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Review

Generative AI in University EFL Writing: Tensions among Efficiency, Language Proficiency, and Learner Agency

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Abstract: The rapid diffusion of generative artificial intelligence (GenAI) is reshaping university-level English writing by lowering the linguistic and cognitive costs of text production. Large language models can generate and revise prose, suggest vocabulary, explain grammatical problems, reorganize paragraphs, and provide immediate feedback. These affordances can improve writing efficiency and the surface quality of students' texts, particularly when learners face linguistic constraints or limited access to individualized feedback. Yet the educational value of GenAI cannot be reduced to technological empowerment. When AI performs ideation, language production, organization, and revision on behalf of learners, opportunities for language output and cognitive engagement may be reduced. This paper examines the resulting tension among writing efficiency, language proficiency, and learner agency through the lenses of second language acquisition, cognitive load, constructivist learning, and self-regulated learning. It argues that the central issue is not whether students use AI, but how responsibility for thinking and decision-making is distributed between students and AI. The paper proposes a conceptual model in which the depth of AI involvement interacts with learner agency to shape learning outcomes. The most productive condition is a collaborative development zone in which students retain ownership of goals, arguments, and final judgments while using AI as a linguistic and cognitive scaffold. The paper further argues for process-based assessment, critical AI literacy, staged AI access, and a redefinition of EFL writing competence. In an AI-mediated environment, effective writing competence extends beyond language generation to include evaluation, strategic collaboration, and meaning reconstruction.

Keywords: generative artificial intelligence; university EFL writing; writing efficiency; language proficiency; learner agency; human-AI collaboration

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1. Introduction

Generative artificial intelligence has entered higher education with unusual speed. Systems such as ChatGPT, Claude, and Gemini can interpret natural-language instructions and produce extended texts with a degree of grammatical and rhetorical coherence that was previously unavailable in ordinary educational software. Their emergence has therefore moved AI-assisted writing from the margins of language learning to a central issue in contemporary EFL pedagogy. Research on AI in higher education has documented both pedagogical opportunities and challenges for teaching, assessment, academic integrity, and the changing role of educators. Generative artificial intelligence (GenAI) is rapidly reshaping university English education, particularly the teaching and learning of EFL writing [1, 2, 3].

For university EFL learners, writing has long been constrained by limited vocabulary, incomplete grammatical knowledge, difficulty with discourse organization, and delayed access to individualized feedback. GenAI can intervene at several points in this process. Students can request lexical alternatives, sentence reformulation, explanations of grammatical errors, paragraph restructuring, feedback on coherence, or even a complete draft. Such affordances can reduce the immediate linguistic burden of writing and allow

learners to complete tasks more quickly. From the perspective of the final product, AI-assisted writing may therefore appear to offer a straightforward response to persistent problems in EFL instruction. AI systems can provide immediate feedback, generate language, and support multiple stages of the writing process, thereby potentially improving the efficiency of EFL writing [1, 4, 5].

The educational picture changes, however, when attention shifts from the final text to the process through which that text is produced. Writing is not merely a matter of converting ideas into grammatically acceptable sentences. It requires learners to retrieve linguistic resources, formulate and organize ideas, construct arguments, monitor their choices, and revise their own output. In second language acquisition research, output is not simply evidence of learning; it can itself contribute to learning by making gaps in learners' linguistic knowledge more noticeable and by prompting them to test and modify their hypotheses about language. If GenAI routinely performs these activities for learners, a polished text may be produced without an equivalent increase in the learner's independent writing ability.

This paper therefore approaches GenAI from a problem-oriented rather than a technology-oriented perspective. The central question is not whether artificial intelligence can "empower" English learning in the abstract, but under what conditions AI-assisted writing supports learning and under what conditions it may displace learning. Three questions guide the discussion: (1) How does GenAI improve efficiency in university EFL writing? (2) How can extensive AI involvement create a gap between textual performance and underlying language proficiency? and (3) How should learner agency be protected and reconceptualized in human-AI collaborative writing? However, increased efficiency in producing AI-assisted texts does not necessarily imply equivalent development of learners' writing competence. This raises a central question concerning how AI involvement may reshape learners' engagement with the writing process [5].

Figure 1 summarizes the paper's central premise. GenAI can simultaneously generate meaningful benefits and educational risks. Its consequences are not determined by the technology alone; rather, they depend on how deeply AI becomes involved in writing and whether learners continue to exercise agency over goals, content, evaluation, and revision. The interaction among efficiency, competence development, and learner agency consequently provides the organizing framework for the paper.

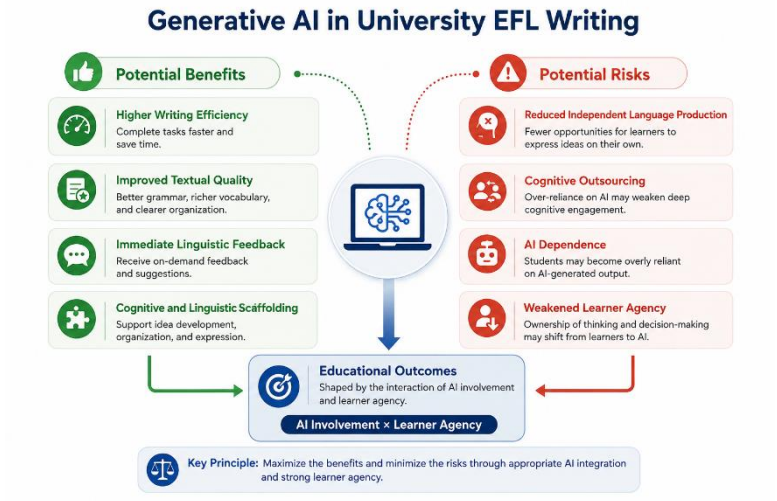

Figure 1. The Double-Edged Effects of Generative AI in University EFL Writing

2. Mechanisms through Which GenAI Supports University EFL Writing

GenAI should not be conceptualized merely as an automated text generator. In university EFL writing, its functions can be grouped into three interconnected forms of support: linguistic support, cognitive support, and process support. Together, these

functions can reduce barriers to language production, assist with higher-order organization, and create opportunities for iterative feedback.

2.1. Reducing the Linguistic Cost of Writing

In conventional EFL writing, learners must transform intentions into English through their own lexical, grammatical, and syntactic resources. For students whose proficiency is still developing, linguistic encoding can consume a substantial proportion of available cognitive resources. A learner may know what to say but lack the vocabulary or sentence patterns needed to express it efficiently. GenAI can temporarily reduce this bottleneck by suggesting expressions, comparing alternative formulations, identifying grammatical problems, and explaining why a particular form may be more appropriate.

This function can be interpreted through cognitive load theory. The theory holds that working memory has limited capacity and that excessive processing demands can interfere with learning. In EFL writing, idea generation, argument organization, and linguistic encoding compete for that limited capacity. If AI provides assistance with relatively low-level linguistic processing, students may be able to allocate more attention to content and rhetorical decisions. The potential benefit, however, depends on whether linguistic support remains a scaffold or becomes a substitute for the learner's own production.

Another important affordance is immediacy. Teacher feedback in large university classes is inevitably constrained by time and workload. GenAI can provide rapid responses to successive versions of a text, creating a potentially productive cycle of writing, feedback, revision, and rewriting [6]. Generative AI can reduce the linguistic barriers involved in EFL writing by providing vocabulary suggestions, grammatical correction, sentence reformulation, and stylistic support [1, 2]. Such immediacy does not guarantee learning, but it creates conditions under which more frequent practice and revision become feasible.

As shown in Figure 2, linguistic, cognitive, and process support are mutually reinforcing. Linguistic support lowers the threshold for expression; cognitive support assists students in developing and organizing ideas; process support makes repeated revision more accessible. The educational question is therefore how to connect these affordances to activities that remain cognitively meaningful for the learner.

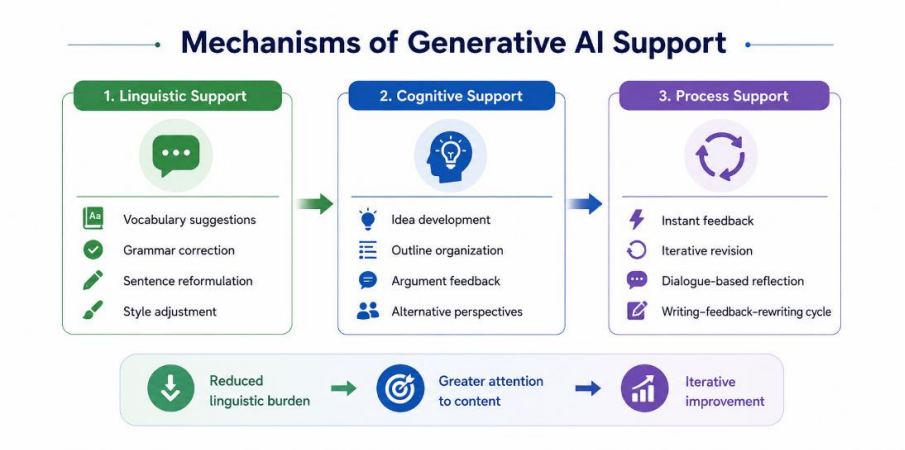

Figure 2. Mechanisms through Which Generative AI Supports University EFL Writing

2.2. From Error Correction to Process-Oriented Writing Support

The scope of GenAI assistance distinguishes it from many conventional writing-support tools. Spell-checkers and grammar checkers typically identify local errors, whereas large language models can comment on discourse-level organization, argumentation, tone, audience, and style. AI can also participate in extended dialogue, allowing learners to request explanations, compare alternatives, and reconsider earlier choices. In this sense, AI is moving from a correction device toward a potential writing

partner. The role of AI in EFL writing is increasingly extending beyond error correction toward interactive support throughout the writing process. ChatGPT-based feedback and human–AI collaborative writing have been explored as ways of involving AI in feedback, revision, and writing engagement [4, 5].

Yet assistance and learning should not be treated as equivalent. A system may successfully revise a sentence without teaching the learner how to recognize the same problem independently. If a student accepts an AI-generated revision without examining the reason for the change, the immediate result is textual optimization rather than demonstrated learning. GenAI can thus operate either as a cognitive scaffold or as a cognitive substitute. The decisive factor is the distribution of responsibility: learners must remain responsible for deciding what they mean, evaluating alternatives, and determining what ultimately enters the final text.

3. Tensions between Writing Efficiency and Language Development

3.1. Textual Quality Is Not Equivalent to Language Proficiency

One of the most visible effects of GenAI is the improvement of the final written product. However, a distinction must be made between the quality of a text and the proficiency of the writer who submits it. A student with limited English proficiency may use AI to produce a fluent, coherent, and lexically sophisticated essay. The essay may deserve a high rating as a text, but its quality cannot by itself demonstrate that the student possesses the linguistic resources necessary to reproduce that performance independently.

This distinction is consistent with the learning role attributed to output in second language acquisition. Producing language can push learners to notice gaps between what they want to say and what they can currently say. Through attempting to express meaning, receiving feedback, and modifying output, learners may develop greater control over the target language. When AI replaces a substantial part of this process, students may obtain a correct answer while experiencing fewer occasions to identify and solve their own linguistic problems.

A possible consequence is a text–proficiency gap: students' submitted texts may improve more rapidly than their ability to produce comparable texts without assistance. The concept should not be interpreted as evidence that AI inevitably harms language learning. Rather, it indicates that final-product assessment becomes less sufficient as a proxy for underlying proficiency when the conditions of text production have changed (As shown in Table 1).

Table 1. Key Differences between Conventional and AI-mediated EFL Writing

Dimension	Conventional writing	AI-mediated writing	Potential concern
Language production	Primarily produced by the student	Partly or extensively generated by AI	Reduced opportunities for independent output
Cognitive processing	Planning and revision are largely student-driven	Rapid generation and restructuring are possible	Cognitive processes may be outsourced
Feedback	Often limited by teacher time and class size	Immediate AI feedback is available	Accuracy and reliability require verification
Core competence	Emphasis on language generation	Generation, evaluation, and integration	The competence profile is changing
Learner agency	Student-centered	Students may become dependent on AI	Autonomy and motivation may weaken

3.2. From Language Generation to Critical Evaluation

The rise of GenAI does not make conventional language competence obsolete. Instead, it changes the demands placed on writers. In a pre-AI environment, students primarily need to answer the question, "How can I express this idea in English?" In an AI-mediated environment, they must also ask, "Is this AI-generated expression accurate?", "Is it appropriate for this audience and context?", and "Does the argument actually make sense?"

Accordingly, AI-era EFL writing competence can be understood as a layered construct. The first layer is basic language production competence, including vocabulary, grammar, syntax, and discourse knowledge. The second is text evaluation competence, involving judgments about accuracy, coherence, rhetorical appropriateness, and logical validity. The third is AI collaboration competence, including strategic prompting, comparison of alternatives, and selective integration. The fourth is meaning reconstruction, through which learners reshape AI output to reflect their own purposes, evidence, and positions.

Figure 3 emphasizes that AI does not eliminate the importance of language knowledge; it adds new layers of competence. Language production remains foundational, while evaluation, strategic collaboration, and meaning reconstruction become increasingly important. In particular, meaning reconstruction requires learners to move beyond acceptance of AI output and actively transform it.

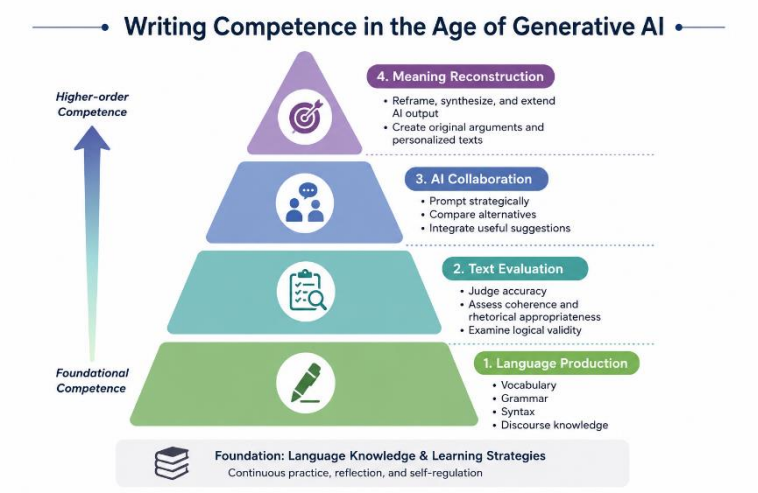

Figure 3. Writing Competence in the Age of Generative AI

4. GenAI and the Tension Surrounding Learner Agency

4.1. From Author to Collaborative Writer—and Potentially to Prompt Operator

Learner agency concerns students' capacity to act intentionally, make choices, regulate their learning, and take responsibility for outcomes. From a constructivist perspective, learning is not simply the transmission of information from teacher or technology to student; it is constructed through active engagement with tasks and social contexts. The arrival of GenAI changes the relationship between the learner and the writing task because part of the activity can now be delegated to a non-human agent. The introduction of generative AI may reshape the role of learners from independent authors to collaborative writers and, in some cases, to operators who primarily generate prompts and select AI-produced outputs [5, 7].

A conventional writing sequence might involve selecting a topic, gathering material, developing a position, organizing an argument, producing language, and revising the text. An AI-dependent sequence can be compressed into entering a prompt, generating a draft, making minor edits, and submitting it. The difference is not merely one of speed. It concerns who performs the intellectual work.

When students delegate ideation, organization, language production, and revision to AI, they may gradually move from authors to selectors of machine-generated text. A more educationally productive role is that of the collaborative writer: the student retains ownership of goals, arguments, and final judgments while AI supplies targeted linguistic or cognitive assistance.

Figure 4 distinguishes three possible roles. The author remains responsible for the whole writing process. The collaborative writer uses AI strategically while retaining intellectual ownership. The prompt operator relies on AI for core cognitive and linguistic tasks and contributes mainly by selecting or lightly editing generated output. The recommended trajectory is therefore not a movement toward maximum AI delegation, but toward deliberate collaboration.

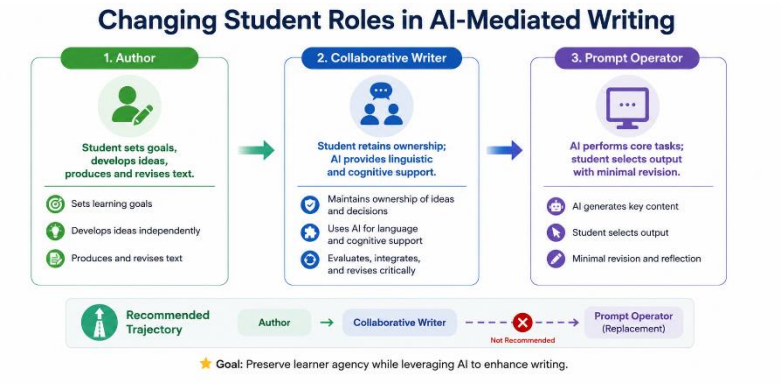

Figure 4. Changing Student Roles in AI-mediated Writing

4.2. AI Dependence and the Weakening of Learner Agency

Learner agency is closely related to self-regulated learning. It is commonly conceptualized in terms of processes such as goal setting, strategic action, self-monitoring, and self-evaluation. In AI-mediated writing, students who decide when and why to use AI and who critically evaluate its suggestions can use the technology as a support for self-regulation. Students who automatically turn to AI whenever they encounter difficulty may gradually outsource these regulatory functions. Excessive reliance on AI may reduce learners' opportunities to make independent decisions and engage actively with writing tasks [4, 7, 8]. This concern is particularly relevant to learner autonomy and agency, because writing development requires learners to formulate intentions, make linguistic choices, evaluate alternatives, and take responsibility for the final text.

Consider a student who does not know how to express a particular idea in English. A learner with stronger agency may first attempt an independent formulation and then ask AI to identify weaknesses. A dependent learner may immediately ask AI to produce the expression. Both students use the same technology, but the learning opportunities differ substantially. The critical question is therefore not whether AI is present, but whether learners retain control over learning goals, substantive content, and final judgments.

4.3. A Model of AI Involvement and Learning Development

The preceding analysis suggests that the relationship between AI involvement and learning outcomes is not linear. Greater AI involvement may improve immediate performance while simultaneously reducing opportunities for independent production if learner agency is not maintained. Learner agency therefore acts as a critical condition through which technological affordances are converted—or fail to be converted—into learning.

Figure 5 uses the depth of AI involvement as the horizontal dimension and learner agency as the vertical dimension. The autonomous development zone represents relatively limited AI involvement combined with high learner agency. The collaborative development zone represents the preferred condition: students retain substantial control

while using AI as a linguistic and cognitive scaffold. The replacement-dependent zone describes extensive AI involvement accompanied by low learner agency; efficiency may be high, but learning gains may be constrained. The low-efficiency learning zone represents insufficient support combined with weak self-regulation. Existing research suggests that the educational value of AI cannot be determined simply by whether learners use or do not use AI. Instead, outcomes may depend on the depth of AI involvement and the extent to which learners retain responsibility for learning and writing decisions [4, 5, 7]. Building on these insights, this paper proposes an AI Involvement–Learning Development Model.

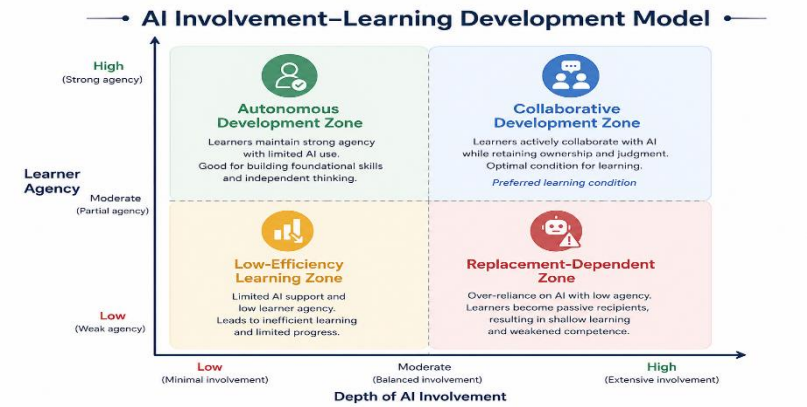

Figure 5. AI Involvement–learning Development Model

The model yields a practical proposition: university EFL instruction should not seek to maximize AI involvement. Instead, it should design tasks that move students toward the collaborative development zone. This proposition also provides a conceptual distinction between technological empowerment and educational value. AI becomes educationally valuable only when its affordances are mediated by learner agency and meaningful cognitive engagement.

5. Pedagogical Implications for Human–AI Collaborative EFL Writing

5.1. From Product-Oriented to Process-Based Assessment

The conventional model of collecting a final essay and assigning a score is increasingly problematic when students have access to powerful generative systems. Assessment should therefore provide evidence of how a text was developed. A practical design is to require students to submit an initial draft, an AI-use record, a revision commentary, a final draft, and a reflective report. AI-mediated writing requires assessment practices that pay greater attention to the writing process rather than the final product alone [2, 4, 5].

The AI-use record is particularly important. Students can be asked to identify which AI functions they used, why they used them, which suggestions they accepted or rejected, and how those decisions affected the final text. Such documentation makes students' reasoning more visible and shifts assessment from "How polished is the final essay?" toward "What did the learner actually do and learn during the writing process?"

5.2. Developing Critical AI Literacy

A blanket prohibition on AI use is unlikely to remain a sustainable response to the spread of generative systems. A more constructive approach is to teach students how to use AI critically and strategically. Four dimensions are particularly relevant to EFL writing: prompt-design competence, verification competence, linguistic judgment, and content reconstruction. Rather than simply encouraging students to use AI tools, universities should develop students' ability to understand, evaluate, and critically engage with AI-generated content [1, 4, 9].

Prompt-design competence enables students to formulate precise requests and obtain useful assistance. Verification competence is necessary because AI systems can generate inaccurate information or unsupported claims. Linguistic judgment allows learners to assess whether an expression is grammatical, contextually appropriate, and rhetorically effective. Content reconstruction enables students to transform AI output into writing that reflects their own ideas and purposes. AI literacy should therefore be treated as an emerging component of contemporary language literacy rather than as a purely technical skill.

5.3. Reserving Core Writing Tasks for Students

Human–AI collaboration does not require every stage of writing to be open to AI assistance. Teachers can distinguish between AI-restricted and AI-permitted stages. Topic selection, formulation of a central claim, and an initial free-writing exercise can be completed independently. AI can then be introduced for targeted feedback on language or organization. During final revision, students can be required to explain major changes and identify which AI suggestions they rejected. Some core writing tasks should retain substantial opportunities for independent student production in order to preserve learner agency and meaningful engagement with language [5, 7, 10].

This staged arrangement preserves essential opportunities for language production and cognitive processing while still allowing students to benefit from AI-supported efficiency. It also creates clearer boundaries for academic integrity because the conditions under which AI was used become explicit rather than hidden.

5.4. Redefining University EFL Writing Competence

The emergence of GenAI does not make English writing unnecessary. It changes the question that writing instruction should address. Rather than asking whether students can produce a text that resembles proficient English, educators need to ask whether students can formulate meaningful positions, evaluate language and information, collaborate strategically with AI, and reconstruct AI output in ways that serve their own communicative purposes.

Traditional dimensions of writing competence—grammatical accuracy, lexical appropriateness, coherence, and organization—remain important. They should, however, be complemented by critical thinking, textual evaluation, intercultural awareness, AI literacy, and human–AI collaboration. The goal is not to teach students to "write like AI," but to enable them to evaluate AI, use it strategically, and produce meanings that are not simply inherited from the machine.

Figure 6 translates the conceptual argument into an instructional sequence. Teachers first define AI-restricted and AI-permitted stages. Students then develop prompting, verification, linguistic judgment, and reconstruction skills. Collaborative writing proceeds through independent drafting, AI-assisted feedback, selective adoption of suggestions, and iterative revision. Finally, process-based assessment evaluates both the final product and the learner's contribution to producing it.

Figure 6. A Process Model for human–AI Collaborative EFL Writing Instruction

6. Conclusion

Generative AI is changing both the technological environment of university EFL writing and the meaning of writing competence itself. Its capacity to reduce linguistic effort, accelerate text production, and provide immediate individualized feedback represents a genuine pedagogical opportunity. Yet efficiency should not be confused with learning, and the quality of an AI-assisted text should not automatically be interpreted as evidence of the writer's underlying proficiency.

When AI takes over ideation, language production, organization, and revision, students may submit increasingly sophisticated texts while experiencing fewer opportunities for the language output and cognitive engagement through which writing competence develops. A text–proficiency gap may therefore emerge. At the same time, habitual dependence on AI may weaken self-monitoring and decision-making, particularly when learners no longer determine what to say, how to say it, or whether the generated content is appropriate.

The educational value of GenAI should consequently be judged by its contribution to learners' capabilities rather than by the polish of the texts it produces. AI is most educationally productive when it helps learners identify problems, evaluate alternatives, organize ideas, revise language, and construct meaning. It becomes less productive when it performs these activities on the learner's behalf.

The central implication is that university EFL writing pedagogy needs a new balance between technological efficiency and learner ownership. The objective should not be to minimize AI use, nor to maximize it, but to design forms of use that preserve students' responsibility for goals, arguments, and final judgments. The AI involvement–learning development model proposed in this paper suggests that the most desirable condition is a collaborative development zone characterized by substantial AI support and sustained learner agency.

Ultimately, the key question for AI-mediated EFL writing is not whether students should use artificial intelligence, but how they can use it without allowing artificial intelligence to replace learning itself. This requires a shift from exclusive attention to final textual outcomes toward greater attention to writing processes, learner agency, critical AI literacy, and the ability to collaborate with—and critically evaluate—generative systems.

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