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THE IMPACT OF AI-ASSISTED FEEDBACK ON ACADEMIC WRITING DEVELOPMENT AMONG EFL LEARNERS

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Abstract. This article examines the impact of artificial-intelligence-assisted feedback on the development of academic writing among learners of English as a Foreign Language (EFL). The study adopts an integrative applied-linguistic perspective and synthesizes recent empirical and review-based evidence on automated written corrective feedback, generative-AI feedback, and hybrid AI–teacher feedback. Particular attention is given to grammatical accuracy, lexical development, coherence and cohesion, argumentation, revision behaviour, learner autonomy, feedback literacy, and ethical use. The reviewed evidence indicates that AI-assisted feedback is especially effective for immediate error detection, language-form revision, and iterative drafting, while its contribution to higher-order dimensions such as argument quality, disciplinary voice, source integration, and original reasoning is more variable. The analysis also shows that learner engagement mediates the value of automated feedback: uncritical acceptance may improve surface correctness without necessarily producing durable learning, whereas selective evaluation and revision can support noticing, self-regulation, and metalinguistic awareness. On this basis, the article proposes a five-stage pedagogical cycle— independent drafting, targeted AI consultation, critical evaluation, revision, and reflective verification—for integrating AI feedback into EFL academic writing instruction. The study concludes that AI should be treated as a formative and dialogic support tool rather than as an autonomous evaluator or substitute for teacher expertise. The strongest pedagogical configuration is a hybrid model in which AI provides timely, individualized feedback and teachers retain responsibility for contextual interpretation, rhetorical development, academic integrity, and learner agency.

Keywords: artificial intelligence, AI-assisted feedback, academic writing, EFL learners, automated written corrective feedback, ChatGPT, Grammarly, feedback literacy, learner autonomy.

INTRODUCTION

Academic writing is a central competence in higher education because it requires learners to coordinate linguistic accuracy, disciplinary vocabulary, text organization, argumentation, source use, and audience awareness. For EFL learners, these demands are intensified by the

need to compose complex academic meanings through a language that is not their primary medium of communication. Feedback therefore occupies a central place in second-language writing pedagogy. Hyland and Hyland describe feedback as a key mechanism through which learners gain increasing control over composing processes, while teacher, peer, and computer-mediated feedback provide different forms of scaffolding for revision and learning [1].

The rapid development of artificial intelligence has substantially expanded the range of feedback available to language learners. Earlier automated writing evaluation systems primarily identified spelling, grammar, mechanics, and limited stylistic problems. Contemporary systems combine natural-language processing with generative large language models and can now explain errors, suggest alternative formulations, comment on organization, generate examples, ask reflective questions, and respond iteratively to learner prompts. Tools such as Grammarly and ChatGPT therefore change feedback from a delayed teacher-controlled event into a potentially continuous component of the writing process. This shift is pedagogically important because academic writing develops through cycles of drafting, feedback, revision, and reflection rather than through a single corrected product.

At the same time, the educational value of AI feedback cannot be assumed from its technological sophistication. Automated suggestions may be inaccurate, overly generic, insensitive to disciplinary conventions, or persuasive even when they are not appropriate for the learner's rhetorical purpose. Research on automated feedback has repeatedly shown that learners differ in how critically they engage with suggestions: some selectively evaluate feedback, whereas others accept it with limited verification [3, 4]. Generative AI creates an additional problem because the boundary between feedback on a learner's text and replacement of the learner's authorship can become unclear. Consequently, applied linguistics must address not only whether AI can improve a text, but also whether its use contributes to the learner's long-term writing competence.

Recent empirical evidence provides a more differentiated picture. Studies have reported improvements in writing accuracy, revision quality, vocabulary, and overall writing performance when learners use automated or generative feedback [5, 9, 11, 13]. However, recent systematic reviews indicate that positive effects are more consistent for surface-level accuracy and writing processes than for higher-order dimensions such as argumentation and discourse organization [15]. Research in Uzbekistan also suggests that AI assistance can improve grammatical and lexical performance while raising concerns about cognitive independence and originality when learners use AI as a substitute for rather than a scaffold to reasoning [16]. These findings make the pedagogical design of AI-assisted feedback more important than the mere presence of the technology.

The aim of this article is to analyse how AI-assisted feedback contributes to academic writing development among EFL learners and to identify the conditions under which it is pedagogically productive. The article addresses four questions: (1) Which dimensions of academic writing are most consistently supported by AI-assisted feedback? (2) How does learner engagement affect the educational value of automated suggestions? (3) What limitations arise when AI feedback is used for higher-order academic writing? and (4) How can AI and teacher feedback be integrated into a responsible applied-linguistic model? The

article does not report a newly conducted experiment; instead, it synthesizes published empirical evidence and develops an instructional framework that can be tested in future classroom research.

LITERATURE REVIEW AND THEORETICAL BASIS

Feedback in L2 writing has traditionally been conceptualized as information that helps learners recognize a gap between current performance and a desired linguistic or rhetorical standard. In process-oriented and genre-oriented writing instruction, effective feedback is not limited to marking errors; it directs learner attention, supports revision decisions, and contributes to the development of independent control over writing [1, 2]. This distinction is fundamental for AI-assisted feedback. A tool may successfully correct a sentence while producing little learning if the learner does not understand the problem, evaluate the suggestion, or transfer the underlying principle to a later writing task.

Automated written corrective feedback (AWCF) represents one of the most established forms of AI-mediated writing support. Research using Grammarly has shown that automated feedback can help learners identify and correct a large proportion of language-form problems in research and academic writing. Barrot found that AWCF can improve L2 writing accuracy by promoting noticing and offering immediate metalinguistic support, although overcorrection, cognitive overload, and insufficient explanation remain relevant limitations [5]. Koltovskaia's case study further demonstrated that learner engagement is not uniform: a more proficient learner questioned suggestions more selectively, whereas a less proficient learner displayed greater dependence on automated feedback [3]. Ranalli similarly emphasized that trust in automated feedback influences what learners notice, accept, reject, and ultimately learn from [4].

The emergence of generative AI extended automated feedback beyond error correction. Barrot identifies several affordances of ChatGPT for L2 writing, including immediate response, language-form support, style suggestions, idea development, and assistance across pre-writing, drafting, and revision stages, while also highlighting problems of accuracy, academic integrity, and overdependence [6]. Kohnke, Moorhouse, and Zou likewise argue that effective use of generative AI in language education requires new forms of digital and AI literacy so that learners can evaluate, rather than merely consume, machine-generated output [7]. More broadly, Kasneci et al. emphasize the need for human oversight, critical thinking, fact checking, and clear pedagogical strategies when large language models are incorporated into education [8].

Empirical studies conducted after the widespread adoption of generative AI have begun to clarify its effects. Mahapatra's mixed-methods intervention study reported a significant positive impact of ChatGPT used as a formative feedback tool on tertiary-level ESL academic writing and found strongly positive learner perceptions, while stressing the importance of training students to use the tool productively [9]. Han and Li examined ChatGPT-supported teacher feedback with 102 tertiary EFL students and found that teacher adaptation of AI-generated feedback could address both language errors and broader rhetorical issues; students also incorporated more of the feedback into later revisions [10]. These findings support a view of AI as a feedback mediator rather than an autonomous assessor.

Recent studies of AWCF and generative feedback also reveal the importance of instructional context. Rahimi, Fathi, and Zou investigated automated written corrective feedback through an activity-theory perspective and reported benefits across task achievement, coherence and cohesion, lexical performance, and grammatical range and accuracy, while showing that feedback works within a broader system of collaborative activity, learner motivation, and tool use [11]. Asadi, Ebadi, and Mohammadi found that combined ChatGPT and teacher feedback produced greater gains in EFL argumentative writing than teacher feedback alone, while teachers still raised concerns about plagiarism, overreliance, and the need for professional development [12]. Mekheimer's study of postgraduate EFL learners similarly linked AI-assisted feedback with writing proficiency, revision frequency, and writing quality [13].

The most recent synthesis studies suggest that AI feedback has a meaningful but conditional effect. Luo and Zhan's 2026 meta-analysis synthesized 234 effect sizes from 43 higher-education studies and reported a significant moderate overall effect on English writing performance ($g = 0.58$), with stronger effects when AI feedback was combined with human feedback [14]. Meng, Xie, and Lu's systematic review of AI-assisted academic writing found that benefits were more consistent for psychological and process outcomes than for final textual products; product-level gains were clearest in surface accuracy and conventions, while evidence for argumentation and discourse organization remained mixed [15]. This distinction is central to applied linguistics because academic writing competence cannot be reduced to grammatical correctness.

The Uzbek higher-education context is especially relevant because EFL learners operate across Uzbek, Russian, and English linguistic resources and may display language-transfer patterns that differ from those described in other settings. A 2026 case study at Fergana State University reported substantial gains in grammatical accuracy and lexical sophistication under AI-assisted conditions, but it also observed lower indicators of warranted argumentation and originality, illustrating the tension between textual enhancement and independent academic reasoning [16]. The expanding research landscape itself is visible in a 2026 bibliometric analysis that identified rapid growth in scholarship on AI and English writing instruction and highlighted AI literacy, long-term impact, and equitable implementation as major future priorities [17].

Table 1. Major functions of AI-assisted feedback in EFL academic writing

Writing dimension	Typical AI feedback	Potential learning value	Principal limitation
Grammar and mechanics	Error detection, correction, explanation	Noticing and increased formal accuracy	False positives, overcorrection
Lexical development	Word choice, collocation, register alternatives	Lexical range and academic phrasing	Context-insensitive or inflated vocabulary
Coherence and cohesion	Transitions, paragraph links, structural suggestions	Revision of local text flow	May oversimplify disciplinary organization
Argumentation	Counterarguments,	Idea expansion and	Risk of substitution for

Writing dimension	Typical AI feedback	Potential learning value	Principal limitation
	claim refinement, examples	rhetorical awareness	independent reasoning
Revision behaviour	Immediate iterative response	More revision cycles and self-editing	Blind acceptance or superficial editing
Metacognitive development	Explanations and reflective prompts	Self-regulation and feedback literacy	Benefits depend on critical learner engagement

RESEARCH METHODOLOGY

The present study uses a qualitative integrative-review design combined with applied-linguistic conceptual analysis. This design is appropriate because the objective is not to estimate a new causal effect from primary participant data, but to identify recurrent patterns across recent empirical research and translate those patterns into pedagogical principles for EFL academic writing. The evidence base prioritizes peer-reviewed research on automated writing evaluation, automated written corrective feedback, generative-AI feedback, ChatGPT-supported writing, and hybrid AI–teacher feedback. Both foundational feedback research and recent studies published during the rapid expansion of generative AI were used to establish continuity between established L2-writing principles and emerging technological practices.

The analytical unit is not the AI tool itself but the feedback episode: a learner produces text, receives machine-generated information or suggestions, interprets that feedback, decides whether and how to revise, and subsequently reflects on the outcome. This unit makes it possible to distinguish text improvement from learning. A correction that improves the current sentence is treated as product-level assistance; a feedback episode that helps the learner notice a recurring problem, understand the rule, justify a revision, and transfer the knowledge to a later text is treated as developmentally stronger.

The synthesis is organized around six applied-linguistic dimensions: (1) grammatical accuracy and mechanics; (2) lexical development and register; (3) coherence and cohesion; (4) argumentation and higher-order academic discourse; (5) learner engagement, autonomy, and feedback literacy; and (6) the relationship between AI feedback and teacher mediation. Findings from individual studies are interpreted cautiously because tools, learner proficiency, task type, intervention duration, and outcome measures differ substantially across studies. Where a study reports a numerical result, the present article uses that value only as evidence from the cited source and does not treat it as a result generated by the current study.

The methodological principle of this article is therefore evidence synthesis without fabricated primary data. No participants were recruited, no new corpus was collected, and no experimental scores were generated. The outcome of the analysis is a pedagogical framework derived from converging findings in the literature. This framework is intended for later classroom validation through pre-/post-writing measures, revision logs, learner interviews, inter-rater scoring of academic writing, and longitudinal assessment of transfer to unaided writing.

ANALYSIS AND RESULTS

4.1. AI-Assisted Feedback as a Formative Writing Resource

Across the reviewed literature, the strongest justification for AI-assisted feedback is its formative immediacy. Conventional teacher feedback is pedagogically rich but constrained by workload, class size, and response time. AI systems can respond to successive drafts within seconds, enabling learners to revise while the linguistic and rhetorical problem is still cognitively active. This immediacy increases the number of feedback–revision cycles available within a single assignment and can support self-directed writing practice outside class.

However, immediacy is educationally valuable only when the feedback remains subordinate to the learner's writing intention. Generative tools can easily move from diagnosis to production: instead of explaining why a claim is weak, they can generate a replacement claim; instead of identifying cohesion problems, they can rewrite the paragraph. The applied-linguistic distinction between scaffolding and substitution is therefore essential. Scaffolding preserves learner responsibility for the text, while substitution transfers the composing decision to the system. The developmental value of AI feedback decreases when the learner's principal activity becomes selecting machine-generated alternatives rather than constructing and evaluating language.

4.2. Effects on Accuracy, Lexis, and Local Revision

The most consistent benefits of automated feedback appear in dimensions that can be localized and explicitly signalled. Grammar, spelling, punctuation, sentence-level clarity, and many lexical-choice problems can be detected rapidly and presented as discrete revision opportunities. Research on Grammarly-based AWCF shows that such feedback can improve writing accuracy and facilitate noticing [5]. Learners also benefit from repeated exposure to explanations and alternatives when they compare their original form with a suggested revision.

The 2026 meta-analysis by Luo and Zhan provides broad support for this pattern: across 43 studies, AI feedback produced a moderate overall improvement in higher-education English writing performance, but the size of the effect varied according to feedback configuration and task characteristics [14]. Similarly, recent systematic evidence suggests that AI-supported academic writing yields its clearest textual gains in surface accuracy and conventions [15]. These findings imply that AI is particularly effective when the feedback target is observable, relatively bounded, and revisable at the sentence or phrase level.

Lexical development is more complex. AI can propose academic collocations, synonyms, hedging devices, reporting verbs, and register-appropriate alternatives, which may expand learners' expressive resources. Yet lexical sophistication should not be equated with the use of longer or less frequent words. Academic vocabulary must fit disciplinary meaning, stance, genre, and collocational constraints. Consequently, learners should be trained to ask why a suggested lexical item is preferable, whether it changes propositional meaning, and whether it is conventional in the target discipline.

4.3. Coherence, Argumentation, and Higher-Order Academic Writing

AI tools increasingly provide feedback on paragraph organization, thesis statements, transitions, counterarguments, and overall coherence. These functions make generative systems appear capable of higher-order tutoring, but the evidence is less uniform than for

language-form correction. A system can identify a missing transition or suggest that a paragraph lacks a topic sentence, yet discourse quality depends on the relationship among claims, evidence, disciplinary expectations, and the writer's intended contribution.

Meng, Xie, and Lu's 2026 systematic review is important in this respect: while AI-assisted writing was associated with positive process and psychological outcomes, evidence for higher-order textual development, including argumentation and discourse organization, was mixed [15]. The Uzbekistan-based study by Qosimov, Ne'matov, and Shokirova Sharifovna similarly reported a productive but problematic tension: assisted writing showed improvements in grammatical and lexical dimensions, while indicators related to warranted argumentative claims and originality declined under AI-assisted conditions [16]. These findings caution against using polished AI-assisted text as direct evidence of independent academic-writing competence.

For pedagogy, higher-order feedback should therefore be dialogic rather than substitutive. Instead of asking an AI system to 'improve this paragraph,' learners can be instructed to request diagnosis: identify the claim, evidence, warrant, and counterargument; point out where reasoning is implicit; or generate questions that a skeptical reader might ask. Such prompts preserve authorship because the system helps expose rhetorical gaps without composing the final argument. Teacher feedback remains essential when the issue involves disciplinary validity, source interpretation, conceptual precision, or the relationship between evidence and claim.

4.4. Learner Engagement, Trust, and Feedback Literacy

The effect of AI feedback is mediated by learner engagement. Automated feedback is not pedagogically effective merely because it is displayed on screen. Learners must notice it, interpret it, compare it with their communicative intention, decide whether it is valid, and implement or reject it. Koltovskaia's and Ranalli's studies show that differences in trust, proficiency, and cognitive engagement shape how learners respond to automated suggestions [3, 4]. This means that two learners using the same tool can experience very different learning outcomes.

Feedback literacy is therefore a necessary component of AI literacy. In academic writing, feedback-literate learners should be able to classify suggestions as grammatical, lexical, rhetorical, stylistic, evidential, or structural; distinguish correction from preference; recognize when the system lacks context; and justify final revisions in their own words. A useful classroom practice is to require a revision log with three decisions—accepted, modified, rejected—plus a short justification. This simple procedure converts passive acceptance into explicit evaluation.

Critical engagement also protects learner autonomy. If AI feedback is used after an independent first draft, learners maintain ownership of idea generation and initial organization. If the tool is introduced before learners have attempted the task, the system may shape not only wording but also the conceptual direction of the text. The timing of AI intervention is therefore part of pedagogy: feedback should generally follow learner production rather than replace it.

4.5. The Hybrid AI–Teacher Feedback Model

The strongest emerging pattern in current research is the value of hybrid feedback. Han and Li show how teachers can use ChatGPT to expand the amount and specificity of feedback while retaining professional judgment over what learners actually receive [10]. Asadi, Ebadi, and Mohammadi report stronger argumentative-writing development when ChatGPT feedback was integrated with teacher feedback than when learners received teacher feedback alone [12]. At the meta-analytic level, Luo and Zhan likewise found that AI feedback was most effective within a hybrid-intelligence configuration, especially when combined with teacher feedback [14].

The two feedback sources should not perform identical functions. AI is well suited to high-frequency, low-stakes, immediately revisable problems such as grammar, mechanics, basic cohesion, alternative wording, and repeated practice. Teachers are better positioned to interpret learner intention, discipline-specific argumentation, source use, genre expectations, ethical authorship, and patterns of development across assignments. The optimal model is therefore complementary rather than competitive: AI increases feedback availability, while teachers provide contextual judgment and developmental direction.

Table 2. Selected empirical evidence on AI-assisted feedback and EFL/ESL writing

Study	Context/sample	Feedback mode	Reported pattern	Applied-linguistic implication
Koltovskaia (2020) [3]	Two college L2 writers	Grammarly AWCF	Different levels of cognitive engagement and reliance	Feedback uptake depends on learner evaluation, not tool output alone
Mahapatra (2024) [9]	Tertiary ESL learners	ChatGPT formative feedback	Positive impact on academic writing and positive learner perceptions	Training is necessary for productive feedback use
Han & Li (2024) [10]	102 tertiary EFL students; 4 instructors	ChatGPT-supported teacher feedback	Broad error/rhetorical feedback and stronger incorporation in revision	Teacher mediation can convert AI output into pedagogically contextualized feedback
Rahimi et al. (2025) [11]	Two classes EFL	Electronic AWCF vs. non-electronic WCF	Benefits across multiple academic-writing dimensions	AI feedback operates within a wider activity system
Asadi et al. (2025) [12]	68 intermediate EFL learners; 8 teachers	ChatGPT + teacher vs. teacher only	Combined condition improved argumentative writing more strongly	Hybrid feedback is a promising instructional configuration
Luo & Zhan (2026) [14]	43 studies; 234 effect sizes	AI feedback meta-analysis	Moderate overall effect; stronger with	Human–AI complementarity

Study	Context/sample	Feedback mode	Reported pattern	Applied-linguistic implication
			human feedback	is a key moderator
Qosimov et al. (2026) [16]	351 students EFL in Uzbekistan	ChatGPT/Grammarly/QuillBot use	Surface-language gains alongside concerns about reasoning/originality	Textual improvement should be separated from independent competence

4.6. Risks, Ethics, and Assessment Validity

AI-assisted feedback introduces several risks that must be addressed explicitly in academic-writing instruction. First, feedback can be inaccurate or rhetorically inappropriate. Automated systems may overcorrect acceptable variation, misunderstand technical terminology, or privilege generic prose over disciplinary style. Second, generative systems can blur the distinction between feedback and authorship. If learners submit AI-generated passages as their own without transparent authorization, the assessment may no longer measure the intended writing construct.

Third, dependence on AI can create a performance–competence gap. A learner may submit a grammatically sophisticated text while remaining unable to produce comparable language independently. This is particularly important when course outcomes include autonomous writing under examination, research, or professional conditions. Assessment systems should therefore distinguish between assisted drafting and independent performance. One practical solution is to combine AI-permitted coursework with short unaided writing tasks, oral explanation of revision choices, and process evidence such as draft histories or revision logs.

Fourth, privacy and data governance require attention. Academic drafts may contain personal information, unpublished research, or institutionally sensitive material. Students need explicit guidance on what types of text can be entered into external AI systems. Ethical AI integration is therefore not only a question of plagiarism; it includes privacy, transparency, attribution, fairness of access, and the learner's right to understand how technology is being used in assessment.

Table 3. Proposed five-stage AI-assisted feedback cycle for EFL academic writing

Stage	Learner action	AI role	Teacher role	Developmental objective
1. Independent drafting	Produce an initial text without AI rewriting	No generation or only task clarification	Set genre/task expectations	Preserve authorship and diagnose authentic ability
2. Targeted consultation	Ask focused questions about identified problems	Provide diagnosis, explanations, alternatives	Teach prompt/feedback literacy	Increase noticing and metalinguistic awareness
3. Critical	Compare	Respond to	Model	Develop

Stage	Learner action	AI role	Teacher role	Developmental objective
evaluation	suggestions with meaning and evidence	follow-up questions	acceptance/rejection criteria	evaluative judgment
4. Revision	Rewrite using justified decisions	Support iterative checking	Focus on higher-order rhetoric and discipline	Integrate form, meaning, and genre
5. Reflective verification	Record each decision—accept, modify, reject—and give a reason	Optional final language check	Review learning and patterns transfer	Promote self-regulation and future independent writing

5. DISCUSSION

The reviewed evidence supports a balanced interpretation of AI-assisted feedback. AI is neither simply an error-correction device nor a replacement writing tutor. Its main pedagogical contribution lies in increasing the frequency, immediacy, and individualization of feedback, especially during drafting and revision. This contribution is particularly relevant in EFL settings where teachers must respond to large numbers of texts and learners need repeated exposure to language-form feedback.

At the same time, writing development should be defined as more than the production of a cleaner final draft. Academic writing includes the capacity to formulate a claim, establish relationships among sources, make warranted inferences, control stance, organize disciplinary knowledge, and revise independently. The distinction between product quality and writer development explains why some AI-assisted studies report strong surface-level gains while concerns remain about argumentation, originality, and cognitive independence [15, 16]. A pedagogically responsible system must therefore evaluate both what happens to the text and what happens to the writer.

The proposed five-stage cycle operationalizes this distinction. Independent drafting establishes an authentic baseline; targeted consultation turns AI into a feedback resource; critical evaluation requires the learner to judge suggestions; revision keeps authorship with the learner; and reflective verification converts individual corrections into explicit learning. The model is consistent with process writing because feedback is embedded between drafts, with sociocultural views of mediation because AI functions as a tool within guided activity, and with feedback-literacy approaches because learners must interpret and act on feedback rather than receive it passively.

The model also clarifies the teacher's role. The growth of AI does not eliminate teacher feedback; it changes the allocation of feedback labour. Teachers can reduce time spent repeatedly marking local errors and redirect attention toward rhetorical purpose, disciplinary conventions, source integration, argument quality, and patterns of learner development. Hybrid feedback is therefore not a compromise between traditional and technological approaches but a principled distribution of functions according to the strengths and limitations of each source.

For the Uzbek EFL context, this approach is especially relevant. Learners may use Uzbek, Russian, and English across academic and digital environments, while institutional norms for AI use are still developing. Recent evidence from Uzbekistan demonstrates both the usefulness of AI support and the need to protect independent reasoning [16]. Universities should therefore move beyond binary policies of unrestricted use versus prohibition and specify which forms of AI assistance are permitted at different stages of the writing process. Transparent policies should be paired with explicit instruction in prompting, verification, citation, privacy, and revision accountability.

Several limitations of the present article should be noted. The reviewed research uses different AI tools, proficiency levels, genres, durations, and scoring procedures, which limits direct comparison. AI systems also change rapidly, meaning that findings associated with one version of a tool may not fully generalize to later versions. Finally, short-term improvements in revised texts do not necessarily demonstrate long-term transfer to unaided writing. Future research should therefore include delayed post-tests, longitudinal writing portfolios, process data, and comparisons between assisted and independent performance.

6. CONCLUSION AND RECOMMENDATIONS

AI-assisted feedback has become a significant component of contemporary EFL academic writing pedagogy. The available evidence indicates that it can improve the speed and accessibility of feedback, support grammatical accuracy and lexical revision, increase opportunities for iterative drafting, and contribute to learner noticing and self-editing. However, its effects are not equally strong across all dimensions of writing. Higher-order outcomes-especially argumentation, disciplinary voice, source-based reasoning, and originality-remain more dependent on learner judgment, task design, and teacher mediation.

The central pedagogical conclusion is that AI should function as a formative scaffold rather than an autonomous author or final evaluator. Effective use requires learners to produce an initial draft, request targeted feedback, evaluate each suggestion critically, revise in their own words, and reflect on what has been learned. Teachers should retain responsibility for rhetorical and disciplinary guidance, while institutions should establish transparent rules for authorized AI use, disclosure, privacy, and assessment.

For practical implementation, EFL writing courses should integrate AI feedback literacy into the curriculum, require revision evidence, combine AI-supported assignments with unaided writing, and use hybrid AI–teacher feedback rather than relying on one source alone. Future empirical work in Uzbekistan should test these principles with controlled classroom studies, longitudinal designs, and discipline-specific academic genres. Such research should measure not only improvements in submitted texts but also the transfer of writing knowledge to subsequent independent performance.

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