

AI: A Digital Collaborator in EFL Writing Pedagogy

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Abstract

In the AI-driven era, digital transformation is ubiquitous in all fields. Consequently, conventional instruction has come into question in the academic realm. Recently, a significant shift in pedagogy toward artificial intelligence in education (AIED) has been evident in all disciplines, including writing pedagogy. However, its efficacy remains a controversial topic among researchers and educators. In response to this issue, the present article aims to investigate three AI-integrated pedagogical frameworks: a hybrid process-based writing approach, an AI-based post-process writing approach, and a sociotechnical writing approach embracing the process-based writing approach to discern how this cutting-edge technology is driven in pedagogical practices in EFL writing pedagogy. The results indicated that each AI-augmented writing pedagogical framework has its unique characteristics. Productively and ethically applied to a particular EFL writing context, such AI-powered writing instructional approaches require certain pedagogical framework adjustment. Hence, the new AI-assisted three-phase process-based writing pedagogy is proposed in this article for a more practical and ethical pedagogical implication in writing pedagogy, specifically in the EFL writing academic context.

Keywords: artificial intelligence (AI), artificial intelligence in education (AIED), AI-assisted writing pedagogy, EFL writing pedagogy, AI-assisted writing tools

Introduction

In the current age, artificial intelligence (AI) attracts attention in all fields though it is still questionable how it is effectively and ethically integrated to produce positive results (Bearman & Ajjawi, 2023). Its prevalent and apparent role is also gaining attention in the academic realm as multiple research topics of AI on language education capture researchers' interests (Zhang, 2024). This technology is empirically regarded as an instructional supplementary tool (Zhang, 2024) and causes a profound effect on second language writing (Roa & Halim, 2024). In particular, it is also growing in popularity in EFL writing pedagogy (Marzuki et al., 2023). However, while it is claimed to restrict learning, critical thinking, and creativity, its effective affordance for language teaching and learning is still recognizable (Gill et al., 2024; Hockly, 2023; Ross, 2023; Tseng & Warschauer, 2023). This even sparks more curiosity in its effectiveness in language learning and skill development, including EFL writing pedagogy (Zhang, 2024). The research on AI technologies, such as generative AI, Grammarly, Google Docs, Turnitin, etc. in education, particularly in EFL writing instruction is still in the early stages where more practical pedagogical implications of these AI tools need to be reconfigured with a range of distinct and specific teaching methodologies for more productive and effective learning experience and writing skill enhancement (Zhang, 2024). This calls for the practical, yet effective and responsible utilization of AI by the digitally literate learners and teachers in the academic context (Gutiérrez, 2023). Thus, the present article aims to explore the AI-integrated writing pedagogy based on theoretically diverse frameworks. Also, it proposes how AI can be more effectively and ethically driven through a more specific

writing pedagogical approach, especially in EFL writing pedagogy.

AI in EFL Writing Pedagogy

The starring role of AI in writing pedagogy, especially in EFL writing instruction is ubiquitous nowadays. Its profound impact on language learning and composition instruction like being an effective and instant scaffolding tool has been demonstrated (Noonen & Baek, 2024). An increasing volume of research has validated its worth in pedagogical implications. For instance, it promotes personalized learning experience, provides tailored feedback, and offers grammatical, paraphrasing, and plagiarism tools to enhance students' language learning and writing performance (Roa & Halim, 2024; Zhang, 2024). Nonetheless, EFL students' writing performance is normally unsatisfactory as the students usually translate from L1 into L2 with the supplementary use of online tools like dictionaries and translation applications instead of focusing on other complex features like organization, revision, etc. to produce well-organized and well-polished writing products (Gayed et al., 2022). Furthermore, previous studies usually focus on the impact of AI writing tools on students' writing improvement in terms of grammar and syntax and ignore other aspects contributing to good writing, such as content and organization. In fact, AI writing tools like Chat-GPT, WordTune, Essay Writer, Copy.ai, Quillbot, Jenni, and Paperpal can help improve these writing features (Marzuki et al., 2023). Once these AI technologies are employed in pedagogy, they support traditional language teaching and learning and vice versa (Gutiérrez, 2023). In such an educational context, the pedagogical role of AI shifts from an assessment tool

in the conventional pedagogy to a language learning and skill development tool, an AI-assisted teaching and learning tool, in artificial intelligence in education (AIED) (Gayed et al., 2022). Nevertheless, students' writing experience does not change to simply editing their work in AI-integrated writing pedagogy as many writing educators concern (Graham, 2023). Indeed, such a cutting-edge technology plays multidimensional roles, for instance, input formulation, output customization, verification, and revision in writing pedagogy.

■ **AI-Integrated Writing Pedagogical Approaches**

According to the three AI-driven writing pedagogical approaches: a hybrid process-based writing approach (Zhang, 2024), an AI-based post-process writing approach (Graham, 2023), and a sociotechnical writing approach (Bearman & Ajjawi, 2023), multifaceted functions of AI in writing instruction can be observed as follows.

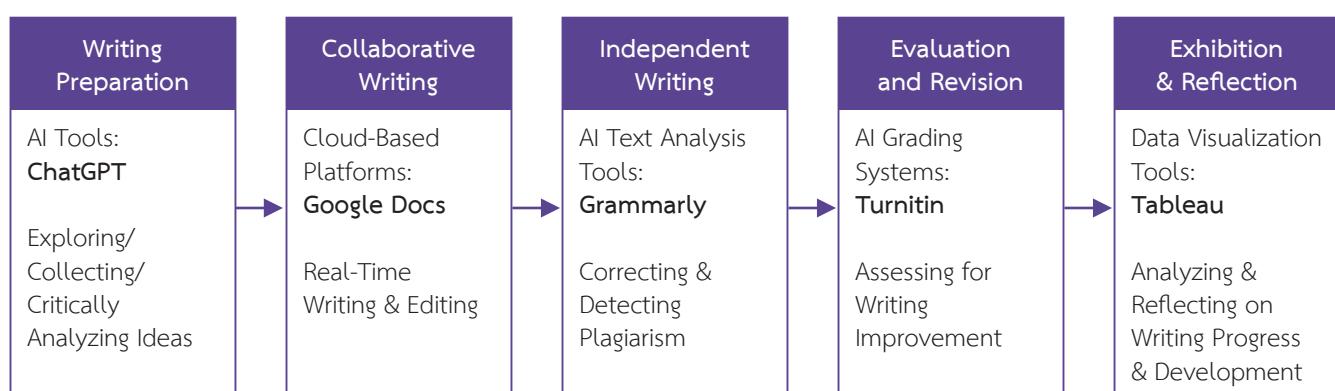
1. A Hybrid Process-Based Writing Approach

In EFL writing pedagogy, a process-based writing

approach is typically applied to writing instead of a product-based writing approach (Murray, 1982). This method emphasizes five stages of the writing process: prewriting, drafting, revising, editing, and publishing to value the process of learning and writing skill development (Murray, 1982). Recently, the blended teaching writing strategies or a hybrid writing pedagogy embracing an integration of AI tools in the traditional writing process have been suggested to foster language learning and skill improvement (Hutson et al., 2024). Such an integration of AI tools into EFL writing instruction was explored in Zhang's study (2024). The study demonstrated how AI tools were regarded as a supplementary tool in traditional writing instruction to enhance EFL students' critical thinking, collaborative skills, and creativity. In so doing, those five steps in the writing process turn into writing preparation, collaborative writing, independent writing, evaluation and revision, and exhibition and reflection (Zhang, 2024) as shown in Figure 1.

Figure 1

A Hybrid Process-Based Writing Approach



Note. The AI tools are integrated into the five steps of EFL process-based writing instruction.

Figure 1 demonstrates a hybrid process-based writing approach. In writing preparation, AI tools such as ChatGPT are used to explore, collect, and analyze ideas or model texts to expand students' understanding and to boost their creativity for their writing. Next, cloud-based platforms like Google Docs can be employed to offer real-time writing and editing to promote collaborative writing among students equipped with AI tools. Regarding independent writing, the application of AI text analysis tools like Grammarly can offer timely linguistic feedback for polishing their work and detect plagiarism. In the evaluation and revision step, students' writing is assessed for more writing improvement through formative diagnostic feedback provided by AI grading systems, namely Turnitin. Finally, their writing progress and development through the writing process can be analyzed and reflect-

ed by data visualization tools, including Tableau. To sum up, the key roles of AI tools supporting language learning and writing skill development can be categorized into five roles as an idea pool tool, an interactive real-time writing tool, a corrective and detective tool, a feedback tool, and a reflective tool based on their functions in the AI-integrated five-stage writing process.

2. An AI-Based Post-Process Writing Approach

Graham (2023), on the contrary, proposes a different theoretical approach: an incorporation of AI usage into post-process writing pedagogy to reinforce the recursive and dialogic nature of the writing process. However, it has remained unpracticed in the field. Based on this concept, AI can be integrated into the four-step recursive and dialogic writing process as illustrated in Figure 2.

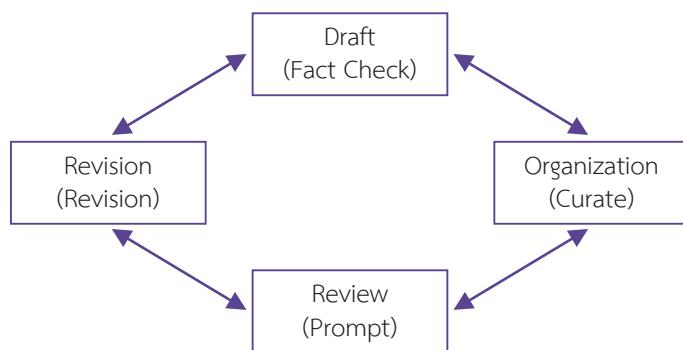
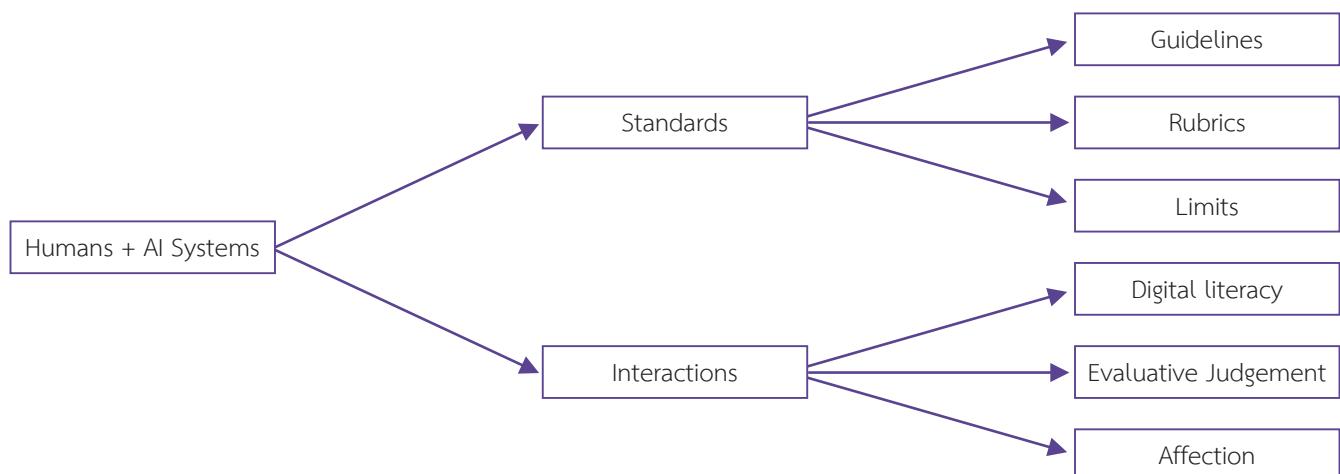
Figure 2*An AI-Based Post-Process Writing Approach*

Figure 2 describes the employment of AI tools in the multidimensional recursive and dialogic post-process writing approach. In such an approach, the four AI-based writing steps involve fact-checking in the drafting step, output curation for writing organization, prompt-engineering in the review process, and revision. Through all the four recursive and dialogic steps, AI, a writing-assisted tool, plays different roles: a verification tool, an organization tool, a review tool, and a revision tool in boosting each writing step in the post-process where revision and rewriting are the key concepts of students' valuable and practical writing experience, resulting in higher quality writing.

3. A Sociotechnical Writing Approach

Another captivating AI-based pedagogical approach is a sociotechnical writing approach based on epistemology and sociomaterial ontology (Bearman & Ajjawi, 2023). It pays no attention to what AI is, or what it could possibly do, but how humans interact with AI. Thus, this pedagogy highlights a context-driven relationship between humans and technology and a significant role of activities through AI systems, entailing two essential main concepts: quality standards and meaningful interactions with AI systems as presented in Figure 3.

Figure 3*A Sociotechnical Writing Approach*

The contextual relationship between humans and AI systems based on two major notions: benchmarks and productive engagement with AI systems according to the sociotechnical writing approach is revealed in Figure 3. The former perception involves disciplinary guidelines, rubrics for ambiguity and complexity, and the limits of the standards. In such a sociotechnical system, students discuss and explore the disciplinary guidelines, take part in designing the more effective rubric for any ambiguous or complex learning situations, portraying standards

formulation engagement, and then recognize the limits of the AI tools through their first two experiences. Reaching such standards based on the disciplinary guidelines, students must realize what their roles and the AI tools' should be in their language learning and skill development, for example. For the latter perception, three notions are emphasized in such a human-machine system: critical digital literacy, evaluative judgment, and affection. In the human-technology interaction, to clarify, students' critical digital literacy, evaluative judgment, and affection

are promoted through the assigned tasks. That means they can do the tasks with the AI systems critically, evaluate the quality of the systems' performance and product, and be aware of their emotions to critically interact with the systems. Accordingly, this approach underscores both teachers and students' AI-driven writing pedagogical practices whereas it balances the reliance on the use of AI in writing pedagogy.

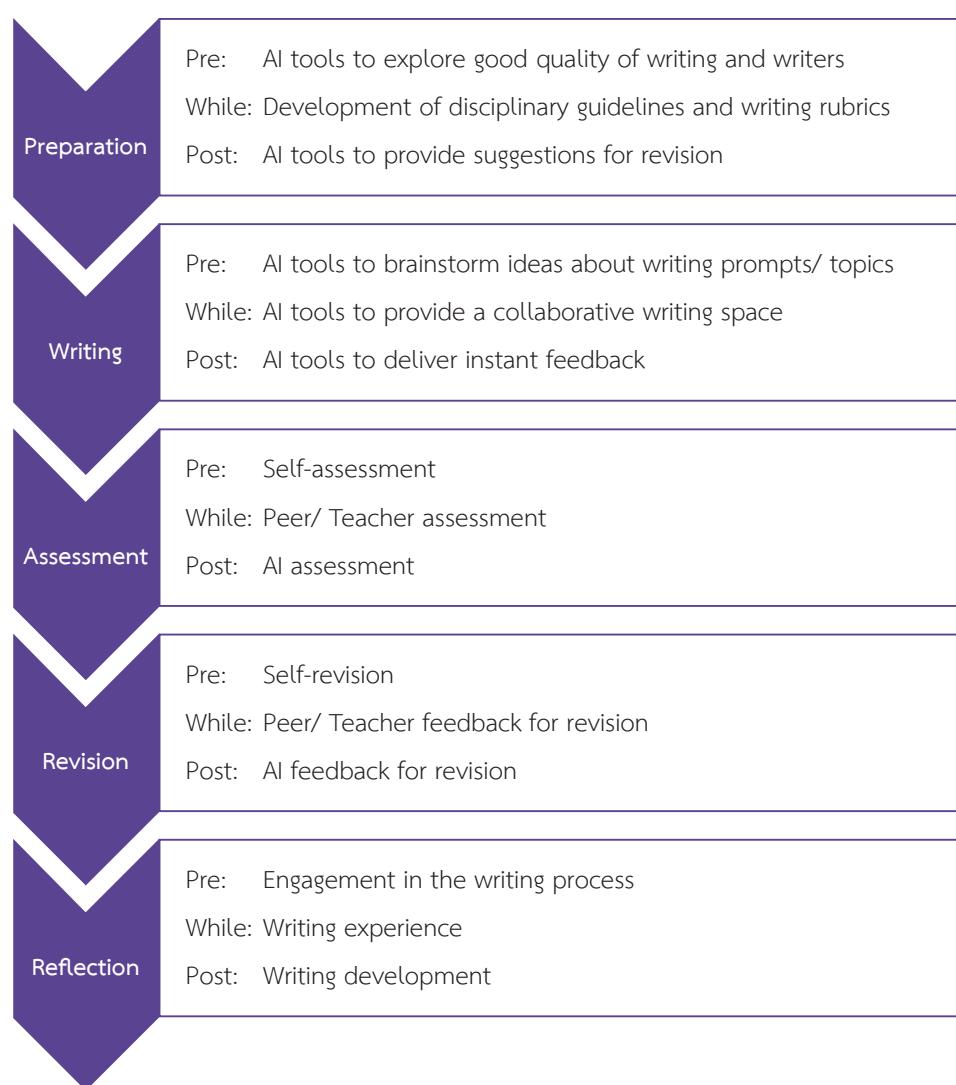
■ The New AI-Assisted Three-Phase Process-Based Approach in EFL Writing Pedagogy

Applied to EFL writing pedagogy, all the afore-

mentioned pedagogical approaches navigate students to quality standards of good writing through productive interactions with AI writing tools to enrich their language learning experience and writing skill development. To achieve such a goal, nonetheless, a practical recommended guideline for teachers is required, so AI can be effectively and ethically adapted to suit a particular educational context (Ramandanis & Xinogalos, 2023). As such, Figure 4 presents a recommended AI-assisted three-phase process-based approach in EFL writing pedagogy based on multidimensional approaches discussed earlier.

Figure 4

The AI-Assisted Three-Phase Process-Based Writing Pedagogy



Note. The AI tools are integrated into the three phases of each writing step in EFL process-based writing pedagogy.

In reference to Figure 4, it suggests how AI can be utilized in three phases of the five-stage process-based writing pedagogy, specifically in EFL writing pedagogy. In the five innovative steps of the writing process, namely preparation, writing, assessment, revision, and reflection,

each step consists of three phases: pre, while, and post. In the first three phases of the preparation step, AI tools such as ChatGPT are used as a search portal tool and an evaluation tool to outline the disciplinary standards and design the writing criteria aligned with good quality

of writing and writers from different sources. These tools are also inspirational tools to help student writers spark more creative ideas to write on the assigned writing topic or the given writing prompt in the first phase of the writing step. AI tools like Google Docs can be a cloud-based writing platform promoting collaborative writing between humans and AI whereas instant feedback, specifically on basic linguistics can be offered by AI in Google Docs in the second phase and the third phase of this step. In the following step, assessment, active cooperation between student writers, their peers, the teacher, and AI tools e.g. Grammarly is required to assess students' writing based on the established criteria in the initial stage to provide the formative diagnostic feedback in all three phases for the revision in the subsequent step. Finally, students are encouraged to reflect on their engagement in the writing process and their writing experience based on their multiple drafts and their final version to observe and identify their strengths and areas for improvement for further writing development in the reflection stage. This can be done

through journal writing with an e-portfolio for the history records of their AI usage via Penzu, My ePortfolio by Google, etc.

■ **AI and Human Roles in the AI-Assisted Three-Phase Process-Based Approach in EFL Writing Pedagogy**

A collaboration between AI and humans in language education offers more effective pedagogy (Meniado, 2024). Based on the new AI-assisted three-phase process-based approach in EFL writing pedagogy, the roles of AI tools are restricted to serve certain functions in certain phases and writing steps to highlight their benefits, discourage immoral practices, and limit excessive dependence. Meanwhile, the roles of humans: students, their peers, and the teacher perform the main driving force, especially in the phases or steps where human performance must be significantly emphasized since it directly affects students' writing skill improvement. For such collaborative intelligence pedagogy, the roles of AI and humans can be summed up in Table 1.

Table 1

AI and Humans Roles in the AI-Assisted Three-Phase Process-Based Approach in EFL Writing Pedagogy

| Writing Stage | AI Roles | Human Roles |
|---------------|--------------------------------|---|
| Preparation | a search portal tool | an AI-assisted standards developer |
| | an evaluation tool | |
| Writing | an inspirational tool | an idea synthesizer |
| | a cloud-based writing platform | a writer |
| | an instant feedback tool | a feedback-driven editor |
| Assessment | an assessment tool | an assessor |
| Revision | a prompt-driven feedback tool | a reviewer a feedback-driven revisor |
| | | |
| Reflection | a historical record tracker | a reflective practitioner |

According to Table 1, it is apparent that AI tools are regarded as a writing assistant tool operating different functions in all stages of the writing process. Primarily, they are acknowledged as search engines for ideas and inspiration in both preparation and writing stages. Besides, they are assessment and evaluation tools in the preparation and assessment stages to assess and evaluate the disciplinary standards, the writing rubrics, and students' drafts. Furthermore, AI tools are not only digital writing platforms but also historical record trackers in the writing and reflection stages, so both students and the teacher can track and reflect on students' writing progress and how they engage in their writing experience

for their future writing improvement and the teacher's professional development. The final and most important role of AI tools in the writing process is that they are feedback tools delivering immediate and input-dependent feedback in the writing and revision stages. In so doing, AI feedback can be viewed as scaffolding to facilitate students' Zone of Proximal Development (ZPD) through social interaction between human and AI tools according to Vygotsky's theory of learning and development (1986) and sociocultural theory (1978). This additionally allows students to get timely and formative constructive feedback from AI tools to diagnose the specific language or writing problems they are facing, boosting up their

motivation for language learning and skill improvement based on The Feedback Intervention Theory (FIT) (Kluger & DeNisi, 1966). This satisfies the expectation that student engagement with feedback alerts all educators' attention since it directly affects student learning outcomes (Syafi'i et al., 2024). With the utilization of AI in this new writing pedagogy, immediate and tailored feedback is granted (Marzuki et al., 2023), especially for personalized writing improvement and writing learning experience enhancement (Zhang, 2024).

On the other hand, a significant point to underscore and consider is that humans play the essential roles in the five-stage writing process, and the major role of writer still belongs to student writers. As illustrated, the human roles in the writing process reflect a cycle of reflective growth of student writers to be an autonomous AI student writer: students play their role in writing with AI as their writing assistant to complete their writing tasks and develop their autonomy through the writing process. In the first writing stage, students and the teacher can develop the disciplinary standards and writing rubrics in line with good quality of writing and writers from AI-generated information. In addition, students can sharpen their ideas or even creatively create new ones based on AI-generated ideas to write independently while instant feedback from the AI writing platform can timely provide tailored feedback for them to edit their drafts while writing in the writing stage. In the assessment stage, it basically begins with students themselves assessing their own writing to develop self-assessment and a reflection on their work. After that, formative assessment from their peers and the teacher can lead to more perception of their writing from different points of view before AI tools are used to assess their work for more understanding of their writing performance. In the step of revision, students as reviewers start to review and revise their work before they receive constructive formative feedback from their peers and the teacher. As AI tools are acknowledged as a source of surface-level feedback, such as spelling, grammar, or writing mechanics, human feedback here can compensate for the lack of feedback on higher level writing aspects like content, organization, coherence, or other aspects of good writing (Gayed et al., 2022; Syafi'i et al., 2024). With the integration of three feedback types: AI-generated feedback, peer feedback, and teacher feedback, students' three feedback engagement domains: behavior, affection, and cognition are enhanced to further promote their constructive revisions (Syafi'i et al., 2024). In the final but crucial stage, students reflect on their writing experiences, writing performance, and writing skill development based on the AI-usage log to enhance their future learning, writing practice, and writing skills.

In accordance with the proposed AI-assisted three-phase process-based approach in EFL writing pedagogy, whereas the active student writers' role is changed into an AI technological collaborator or partner, the vital roles of the teacher can be witnessed as not only an AI technological guide but also a facilitator for their students' learning experiences. As students need guidance and training, the teacher's scaffolding strategies together with their presence, involvement, and active mentor are required in the AI-assisted writing process (Roa & Halim, 2024; Ross, 2023). Particularly, when they are first exposed to the application of AI in their writing, they can be anxious and do not trust the process as it is new to them, and they do not know its efficacy; nonetheless, these things will be gradually diminished after gaining their practical experience (Hutson et al., 2024) and receiving technological guidance from the teacher.

■ Conclusion

All in all, it is worth noting that the topical issues of ethics and over-reliance when using AI need to be addressed and settled (Roa & Halim, 2024). Due to AI-integrated writing, it blurs the boundary between academic dishonesty and the proper use of writing assistant tools (Tseng & Warschauer, 2023). In addition, as AI is used as a writing assistant tool through the writing process to overcome student's learning difficulties and skill development challenges, it can restrict their learning experience (Tseng & Warschauer, 2023). Such overreliance on AI writing tools can additionally block their critical thinking and problem-solving skill development (Marzuki et al., 2023). However, all these concerns about ethics and over-reliance can be reduced with restricted capabilities of AI tools and the disciplinary guidelines in the AI-assisted three-phase process-based writing pedagogy. Last but not least, the pedagogical implications of this proposed approach require not only teachers' but also students' technological skills, digital literacy, willingness, and adaptability to the innovative teaching and learning experience in EFL writing instruction. Taking this into account, future research should investigate this issue to discern their capacity and eagerness for the advent of AIED before delving into its efficacy in EFL writing pedagogy.

■ Declaration of Competing Interest

The author declares no competing interest.

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