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EFL STUDENTS' PERCEPTIONS OF GRAMMARLY FOR GRAMMAR ACCURACY AND INDEPENDENT LEARNING IN THE ERA OF EDUCATION 5.0

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Abstract: The integration of artificial intelligence (AI) into English as a Foreign Language (EFL) instruction has reshaped feedback practices in academic writing, particularly through Automated Writing Evaluation (AWE) tools such as Grammarly. Within the Education 5.0 paradigm, AI is expected to support human-centered learning, reflective engagement, and learner autonomy rather than replace teacher mediation. This study explores Indonesian EFL students' perceptions of Grammarly in supporting grammatical accuracy, independent learning, and writing confidence. Employing a qualitative-dominant research design, data were collected from 100 undergraduate EFL students through a descriptive questionnaire and follow-up semi-structured interviews with three purposively selected participants. Quantitative data were analyzed descriptively, while qualitative data were examined using reflexive thematic analysis. The findings indicate that students generally perceived Grammarly as easy to use and helpful in identifying grammatical errors, expanding vocabulary, and improving sentence-level accuracy. Grammarly was also perceived to encourage self-checking and reflective revision; however, learner independence was found to be conditional, as many students still relied on teacher guidance for contextual and rhetorical aspects of writing. In addition, positive affective outcomes emerged, including increased confidence and reduced anxiety toward writing tasks. Overall, the study suggests that Grammarly functions as a micro-level linguistic scaffold rather than a comprehensive writing tutor. Its pedagogical value is maximized when integrated within teacher-guided instructional frameworks that promote critical engagement with AI feedback, aligning with the human-centered principles of Education 5.0.
Keywords: *Grammarly; EFL writing; automated writing evaluation; learner autonomy; education 5.0*

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly transformed educational practices, particularly in the field of second and foreign language learning. In English as a Foreign Language (EFL) contexts, writing remains one of the most cognitively demanding skills due to its requirement for linguistic accuracy, coherence, and sustained reflection (Hyland, 2022; Reza et al., 2025). At the instructional level, teachers frequently encounter structural constraints, such as large class sizes and limited feedback time, which restrict their ability to provide individualized, detailed, and timely written feedback (Nhi & Phuong, 2025). These challenges have contributed to growing interest in AI-assisted feedback tools as supplementary support in EFL writing instruction. One prominent form of AI support in writing instruction is Automated Writing Evaluation (AWE), which provides immediate, algorithm-driven feedback on linguistic features such as grammar, spelling, vocabulary use, and sentence structure (Rahimi et al., 2025; Yeung, 2025). Among available AWE tools, Grammarly has gained widespread adoption in academic contexts due to its accessibility, user-friendly interface, and ability to deliver real-time corrective feedback during the writing process. Recent empirical research demonstrates that Grammarly is predominantly perceived as effective in supporting

surface-level linguistic accuracy and facilitating error noticing, particularly for EFL learners with developing grammatical competence (Nhi & Phuong, 2025; Venter et al., 2025; Wenxun et al., 2025). Rather than functioning as a replacement for human feedback, Grammarly is increasingly conceptualized as a formative learning aid that supports revision and self-monitoring during drafting.

Recent scholarship has demonstrated that research on AI-based automated written feedback (AWF) has expanded beyond accuracy outcomes to include learners' perceptions, engagement, and affective responses. A comprehensive systematic review of AI-driven AWF studies published in SSCI-indexed journals identifies learner perceptions and engagement as one of the major research strands in this field (Ebadi et al., 2023). Studies conducted across diverse EFL contexts have reported generally positive student attitudes toward Grammarly, particularly regarding usability, feedback immediacy, and perceived support for grammatical accuracy (Dizon, 2023; Heydarnejad, 2025). These findings indicate that learners often view Grammarly not merely as a corrective mechanism but as a supportive learning aid during the writing process.

However, Despite the growing number of studies that focus on learners' positive perceptions of AI-assisted writing tools, several important conceptual and contextual gaps remain insufficiently explored. Many previous studies tend to report favorable attitudes toward AI feedback without critically examining how these perceptions are connected to pedagogical mediation and the potential for learner dependence on technology. Research in technology-enhanced language learning highlights that AI-generated feedback becomes more effective when it is supported by teacher mediation, which helps learners interpret, evaluate, and selectively apply automated suggestions in meaningful ways (Li et al., 2023). Without such guidance, the notion of "independent learning" may risk becoming a shift in reliance from teachers to AI tools rather than fostering genuine learner autonomy. In a similar vein, Mohebbi (2025) caution that AI-assisted feedback does not automatically promote independence if students lack the skills to critically engage with the feedback provided. Likewise, Hou & Zhou (2026) emphasize that learner autonomy requires more than access to immediate feedback; it involves the ability to strategically use AI suggestions within specific communicative and academic contexts.

Second, ethical issues related to the use of AI-assisted writing tools have become an increasingly important concern in higher education contexts. Current scholarly discussions no longer view AI use merely through the lens of academic dishonesty or strict prohibition, but instead advocate for responsible, transparent, and pedagogically guided implementation to maintain learning integrity. Thomas (2025) emphasizes that ethical AI integration in education requires clear instructional frameworks and explicit guidance for students regarding acceptable use. Similarly, Sani (2025) argue that ethical concerns should be addressed through instructional design that promotes awareness, accountability, and critical engagement with AI-generated feedback. In this regard, Grammarly differs from generative AI systems in that it functions primarily as a linguistic support tool rather than a content-generating agent. Nevertheless, students' perceptions of this distinction and their understanding of ethical boundaries when applying AI-based feedback remain insufficiently investigated, particularly within EFL learning contexts.

Third, although Grammarly is widely applied in academic writing instruction, its perceived relevance to professional and workplace communication has not received sufficient scholarly attention. Several studies indicate that written communication remains a highly valued competency in employment settings, yet many graduates struggle to transfer the writing skills developed in academic contexts to real-world professional tasks. Hasumi (2024) highlight that employers consistently emphasize clarity and accuracy in written communication, while at the same time reporting noticeable gaps between graduates' academic writing proficiency and workplace expectations. In a similar vein, Pertiwi (2025) argue that academic writing instruction often fails to adequately prepare students for the communicative demands of professional environments. Therefore, exploring students' perceptions of Grammarly as a skill-development tool that can be transferred beyond classroom-based writing tasks into professional writing contexts represents an important and still under-investigated area in current AWE research.

These concerns are strongly connected to the core principles of Education 5.0, a framework that foregrounds the synergy between advanced digital technologies and human-centered values, including ethical responsibility and critical thinking. Within this perspective, AI is viewed not as a substitute for human instruction but as a

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collaborative partner that supports reflective learning processes and strengthens learner autonomy (James, 2025). Adopting an Education 5.0 lens, Grammarly can be understood as a micro-level linguistic support system that assists learners in developing metalinguistic awareness, fostering self-regulated learning, and sustaining affective engagement during the writing process, particularly when its use is guided by appropriate pedagogical strategies. Hou & Zhou (2026) argue that such AI-supported tools can facilitate reflective interaction with language, while Sari (2024) further suggest that meaningful integration of AI in instruction depends on educators' guidance and contextualization. Despite these theoretical assumptions, further empirical investigation is still required to capture how learners themselves perceive Grammarly's role and to identify the limits they associate with AI-mediated writing assistance.

In the Indonesian EFL context, challenges related to grammatical accuracy, limited exposure to English outside the classroom, and high learner anxiety toward writing are well documented (Herda, 2025). Although prior Indonesian studies have reported favorable perceptions of Grammarly, most rely heavily on descriptive survey data and do not sufficiently explore learners' reflective experiences or their views on teacher mediation and learning independence (Dewi, 2023). This suggests a need for more nuanced qualitative insights that capture how students make sense of AI feedback within their specific educational and cultural context.

Therefore, the present study aims to explore Indonesian EFL students' perceptions of Grammarly not only as a tool for grammatical support but also as a learning aid that influences reflective learning, learner autonomy, and writing confidence within the Education 5.0 paradigm. Rather than claiming measurable improvement in writing accuracy, this study focuses on students' perceived experiences and interpretations of Grammarly's role in their writing practices. Specifically, this study addresses the following research questions: (1) How do EFL students perceive Grammarly's role in supporting grammatical accuracy in writing? (2) To what extent does Grammarly foster independent and reflective learning? (3) What are students' attitudes and intentions toward continued use of Grammarly?

By addressing these questions, this study seeks to contribute to ongoing discussions on pedagogically responsible AI integration in EFL writing instruction, particularly by foregrounding learners' perspectives within a human-centered educational framework.

METHOD

This study employed a qualitative-dominant research design supported by a descriptive survey to explore EFL students' perceptions of Grammarly as an Automated Writing Evaluation (AWE) tool in academic writing. This design was selected to prioritize in-depth understanding of learners' experiences and interpretations of AI-mediated feedback, while using quantitative data to provide contextual patterns rather than inferential generalization (P. Chen, 2025).

Although numerical data were collected through a questionnaire, the study does not claim a fully convergent mixed-methods design. Instead, the survey functioned as a contextual backdrop to map general perception trends, while semi-structured interviews served as the core data source for analytical interpretation. Recent methodological scholarship emphasizes that labeling a study as mixed-methods requires balanced analytical rigor and explicit integration procedures, which were beyond the scope of this research (Guetterman, 2023; Nashra, 2025) Therefore, the study is more accurately described as a qualitative exploration informed by descriptive quantitative data.

The study was conducted at Institut Prima Bangsa Cirebon, Indonesia, involving undergraduate students enrolled in an English Language Education program. The Indonesian EFL context is characterized by limited exposure to English outside the classroom and a strong emphasis on grammatical accuracy in academic writing, making it a relevant site for examining perceptions of AI-based feedback tools (Aladini et al., 2025; Bidari, 2025).

A total of 100 undergraduate EFL students participated in the questionnaire phase. Participants were selected using convenience sampling, a common approach in exploratory educational research where access and feasibility are primary considerations (Ahmad & Wilkins, 2024). While convenience sampling does not aim for statistical generalization, it is appropriate for perception-based studies that seek to identify patterns of experience within a specific educational setting.

From the questionnaire respondents, three participants were purposively selected for follow-up semi-structured interviews. Selection was based on variation in Grammarly usage frequency (high,

moderate, and low), self-reported English proficiency, and academic writing purposes. Purposeful variation sampling was used to capture diverse perspectives rather than representativeness, consistent with qualitative research principles (Sale & Carlin, 2025; Thorne, 2025).

Data were collected using two instruments: a questionnaire and a semi-structured interview guide. The questionnaire consisted of ten closed-ended items measured on a four-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree), along with several open-ended questions to capture brief reflective responses. The instrument was adapted from previous studies on AWE perception and underwent expert review and pilot testing to ensure clarity and face validity (Chong, 2025; Wang et al., 2025).

The semi-structured interview guide included open-ended questions focusing on students' experiences with Grammarly, perceived benefits and limitations, learning independence, confidence, and reliance on teacher feedback. Semi-structured interviews were chosen to allow flexibility while maintaining alignment with the research objectives (Kahlke et al., 2025).

Data collection was conducted over a four-week period. The questionnaire was distributed online via Google Forms and required approximately ten minutes to complete, a format that enabled efficient data gathering while maintaining participant anonymity. After the questionnaire phase, individual semi-structured interviews were carried out through voice calls, with each session lasting approximately 20–25 minutes. This interview duration is considered appropriate for obtaining in-depth qualitative insights without causing participant fatigue, as suggested by (Chand, 2025). All interviews were conducted in a language preferred by the participants in order to encourage comfort, expressiveness, and depth of response.

With participants' informed consent, all interviews were audio-recorded and subsequently transcribed verbatim. Verbatim transcription was employed to preserve the authenticity of participants' voices and to enhance analytical rigor and transparency, in line with qualitative research best practices described by (Kushnir, 2025). All collected data were securely stored and used exclusively for academic and research purposes.

Quantitative data were analyzed using descriptive statistics, including frequencies, percentages, and mean scores, to summarize overall perception trends. No inferential statistical tests were conducted, as the survey was not intended to establish relationships or measure effectiveness but to contextualize qualitative findings (Inayah, 2024).

Qualitative data from interviews and open-ended questionnaire responses were analyzed using reflexive thematic analysis. The analysis followed six iterative phases: familiarization, coding, theme development, theme review, theme definition, and reporting (Lepore et al., 2025). This approach emphasizes researcher reflexivity and interpretive depth rather than code reliability alone, making it suitable for perception-based studies of educational technology use.

To enhance the trustworthiness of the findings, several strategies were employed, including data source triangulation between questionnaire and interview responses, member checking to confirm interpretive accuracy, and peer debriefing to reflect on emerging themes. These strategies align with contemporary qualitative standards for credibility, dependability, and confirmability (Ahmed, 2025). Ethical approval was obtained at the institutional level, and all participants provided informed consent. Participation was voluntary, anonymity was ensured, and all data were used exclusively for academic purposes.

RESULTS AND DISCUSSION

1. Perceived Usability and Learning Support

The quantitative findings indicate that students generally perceived Grammarly as a user-friendly and effective tool for supporting grammatical accuracy in writing. Mean scores ranging from 3.28 to 3.41 on a four-point Likert scale suggest strong agreement that Grammarly assists learners in identifying grammatical errors, improving sentence structure, and expanding vocabulary. These findings are consistent with recent empirical studies indicating that perceived usability and immediacy of automated feedback strongly influence learners' acceptance of AI-assisted writing tools in EFL contexts (Amani & Bisriyah, 2025; Baldrich & Carmen, 2025). The highest agreement was observed for items related to vocabulary expansion and language skill improvement, suggesting that students perceived Grammarly not only as a grammar checker but also as a broader linguistic support tool.

Table 1. *Usability and learning support*

No	Questions	Response				
		SA	A	D	SD	Mean
1.	Grammarly is easy to use.	24%	68%	8%	-	3.16
2.	Grammarly helps me to improve my language skills.	41%	56%	3%	-	3.38
3.	Grammarly helps me to identify errors in my writing and provide solutions to fix them.	36%	61%	3%	-	3.33
4.	Grammarly helps me to expand my English vocabulary.	43%	54%	3%	-	3.40
5.	Grammarly helps me improve my grammar knowledge.	36%	60%	4%	-	3.32

Beyond numerical trends, interview data reveal how students interpreted these benefits in practice. Students frequently highlighted Grammarly's instant feedback and brief explanations as key features that enabled them to notice errors and reflect on their writing decisions. One participant stated:

> "Grammarly points out mistakes I don't even realize I've made and explains why they are wrong. Over time, I start to understand the pattern of my errors." *(Student B)*

Another participant emphasized the role of repeated exposure to feedback:

> "After using Grammarly many times, I can guess what kind of mistakes it will highlight. It helps me be more careful when writing*."* (Student A)

These findings suggest that Grammarly supports perceived grammatical accuracy primarily at the micro-linguistic level. This aligns with previous studies showing that Automated Writing Evaluation tools are particularly effective in facilitating error noticing and metalinguistic awareness, though their impact on higher-order writing skills remains limited (Hyland, 2022).

Development of independent learning

Students' responses related to independent learning reveal a more complex pattern. As shown in Table 2, a majority of students agreed that Grammarly encourages independent learning and reduces reliance on teachers during the writing process. However, a substantial minority (36–40%) disagreed with statements suggesting that Grammarly could support learning entirely without teacher presence, indicating variability in how independence was experienced

Table 2. *Independent learning*

No	Questions	Response				
		SA	A	D	SD	Mean
1.	Grammarly helps me to write with less guidance from teachers.	18%	54%	27%	1%	2.89
2.	Grammarly helps me to learn English without the teacher's presence.	12%	48%	36%	4%	2.68
3.	Grammarly encourages me to learn English independently.	26%	57%	15%	2%	3.07

Interview data clarify this mixed tendency. Some students described Grammarly as a facilitator of self-regulated learning, enabling them to monitor and revise their writing before consulting teachers:

> "When I use Grammarly, I can check my work by myself first before asking the teacher." *(Student A)*

In contrast, other participants emphasized the continued importance of teacher mediation, particularly when Grammarly's suggestions were perceived as unclear or contextually inappropriate:

> "Sometimes Grammarly changes my sentence, but I don't really understand the reason. In that case, I still need the teacher to explain*."* (Student C)

These contrasting perspectives indicate that Grammarly-supported independence was conditional rather than absolute. Rather than fully replacing teacher guidance, Grammarly appeared

to shift the feedback process by allowing students to engage in preliminary self-correction. This finding resonates with research emphasizing that AI-supported autonomy requires pedagogical mediation to prevent over-reliance and ensure meaningful learning (Li et al., 2023).

Attitudes and intentions toward Grammarly

Students demonstrated positive attitudes and strong intentions toward continued use of Grammarly, as shown in Table 3. High mean scores indicate that students valued Grammarly as a long-term learning aid and supported its integration into academic Context.

Table 3. *Attitude and intention toward Grammarly*

No	Questions	Response				
		SA	A	D	SD	Mean
1.	I will always use Grammarly in the future.	24%	56%	18%	2%	
2.	It would be a great help for students if schools allow students to use Grammarly.	35%	60%	4%	1%	

Interview excerpts highlight the affective benefits associated with Grammarly use, particularly increased confidence and reduced anxiety:

> "I feel more confident submitting my assignments because I know Grammarly has helped me avoid basic mistakes." (Student C)

From a theoretical perspective, these affective outcomes can be interpreted through the lens of the affective filter hypothesis, which posits that reduced anxiety and increased confidence facilitate language acquisition by allowing greater cognitive engagement with linguistic input (X. Chen et al., 2025). In line with more recent technology-enhanced language learning research, positive emotional responses to AI-based feedback can strengthen learners' self-efficacy and persistence in writing tasks (Ebadi et al., 2023). However, students' expressed awareness of Grammarly's limitations—particularly its inability to fully account for context and rhetorical intention—suggests a level of critical engagement rather than blind acceptance of automated feedback.

Synthesizing the findings across all themes, this study suggests that Grammarly functions primarily as a micro-level linguistic scaffold rather than a comprehensive writing tutor. Drawing on sociocultural theory, Grammarly's feedback can be viewed as a mediational tool that supports learners within their zone of proximal development by providing immediate, form-focused assistance (Yang, 2025). However, unlike human mediation, Grammarly lacks dialogic interaction and adaptive explanation, which limits its capacity to support higher-order meaning-making and rhetorical development.

From the perspective of self-regulated learning theory, Grammarly appears to facilitate specific regulatory processes, particularly self-monitoring and revision. Students reported using the tool to check drafts, notice recurring errors, and revise texts independently, which corresponds to the monitoring and evaluation phases of self-regulated learning cycles (Zimmerman, 2002). Nevertheless, the findings also reveal that such regulation remains partial and tool-dependent, reinforcing arguments that technological autonomy does not equate to pedagogical independence.

Within the Education 5.0 framework, the results underscore the importance of positioning AI tools as co-facilitators of learning that complement human instruction. Education 5.0 emphasizes not only technological innovation but also ethical awareness, critical thinking, and human-centered values. In this regard, students' recognition of the need for teacher guidance reflects an implicit understanding of balanced human–AI collaboration. Rather than replacing teachers, Grammarly reshapes the feedback ecology by reallocating routine corrective tasks to technology, thereby allowing teachers to focus on higher-level instructional support.

Overall, the discussion highlights that Grammarly's pedagogical contribution lies in enhancing grammatical awareness, reflective engagement, and affective readiness for writing. Its limitations, however, point to the necessity of intentional pedagogical integration, where teachers guide students in interpreting feedback, questioning automated suggestions, and transferring linguistic knowledge to diverse writing contexts.

The discussion is organized according to the three research questions to provide a focused and analytic interpretation of the findings.

RQ1: How do EFL students perceive Grammarly's role in supporting grammatical accuracy in writing?

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The findings indicate that students generally perceived Grammarly as effective in supporting grammatical accuracy and overall language development. High levels of agreement regarding usability and error identification suggest that learners particularly valued Grammarly's immediate, clear, and explanatory feedback during the writing process. Such perceptions are commonly reported in recent studies on AI-based writing support, where real-time feedback is associated with increased learner awareness of linguistic forms and greater engagement in revision activities (Wei et al., 2023). Nevertheless, these outcomes reflect perceived improvement rather than objectively measured gains in writing performance. Previous empirical research consistently indicates that Grammarly is most effective in addressing surface-level linguistic features, including grammar, spelling, and vocabulary choice, rather than higher-order writing concerns (Fiki, 2025). From a pedagogical perspective, particularly within the 5E instructional framework, Grammarly's contribution is most apparent during the Explain phase, in which learners receive clarification and corrective input that supports conceptual understanding. However, recent studies caution that without complementary instructional strategies and teacher mediation, the potential of AWE tools to foster deeper elaboration, critical reflection, or skill transfer to new contexts remains limited (Wilson et al., 2025).RQ2: To what extent does Grammarly foster independent and reflective learning?

Results related to independent learning reveal a nuanced and at times contradictory pattern. Although many students reported greater engagement in self-checking, monitoring, and assuming responsibility for their writing, a considerable number of participants still indicated reliance on teacher guidance. This pattern suggests that the use of Grammarly may relocate students' dependence rather than fully eliminate it, reflecting ongoing concerns in the literature about tool-mediated autonomy. Interview findings further indicate that reflective learning mainly emerged through repeated interaction with automated feedback and recurring error patterns, which contributed to the development of students' metalinguistic awareness. However, consistent with the arguments presented by Li (2023), the findings underscore the continued importance of teacher mediation in helping learners critically evaluate automated feedback instead of accepting it unreflectively. Similarly, Hou & Zhou (2026) emphasize that without pedagogical scaffolding, AI-based feedback tools may foster surface-level engagement rather than genuine autonomous learning.

RQ3: What are students' attitudes and intentions toward continued use of Grammarly?

Students' attitudes toward Grammarly were overwhelmingly positive, particularly in relation to its anticipated future use and acceptance within institutional learning contexts. Increased writing confidence and reduced anxiety emerged as salient affective outcomes, supporting previous findings that Automated Writing Evaluation (AWE) tools can help lower affective barriers in L2 writing development, as reported by Dizon (2023). Similar evidence is provided by Annas & Liu (2025; 2025), who found that sustained interaction with AI-based feedback tools contributes to learners' emotional comfort and willingness to revise. At the same time, students' expressed concerns regarding potential overreliance on automated feedback and the limited handling of contextual or discourse-level issues highlight the necessity of balanced and critical implementation. From an Education 5.0 perspective, these findings reinforce the importance of positioning Grammarly as a supportive learning partner that complements, rather than replaces, human instruction. Overall, the results indicate that Grammarly contributes meaningfully to perceived linguistic accuracy, reflective engagement, and learner confidence; however, its pedagogical value is optimized only when embedded within teacher-guided frameworks that encourage critical evaluation, contextual awareness, and long-term writing development, as also emphasized in recent discussions of AI integration in language education (Chigbu & Makapela, 2025).

CONCLUSION

This study explored EFL students' perceptions of Grammarly as an Automated Writing Evaluation (AWE) tool within the framework of Education 5.0, with a focus on perceived grammatical support, independent learning, and affective outcomes. The findings indicate that students generally viewed Grammarly as a helpful and accessible tool for identifying grammatical errors, expanding vocabulary, and supporting sentence-level accuracy. Importantly, these findings reflect perceived improvement rather than objectively measured gains in writing performance, highlighting the interpretive and experiential nature of the study.

In terms of learning autonomy, Grammarly was perceived to encourage self-checking, reflection, and preliminary revision before teacher consultation. However, the results also revealed that a considerable proportion of students continued to rely on teacher guidance, particularly for contextual, rhetorical, and explanatory aspects of writing. This suggests that AI-supported learning does not equate to full independence but rather represents a reconfiguration of the feedback process, where responsibility is shared between learners, technology, and teachers.

Affective dimensions emerged as a significant aspect of students' experiences. Increased confidence, reduced anxiety, and positive attitudes toward continued use indicate that Grammarly can function as a motivational support in EFL writing. These affective benefits are particularly relevant in contexts where students experience persistent anxiety related to grammatical accuracy. Nevertheless, students' awareness of Grammarly's limitations underscores the importance of critical engagement with automated feedback.

Overall, the study concludes that Grammarly is best positioned as a supportive learning partner rather than a substitute for teacher feedback. Its pedagogical value is maximized when integrated into teacher-guided instructional frameworks that promote reflection, contextual understanding, and ethical use of AI tools. From an Education 5.0 perspective, this integration aligns technological efficiency with human-centered learning values.

This study is limited by its reliance on self-reported perceptions, a single-institution sample, and the absence of objective writing performance measures. Future research is encouraged to employ longitudinal designs, include performance-based assessments, and incorporate teachers' perspectives to better understand how AI-mediated feedback can be pedagogically orchestrated to support sustainable writing development.

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