# The Benefits and Limitations of the Use of Artificial Intelligence Tools in the Acquisition of Writing in English as a Foreign Language—A Systematic Analysis

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***Abstract:*** This systematic review examines the use of artificial intelligence (AI) tools in the acquisition of English writing as a foreign language (EFL). The study synthesizes existing literature published between 2020 and 2025, focusing on the impact of AI-powered tools such as grammar checkers, text generation assistants, and automated feedback systems. Results indicate that over 80% of empirical studies report positive outcomes, particularly in improving grammatical accuracy, fluency, and self-efficacy. However, challenges such as overreliance on AI feedback and concerns about academic integrity are noted in about 15–20% of studies. The review identifies several gaps in the literature, including the need for longitudinal studies, comparative analyses of different AI tools, and more diverse research populations. Future research should address these gaps and explore the integration of AI tools in real-world writing contexts, with an emphasis on pedagogical strategies and ethical considerations.

***Keywords:*** Artificial Intelligence; English Writing; AI Tools; Systematic Review

## 1.Introduction

Writing in English as a foreign or second language is widely recognized as a complex cognitive and communicative task. Learners must coordinate lexical choice, grammatical accuracy, coherence, rhetorical structure, and audience–purpose demands, making writing more demanding than receptive skills (Graham & Perin, 2007). In many EFL contexts, learners face persistent difficulties, including weak language foundations, limited syntactic and lexical range, poor organization, and challenges in sustaining coherence (Hyland, 2019; Li et al., 2022: 139; Liu & Liu, 2014: 28). These issues are intensified by limited teacher time, large classes, insufficient feedback, and varied proficiency levels.

Meanwhile, rapid advances in Artificial Intelligence (AI) are reshaping writing instruction. AI tools—grammar and style checkers, generative assistants, automated feedback—are increasingly embedded in writing environments, providing real-time detection, revision suggestions, and text-generation support. Reviews show that AI tools enhance engagement, offer personalized feedback, and support writing improvement (Kristiawan et al., 2024), helping learners express complex ideas, think reflectively, and communicate nuanced perspectives while fostering intercultural awareness (Gayed et al., 2022; Nazari et al., 2021; Pham et al., 2020).

This convergence of writing challenges and emerging AI support motivates inquiry into how AI tools are used, their effects, and the conditions for their effectiveness. Accordingly, this article examines current trends in learning English with Generative Artificial Intelligence (GenAI) tools that offer flexible, unconstrained access.

To address these issues, a systematic analysis was adopted. Within this context, the present review maps and critically synthesizes the literature on AI tools in English writing, providing a baseline from which researchers and practitioners may assess current developments and future directions.

## 2.Methodology

This study adopts a systematic review approach aligned with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, a framework widely recognized for ensuring transparency, rigor, and replicability in educational technology research (Page et al., 2021). The objective is to synthesize empirical and theoretical research to identify trends in AI-assisted English writing and predict future directions.

A bilingual search strategy was implemented across both English- and Chinese-language databases to ensure

cross-cultural coverage and minimize linguistic or regional bias. The English-language databases consulted were Web of Science and Google Scholar. The Chinese-language databases consulted—accessed via their English interfaces—were CNKI, Wanfang Data, and VIP.Search terms targeted core research dimensions from 2020 to 2025. For English-language searches, the keywords were:("AI tools" OR "Generative AI" OR "Large Language Model" OR "ChatGPT") AND ("English writing" OR "L2 writing" OR "Academic writing") AND ("EFL" OR "ESL").For searches conducted in Chinese-language databases, the queries employed the Chinese equivalents of these terms (e.g., terms corresponding to "AI tools," "generative AI," "large language models," "ChatGPT," "English writing," "L2 writing," and "academic writing").This bilingual search approach ensured comprehensive retrieval of studies published in parallel with the rise of generative AI after 2020 (Andreou & Christani, 2025).

Inclusion criteria restrict literature to 2020–2025, when generative AI tools rapidly evolved and entered writing instruction (Nguyen et al., 2025). English studies must appear in SSCI-indexed journals and Chinese studies in Peking University Core Journals. Exclusion criteria remove non-English/Chinese literature, studies on other skills, reviews, and duplicates. Literature management and screening using NoteExpress followed three stages: title–abstract screening, full-text verification, and final eligibility checks.

A total of 594 records were initially screened. After removing 318 duplicates, 276 reports underwent eligibility assessment. Studies were excluded for lacking focus on writing (67), being inaccessible (41), being reviews (9), not mentioning AI tools (58), or addressing other languages (55). Ultimately, 46 studies were included, as shown in the PRISMA diagram (Figure 1).
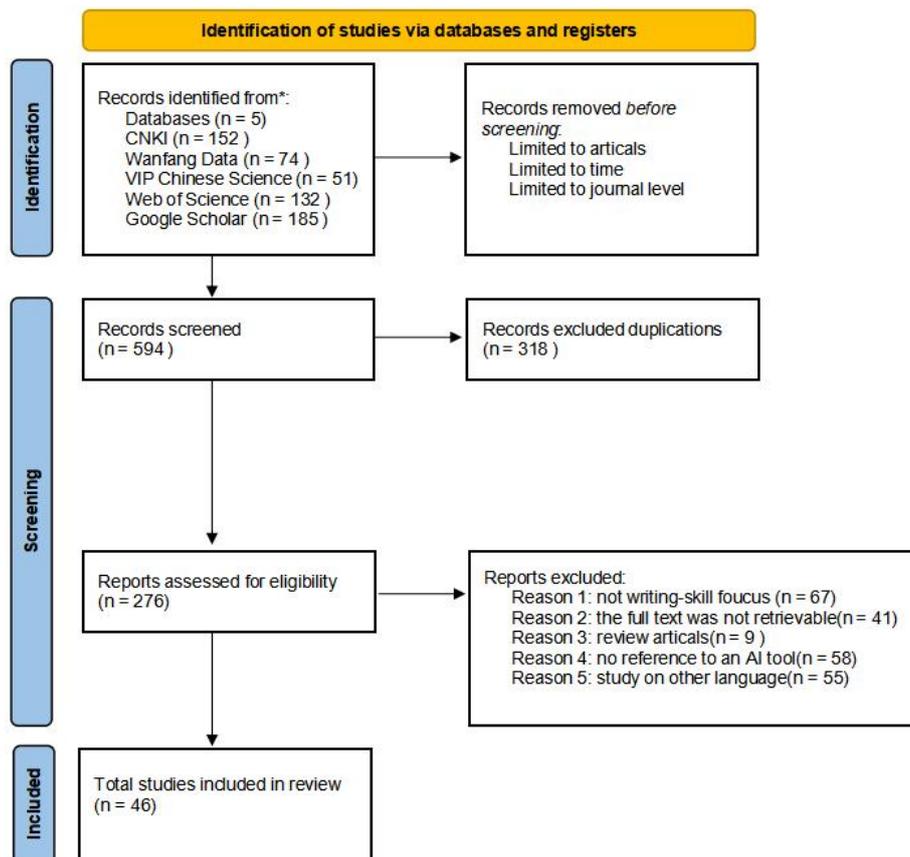


Figure 1. PRISMA flow chart

## 3.Results

### 3.1 Overall Research Trends (2020–2025)

As shown in Figure 1, research on AI tools in English writing grew substantially from 2020 to 2025, with a sharp rise after 2023. Publications nearly doubled between 2023 and 2025, reflecting the accelerating use of AI tools

such as ChatGPT, Grammarly, and Write&Improve in writing pedagogy and academic communication, alongside the global diffusion of large language models and growing academic interest in their educational affordances.
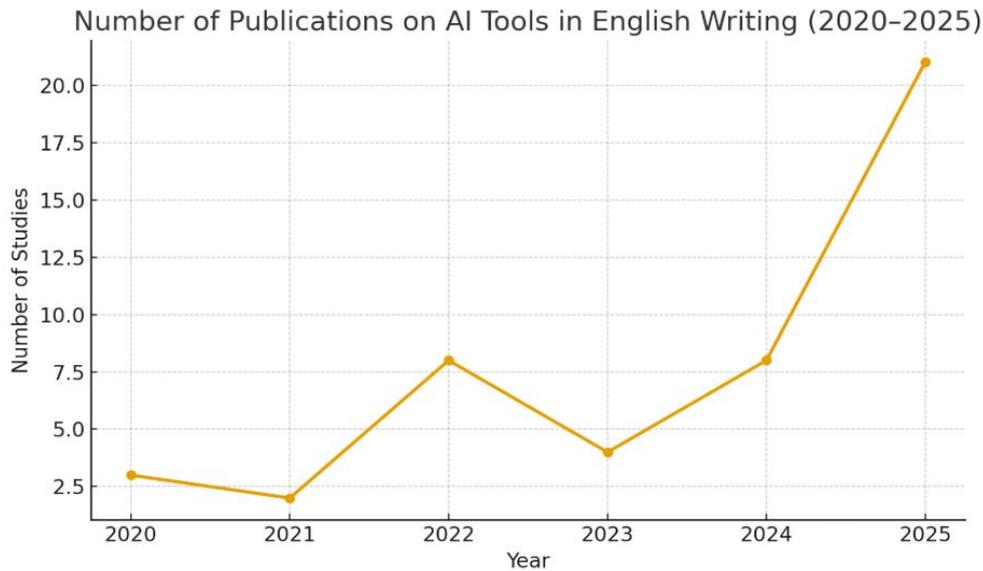


Figure 2

## 3.2 Research Type Distribution

Figure 2 shows that empirical (E) research has dominated since 2022. Early studies (2020–2021) were mainly conceptual or literature-based, focusing on applications and ethics (Zhong & Zhong, 2020). After 2023, the field shifted toward data-driven empirical studies evaluating AI's impact on writing performance, accuracy, and learner attitudes (Mu & Tang, 2025; Chu, 2025), reflecting a move from exploratory discussion to evidence-based validation.
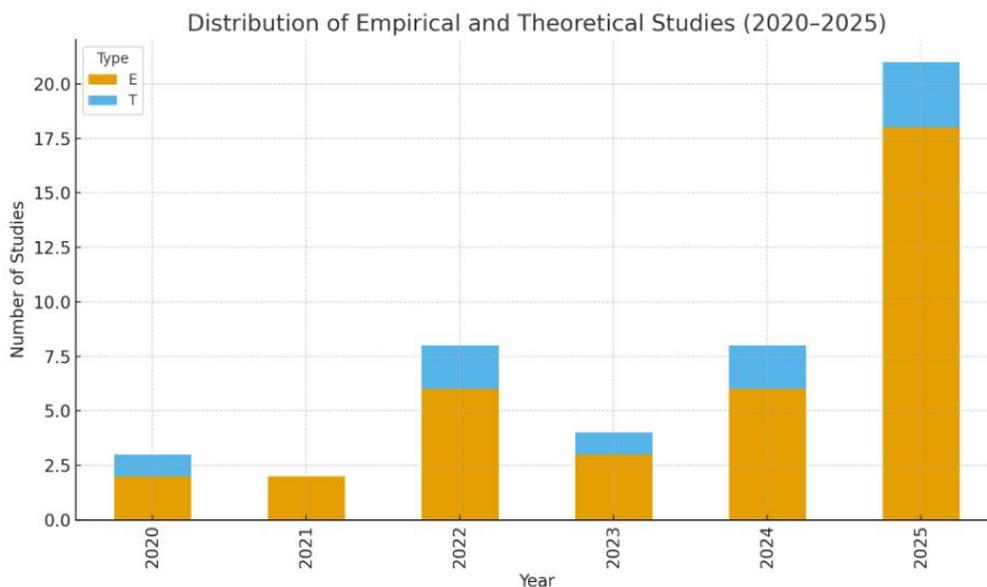


Figure 3

## 3.3 Thematic Focus: Influence and Acceptance

Figure 3 shows two main research themes: Influence of AI on writing performance (IOA) and Acceptance of AI (ATA). About 65% of studies focused on AI's impact on fluency, lexical richness, grammar, and critical thinking, while 35% examined learner or teacher acceptance, including perceived usefulness, trust, and ethics (Nazari et al.,

2021; Pham et al., 2020). This indicates that technological impact and user perception are closely intertwined in AI-assisted writing.
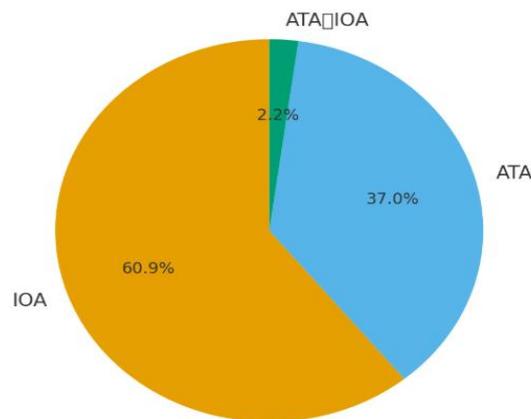


Figure 4

### 3.4 Target Groups and Research Sources

Most empirical studies targeted university students (≈70%), followed by junior high students and teachers, reflecting the accessibility of higher education for controlled experiments and the prevalence of academic writing tasks. Data were mainly collected via polls and online questionnaires (P), supplemented by interviews (I) and experimental tasks (O), indicating a mixed-methods tendency in current research.

### 3.5 Emerging Research Directions

From 2024, research began focusing on learner autonomy, AI feedback literacy, and ethical aspects of automated writing. Studies (Mu & Tang, 2025; Zhang & Liu, 2025) highlight the need to balance AI assistance with independent writing, suggesting future work will emphasize critical human–AI collaboration over mere technological enhancement.

### 3.6 Research Findings

Analysis of the literature reveals several trends in AI-assisted writing. Most empirical studies (over 80%) report positive effects on grammatical accuracy, lexical diversity, coherence, and fluency, as well as increased self-efficacy and motivation (Song & Song, 2023; Yıldız, 2025; Nazari et al., 2021). Early studies (2020–2021) focused on mechanical aspects, with tools like Grammarly reducing errors by over 30% per writing cycle (Reynolds et al., 2021). More recent work (2022–2025), especially with generative AI, emphasizes higher-order skills such as argumentation, creativity, and metacognition (Gayed et al., 2022; Mu & Tang, 2025).

However, 15–20% of studies report mixed effects due to overreliance on AI, superficial revisions, or concerns about authorship (Pham et al., 2020; Zhang & Liu, 2025). Some, particularly in teacher education, highlight the need for hybrid human–AI assessment models (Chu, 2025). Overall, AI tools improve technical skills, but their long-term pedagogical value depends on integration into feedback systems, reflective practices, and curriculum design.

## 4.Discussion

### 4.1 Pedagogical Implications

This systematic analysis indicates that AI tools in EFL writing offer substantial pedagogical benefits. When used appropriately, AI-assisted feedback improves grammatical accuracy, lexical variety, and coherence (Mekheimer, 2025; Zhang, 2024). Educators should integrate AI as scaffolding that supports revision and self-regulated writing, combining AI feedback for lower-level issues with teacher guidance for higher-level concerns (Tran, 2025). Tasks should encourage learners to engage with AI suggestions, reflect, and revise collaboratively.

These benefits depend on pedagogical framing. AI tools alone cannot sustain writing development without learner feedback literacy—skills to interpret, evaluate, and apply AI suggestions. Without it, learners may accept corrections passively, limiting autonomy and strategic competence. Thus, teachers remain central, shifting from corrector to facilitator of AI-mediated writing cycles.

### 4.2 Strategic Integration of AI Writing Tools

Effective AI integration in EFL writing relies on three elements: tool–task alignment, learner readiness, and assessment/ethical frameworks. Tools should match task demands—generative AI for idea generation, grammar checkers for polishing (Sadigzade, 2025). Learner readiness, including metacognition, digital literacy, and critical engagement, strongly shapes outcomes (Wu, 2024). Teachers should clarify tool affordances and limitations.

Assessment and ethical considerations are crucial. Over-reliance on AI may undermine originality, transparency, and critical engagement (Sadigzade, 2025; Zhang, 2024). Institutions should set authorship guidelines and promote metacognitive reflection. Effective integration emphasizes purposeful and ethical use, not blanket adoption.

### 4.3 Future Research Directions

This review identifies major gaps in research on AI-assisted writing. Most studies focus on short-term interventions, leaving long-term effects on accuracy, fluency, and coherence unclear; longitudinal research across genres and authentic contexts is needed (Mekheimer, 2025). Studies also largely examine single AI tools, limiting understanding of how generative, evaluative, and hybrid systems support idea generation, revision, and rhetorical development; comparative research is recommended.

Research populations and contexts need diversification. Most studies target university-level EFL learners in technologically advanced regions, limiting generalizability. Future work should include K–12 learners, multilingual or low-resource settings, and varied proficiency levels, as well as investigate teachers' evolving roles and professional development in AI-enhanced classrooms (Wu, 2024).

Ethical, assessment, and governance issues remain underexplored. While AI efficiency is noted, discussion on institutional regulation, academic integrity, and learner agency is limited (Sadigzade, 2025). Future research should incorporate ethical frameworks and assessment literacy to ensure equitable, transparent AI integration, advancing the field beyond proof-of-concept studies.

## 5.Conclusion

This systematic review highlights AI tools' positive impact on EFL writing, improving grammatical accuracy, fluency, and learner motivation. Most studies report benefits, including enhanced self-efficacy, but challenges remain, such as overreliance on AI, superficial revisions, and academic integrity concerns. Careful integration into teaching is needed to maximize benefits and minimize drawbacks.

Future research should adopt longitudinal designs, compare different AI tools, include diverse learner populations, and address ethical issues such as integrity and authorship to ensure responsible and effective use in EFL writing.

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