assignments, peer assessment, and written feedback. Although these approaches provide valuable educational support, teachers often face challenges in delivering individualized feedback and addressing the diverse linguistic needs of students. Consequently, the integration of digital technologies has created new opportunities for improving the effectiveness of writing instruction.

Artificial intelligence has emerged as a significant technological innovation in language education. AI-powered writing assistants, automated writing evaluation systems, and generative language models offer various forms of support throughout the writing process. These technologies can identify grammatical inaccuracies, suggest vocabulary improvements, evaluate textual organization, and provide feedback on written communication. The growing application of artificial intelligence in educational environments has also transformed the relationship between students, teachers, and learning resources. AI-supported technologies allow learners to receive immediate feedback, engage in independent revision, and develop greater awareness of linguistic structures. Furthermore, personalized writing assistance may help accommodate differences in students' language proficiency, learning pace, and educational needs.

However, the increasing use of AI in writing instruction raises important pedagogical and ethical concerns. Excessive dependence on automated suggestions may limit independent thinking, creativity, and the development of original writing abilities. Additional challenges include the reliability of AI-generated feedback, academic integrity, data privacy, and unequal access to technological resources. Therefore, the effective integration of artificial intelligence requires a balanced approach that combines technological assistance with teacher guidance, critical evaluation, and independent writing practice. Understanding both the opportunities and limitations of AI-assisted instruction is essential for developing effective educational strategies.

Literature review

The application of artificial intelligence in writing instruction has attracted considerable attention from researchers in applied linguistics, educational technology, and second language acquisition. Existing studies have examined the effectiveness of automated writing evaluation, computer-generated corrective feedback, and generative AI in supporting writing development. Hyland and Hyland [1] emphasized the importance of feedback in second language writing. Their work demonstrates that effective feedback helps students recognize linguistic weaknesses, revise their texts, and develop greater awareness of writing conventions. This perspective provides a foundation for understanding AI-generated feedback as an additional educational resource.

Stevenson and Phakiti [2] conducted a critical review of research on automated writing evaluation. Their findings revealed modest evidence that automated feedback improves the quality of revised texts, while evidence concerning broader improvements in independent writing proficiency remained limited. The researchers noted that improvements in individual assignments should not automatically be interpreted as long-term writing development. Warschauer and Grimes [3] investigated automated writing assessment in classroom environments. Their research examined the opportunities and challenges associated with computer-assisted evaluation, particularly its influence on revision practices and the organization of writing instruction.

Zhang and Hyland [4] examined students' engagement with teacher and automated feedback in second language writing. Their research demonstrated that the effectiveness of feedback depends on students' cognitive, behavioral, and emotional engagement. The authors emphasized that learners must actively interpret and apply suggestions rather than accept them without reflection. Ranalli [5] investigated the effectiveness of automated written corrective feedback among second language learners. His findings indicated that automated systems may provide inaccurate or incomplete suggestions and that students require sufficient linguistic knowledge to evaluate feedback appropriately.

Chen and Cheng [6] explored the pedagogical applications of automated writing evaluation in English as a foreign language classrooms. Their research highlighted the importance of integrating technological feedback into meaningful instructional activities rather than relying exclusively on automated corrections. Li, Link, and Hegelheimer [7] examined the use of automated writing evaluation in language education. Their study contributed to understanding how automated feedback can be incorporated into writing instruction and assessment practices. Kasneci and colleagues [8] analyzed the educational opportunities and challenges associated with large language models. Their research identified potential benefits in personalized learning, educational content generation, and writing assistance. However, they emphasized the importance of critical thinking, fact-checking, and human supervision.

Tlili and colleagues [9] investigated the educational implications of ChatGPT, examining its possible contributions to teaching and learning alongside concerns about academic integrity, reliability, and ethical implementation. UNESCO [10], in Guidance for Generative AI in Education and Research, emphasized the importance of maintaining human agency, educational equity, and responsible technological integration. Its recommendations highlight the need to protect students' independence and ensure that AI technologies support meaningful learning rather than replace human intellectual activity.

Methodology

This study employs a qualitative descriptive research approach based on literature review, comparative analysis, and thematic synthesis of existing academic publications. The research examines scholarly studies concerning automated writing evaluation, AI-generated feedback, and generative artificial intelligence in language education. The selected sources are analyzed according to their findings on grammatical accuracy, vocabulary development, textual coherence, writing organization, learner autonomy, and academic integrity. Particular attention is given to comparing traditional writing instruction with AI-assisted approaches and identifying the educational conditions under which artificial intelligence can support writing development. Illustrative writing samples are constructed to demonstrate possible applications of AI feedback in classroom instruction. The study does not involve original experiments, questionnaires, or statistical measurements; therefore, its findings represent an analytical interpretation of published research rather than newly collected empirical data.

Results

The analysis of the selected academic literature demonstrates that artificial intelligence can contribute to the development of writing skills by providing personalized feedback, supporting linguistic accuracy, improving textual coherence, and facilitating independent revision. The findings indicate that AI-powered writing tools can assist learners at different stages of the writing process, particularly when technological support is combined with appropriate instructional guidance and critical evaluation.

One of the most significant contributions of artificial intelligence to writing development is its ability to identify grammatical inaccuracies and provide immediate corrective feedback. Automated writing evaluation systems can detect errors related to subject–verb agreement, verb tense, sentence structure, punctuation, and word order, allowing students to recognize linguistic weaknesses and revise their written work more effectively. Stevenson and Phakiti [2] examined the influence of computer-generated feedback on writing quality and found evidence that automated feedback could support improvements in revised texts, although its contribution to long-term writing proficiency remained less certain. This distinction suggests that grammatical correction becomes educationally meaningful when students understand the linguistic principles underlying the suggested changes. For example, a student may produce the sentence *"Many students uses artificial intelligence because it help them improve their writing skills"*, while an AI-powered writing assistant may suggest *"Many students use artificial intelligence because it helps them improve their writing skills"*. In this illustrative example, the automated correction addresses subject–verb agreement, while the teacher can encourage students to explain why the verb forms change according to the grammatical subject. Such an approach transforms automated correction into an opportunity for developing grammatical awareness rather than simply producing an error-free sentence.

Another important finding concerns the role of artificial intelligence in vocabulary development and lexical diversity. AI-assisted writing tools can identify repetitive expressions, suggest contextually appropriate alternatives, and help learners distinguish between informal and academic language. These functions are particularly relevant for students learning English as a foreign language, who may experience difficulties selecting vocabulary appropriate to specific communicative purposes. However, vocabulary suggestions should be evaluated carefully because more sophisticated expressions do not necessarily improve clarity or accurately represent the writer's intended meaning. For instance, the sentence *"Artificial intelligence is very good because it gives students good information"* may be revised as *"Artificial intelligence is beneficial because it provides students with valuable information"*. The revised version demonstrates how lexical substitution can reduce unnecessary repetition and produce a more appropriate academic style. Nevertheless, students should understand the semantic differences between the original and suggested expressions to ensure that vocabulary development contributes to independent language proficiency.

The reviewed studies also indicate that artificial intelligence can support the development of coherence and logical organization in academic writing. AI-powered systems can analyze relationships between sentences, identify abrupt transitions, and suggest improvements in paragraph structure, thereby helping learners recognize the importance of topic sentences, supporting arguments, and concluding statements. Warschauer and Grimes [3] examined automated writing assessment in classroom contexts and highlighted its potential to encourage revision, while also identifying limitations in the ability of automated systems to address more complex aspects of writing quality. For example, a student may initially write *"Online education is popular. Students use technology. There are some problems with learning"*. An AI-assisted revision might produce *"Online education has become increasingly popular because digital technologies provide students with flexible access to educational resources; however, this learning environment also presents challenges related to limited interaction and unequal access to technological facilities"*. This example illustrates how automated suggestions can help establish logical relationships between ideas while improving the overall coherence of a paragraph.

Furthermore, artificial intelligence can facilitate personalized learning by providing feedback that responds to students' individual writing difficulties and proficiency levels. Unlike conventional feedback practices, which may require considerable teacher preparation and evaluation time, automated systems can provide immediate responses and allow learners to revise their assignments repeatedly. Zhang and Hyland [4] demonstrated that students' engagement with feedback involves cognitive, behavioral, and emotional dimensions, suggesting that the effectiveness of automated suggestions depends on how actively learners interpret, evaluate, and incorporate them into subsequent writing.

The findings also reveal that AI-assisted writing instruction can encourage learner autonomy when students use automated feedback as a resource for self-assessment rather than as a substitute for independent intellectual activity. Ranalli [5] investigated learners' ability to use automated written corrective feedback and demonstrated the importance of evaluating technological suggestions critically, particularly because automated systems may generate inaccurate or contextually inappropriate corrections. Consequently, the development of writing proficiency requires students to make informed decisions about suggested revisions and maintain responsibility for the content and organization of their texts.

Table 1. The role of artificial intelligence in developing different components of writing proficiency

Writing component	AI-supported activity	Potential educational contribution
Grammatical accuracy	Identification and explanation of linguistic errors	Development of grammatical awareness and accuracy

Vocabulary development	Suggestions for lexical alternatives and academic expressions	Improvement of lexical diversity and contextual appropriateness
Textual coherence	Analysis of sentence connections and logical transitions	Development of coherent and logically organized writing
Writing organization	Feedback on paragraph structure and argument development	Improvement of academic text organization
Revision skills	Immediate feedback and repeated editing opportunities	Development of self-correction and revision strategies
Critical thinking	Evaluation of AI-generated suggestions	Strengthening of analytical judgment and independent decision-making
Learner autonomy	Personalized feedback and self-assessment	Greater responsibility for individual writing development

The comparative analysis presented in Table 1 demonstrates that artificial intelligence can support writing development through several interconnected instructional functions, ranging from linguistic correction to the improvement of higher-order writing abilities. While grammatical accuracy and vocabulary selection represent relatively direct applications of automated feedback, the development of coherence, argumentation, and critical thinking requires more substantial student involvement and teacher guidance. In addition, the reviewed literature suggests that the effectiveness of AI-assisted writing instruction depends on the pedagogical context in which technological tools are employed. Chen and Cheng [6] emphasized the importance of classroom practices in determining the perceived effectiveness of automated writing evaluation, while Li, Link, and Hegelheimer [7] examined how automated feedback could be integrated into second language writing instruction. These studies indicate that technological assistance becomes more educationally valuable when students are encouraged to revise their work purposefully and reflect on the reasons behind linguistic and structural changes.

Discussion

The findings demonstrate that artificial intelligence offers opportunities to improve writing instruction by providing immediate feedback, supporting revision, and facilitating personalized learning. Nevertheless, its effectiveness depends on how students and teachers incorporate these technologies into educational activities. One important advantage of AI-assisted writing is the accessibility of feedback. Traditional writing instruction often requires teachers to spend considerable time evaluating written assignments. Automated writing evaluation systems can provide immediate responses, allowing learners to identify certain mistakes and revise their work independently. Warschauer and Grimes [3] found that

automated writing assessment encouraged revision and reduced some aspects of teachers' workload. However, their research also indicated that automated assessment did not necessarily produce substantial improvements in writing content and organization. This finding suggests that AI-generated feedback should be considered a supplementary resource rather than a replacement for teacher evaluation.

Another important issue concerns the distinction between improving a written text and developing writing proficiency. Students may produce more accurate assignments with AI assistance without fully understanding the linguistic principles behind the corrections. Stevenson and Phakiti [2] emphasized this limitation in their review of automated writing evaluation. Their research found only limited evidence that improvements achieved through automated revision necessarily transfer to independent writing performance. The importance of student engagement is also evident in Zhang and Hyland's [4] investigation of automated and teacher feedback. Their study describes engagement as:

"a crucial mediating variable"

This expression highlights the importance of learners' active involvement in interpreting and applying feedback. Furthermore, generative AI introduces new possibilities for supporting academic writing. Students can use AI-assisted feedback to evaluate paragraph structure, examine alternative expressions, and identify weaknesses in argument development. However, these opportunities must be balanced against the risks of excessive dependence and reduced independent thinking. Kasneci and colleagues [8] emphasized that educational applications of large language models require critical thinking, fact-checking, and human oversight. Their research suggests that technological competence should be accompanied by an understanding of AI limitations. Academic integrity represents another significant challenge. Students who submit AI-generated texts without meaningful personal contribution may fail to develop the independent writing abilities that educational assignments are intended to assess. Tlili and colleagues [9] investigated ChatGPT in educational contexts and identified concerns involving honesty, reliability, privacy, and responsible technology use. Their findings indicate that clear educational guidelines are necessary to prevent inappropriate dependence on automated systems.

UNESCO [10] similarly advocates a human-centered approach to generative AI in education. Its guidance emphasizes the importance of protecting human agency and ensuring that technological innovation supports meaningful learning.

The document states:

"AI must not usurp human intelligence".

This statement reflects the principle that artificial intelligence should support human intellectual development rather than replace independent reasoning and creativity. A balanced approach to AI-assisted writing instruction may involve students preparing an initial draft independently, examining automated feedback, evaluating suggested changes, and producing a revised version. Teachers can subsequently assess both the final text and students'

understanding of the revision process. For example, students may be asked to write an argumentative paragraph about environmental protection. After completing their drafts, they can examine AI-generated suggestions concerning grammar, coherence, and vocabulary. Instead of automatically accepting every recommendation, learners should explain why particular revisions improve their writing.

This instructional strategy combines technological assistance with reflection, linguistic awareness, and independent decision-making. Therefore, the effective integration of artificial intelligence into writing instruction requires appropriate teacher guidance, clear learning objectives, responsible technological use, and opportunities for independent writing practice.

Conclusion

Artificial intelligence has introduced significant opportunities for developing writing skills through automated feedback, grammatical correction, vocabulary assistance, and text revision. The analysis of existing academic research indicates that AI-powered tools can support different stages of the writing process and provide learners with additional opportunities to improve their written communication. However, the effectiveness of AI-assisted writing instruction depends on students' active engagement with automated feedback. Simply accepting suggested corrections does not necessarily lead to the development of independent writing proficiency. Learners must understand linguistic principles, evaluate alternative expressions, and maintain responsibility for their written work.

The study also identifies important challenges, including inaccurate feedback, excessive technological dependence, academic integrity concerns, and unequal access to digital resources. These limitations demonstrate the continuing importance of teacher guidance and ethical educational practices. Artificial intelligence should be integrated into writing instruction as a supportive educational resource rather than a substitute for human creativity and critical thinking. A balanced combination of AI-assisted feedback, teacher evaluation, and independent writing practice can contribute to the development of accurate, coherent, and effective written communication.

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