Research Article

The role of artificial intelligence in transforming the writing process: Benefits, limitations, and future opportunities

Zoleikha Shahbazi [1]* 📧, Ebrahim Mohammadkarimi [1] 📧, Shirzad Yousefiazar [1] 📧, Karzan Othman [1] 📧

[1] University of Raparin, Ranya, IRAQ
Corresponding Author: zoleikha.shahbazi@uor.edu.krd

ABSTRACT

This study focuses on the effect of artificial intelligence (AI) technology on the writing process from its positive effects and limitations to the outlook. A mixed-methods research design was used with focused on 197 English as a foreign language (EFL) teachers and 274 learners from the countries of Iran and Turkey. The quantitative statistics received from the administration of structured questionnaires indicate that all the study respondents had a similar belief about the role of AI tools in improving the quality and speed of writing tasks. Moreover, focus group discussions show that respondents see its ability to eliminate the language barrier, provide tailored instruction on writing, and handle nuisances with focus on students, which is appealing. There is, however, a more complex view that emerges and stresses the importance of recognizing the advantages of these technologies against their shortfalls, which have been documented in the corpus. In an interesting twist, postgraduate students appear to be more value oriented than classification intending angels since they aim for quality content, while undergraduate students appear to prefer the speed at which AI services may offer them assistance. These findings add another dimension exploring the ongoing transformations that writing embraces in this age of advanced technology as it brings interactivity among educators, students, and AI at all times in readiness for different tasks. The present study is hence beneficial to both teachers and learners because it provides insights on how AI can be used in writing improvement and its limitations.

Keywords: artificial intelligence, education, EFL learners, writing process

INTRODUCTION

As stated by Mohammadkarimi (2022), the process of academic writing can be difficult, affective, and complicated. Both native and foreign language learners consider academic writing in the English language as an intricate, necessary and integrative task (Campbell, 2019). English as a foreign language (EFL) students who are supposed to produce written material in English frequently create their ideas in their first language (L1) before attempting to finish the writing work while trying to mentally translate those concepts into English. Writing in a second language (L2) imposes a significant amount of cognitive pressure on the writers because they must translate from their L1 to L2 while utilizing digital mediation resources (online dictionaries, translation software) to finish the process. It has been revealed that this cognitive pressure prevents students from concentrating on higher-level writing activities like organizing and revising, which are crucial to strengthening writing ability and generating higher-level output.

Language teachers currently have a multitude of fascinating technological tools to improve language acquisition, to the point where it can be astonishing (Kessler, 2018). With the emergence and development of artificial intelligence (AI) technologies, educational technologists have been greatly interested in finding ways to successfully incorporate these innovations into the field of teaching and learning (Adams & Chuah, 2022; Shi et al., 2022), particularly in writing skills. A new generation of writing tools has arisen to aid users in the writing process as a result of the development of AI technologies (Gayed et al., 2022; Godwin-Jones, 2022; McKee & Porter, 2020; Puntoni et al., 2021; Tang et al., 2018). These tools integrate AI algorithms to give users higher-level writing assistance and instruction. Automated writing generators (e.g., Textio, Microsoft 365 Pilot and Articoolo), automated written corrective feedback (Grammarly, ProWriting Aid, and Language Tool), and writing paraphrases (Quillbot, Spinbot, and Prepostseo) are some examples of AI writing tools. Students can enhance their writing abilities with the help of these AI-powered writing tools, which are now accessible on mobile devices and the web. This is a reassuring advancement for the education sector

(Nazari et al., 2021) and it is also influencing how teachers deal with L2 writing (Barrot, 2021). Zhao et al. (2025) conducted a research through a large-scale survey of Wordtune users and the users reported that Wordtune provides low-order benefits such as rephrasing and writing more grammatical sentences. At the same time, they confirmed the high-order benefits including reducing mental barriers and creating language learning opportunities. AI writing tools unquestionably have some helpful effects and they improve writing abilities and consistency, however their drawbacks must be taken into consideration as well (Alessandro et al., 2021; Biermann et al., 2022; Chaves & Gerosa, 2021; Floridi & Chiriatti, 2020; Lund & Wang, 2023; McKee & Porter, 2020). Biermann et al. (2022) stated that writers might depend too much on pre-fabricated sentences and phrases and the texts will lose their novelty and creativity. And on the one hand, these AI tools have turned into a huge help for students in doing research. On the other hand, they are utilized by the students in cheating on exams, assignments, essays, and even master's theses (Dwivedi et al., 2023). Black and Tomilson (2025) conducted a qualitative study on undergraduate students in a large General Education course. AI is mainly utilized to enhance the phrasing of students' original ideas, whereas it was used by some students to do more complex tasks such as finding evidence and generating arguments. Complementing this, Yang et al. (2025) demonstrated that when students actively engage with AI by modifying the generated text can achieve higher writing quality than those who accept the texts without changes. These findings suggest that not only the availability of AI tools matters, but also how students interact with them is crucial. In addition, research in academic context shows that scholar's acceptance of AI writing tools is influenced by attitudes and social factors. Al-Bukhrani et al. (2025) applied the Theory of Research Action to investigate the factors affecting academic researchers' acceptance of AI writing tools. Their study confirmed that favorable attitudes and subjective norms have a positive influence on researchers' intentions to use AI writing tools.

Considering the possible uses of AI tools, the researchers must meticulously discuss the uses, and also the risks or shortcomings of AI tools. Hence, the objective of this research is to expose the concrete benefits, fundamental limitations, and possible opportunities of integrating AI into the writing process. The researchers examined the perspectives of both teachers and learners from Iran and Turkey adopting a mixed-method approach. They collected quantitative date through a structured questionnaire and qualitative insights were gathered from semi-structured interviews. In the age of technology when educational paradigms are continually being reshaped, this study contributes to better understanding of the cooperative relationship between human writers and AI technologies.

LITERATURE REVIEW

For a long time, writing has been in the middle of academic meetings and has played an intrinsic role in developing and upgrading knowledge. Due to its significance in enlightening our universe, it has encountered many changes in style and form. Authors have needed variety of tools while writing an academic paper among which, an authenticated source of data is the base. Nowadays, as an author decides on writing a research on a topic, he\she might recon on utilizing AI. AI technology has recently shed light on how we build up a text and revealed new aspects of how we write on a specific topic.

AI has emerged as a transformative technology and revolutionized various fields, including writing. AI works on the base of algorithms by recognizing words, phrases and sentences we provide. Moreover, it can provide information for what we want regardless of the topic. AI has shown various pros and cons throughout its short age (Salvagno et al., 2023).

It can be beneficial to writers. Firstly, it enhances the writing process by providing real-time grammar and spelling corrections, ensuring error-free contents. Additionally, AI algorithms can also generate relevant topic suggestions, assist in organizing ideas, improving overall coherence and structure. AI machines are also beneficial in translation; they have made it easier to translate a paragraph and/or a book. One powerful translator is DeepL Translator which is capable of translating not only paragraphs and pages but also books. DeepL Translator was founded in August 2017 and now it supports 31 languages. It uses convoluted neural networks as a means to facilitate and empower the produced text (Chen, 2023).

Evidence that AI solutions create a new vista of possibilities for teaching and learning in higher education is consistent. Although AI is not (yet) ready to replace teachers teaching varieties of subjects, it does offer a real chance to supplement them. It is vital to acknowledge the existing limitations of AI; therefore, one would conclude that utilizing AI in teaching is beneficial but not sufficient yet (Cheng et al., 2023; Polce et al., 2023).

The quick development of chatbots has helped their users to have access to more efficient and scalable tools such as ChatGPT-3.5 and Chat ChatGPT4 (Zhou et al., 2024). ChatGPT is a software capable of understanding words and phrases and can simulate conversations that seem like human conversations (Fitria, 2023). These newly released chatbots are becoming replacements to facilitate writing by utilizing automated writing bots (Nazari et al., 2021). These chatbots also help students learn and develop their writing skills after having difficulties learning from old-fashioned training (Nazari et al., 2021). New writing chatbots offer flexible and time-saving functions (Koltovskaia, 2020). Thanks to these computer-based software, it is now easier to recognize essay plagiarism (Zawacki-Richter et al., 2019). Moreover, AI technology will facilitate L2 learners' self-directed learning. Zhao (2022) has referred to a newly released AI application which is popular among writers so as to convert their ideas to text through offering phrase options. As such, one would conclude that AI-powered applications are serving the writers to come up with perfect and purified texts.

Traditionally, researchers have literally been dependent on arduous reading of many sources to break down many volumes of articles and books. Nevertheless, developments in natural language processing technology have made it easier to process the texts and extract what is meant by the author. AI has developed to the extent that it is challenging to distinguish

Table 1. Demographic information of EFL teachers

N	Country	Gender		Years of experience	Age (years)	Level of teaching	
		Female	Male			Undergraduate	Postgraduate
111	Iran	63	48	≈ 11	≈ 37	86	25
86	Turkey	49	37	≈ 8	≈ 34	69	17
Total = 197		112	85	≈ 10	≈ 36	155	42

Table 2. Demographic information of EFL students

N	Country	Gender		Age (years)	Level of teaching	
		Female	Male		Undergraduate	Postgraduate
152	Iran	91	61	≈ 23	98	54
122	Turkey	73	49	≈ 23	76	46
Total = 274		164	110	≈ 23	174	100

between a text written by human and one which is written by AI (Dergaa et al., 2023). AI Technology can make a well-written student essay handy, make answers ready for a biological exam and rearrange computer codes in order to generate a new one. Mohammadkarimi (2023) believe that AI can have positive effects on writers who have faced language barriers.

AI texts have some malignant disadvantages of which originality is the absolute weakness (Chen, 2023). It is obvious that AI machines borrow their productions from the initial ideas that have been provided throughout the web, so that their texts are not literally original. Consequently, one can't get new science added to what has already been approved.

Alongside all the benefits of AI-powered Application, in this article, the limitations of AI technology are monitored. As Sumakul et al. (2022) has said AI catboats can manipulate education by changing how teachers teach and how students learn. In a research being done in an English class in Indonesia, the students were provided with an AI-powered website. The website is utilized to paraphrase short stories, make plot summaries, and write about the themes of the stories. Alongside all the advantages of the website, the participants reported some drawbacks of AI technology. The students reported shortcomings of sentence production, unwanted sections in their summaries, summary incoherency, and the same patterns.

Another argument that AI technology has arisen is artificial hallucinations, which are the phenomena of a machine, such as chabot, producing remarkably lifelike sensory sensations that do not correspond to any input from the outside world (Alkaissi & McFarlane, 2023). Deniz (2023) criticizes the shortcomings of AI technology as it could provide unreliable and unethical texts as it derives its data from the internet which its authentication is the subject of debate. Perlman evaluated the text produced by ChatGPT and highlighted the potential for imagining a new future by considering the ethical concerns, flawed applications, and plagiarism issues associated with AI in a collaborative study where Perlman and ChatGPT served as co-authors.

This review tended to track the available studies regarding the benefits and limitations of AI concerning writing. After reviewing these studies, it is now clear that no or less research is done on the appreciated topic. Hence, it is now significant to shed more light on and write pricelessly on the benefits and limitations of utilizing AI in writing.

METHODOLOGY

Participants

Participants in the current research were two groups of 197 EFL teachers and 274 learners from Iran and Turkey. Availability sampling was used to collect the data from these participants. As **Table 1** illustrates, teachers (N = 197) consisted of both females and males, were mostly teaching at undergraduate levels, and had various ages and teaching experiences.

The second group of participants consisted of 274 EFL students from Iran and Turkey. They were mostly undergraduate students (N = 174) and mostly female (N = 164), with an average age of 23 years old (**Table 2**).

Research Questions

1. What are the tangible benefits of integrating AI into the writing process, and how do they contribute to enhancing the efficiency, quality, and overall experience of writers?

2. What are the inherent limitations and challenges associated with using AI-assisted writing tools, particularly in terms of creativity, bias detection, and the potential risk of over-reliance on automated suggestions?

3. In light of current advancements and trends, what future opportunities exist for the harmonious collaboration between human writers and AI in the writing process? How might this collaboration lead to innovative writing practices and cross-lingual support?

Research Design

The study aims to comprehensively explore the role of AI in transforming the writing process, focusing on its benefits, limitations, and future opportunities. To achieve this, a mixed-methods research design was employed, integrating quantitative data collected through a structured questionnaire and qualitative insights gained from semi-structured interviews. A structured questionnaire (including 13 questions) was designed by the researchers, and its reliability was measured by Cronbach's alpha, which was 0.86, showing a good result. The instrument was given to the students and the teachers for the purpose of surveying their opinions on the advantages, disadvantages and possible courses of development of the AI-enabled writing. The questionnaire

Table 3. Benefits of AI in writing-1

Items	STD	D	NT	A	STA
1. I believe AI-assisted tools have improved the efficiency of my students' writing tasks.	0%	26%	6%	68%	2%
2. I believe AI tools have contributed to enhancing the quality of my students' written content.	6%	28%	6%	54%	6%
3. I believe AI integration has made the writing process of students more convenient.	0%	26%	12%	60%	6%
4. I believe AI-assisted grammar and style suggestions have been helpful in my students' writing.	0%	6%	12%	76%	6%
5. I believe AI-powered tools have supported students in generating creative ideas for their writing.	0%	14%	8%	72%	6%

Note. STD: Strongly disagree; D: Disagree; NT: neutral; A: Agree; & STA: Strongly agree

Table 4. Limitations and challenges of AI in writing-1

Items	STD	D	NT	A	STA
6. I find that AI-generated content sometimes lacks human touch and authenticity.	0%	0%	0%	62%	38%
7. I am concerned that heavy reliance on AI tools may erode my students' writing skills.	0%	24%	12%	52%	12%
8. AI-generated content can inadvertently introduce biases into writing.	0%	18%	12%	52%	18%
9. In my experience, AI-generated content requires significant post-editing.	30%	13%	1%	38%	18%

Note. STD: Strongly disagree; D: Disagree; NT: neutral; A: Agree; & STA: Strongly agree

Table 5. Future opportunities and collaboration with AI in writing-1

Items	STD	D	NT	A	STA
10. AI tools have the potential to assist in overcoming language barriers in writing.	2%	26%	0%	30%	42%
11. Students are open to collaborating with AI to enhance their writing process.	48%	32%	0%	20%	0%
12. AI could contribute to more personalized and tailored writing suggestions.	8%	15%	1%	62%	14%
13. AI can play a role in automating routine writing tasks, freeing up time for more creative aspects.	28%	10%	0%	44%	18%

Note. STD: Strongly disagree; D: Disagree; NT: neutral; A: Agree; & STA: Strongly agree

contained Likert scales in order to quantify subjects' attitudes. Furthermore, a subset of the participants was interviewed in a semi-structured way to explore their opinion in a more detailed manner. The interviews provided an opportunity to elaborate more on the experience, issues and thoughts of the participants regarding the use of AI in writing assistance. The entire research process also observed ethical considerations. All of the participants provided informed consent and their identity and privacy were protected. It was an opt-in process, and participants could leave at any time if they so wished.

Data Analysis

The quantitative data obtained from the questionnaire assessment was assessed through descriptive statistics in order to present a summary of the participants' views on the use of AI in writing. The responses given by students and teachers were compared in order to highlight any significant differences and respective tests employed. The qualitative data obtained through interviews was analyzed through thematic analysis. Transcripts were coded to identify recurring themes, patterns, and variations in participants' narratives. These themes provided insights into participants' experiences and attitudes towards AI in writing.

RESULTS

Teachers' Questionnaire

In the first section of the teachers' questionnaire, respondents provided their perspectives on the benefits of AI in writing (**Table 3**). The data indicates that a substantial majority (70%) agreed or strongly agreed that AI-assisted tools have significantly improved the efficiency of their students' writing tasks. A similar trend is observed for the belief that AI tools have contributed to enhancing the quality of students' written content, with 60% agreeing or strongly agreeing.

Additionally, 72% of participants expressed agreement or strong agreement that AI-powered tools have supported students in generating creative ideas for their writing endeavors. However, opinions are more varied when it comes to the convenience of the writing process through AI integration, as 72% leaned toward agreement or neutrality. Furthermore, AI-assisted grammar and style suggestions received substantial recognition, as 82% of participants agreed or strongly agreed that such tools were helpful in improving their students' writing.

In the second section of the teachers' questionnaire, participants were asked to reflect on the limitations and challenges associated with the use of AI in writing (**Table 4**). According to the findings, a significant majority of respondents (38%) believe that human-authored material often has the human touch and authenticity that AI-generated content sometimes lacks. Furthermore, 64% of those who either disagreed with the statement or strongly disapproved voiced worry about the possible degradation of students' writing abilities as a result of the significant dependence on AI technologies. The assumption that AI-generated material may unintentionally bring biases into writing was likewise supported by a significant percentage of respondents (70%) who responded. A significant 61% of participants agreed or strongly agreed that post-editing is often necessary for AI-generated material, indicating a skepticism about the technology's ability to completely replace human editing and refining procedures.

Participants shared their ideas and attitudes about possible future prospects for cooperation between writing and AI in the last portion of the instructors' questionnaire (**Table 5**). The statistics imply that a sizeable majority of participants (42%) think that AI tools have the ability to help students who have language-related difficulties in their writing overcome such hurdles, demonstrating an upbeat assessment of the technology's capabilities in doing so. Additionally, according

Table 6. Benefits of AI in writing-2

Items	STD	D	NT	A	STA
1. AI-assisted tools have improved the efficiency of my writing tasks.	9%	%7	%9	%49	%26
2. AI tools have contributed to enhancing the quality of my written content.	0%	2%	5%	88%	5%
3. AI integration has made the writing process more convenient for me.	0%	1%	1%	89%	9%
4. AI-assisted grammar and style suggestions have been helpful in my writing.	0%	1%	5%	89%	5%
5. AI-powered tools have supported me in generating creative ideas for my writing.	0%	2%	5%	88%	5%

Note. STD: Strongly disagree; D: Disagree; NT: neutral; A: Agree; & STA: Strongly agree

Table 7. Limitations and challenges of AI in writing-2

Items	STD	D	NT	A	STA
6. I find that AI-generated content sometimes lacks human touch and authenticity.	15%	17%	29%	31%	8%
7. I am concerned that heavy reliance on AI tools may erode my writing skills.	31%	22%	11%	23%	13%
8. AI-generated content can inadvertently introduce biases into writing.	19%	14%	37%	22%	8%
9. In my experience, AI-generated content requires significant post-editing.	28%	41%	14%	12%	5%

Note. STD: Strongly disagree; D: Disagree; NT: neutral; A: Agree; & STA: Strongly agree

to 68% of respondents, students are receptive to working with AI to improve their writing process, indicating a readiness to accept AI as a helpful tool in the educational setting. Approximately 76% of participants agreed that AI could provide more individualized and adapted writing ideas, demonstrating their confidence in AI's capacity to meet the writing demands of particular pupils. The research also reveals that 62% of respondents agreed that AI may play a role in automating mundane writing chores, freeing up students' time to participate in more creative parts of writing, maintaining a balance between automation and human creativity in the writing process.

Students' Questionnaire

The responses to the first section of the students' questionnaire provide light on how they see the advantages of AI in the writing process (**Table 6**). According to the statistics, 75% of the students agree or strongly agree that using AI-assisted tools has increased the effectiveness of their writing assignments, showing that they are aware of the advantages of the technology in job completion. Furthermore, 93% of students agree that using AI tools has improved the quality of their written work, demonstrating their confidence in AI's potential to have a beneficial impact on content production. Furthermore, 98% of respondents agree that the addition of AI has made writing easier for them, indicating that students see AI as a tool that improves their entire writing experience. The data also shows that 94% of students find AI-assisted grammar and style suggestions helpful in their writing, indicating their reliance on AI to refine their writing skills. Furthermore, 93% of students agree that AI-powered tools have supported them in generating creative ideas for their writing, highlighting the technology's role in fostering creativity.

Undergraduate students generally show a stronger consensus that AI-assisted tools have significantly improved the efficiency of their writing tasks, likely reflecting their inclination towards seeking quicker solutions for assignments. In contrast, post-graduate students exhibit a slightly more nuanced perspective, with a greater emphasis on the enhancement of the quality of their written content. This divergence might arise from post-graduates' higher expectations and standards for the caliber of their work. Both groups largely concur that AI integration has made the writing

process more convenient, which could be attributed to the routine nature of many undergraduate assignments.

In the second section of the students' questionnaire, the responses shed light on their perceptions of the limitations and challenges associated with AI in the writing process (**Table 7**). The data indicates that 46% of students find that AI-generated content sometimes lacks human touch and authenticity, highlighting concerns about the ability of AI to replicate the nuanced aspects of human writing. Furthermore, 54% of students express concerns that a high reliance on AI tools may impair their writing abilities, indicating worries about an excessive reliance on technology. Furthermore, 59% of students agree that AI-generated material may unintentionally add biases into writing, demonstrating that they are aware of possible problems with AI-generated content. However, just 17% of students agree that post-editing is necessary for AI-generated material, indicating that the majority of students believe post-editing is not necessary for AI-generated content.

While post-graduate students show slightly more serious worry about the possible degradation of their writing abilities owing to an excessive dependence on AI tools than undergraduate students do, both groups of students agree that sometimes AI-generated text lacks human touch and authenticity. This distinction may arise from post-graduates' greater emphasis on maintaining robust writing capabilities throughout their academic journeys. Moreover, both groups recognize the inadvertent introduction of biases through AI-generated content, though this apprehension is more prevalent among post-graduates. Interestingly, post-graduates also highlight the necessity of significant post-editing for AI-generated content, potentially due to their heightened standards for refined work.

The final section of the survey asks students questions about their opinions on potential prospects and working with AI throughout the writing process (**Table 8**). According to the statistics, 66% of students think AI technologies might help them write across language boundaries, showing confidence in AI's potential to facilitate cross-language communication. Furthermore, 87% of students indicate they are open to working with AI to improve their writing process, indicating a desire to use AI technology for better writing outputs. Additionally, 87% of students agree that AI might help to give

Table 8. Future opportunities and collaboration with AI in writing-1

Items	STD	D	NT	A	STA
10. AI tools have the potential to assist in overcoming language barriers in writing.	12%	9%	13%	41%	25%
11. I am open to collaborating with AI to enhance my writing process.	4%	8%	1%	77%	10%
12. AI could contribute to more personalized and tailored writing suggestions.	3%	2%	1%	85%	9%
13. AI can play a role in automating routine writing tasks, freeing up time for more creative aspects.	7%	16%	21%	48%	8%

Note. STD: Strongly disagree; D: Disagree; NT: neutral; A: Agree; & STA: Strongly agree

more specific and customized writing ideas, highlighting their confidence in AI's ability to provide customized writing assistance. Last but not least, 56% of students agree that AI may automate repetitive writing chores, freeing up time for more creative parts, highlighting the assumption that AI might increase efficiency in writing-related tasks.

Given their varied language backgrounds, and probable need for increased clarity in their assignments, undergraduate students seem more enthused about AI's ability to help overcome language obstacles in writing. However, despite post-graduate students' potential slight preference for keeping their own writing abilities, both groups are similarly willing to collaborate with AI to improve their writing processes. Additionally, both undergraduate and graduate students are aware of the potential of AI for providing targeted and personalized writing recommendations. Last but not least, students show a higher interest in how AI may automate repetitive chores to free up time for creative activities, which is in line with their desire to effectively manage several assignments.

Interviews

Participants in the interviews were 34 students as well as 21 teachers from main participants.

Students' interviews

Regarding the first question, the students' answers highlight the positive impact of using AI tools in writing. They consider the emergence of AI as a welcome shift in their writing experience, in that, it has made everything more fun and efficient. A majority of the civil engineering students interviewed talked about how the AI takes care of the grammar style thereby making their work of better quality. The students applaud the fact that the task of generating ideas and outlines by the AI has made it easier for them to write.

> In other words, a turn in the writing process is enabled when the writers apply the so-called AI tools. The process becomes less cumbersome in terms of taking up time. For instance, AI assists detecting grammatical errors that I may overlook in editing which improves the quality of my content (student 23).

> AI has several useful applications, in particular, it is time-saving when organizing my thoughts. For instance, the software can also provide me with the topic and an outline of the essay which enhances my writing further (student 7).

> AI provides two things, which are qualitative and quantitative advantages. It also addresses the issue of coherence and style, hence improving my writing. It is

almost as if there is a mechanism that aids the writing process (student 2).

In the second question, students had differing views regarding the writing skills of AI. Some raised concern that dependence on AI in carrying out tasks would decrease their imagination and originality, as they hold the stance that human created content is unique and personal. Some also expressed concern on the fact that AI generated content would come from content with existing bias. They find AI tools useful, however, most of the students indicate that there is a need for post-editing in order to fit AI proposals to their writing.

> Personally, I am apprehensive of this technology. It's tempting, but I feel like it will inhibit my creative abilities. There is something unique about writing by hand (student 16).

> There might be some other issues with AI content. It can be repetitive. This is worth considering (student 31).

> AI tools are great, but they are not that great. I do a lot of work on what the AI writes to fit my style primarily (student 9).

In the last question, the students envision the future of AI and human writers as a partnership. They appreciate the usefulness of AI in bridging the language gaps, enhancing communication across languages and geographies, and increasing the distribution of their written works. A theme of creative partnership emerges, with students believing that AI can provide valuable suggestions while humans bring unique perspectives, leading to innovative and unconventional writing. The automation potential of AI is acknowledged, especially in handling routine tasks, allowing writers to focus on more creative aspects.

> The future is AI and humans working together. AI can help with languages, which is good for global writing (student 3).

> AI and humans can make writing more creative. AI gives ideas, and humans add unique things (student 26).

> AI can do boring tasks, which leaves time for creative stuff. It can format and fix, so I focus on the important parts (student 22).

Teachers' interviews

In answering the first question, the teachers' responses align closely with the students' feedback on the benefits of AI

in writing. Both groups acknowledge AI's positive impact on efficiency and content quality. The teachers' answers emphasize how AI tools accelerate the writing process, enabling more time for refining work, which resonates with the students' viewpoints on improved efficiency and enhanced content quality through AI assistance.

> The integration of AI tools has indeed revolutionized writing efficiency. Students now accomplish tasks faster with AI-powered grammar checks and instant editing suggestions, which enhances their productivity (teacher 17).

> The influence of artificial intelligence is indeed remarkable. It enhances the speed of writing considering that additional time can be devoted to improving the quality of the written content. The help is automatic and makes it possible to present work that is well organized and free of mistakes (teacher 20).

> The advantages of artificial intelligence are clear. Proofreading, which is a very tedious process, is now fast because of AI. This enhances the quality of the content and motivates learners to be more productive in their writing (teacher 3).

Responses from teachers to the second question reflect the worries students have concerning the confines and struggles of AI. Both teachers and students are apprehensive about the inhuman nature of content generated by AI, that students may become too dependent on AI and not be creative enough, and finally that such content generation may introduce some form of bias. These mutual sentiments underscore a collective understanding regarding the drawbacks associated with AI and the reasons for its careful use.

> AI is a tremendous help even though it is very important to acknowledge the weaknesses associated with its use. It can generate content but lacks certain elements whereby human beings are needed to actually make it real (teacher 6).

> Enthusiasm towards the capabilities of AI advancement is welcome. However, we must be very careful not to abuse it as that would mean that students will not be able to think creatively over the years (teacher 16).

> The use of AI-created materials should be tempered. It is important to remember that AIs may unintentionally perpetuate bias from their training data, and so thorough revision is needed (teacher 9).

Teachers and students are aligned in last question in envisioning a future where AI-human collaboration is impactful. Both groups anticipate AI's role in overcoming language barriers, providing personalized suggestions, and automating mundane tasks. The shared expectation of fostering innovative writing practices through AI-human partnership signifies a collective understanding of AI's potential contributions to the writing process.

> The future collaboration between AI and writers holds immense promise. AI could provide real-time language suggestions, making cross-lingual communication smoother and fostering global reach (teacher 14).

> AI-human partnership is the way forward. While AI aids in generating ideas, human writers bring unique perspectives and creativity, leading to innovative writing practices (teacher 1).

> AI's potential to automate routine tasks is exciting. This would free up valuable time for writers to focus on intricate aspects, ultimately leading to more creative and refined work (teacher 4).

DISCUSSION

The current study was designed to show the impact of incorporating AI into the writing process. Based on the results, a clear understanding can be drawn from the perspectives of both teachers and students. The aim of the research questions was to uncover the tangible benefits, inherent limitations, and hidden possibilities that AI provides in writing; and the results reveal a complex interaction between views and attitudes.

The benefits of AI in the writing process are well-acknowledged by both teachers and students. Almost all the teachers who participated in the questionnaire undoubtedly admit that the efficiency and quality of their students' writing tasks have been drastically improved through AI-assisted tools.

There can be seen, based on the results, a relatively different perspective regarding the challenges and limitations connected with AI, reiterating the need for striking a balance between the benefits of AI with its potential limitations, as outlined in the literature review.

Moreover, both teachers and students demonstrate their interest in making use of AI in the writing process. They recognize the outstanding ability of AI to get rid of language constraints, provide personalized writing suggestions, and automate routine tasks. The idea of AI automating repetitive tasks to free up time for more creative aspects of writing is, in particular, more appealing to students. These results highlight the fact that both educators and students approve AI as a remarkably useful tool that makes their writing process easier along with their readiness for future collaboration. Furthermore, consistency can be seen between the responses of students and teachers regarding future opportunities and collaboration with AI in writing with the literature's discussion of the potential ability of AI to improve language learning, provide personalized writing suggestions, and automate routine writing tasks.

The results demonstrate some noteworthy differences, despite the similarities that exist in the perspective of both teachers and students, On the one hand, the AI-assisted tools seem to be more appealing to undergraduate students, the post-graduate students, on the other hand, exhibit a more nuanced perspective, putting more emphasis on the enhancement of content quality. This may indicate that

undergraduate students resort to AI to have their assignments done in a relatively short time.

While both teachers and students show similar perspectives, the results suggest some evident differences as well. On the one hand, the AI-assisted tools seem to be more appealing to undergraduate students, the post-graduate students, on the other hand, exhibit a more nuanced perspective, putting more emphasis on the enhancement of content quality. This may indicate that undergraduate students resort to AI to have their assignments done in a relatively short time. The reason for such discrepancy may reflect the higher expectations and standards that post-graduate students have for their work.

This study supports the findings of the previous studies that have thoroughly investigated the advantages of AI tools, such as improved efficiency, higher-quality content, and convenience. This aligns with the findings of the studies conducted by (Chen, 2023; Mohammadkarimi, 2023) which includes real-time grammar and spelling corrections, organization of ideas, and assistance in translation. Both sources recognize the significant help AI provides the writers in producing error-free and coherent content. In terms of keeping the balance of AI and human competence as mentioned by Deniz (2023), the results of the current study emphasize the same concern and acknowledge that while AI can be a valuable tool, it should not replace the human touch entirely, reiterating the importance of keeping human creativity and avoiding skill erosion. The study by Black and Tomilson (2025) confirm our findings when their participants mention both advantageous and selective use of AI that shows students are quite reflective about when AI helps and when it hinders. Moreover, Yang et al. (2025) support our study when users actively engage with AI for editing which suggests that the mode of interaction with AI in important. The study by Zhao et al. (2025) showed that many Wordtune users apply the tool both for mechanical corrections and higher-order rewriting and idea refinement. They also report a few serious drawbacks and dependency issues. This reinforces our finding that participants see AI as helpful, whereas they emphasize keeping a balance. In terms of researchers' perspectives, Al-Bukhrani et al. (2025) provide important context. They show that favorable attitudes and subjective norms play a stronger role in adopting AI writing tools than perceived barriers. This may help explain why teachers and learners in our study were also inclined to adopt AI despite recognizing limitations.

When it comes to the way in which the current study differs from the previous studies, this study prioritizes its objective to explore the benefits of using AI in writing, while other studies mentioned in the literature shed light on topics like originality concerns (Chen, 2023), manipulation of education (Sumakul et al., 2022), and ethical concerns (Alkaissi & McFarlane, 2023).

This is a clear indication that the study serves to enhance the current knowledge of the field, as highlighted in the literature review. Correspondingly, there are concerns about the drawbacks and challenges of AI, such as the possibility of the degradation of writing skills and the introduction of biases, which are still present today. These results align with Biermann et al. (2022) and Dwivedi et al. (2023), among others, who pointed to the students over dependence on AI for their writing.

In a nutshell, the advantages of incorporating AI into the writing process are well-recognized by both teachers and students. Hence, its potential to enhance efficiency, quality, and creativity is acknowledged as well. However, there are concerns about the loss of human touch, potential skill erosion, and bias introduction. It is highly expected that there will be a collaboration between human writers and AI technologies in the future, along with the willingness to search for opportunities aiming at getting personal assistance and task automation. As AI continues to develop faster, further research should investigate both whether AI is used and how users interact with it. Providing a better understanding of the perspectives of those who are directly involved in academic writing can clearly show the contribution of this study.

CONCLUSION

This study underscores the evolving role of AI in education, particularly in writing. The research findings indicate that AI-assisted tools have significantly improved the efficiency and quality of the writing process. AI is perceived as a valuable resource for grammar and style suggestions, enhancing the convenience of writing, and aiding in idea generation. However, there are concerns about AI-generated content lacking human touch and authenticity.

Additionally, it diminishes creativity and enhances the chances of such content becoming automated and yet biased, owing to the excessive use of AI. There are occasions when it is necessary to edit in order to fit AI content into a suit of the user's writing style. Concerning the prospects, AI will assist in eliminating the challenges posed by language differences, enhancing reach, and providing users with content tailored to their needs. Repetitive tasks can be taken over by AI, allowing writers more time for the enjoyable components of the composition. The research underscores the point that while machine intelligence has to be relied on in writing, it has to be used in a manner that supports and enhances the human element of creativity as opposed to replacing it. In summary, this study illustrates the role of AI as an important writing and teaching aid for all the stakeholders. Longitudinal studies are encouraged to support this claim. As AI technologies develop over time, their employment within the writing process can only be beneficial in abstracting the writing outcomes while maintaining the essence of writing within the writer.

Limitations

This research provides valuable insight on the perspectives of EFL teachers and students regarding the use of AI in writing, though caution must be exercised in drawing conclusions from the findings by recognizing the drawbacks of the study.

1. Concerning sampling, the presence of Availability sampling in the research could induce bias. There may be contradictions between the opinions of study participants who took part in the research on a voluntary basis and those who did not take part and risk the generalizability of the findings.

2. The article does not detail whether AI in writing was viewed differently by respondents at different time intervals. Given the rapid evolution of AI tools and

technology, it is also expected that there will be differing views and many challenges in the future.

Implications

The present research has several implications that can inform educational practices, technology development, and future research in the field of AI education. Both EFL teachers and students perceive AI as a valuable tool for improving the efficiency and quality of the writing process. This suggests that educators and institutions should consider integrating AI writing tools into language learning and teaching curricula to support students in their writing tasks. Overreliance on AI tools leads to lack of creativity and authenticity in students' writing. Educators need to emphasize the importance of striking a balance between using AI for assistance and encouraging students to develop their creative writing skills. Participants in this study recognize the potential of AI in automating routine writing tasks. Institutions and students can explore ways to leverage AI to streamline administrative and repetitive writing tasks. Given the multidisciplinary nature of AI in education, collaboration between educators, technologists, and researchers is crucial. Cross-disciplinary efforts can lead to more effective and pedagogically sound AI writing solutions.

Suggestions For Further Research

To further investigate the effectiveness of AI in boosting students' writing ability, researchers may consider the following recommendations:

1. Comparative studies involving participants from different cultural backgrounds explore how cultural factors may influence attitudes and experiences related to AI in writing.

2. Long-term studies that track the attitudes and experiences of students and teachers over an extended period. It can help reveal how perceptions of AI in writing evolve with increased exposure and technological advancements.

3. The impact of educational levels (e.g., primary, secondary, and higher education) and academic disciplines on the adoption and perception of AI writing tools. Different levels and fields have unique requirements and attitudes.

4. Ethical considerations surrounding AI in education. Explore the extent to which students and teachers are aware of AI biases and ethical issues and how education can address these concerns.

REFERENCES

Adams, D., & Chuah, K.-M. (2022). Artificial intelligence-based tools in research writing: Current trends and future potentials. In P. P. Churi, S. Joshi, M. Elhoseny, & A. Omrane (Eds.), *Artificial intelligence in higher education* (pp. 169-184). CRC Press. https://doi.org/10.1201/97810031841 57-9

Al-Bukhrani, M. A., Alrefaee, Y. M. H., & Tawfik, M. (2025). Adoption of AI writing tools among academic researchers: A theory of reasoned action approach. *PLoS ONE, 20*(1), Article e0313837. https://doi.org/10.1371/journal.pone. 0313837

Alessandro, C., Lorenzo, B., Pierpaolo, L., Pinfield, S., & Bianchi, G. (2021). AI-assisted peer review. *Humanities and Social Sciences Communications, 8,* Article 25. https://doi.org/10.1057/s41599-020-00703-8

Alkaissi, H., & McFarlane, S. I. (2023). Artificial hallucinations in ChatGPT: Implications in scientific writing. *Cureus, 15*(2), Article e35179. https://doi.org/10.7759/cureus. 35179

Barrot, J. S. (2021). Using automated written corrective feedback in the writing classrooms: Effects on L2 writing accuracy. *Computer-Assisted Language Learning, 36*(4), 584-607. https://doi.org/10.1080/09588221.2021.1936071

Biermann, O. C., Ma, N. F., & Yoon, D. (2022). From tool to companion: Storywriters want AI writers to respect their personal values and writing strategies. In *Proceedings of the 2022 ACM Designing Interactive Systems Conference* (pp. 1209-1227). ACM. https://doi.org/10.1145/3532106. 3533506

Black, R. W., & Tomlinson, B. (2025). University students describe how they adopt AI for writing and research in a general education course. *Scientific Reports, 15*, Article 8799. https://doi.org/10.1038/s41598-025-92937-2

Campbell, M. (2019). Teaching academic writing in higher education. *Education Quarterly Reviews, 2*(3), 608-614. https://doi.org/10.31014/aior.1993.02.03.92

Chaves, A. P., & Gerosa, M. A. (2021). How should my chatbot interact? A survey on social characteristics in human-chatbot interaction design. *International Journal of Human-Computer Interaction, 37*(8), 729-758. https://doi.org/ 10.1080/10447318.2020.1841438

Chen, T. J. (2023). ChatGPT and other artificial intelligence applications speed up scientific writing. *Journal of the Chinese Medical Association, 86*(4), 351-353. https://doi.org/10.1097/JCMA.0000000000000900

Cheng, K., Li, Z., He, Y., Guo, Q., Lu, Y., Gu, S., & Wu, H. (2023). Potential use of artificial intelligence in infectious disease: Take ChatGPT as an example. *Annals of Biomedical Engineering, 51*, 1130-1135. https://doi.org/10.1007/s10439-023-03203-3

Deniz, G. (2023). The role of artificial intelligence in academic paper writing and its prospective application as a co-author: A letter to the editor. *European Journal of Therapeutics, 30*(1), 84-86. https://doi.org/10.58600/eurjther1808

Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. B. (2023). From human writing to artificial intelligence generated text: Examining the prospects and potential threats of ChatGPT in academic writing. *Biology of Sport, 40*(2), 615-622. https://doi.org/10.5114/biolsport.2023.125623

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., & Ahuja, M. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management, 71*, Article 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Fitria, T. N. (2023). Artificial intelligence (AI) technology in OpenAI ChatGPT application: A review of ChatGPT in writing English essay. *ELT Forum: Journal of English Language Teaching, 12*(1), 44-58. https://doi.org/10.15294/elt.v12i1.64069

Floridi, L., & Chiriatti, M. (2020). GPT-3: Its nature, scope, limits, and consequences. *Minds and Machines, 30*, 681-694. https://doi.org/10.1007/s11023-020-09548-1

Gayed, J. M., Carlon, M. K. J., Oriola, A. M., & Cross, J. S. (2022). Exploring an AI-based writing assistant's impact on English language learners. *Computers and Education: Artificial Intelligence, 3*, Article 100055. https://doi.org/10.1016/j.caeai.2022.100055

Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Language Learning & Technology, 26*(2), 124-128. https://doi.org/10.64152/10125/73474

Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals, 51*(1), 205-218. https://doi.org/10.1111/flan.12318

Koltovskaia, S. (2020). Student engagement with automated written corrective feedback (AWCF) provided by Grammarly: A multiple case study. *Assessing Writing, 44*, Article 100450. https://doi.org/10.1016/j.asw.2020.100450

Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: How may AI and GPT impact academia and libraries? *Library Hi Tech News, 40*(3), 26-29. https://doi.org/10.1108/lhtn-01-2023-0009

McKee, H. A., & Porter, J. E. (2020). Ethics for AI writing: The importance of rhetorical context. In *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society* (pp. 110-116). ACM. https://doi.org/10.1145/3375627.3375811

Mohammadkarimi, E. (2022). Analytic assessment of TEFL undergraduate students' writings: Diagnosing areas of strength and weakness. *International Journal of Language Testing, 12*(2), 25-44. https://doi.org/10.22034/IJLT.2022.157123

Mohammadkarimi, E. (2023). Teachers' reflections on academic dishonesty in EFL students' writings in the era of artificial intelligence. *Journal of Applied Learning and Teaching, 6*(2). https://doi.org/10.37074/jalt.2023.6.2.10

Nazari, N., Shabbir, M. S., & Setiawan, R. (2021). Application of Artificial Intelligence powered digital writing assistant in higher education: Randomized controlled trial. *Heliyon, 7*(5), Article e07014. https://doi.org/10.1016/j.heliyon.2021.e07014

Polce, E. M., & Kunze, K. N. (2023). A guide for the application of statistics in biomedical studies concerning machine learning and artificial intelligence. *Arthroscopy: The Journal of Arthroscopic & Related Surgery, 39*(2), 151-158. https://doi.org/10.1016/j.arthro.2022.04.016

Puntoni, S., Reczek, R. W., Giesler, M., & Botti, S. (2021). Consumers and artificial intelligence: An experiential perspective. *Journal of Marketing, 85*(1), 131-151. https://doi.org/10.1177/0022242920953847

Salvagno, M., Taccone, F. S., & Gerli, A. G. (2023). Can artificial intelligence help for scientific writing?. *Critical Care, 27*, Article 75. https://doi.org/10.1186/s13054-023-04380-2

Shi, Z., Liu, F., Lai, C., & Jin, T. (2022). Enhancing the use of evidence in argumentative writing through collaborative processing of content-based automated writing evaluation feedback. *Language Learning & Technology, 26*(2), 106-128. https://doi.org/10.64152/10125/73481

Sumakul, D. T. Y., Hamied, F. A., & Sukyadi, D. (2022, February). Students' perceptions of the use of AI in a writing class. In *Proceedings of the 67th TEFLIN International Virtual Conference & the 9th ICOELT 2021* (pp. 52-57). Atlantis Press. https://doi.org/10.2991/assehr.k.220201.009

Tang, A., Tam, R., Cadrin-Chênevert, A., Guest, W., Chong, J., Barfett, J., Chepelev, L., Cairns, R., Mitchell, J. R., & Cicero, M. D. (2018). Canadian Association of Radiologists white paper on artificial intelligence in radiology. *Canadian Association of Radiologists Journal, 69*(2), 120-135. https://doi.org/10.1016/j.carj.2018.02.002

Yang, K., Raković, M., Liang, Z., Yan, L., Zeng, Z., Fan, Y., Gašević, D., & Chen, G. (2025). Modifying AI, enhancing essays: How active engagement with generative AI boosts writing quality. In *Proceedings of the 15th International Learning Analytics and Knowledge Conference* (pp. 568-578). ACM. https://doi.org/10.1145/3706468.3706544

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education*, *16*, Article 39. https://doi.org/10.1186/s41239-019-0171-0

Zhao, X. (2022). Leveraging artificial intelligence (AI) technology for English writing: Introducing Wordtune as a digital writing assistant for EFL writers. *RELC Journal, 54*(3), 890-894. https://doi.org/10.1177/00336882221094089

Zhao, X., Sbaffi, L., & Cox, A. (2025). The digitisation of writing in higher education: Exploring the use of Wordtune as an AI writing assistant. *Electronics, 14*(6), Article 1194. https://doi.org/10.3390/electronics14061194

Zhou, J., Ke, P., Qiu, X., Huang, M., & Zhang, J. (2024). ChatGPT: Potential, prospects, and limitations. *Frontiers of Information Technology & Electronic Engineering*, *25*, 6–11. https://doi.org/10.1631/FITEE.2300089