Environment and Social Psychology (2025) Volume 10 Issue 4 ISSN: 2424-8975 (O)
doi: 10.59429/esp.v10i4.3275 2424-7979 (P)

RESEARCH ARTICLE

Analyzing written performance of learners with AI assistance: Challenges, Limitations, and perceived effectiveness

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ABSTRACT

There is growing attention towards the use of artificial intelligence (AI) in improving students' writing performance. In this qualitative exploration, perceptions of higher education institution (HEI) teachers regarding the effect of AI support on writing quality and performance outcomes are undertaken. There were 25 teachers from Samar, Philippines surveyed to explore the perceived benefits and challenges of using AI tools in the writing process. Findings indicated that AI had the potential to enhance grammar, syntax, and structure, thereby reducing writing inefficiencies and building confidence of students. In contrast, they noted that overreliance on AI was problematic, alongside the increased likelihood of academic dishonesty and the weakening of critical thinking and independent writing abilities. From these findings, the need for balance in this process surfaced as well, where AI tools supplemented traditional teaching approaches such as teacher feedback and peer review. The identified benefits included increased writing efficiency, boosted confidence, and greater student engagement in writing activities. However, challenges also emerged, such as concerns about AI accuracy in assessments, the occurrence of academic dishonesty, and the need for students to master AI command prompts. The study concluded that AI could serve as a valuable tool in supporting student writing, but it required careful introduction and an understanding of its limitations. While considering both the potential benefits and emerging issues associated with AI support, teachers were encouraged to leverage its power to enhance learning without compromising the integrity and quality of education.

Keywords: AI-assisted learning; English language learning; perceived effectiveness; technology in education; writing

1. Introduction

There is increasing attention paid to using artificial intelligence (AI) in the analysis of students' writing performance. It will be important to understand the related challenges, constraints, and perceived value of these technologies since educational institutions are increasingly relying on AI tools to enhance learning outcomes[1]. With the promise of simplified formative assessment through giving automated, personalized feedback on grammar, structure, and coherence, AI-based writing tools and systems have great potential. The Adaptive Feedback method triggers teachers to develop writing skills in their students that have proven to enhance their performance on assessments for proficiency tests[2].

However, AI brings along many questions of bigotry, misinformation, and impairment on the learners'

ARTICLE INFO
Received: 27 November 2024 | Accepted: 10 April 2025 | Available online: 17 April 2025

CITATION
Tan JM. Analyzing written performance of learners with AI assistance: Challenges, Limitations, and perceived effectiveness. *Environment and Social Psychology* 2025; 10(4): 3275. doi:10.59429/esp.v10i4.3275

cognitive ability, even though at the same time, it hastens the marking process and allows feedback to each learner[3]. Rapid technology advancements have a ripple effect on the education arena, so educators have to adjust and reassess traditional marking practices.

The main challenge to applying AI for the analysis of written performance is the possibility of bias instilled in algorithms. Machine learning models are only as good as the data they are trained on; biased data can lead to unjust assessments and reinforce already-exist student inequities. According to Nazari et al.[4], AI-generated feedback could not be always reliable because these tools have the potential of misreading the subtleties in the context of the student's writing, hence producing incorrect assessments and suggestions. Students' cognitive involvement and the growth of their writing critical thinking abilities may be affected by this restriction. In addition, there are still debates regarding how good AI is in the classrooms[5]. Teachers often find that while AI tools can be helpful for instruction, they are never fully able to substitute for teachers, especially in regard to the more intricate task areas such as creativity or complex argumentation[6]. Some students use AI technologies as 'shortcuts' and do not engage in the actual process of writing, raising questions about the validity of student work.

Misinformation produced by AI algorithms is a serious issue in addition to bias. These resources could generate erroneous or out-of-date content, which could mislead students and erode their faith in the educational process. Such errors can damage the reputation of educational institutions that use these systems in addition to impairing the educational experience[7]. Studies have highlighted the significance of data privacy, transparency in AI decision-making, and addressing biases in AI algorithms, which can impact the fairness of assessments for students from different linguistic backgrounds[8]. Concerns about ethics are also present. AI models trained on particular data sets that don't accurately reflect all users may exhibit these biases, producing contradictory outcomes. In addition, because small insights about writing style, voice, and creativity are sometimes missed, AI tools may not offer the depth of understanding that human comments can[9].

Despite these difficulties, teachers and students typically have a high opinion of AI's ability to analyze written work. AI tools have been shown to improve learners' understanding, creativity, and productivity[10]. Instant feedback and focused recommendations enable students to hone their writing and advance their abilities in general. According to the Technology Acceptance Model (TAM), students are more inclined to employ AI tools in their academic assignments if they believe they are useful and simple to use. This supports the idea that AI can support self-directed learning and motivation[11]. Furthermore, AI systems are able to spot trends in student performance that conventional evaluation techniques can miss, enabling more specialized educational interventions.

Though it requires a balanced approach that takes into account both the advantages and the disadvantages, artificial intelligence in education has a bright future[12]. Teachers need to be constantly assessing the tools they use to make sure they enhance human judgment in the assessment process rather than take its place. Using AI to analyze students' written work offers both huge potential and huge challenges. To improve educational practices, it is essential to address the biases and limitations of AI algorithms while also utilizing their potential for personalized feedback[13]. To optimize AI integration's potential while preserving educational equity and quality, educators and developers must be aware of its ethical implications. Educational institutions can improve learning outcomes while advancing equity and integrity in the assessment process by being aware of the perceived efficacy of these tools and carefully putting them into practice[14].

This research sought to understand the effectiveness of AI support in the writing performance of college students, focusing on the perceptions of effectiveness and the challenges and difficulties associated with incorporating AI in the teaching process. In particular, it examines the impact of AI technologies on the writing skills of students in key aspects of writing, detects the presence of bias and limitations in AI systems, and evaluates whether AI is effective in helping a student achieve learning outcomes. Ultimately, it serves as a guide in helping educators make informed decisions when using AI tools, with effective use that guards against injustices or ineffectiveness in learning for all the students.

2. Literature review

The use of AI in student writing evaluation has shown both possibilities and difficulties. AI systems offer instantaneous, individualized feedback that helps improve writing abilities, particularly for language learners who need more practice[15]. Numerous research have looked at how well AI technologies work to enhance student writing and solve different writing-related issues as they are incorporated into educational settings more and more. Concerns about bias, dependence, and the effects on cognitive involvement during the learning process are also raised by these tools. But even if AI is good at automating judgment, its inability to comprehend complex context and reason like a human still exists, which raises concerns about over-reliance and possible stasis in the development of creative skills[16].

AI writing tools have been shown in numerous studies to improve students' writing quality[17]. For example, programs like QuillBot and Grammarly give students immediate feedback on their writing style, grammar, and punctuation, which helps them become better writers overall. Because AI programs can evaluate enormous volumes of data, they can spot trends in student writing that teachers would miss, enabling more individualized learning experiences[18]. These developments imply that AI may be able to support conventional teaching methods by providing insights that could result in better writing results.

Although these developments, there are still major issues with the accuracy and dependability of AI evaluations. Based on the information they are trained on, research shows that AI tools might generate biased results, resulting in skewed assessments that may disproportionately impact underprivileged populations[19]. These biases have the potential to provide students inaccurate feedback, which compromises the usefulness of the learning resources and presents moral questions regarding their use in classroom settings. Subjective elements of writing, such as tone and context, are frequently difficult for Automated Writing Evaluation (AWE) technologies to handle, which might leave students with insufficient feedback[20]. The use of AI for ongoing writing support raises ethical concerns as well since it may lead students to become overly dependent on AI products, which could reduce the value of real-world learning opportunities[21].

Furthermore, the idea of relying on AI writing support has become a crucial topic of worry. Some teachers are concerned that pupils can become unduly dependent on these resources, which could impede the growth of critical thinking and writing abilities. Additionally, this over-reliance may hinder pupils' capacity for deep learning or self-correction, which would ultimately impede their academic progress[22]. Teaching students how to use AI tools successfully is crucial to reducing these hazards and making sure they support writing rather than act as a crutch. Coauthor and other AI systems have demonstrated encouraging outcomes in collaborative writing, enabling students to interactively edit and polish their work[23]. Particularly in learning language environments, AI's capacity to provide low-stress, iterative feedback chances foster confidence and enhances writing skill. These advantages must be balanced against the drawbacks of the technology, such as possible biases in feedback, which may impact students' growth.

Teachers and students are becoming more receptive to the use of AI in writing education in terms of perceived efficacy. According to Inoferio et al.[24], AI tools are seen favorably since they offer prompt feedback and encourage a more involved writing process. Although studies highlight the value of human monitoring to reduce the technology's possible risks, teachers can employ AI-generated insights to customize feedback[25]. Perceptions among students suggest that although AI facilitates skill development, technology cannot replace mentorship and human connection[26]. But for these technologies to be used successfully, they must be carefully incorporated into the curriculum, and teachers are essential in regulating the usage of AI tools and making sure they are in line with pedagogical goals.

Through further research and discussion on the implications of using AI in education, stakeholders can better understand the limitations of these technologies while leveraging their potential to foster improved writing skills[27]. While AI writing tools offer exciting opportunities to improve student writing performance, they also introduce complexities that educators must navigate[28]. Students may eventually benefit from more effective writing instruction and richer learning experiences if a balanced strategy is taken that stresses critical engagement with AI technologies.

3. Methods

3.1. Research design

This paper explored the experiences of HEIs teachers in using AI in their classrooms, especially with writing activities. Qualitative exploration is a valuable approach for examining emerging issues and gaining deeper understanding of relatively unexplored phenomena[29]. It utilizes systematic and deliberate methods to uncover meaningful patterns, which helps in organized analysis of sociocultural and psychological dimensions[26]. Although concerns have been raised regarding its methodological rigor, recent scholarly discourse highlights its essential contribution to advancing research knowledge and supporting the structured collection of qualitative data[30]. One of the key strengths of exploratory research is its adaptability, which allows researchers to make systematic changes in response to evolving datasets—a critical characteristic when investigating topics with limited existing literature[31,32]. In this study, exploration was essential because of the novelty and rapidly evolving nature of AI in education. The narratives presented, particularly those shared by HEIs teachers, offer valuable scope of how AI-assisted tools are perceived to influence the quality and outcomes of student writing.

3.2. Sampling and participants

This study employed an exploratory research design, which relied on a small, purposefully selected sample to allow for a focused examination of key variables and their interrelationships[24]. Instead of aiming for statistical generalization, the study prioritized depth by engaging a specific group whose perspectives were essential to understanding the phenomenon under investigation[31]. The sample size remained flexible and was determined by the participants' capacity to offer meaningful insights aligned with the research objectives[33]. A purposive sampling technique was utilized, wherein participants were deliberately chosen through a systematic selection process based on their relevance to the study[34-36]. Specifically, online purposive sampling[37] using Google Forms was carried out to recruit participants to be interviewed in this study. There were five characteristics considered when selecting participants: (1) they were HEIs English teachers, (2) they had experience integrating AI tools into classroom instruction, (3) they had a minimum of one year of teaching experience to ensure pedagogical familiarity, (4) they demonstrated a willingness to reflect on their teaching practices and student outcomes, and (5) willingness to participate in one-on-one interviews. There were 76 teachers from Samar, Philippines who responded to the forms but only 25 were selected to participate in the interview process.

3.3. Instrumentation

To facilitate the one-on-one interviews, participants were guided by a semi-structured interview protocol that had been carefully developed in advance. The questions were intentionally designed to be open-ended and flexible, allowing for a more fluid and adaptive conversational approach[38,39], which allows for extraction of rich and meaningful insights. The interview guide was developed based on Kallio et al.[40] methodological context, which included defining prerequisites, reviewing existing literature, drafting and refining questions, and conducting pilot testing. Probing questions were used to elicit deeper insights into participants' experiences and perspectives[41]. In addition, expert validation ensured coherence with research objectives and methodological rigor[42]. Pilot testing assessed the clarity and relevance of questions, while the semi-structured format allowed for follow-ups and the exploration of emergent themes[43]. **Table 1** presents the final interview questions after pilot testing and expert validation process.

Table 1. Interview guide questions.

Objectives	Interview question
How do HEIs teachers perceive the influence of AI assistance on students' writing quality and performance outcomes?	1. In your experience, how has AI assistance changed the quality of students' written work compared to previous methods? 2. Can you provide specific examples of how you believe AI tools have impacted students' writing performance outcomes? 3. What particular aspects of writing (e.g., grammar, structure, creativity) do you think have improved or declined with the use of AI assistance? 4. How do you assess the overall effectiveness of AI tools in supporting student writing in your classroom? 5. What concerns, if any, do you have regarding the reliance on AI assistance for students' writing abilities?
What are the challenges of using AI tools in the writing processes of college students?	6. What benefits have you observed in your students' writing processes since incorporating AI tools into their work? 7. Can you discuss any challenges or limitations you have encountered when integrating AI tools into your students' writing assignments? 8. How do students respond to using AI assistance in their writing? Have you noticed any changes in their attitudes toward writing? 9. In what ways do you think AI tools can enhance or hinder the development of students' independent writing skills? 10. How do you believe the use of AI tools in writing can be balanced with traditional teaching methods to optimize student learning outcomes?

3.4. Data collection

The interviews were conducted to gather participants' lived experiences through a structured yet flexible framework that examined their behaviors, perspectives, and narratives[44]. With the exploratory nature of this study, semi-structured interviews were employed to maintain methodological rigor while allowing for organic conversations that revealed in-depth insights[45-47]. The process began with the articulation of research objectives, the formulation of thematic questions, and the review of relevant literature to establish a solid foundation for inquiry[48]. A confidential and supportive environment was cultivated to encourage open expression, allowing participants to communicate in their preferred language to reduce potential linguistic barriers. The interviews followed a structured protocol, which included obtaining informed consent, addressing ethical considerations, ensuring confidentiality, and implementing systematic questioning[46]. Probing techniques were applied to elicit implicit meanings and enrich participants' narratives[24,48]. With participants' consent, interviews were audio-recorded using secure mobile devices, and emerging themes and initial reflections were documented in a Microsoft Excel spreadsheet for systematic analysis.

3.5. Data analysis

This study utilized reflexive thematic analysis to explore the narrative data gathered from individual interviews, aiming to uncover patterns and themes that reflected the participants' personal experiences. Thematic analysis involves systematic organization, classification, and interpretation of qualitative data, providing a flexible yet structured means of deriving insights grounded in participants' accounts[49]. Its flexible nature made it particularly appropriate for exploratory research, as it enabled the emergence of themes without reliance on predetermined theoretical constructs[50]. As outlined in **Figure 1**, the analysis adhered to Braun and Clarke[51] six-phase model: becoming familiar with the data, generating initial codes, identifying preliminary themes, reviewing and refining themes, defining and naming them, and producing the final analysis. An inductive method was applied to minimize researcher assumptions and ensure the findings reflected the participants' own perspectives, thereby supporting the credibility and trustworthiness of the results[52]. Reflexivity was integral to the process, requiring the researchers to maintain critical awareness of their own influence throughout the analysis and to embrace subjectivity as a means of deepening interpretative insight[53]. This analytical approach enabled a deeper exploration of meanings embedded within the data, moving beyond surface-level categorization to reveal nuanced conceptual understandings. By allowing themes to develop inductively, the study preserved the integrity of participants' statements and generated contextually rich, meaningful conclusions[54].

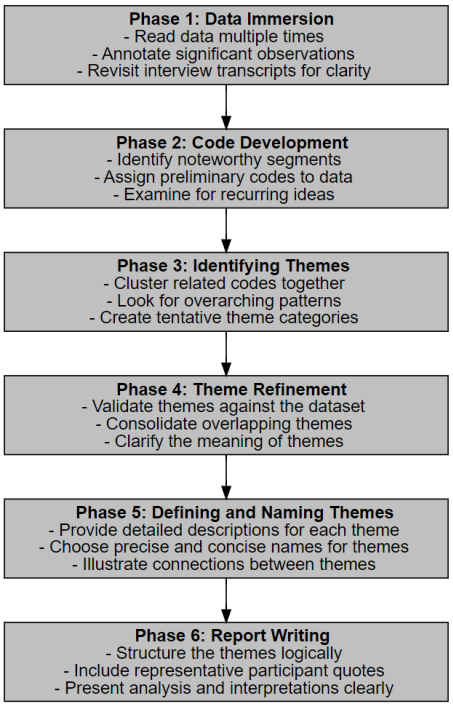

Figure 1. Workflow of reflexive thematic analysis.

4. Results

Objective 1: How do HEIs teachers perceive the influence of AI assistance on students' writing quality and performance outcomes?

Theme 1: Linguistic Improvement

In reflecting on the narratives shared by the participants, it became evident that HEI teachers perceived AI assistance as a significant contributor to the enhancement of students' linguistic competence in writing.

Teachers consistently noted that the integration of AI tools had led to marked improvements in students' academic writing, particularly in grammar, sentence structure, tone, and the overall clarity of ideas. They

recounted that, compared to traditional methods, students who actively engaged with AI demonstrated more polished and coherent written outputs.

> "From my own experience and observation, students who know how to use AI as assistance were able to improve their essays in terms of the correct grammatical structure compared to other methods."

Several participants described how AI tools offered instant, corrective feedback that students could immediately apply, thus allowing them to internalize grammatical rules and develop better syntactical awareness. The teachers acknowledged that these improvements were not merely surface-level but contributed to an in-depth understanding of writing conventions.

> "AI assistance has significantly impacted students' written work by enhancing their academic writing structure, grammar, tone, and even the quality of ideas presented."

The tools empowered students to self-correct and revise their drafts independently, reducing their reliance on teacher intervention. This aspect of AI-supported learning was valued by the teachers, as it aligned with the goal of promoting learner agency and self-regulated writing practices.

> "AI tools can enhance students' independent writing skills by providing immediate feedback on grammar, structure, and clarity."

> "AI assistance has improved the quality of students' written work by enhancing grammar, syntax, and mechanics, providing suggestions for clarity and concision."

Theme 2: Error Spotting

It became clear that HEI teachers recognized AI assistance as essential in helping students identify and correct errors in their writing. They emphasized that AI tools functioned as immediate, accessible aids that guided students toward greater grammatical precision and structural accuracy. They acknowledged that AI not only flagged mistakes but also encouraged learners to take a more active role in the revision process.

> "AI actually can be of great benefits to the learners in developing his/her writing skills because you will be corrected by it."

One recurring sentiment was the observed reduction in grammatical errors, which teachers attributed to students' regular interaction with AI-based writing tools. This reduction was seen not just in terms of fewer technical mistakes, but also in an improved ability to construct more coherent and syntactically sound sentences. Teachers noted that students developed a heightened awareness of their language use, often learning from the corrections suggested by AI systems.

> "…the grammatical error in the construction of sentence was reduced."

> "The proper grammar and structure is improving, because Al helps students to identify their mistakes specially in grammar and structure."

The participants also recognized the role of AI in supporting coherence in students' writing. They noted that beyond grammar and sentence structure, AI tools aided students in maintaining logical flow and consistency throughout their texts. This, in turn, contributed to stronger, more organized outputs. One teacher pointed out that the corrective feedback from AI helped students refine not only their grammar but also the clarity of their expression.

> "AI assistance helps students to spot grammatical errors, change grammatical structure and even ensure coherence in their writing."

Theme 3: Boost Confidence

Teachers consistently reflected on how access to AI tools appeared to reduce students' anxiety about making errors, which in turn allowed them to engage more actively and independently in their academic writing.

> "It can help them enhanced confidence and motivation."

Participants noted that students became more self-assured in their written outputs, partly because they knew they had a digital resource that could check their grammar, provide alternative phrasing, and offer real-time feedback. This sense of support, according to the teachers, made students more willing to take risks in expressing their ideas and more open to writing tasks they might have previously avoided. In this way, AI was not only seen as a corrective tool, but also as a confidence-building mechanism.

> "It also boosts their confidence in academic writing as AI tools will support and help them enhance their written works."

Some teachers observed that the boost in writing confidence extended into broader academic behaviors. Students who felt more competent in writing were reportedly more motivated to participate in collaborative activities, such as group discussions and presentations. Teachers described these shifts in behavior as signs of growing self-efficacy, influenced by the reassurance that AI provided during the writing process.

> "They are confident in their writing, maybe because AI automatically check the grammar and often write and paraphrase using the app which also make the learners responsive."

> "…they also improved their motivation like participating in group activities and presentations."

Objective 2: What are the observed challenges of using AI tools in the writing processes of higher education students?

Theme 1: Over-reliance

Participants commonly expressed concern over the growing over-reliance of students on AI tools during the writing process. Teachers observed that students tended to lean too heavily on these technologies, to the point where some appeared unable to write effectively without them. This dependency undermined the development of independent writing skills—skills that are crucial in academic and professional contexts.

> "Students become completely reliant on these AI tools making them unable to function sometimes without these tools."

> "I think over-reliance on AI tools may hinder independent writing skills…"

> "AI tools can also hinder students' development when they are overly reliant on these."

Teachers reflected that while AI could enhance writing mechanics, excessive dependence diminished students' capacity to generate original content, construct logical arguments, or engage in deeper critical reflection. Many of the participants voiced that this over-reliance not only stifled creativity but also led to reduced engagement in the cognitive processes required for meaningful academic writing, such as critical and analytical thinking.

> "…too much reliance on AI will hinder students' critical thinking and analytical thinking skills."

> "…over-reliance on AI tools may lead to decreased critical thinking."

Because AI could automatically generate or revise content, learners became less inclined to revise or reflect on their drafts. This shift resulted in outputs that were often perceived as rigid, formulaic, and lacking the authenticity and nature of human expression. As one participant noted, the writing sometimes felt mechanical—technically correct, but devoid of personal insight or emotional depth.

> "Making the learners lazy and reduced their capability to come up more appealing written works."

> "…the result seems to be rigid, and it does not create an appealing and more human ideas."

Theme 2: Academic Dishonesty

Participants reflected critically on the ethical implications of AI-assisted writing, emphasizing the growing concern over academic dishonesty. From their perspective, the misuse of AI tools had the potential to compromise the authenticity of student work, as some learners began to rely on AI-generated content without adequate engagement in the writing process. Teachers expressed concern that this reliance blurred the line between assistance and dishonesty, particularly when students submitted AI-generated work as entirely their own.

> "…and will result to academic dishonesty."

> "For me, addressing plagiarism and academic integrity concerns should take into consideration and action as well."

Several respondents observed a pattern in which students would bypass the cognitive rigor of composing original texts, instead using AI to generate ideas or full-length responses without proper attribution. This behavior raised issues not only about plagiarism but also about the erosion of academic values such as honesty, effort, and personal accountability. One teacher stressed the need to actively address these risks by embedding academic integrity into AI literacy discussions and classroom policies.

> "It could increase plagiarism and limited understanding of writing fundamentals."

Theme 3: Assessment

Many teachers found it difficult to determine whether a submission was genuinely the student's own work or generated through AI assistance. This ambiguity disrupted traditional evaluation processes, especially when trying to assess originality and authenticity in student writing.

> "It's hard to tell if the output is really from the student or just generated by AI."

Teachers admitted that assessing creativity and critical thinking had become increasingly challenging, as AI-generated content often appeared polished but lacked personal insight and cognitive depth. They also expressed concerns over the difficulty of validating students' actual understanding, noting that AI could mask learning gaps.

> "Assessing creativity and critical thinking becomes difficult when AI is involved."

> "We struggle to validate if students truly understand the content they submit."

Some participants pointed out that AI-assisted texts tended to lack the student's unique voice, making it hard to evaluate personal effort or growth. Others mentioned how AI complicate the use of standard rubrics, as outputs often met technical criteria but fell short in demonstrating genuine learning.

"AI-generated work often lacks the personal voice or effort we want to assess."

"It challenges our usual rubrics since AI can produce technically perfect essays."

5. Discussion

Objective 1: How do HEIs teachers perceive the influence of AI assistance on students' writing quality and performance outcomes?

An outcome of the present research is a clue toward unpacking the complicated relationship between AI assistance and the performance of student writing in terms of the perceptions of college teachers. Overall, the responses reveal mixed perceptions: school teachers, while acknowledging the benefits, seem to hold deep concerns about the use of AI tools in the classroom. There is convergence of existing literature reporting on the need to recognize the strengths and limitations of AI in educational contexts[6,12].

College teachers reported improvements in students' writing quality, particularly in grammar, syntax, and structure. This finding is consistent with research highlighting the ability of AI tools to provide immediate feedback and assist students in identifying and correcting errors[2,4]. While such benefits are real, the teachers expressed specific fears of this use to an over-reliance on AI and the regretful loss in understanding that the students may fail to memorize some of the writing fundamentals and see the less of originality. Such concerns are reflected in the literature that derailed efforts of designing critical thinking and independent writing skills through the uses of AI[16,21].

The observations of the respondents regarding the effects of AI assistance in the writing performance of outcomes are mixed. While teachers believe that AI tools can be helpful for improving writing efficiency and productivity, these teachers believe that the tools can disconnect in some way from the expected academic level of student writing. This indicates that AI tools do not always understand the nuances of academic writing and may produce outputs that are not suitable for the targeted audience. This resonates with studies stating that AI does not generally understand complex context and reasoning[9,20].

One major concern echoed through the respondents is overdependence of students on AI assistance. This can result in a decline in independent writing abilities among the students and more instances of academic dishonesty. This is closely related to the apprehensions over the misuse of AI as a shortcut instead of a means of learning[6,22]. The respondents draw attention to the need to address such concerns through appropriate pedagogical strategies and a culture of academic integrity in the classroom.

Suggestions of the respondents in balancing AI with the conventional mode of teaching shed more light on the thoughtful and deliberate infusion of these tools with the curriculum. They do advocate for a gradual approach to introduce the students to AI assistance that could support their learning and development without sacrificing their writing abilities. This resonates well with the suggested balanced use of AI in educational settings, enabling technology to supplement human judgment and support learning rather than replace it[12,27]. Overall, the findings of this study suggest that while AI assistance has the potential to enhance student writing quality and performance, it is essential to approach its integration into the classroom with caution and a clear understanding of its limitations. Teachers need to be aware of the potential for over-reliance, academic dishonesty, and the impact on students' critical thinking and independent writing skills. By carefully considering these factors and developing appropriate pedagogical strategies, educators can leverage

the potential of AI to support student learning while maintaining the integrity and quality of the educational process.

Objective 2: What are the observed challenges of using AI tools in the writing processes of higher education students?

From the responses from teachers, it is brought to light that there are both benefits and challenges related to the usage of AI tools in the writing processes of college students. Although the applications of AI tools are very helpful and support better writing efficacy by enhancing the confidence levels of students, a lot of challenges still arise in regard to the assessment of a student's abilities, academic integrity, and independent writing skills. These findings fall into the larger tide of research, which demonstrates the features that make integrating AI into educational settings complex[6,28].

The respondents identify several benefits of AI tools in the writing process, including improved writing efficiency, increased student confidence, and enhanced engagement in writing activities. These observations align with research highlighting the potential of AI to provide immediate feedback, reduce writing anxiety, and support students in developing their writing skills[10,24]. However, the respondents also caution that these benefits should be considered in conjunction with the potential challenges of AI integration.

In terms of challenges, teachers highlighted several concerns, including the accuracy of AI assessments the potential for academic dishonesty, and the need for students to master AI command prompts. These concerns align with the broader literature on AI's limitations in understanding complex contexts and reasoning, as well as the risks of AI being misused[4,19]. As AI tools continue to evolve, educators must remain vigilant about these challenges and adjust their strategies accordingly.

In response to these challenges, teachers emphasized the importance of balancing AI tools with traditional teaching methods. They advocated for a gradual, thoughtful approach to integrating AI into the curriculum that supports students' learning without compromising their independent writing skills. In addition, teachers suggested developing innovative writing models that incorporate AI as a supplement to traditional methods, such as teacher feedback and peer review. This perspective aligns with calls in the literature for a balanced approach to AI integration, where technology enhances human judgment and supports learning rather than replacing it entirely[12,27].

Overall, the findings of this study suggest that while AI tools can offer valuable support for student writing, it is essential to approach their integration into the classroom with caution and a clear understanding of their limitations. Teachers need to be aware of the potential for over-reliance, academic dishonesty, and the impact on students' critical thinking and independent writing skills. By carefully considering these factors and developing appropriate pedagogical strategies, educators can leverage the potential of AI to support student learning while maintaining the integrity and quality of the educational process.

6. Conclusion

The primary goal of this study was to explore how HEI teachers perceived the influence of AI assistance on students' writing quality and performance outcomes, as well as to identify the challenges observed in its integration into academic writing processes. Findings revealed that teachers largely acknowledged the positive impact of AI tools on students' linguistic proficiency, particularly in improving grammar, sentence structure, tone, and clarity, which contributed to overall writing coherence and polish. AI tools were credited for offering immediate corrective feedback, enabling students to internalize grammatical conventions and write with greater independence, while also helping them identify errors, foster coherence, and build self-confidence.

Teachers noted that AI access reduced students' writing anxiety and promoted deeper engagement in academic writing and collaborative activities. However, concerns were raised regarding over-reliance on AI, which hindered the development of students' independent thinking, creativity, and critical writing skills, often resulting in outputs that lacked depth and originality. Ethical issues, such as academic dishonesty, were also highlighted, as some students submitted AI-generated work as their own, raising concerns about plagiarism and academic integrity. Additionally, teachers faced challenges in assessment, as AI-generated texts made it difficult to determine originality, assess critical thinking, or evaluate authentic student understanding using traditional rubrics. Consequently, the study contributed to the ongoing discourse on the pedagogical implications of AI in higher education, emphasizing the need for balanced and ethical use of AI tools, promoting AI literacy, reinforcing academic integrity, and adopting assessment strategies that recognize both the benefits and limitations of AI-assisted writing.

Teachers also suggest gradual implementation but caution that a balance should always be struck between relying on AI and the other means of instruction, like feedback from the teacher and peer review. Future studies must examine the long-term effect that AI assistance can have on student writing development, including its influence on critical thinking, creativity, and academic integrity. The potential effectiveness of varying pedagogies for implementing AI tools in a classroom is highly relevant to the research as are the studies pertaining to the development of AI specifically created with the issues and challenges of college students in mind. While considering the conceivable benefits and problems arising from AI assistance, teachers must use the power of AI to support the learning process without compromising the integrity and quality of education.

Conflict of interest

The authors declare no conflict of interest.

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