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The Role of AI-Powered Chatbots in Enhancing EFL Learners' Writing Macro Skills: Perceptions and Challenges

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ABSTRACT

This study investigates the perceptions and challenges experienced by Saudi English as a Foreign Language (EFL) learners when using AI-powered chatbots to enhance their writing macro skills. A three-part questionnaire was administered to 206 EFL students at Qassim University to explore their views on the usefulness, motivational impact, and difficulties associated with these tools. The findings indicate that students perceive AI chatbots as highly beneficial for improving organizational and structural aspects of writing, such as essay structure, paragraph transitions, and idea development. However, perceptions were more moderate regarding their effectiveness in enhancing deeper analytical elements like argument coherence and critical thinking. Furthermore, the results displayed that while chatbots serve as a motivational tool for task engagement, their capacity to foster intrinsic motivation for critical analysis was limited. Significant challenges identified include generic feedback, suggestions misaligned with intended style or structure, and concerns about over-reliance and the suppression of personal voice. Qualitative analysis emphasized these issues, disclosing fears of dependency, superficial feedback, and a potential loss of authorial voice. The study concludes that while AI chatbots are valuable supplementary tools for developing writing macro skills, their integration requires careful pedagogical design to address their limitations and ethical considerations. Educators are recommended to promote critical AI literacy and design activities that encourage

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students to evaluate and refine AI-generated suggestions, thereby making sure that these tools support rather than hinder the development of independent writing skills.

Keywords: Artificial Intelligence (AI); AI-Powered Chatbot; ChatGPT; EFL Writing; Macro Skills; Perceptions; Challenges

1. Introduction

Mastering academic writing is a significant challenge for university students, particularly for English as a Foreign Language (EFL) learners transitioning to higher education. This transition involves navigating complex academic expectations, rigorous research demands, and the necessity for effective communication. Writing at this level transcends the mere arrangement of words; it requires the adept communication of intricate ideas with a high degree of coherence and cohesion[1]. Historically, writing instruction focused on linguistic accuracy at the sentence level[2]. However, it is now recognized as a multifaceted social act that reflects a writer's communicative prowess, a complexity acutely felt in EFL contexts[3]. Students often struggle with developing and organizing ideas into coherent, readable text, while teachers grapple with providing effective instruction and timely feedback[4,5].

In response to these persistent challenges, Artificial Intelligence (AI)-powered chatbots have emerged as transformative tools in the educational landscape. These advanced Large Language Models (LLMs) offer new paradigms for supporting the teaching and learning of writing[6]. For EFL learners, chatbots can serve as always-available assistants throughout the writing process. They can help generate and refine ideas, provide outlines, suggest improvements for coherence and cohesion, and offer instant, formative feedback on drafts[7,8]. This capability positions them not as a replacement for instruction but as a powerful supplement that can bridge feedback gaps and provide personalized scaffolding[9]. By offloading some of the more mechanical aspects of writing and revision, chatbots may free up cognitive resources for learners to focus on higher-order concerns like argument development and rhetorical structure, thereby potentially enhancing their macro skills—organization, content development, and overall essay structure.

The integration of chatbots into academic writing, however, is a subject of intense debate. While some herald their potential to motivate learners and democratize access to writing support[10,11], others raise significant concerns regarding academic integrity, the potential for overreliance, and the accuracy of the information provided[12,13]. Despite these concerns, the output of systems like ChatGPT has been described as "coherent, (partially) accurate, informative, and systematic"[14], suggesting a valuable role in education if integrated thoughtfully. The key lies in designing AI-integrated tasks that promote critical engagement rather than passive acceptance, encouraging students to use the technology as a collaborative partner in the writing process[15].

The use of Artificial Intelligence (AI) in education has changed language learning, especially in English as a Foreign Language (EFL) writing. AI-powered chatbots, like Chat-GPT, provide immediate and personalized feedback. This is particularly helpful in situations where teacher support is limited[16]. These tools are accessible and can support different parts of the writing process, from brainstorming to organizing structure. They are valuable for EFL learners who want to improve their overall writing skills.

Macro skills in writing, such as organization, coherence, and idea development, are important for academic success. However, they present significant challenges for EFL students[1]. Traditional teaching often emphasizes micro-level issues like grammar and vocabulary. This leaves students unprepared for the challenges of academic writing. AI chatbots help fill this gap by offering support that allows students to visualize and organize their essays more effectively. This improves their ability to write well-structured and logically developed texts[7].

Still, using AI chatbots in writing education comes with challenges. Concerns about academic integrity, overdependence, and possible declines in critical thinking and personal voice have been discussed in recent research[8,13]. These points underline the need for a careful approach to integration. It should take advantage of AI's benefits while minimizing risks through thoughtful teaching design and ethical standards.

How learners and educators view AI tools is crucial for their successful use. Knowing how EFL students perceive the usefulness, motivational effects, and limitations of chatbots is important for creating effective AI-supported learning environments[17]. This study contributes to that understanding by looking at the views and challenges faced by Saudi EFL learners. It provides insights that can shape both practice and policy in similar educational settings.

To sum up, while AI-powered chatbots offer a promising step forward in EFL writing instruction, their success relies on how they are incorporated into the curriculum. A sound teaching approach that combines AI support with clear instruction in critical thinking, self-monitoring, and personal voice is essential. This will ensure that these tools help, rather than hinder, the development of independent writing skills[10,18].

Therefore, to understand the practical implications of this technology, the present study aims to explore the Perceptions and Challenges of using AI-powered Chatbots to enhance EFL Learners' writing macro skills. This research seeks to provide data-supported answers to the following questions:

1. How do EFL learners perceive using AI chatbots to enhance their writing macro skills (e.g., organization, content development, and structure?

2. How do AI chatbots motivate EFL learners to improve their writing macro skills, such as content development, coherence, and essay structure?

3. What challenges do EFL learners encounter when using AI chatbots to develop their writing macro skills?

2. Literature Review

The integration of artificial intelligence (AI) into educational contexts has created transformative opportunities for teaching English as a Foreign Language (EFL). A significant area of focus within this domain is the application of AI-powered chatbots, such as ChatGPT, to enhance the writing skills of EFL learners. This literature review synthesizes current research to explore the perceived benefits, persistent challenges, and overall impact of these technologies on writing instruction. As Rudolph et al.[13] note, a growing body of scholarship is dedicated to investigating the advantages, disadvantages, opportunities, and risks associated with employing AI-powered chatbots in higher education, providing a rich foundation for analysis.

2.1. Perceived Benefits and Pedagogical Applications

A consistent theme across the literature is the capacity of AI chatbots to provide immediate, personalized feedback, which is particularly valuable in large classrooms where individualized instructor attention is limited[16]. Studies demonstrate that this functionality significantly contributes to improving specific writing macro-skills. For instance, Abdelkader[19] found that AI tools markedly enhanced writing fluency among students. Similarly, research by Song and Song[20] using a quasi-experimental design reported significant improvements in overall writing proficiency, attributing this growth to the interactive and tailored learning experiences facilitated by chatbots.

Beyond skill development, these tools are recognized for boosting student engagement and autonomy. Cotton et al.[10] highlight ChatGPT's ability to enhance collaboration and accessibility, while Xiao and Zhi[17] observed that students actively learned to refine their prompts to maximize learning, fostering critical thinking and independent learning skills. This positions AI not as a replacement for instructors, but as a valuable complement to traditional teaching methods[16].

2.2. Navigating Challenges and Ethical Considerations

Despite the promising benefits, the literature underscores several critical challenges. The foremost concern revolves around academic integrity, including risks of plagiarism and over-reliance on AI-generated content[8,10]. This has sparked a necessary re-evaluation of traditional concepts of authorship and plagiarism in the modern digital context[8].

A parallel challenge involves ensuring that technology supplements rather than supplants human instruction and critical thinking. D'Agostino[21] provides a critical perspective, questioning the implications of AI for traditional writing pedagogy and emphasizing the enduring role of educators in fostering original thought. Faiz et al.[18] echo this concern, focusing their research on balancing the benefits of ChatGPT for grammar and vocabulary with the imperative to nurture students' ability to write independently.

2.3. Synthesis and Future Directions

The collective findings suggest that a proactive and ethical approach is essential for successful integration. Studies recommend the development of clear institutional policies, comprehensive training for both educators and students, and the implementation of robust anti-cheating measures [10,22]. When implemented thoughtfully, AI can serve as a potent formative feedback tool, as evidenced by Mahapatra [23], who reported substantial enhancements in ESL undergraduates' academic writing proficiency and highly favourable student perceptions.

Furthermore, understanding user preferences is key to effective implementation. Sasikumar and Sunil [24] identified that students prioritize chatbots that draw from reliable sources and are easy to use, indicating a demand for both credibility and usability in educational AI tools.

2.4. Previous Studies

Hwang et al. [25] argued that AI is likely to change not only the learning environment but also the learning process and what it means to learn. This view aligns with the experiences of the participants in this study. While AI may streamline traditional writing methods, it does not mean students will have less cognitive, behavioral, or emotional involvement with writing, learning, and thinking. AI does not necessarily make writing easier. Instead, a critical, ethical, and genuine approach to AI-assisted writing encourages students to think deeper and focus on their own voice, originality, and creativity, resulting in high-quality writing. In this way, when used correctly, AI can create new opportunities for enhancing writing and education.

Guo and Li found that using self-made chatbots has a positive effect on learners' writing motivation. This leads to clearer writing goals, more confidence, and a more positive attitude toward writing. Their research shows that chatbots can be valuable teaching tools [26]. They help personalize the language learning experience and boost learner motivation. This complexity underscores the need for additional exploration.

According to a study by Barrot, automatic written corrective feedback (AWCF) improves L2 learners' writing accuracy despite some drawbacks like overcorrection, cognitive overload, and insufficient explanations of language norms [27]. According to the study's findings, students who got this kind of feedback outperformed those in the control group, indicating that AI-based AWCF may prove to be a useful tool in L2 writing classes. By examining texts from the real world, LLMs can not only teach students grammar principles but also promote their practical application.

Apriani et al. [28] conducted a recent mixed-methods study to examine how AI-powered chatbots affected the writing abilities, self-efficacy, and self-regulation of EFL learners. Pre/post examinations and interviews were used in the study, which involved 40 students split into control and experimental groups. The results demonstrated that, in comparison to the control group, the ChatBot-assisted group improved writing skill, self-efficacy, and self-regulation by a substantially larger margin. While the qualitative data highlighted learner perceptions of increased confidence alongside challenges like over-reliance and plagiarism concerns, the empirical demonstration of ChatBots' ability to improve core writing competencies (also known as "macro skills") makes this study directly relevant to the topic.

The effect of ChatGPT, an AI-based language model, on English writing abilities was examined in Kulaksiz's [29] study. According to the study, ChatGPT is helpful for enhancing writing abilities. The results also demonstrated the potential of AI tools like ChatGPT to enhance writing abilities and verified that the program successfully assisted students in developing their writing abilities. The influence of AI-based language models employed in language learning and teaching procedures increased learners' comprehension. Additionally, it aided in the creation of more potent language teaching techniques. As a result, it is regarded as a valuable tool for scholars and practitioners working in the field of teaching English.

Steiss et al. examined 400 feedback examples on the same essays, half produced by ChatGPT and the other half by human raters [30]. The results demonstrated that human raters gave better comments in terms of precision, clarity, encouraging tone, and focus on important areas for development. AI feedback, on the other hand, excelled in providing criteria-based assessments. The study produced significant ramifications for weighing ChatGPT's advantages and disadvantages against human review of student essays.

In conclusion, the literature presents a generally positive yet cautious outlook on the role of AI-powered chatbots in EFL writing instruction. These technologies offer significant potential to personalize learning, increase engagement, and improve writing fluency and proficiency. However, their

integration necessitates careful consideration of ethical dilemmas, a commitment to upholding academic integrity, and a pedagogical framework that ensures AI supports rather than undermines the development of critical, independent writers. Future research should continue to explore the long-term effects of AI on writing proficiency and critical thinking skills, as well as the development of best practices for its ethical and practical application in diverse educational settings.

3. Methods

The methodology of this study is a combination of quantitative and qualitative analysis.

3.1. Participants

The study involved a sample of 206 Saudi EFL students enrolled in the sixth, seventh, and eighth levels, English Department at College of Languages and Literature, Unaizah, Qassim University, in Saudi Arabia, during the academic year 2024–2025. The primary criterion for enrolling participants in this study was prior experience using Chatbots. All students who reported that they had not tried such a learning method were excluded from the study.

3.2. Instruments

A structured three-part questionnaire was administered to the students to explore the Perceptions and Challenges of using AI-Powered Chatbots to enhance EFL Learners' Writing Macro Skills.

3.3. Validity of the Questionnaire

After formulating suitable and sufficient statements for the questionnaire that covered the study's intricate parts,

validation was necessary. To achieve the validity of the structured questionnaire, some university English language teachers checked it. The experts excluded some statements and paraphrased others to avoid ambiguity or negation. In the end, they confirmed all the items of the questionnaire to be clear, specific, and understandable.

3.4. Reliability of the Questionnaire

To check the questionnaire's reliability, the researchers randomly selected a small group of 20 students from the sample, who were later excluded from the study. They were asked to read each statement of the prepared questionnaire and respond to it by checking the corresponding option in the right column of the old version.

After collecting the questionnaire's answers, the data were fed and analyzed in the SPSS program. SPSS version 25 for Windows was used to compute descriptive statistics (frequencies, percentages, means, and standard deviation) and perform reliability analysis. The reliability of the questionnaire was found to be 0.80 (**Table 1**).

3.5. Procedure

The following procedures were followed to investigate the perceptions and challenges of using AI-powered chatbots to enhance EFL learners' writing macro skills:

1. Reviewing relevant literature.
2. Designing and validating a questionnaire.
3. Administering the previous tool to the sample at the sixth, seventh, and eighth levels university students.
4. Treating the data statistically by using SPSS software.
5. Interpreting the findings of the study.
6. Introducing the suggestions and recommendations of the study.

Table 1. This table shows reliability statistics.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.800	0.814	30

4. Results and Discussion

To answer the study question, 206 learners responded to a three-part questionnaire. The first part of the questionnaire, which included ten statements, investigates usefulness (How do EFL learners perceive using AI chatbots to enhance their writing macro skills (e.g., organisation, content development, and structure)?) The second part, which included ten

statements, explores motivation (How do AI chatbots motivate EFL learners to improve their writing macro skills, such as content development, coherence, and essay structure?) The third part, which included ten statements, investigates challenges and difficulties (What challenges do EFL learners encounter when using AI chatbots to develop their writing macro skills?) For statistical purposes, the researchers assigned numerical values to the responses in the following manner:

- Strongly agree = 5
- Agree = 4
- Neutral = 3
- Disagree = 2
- Strongly disagree = 1

4.1. Perceptions on Improving Writing Macro Skills

The first research question explored how EFL learners view using AI chatbots to improve their writing macro skills (e.g., organization, content development, and structure). The results are shown in **Table 2**.

Table 2. Students' responses regarding perceptions of AI chatbots for enhancing writing macro skills.

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean	Std. D
1	63	110	28	5	0		4.12	0.725
2	73	98	33	2	0		4.17	0.724
3	48	109	44	4	1		3.97	0.757
4	41	90	60	14	1		3.76	0.868
5	37	72	78	19	0		3.61	0.887
6	46	113	33	13	1	206	3.92	0.825
7	30	95	68	12	1		3.68	0.812
8	41	103	48	13	1		3.82	0.835
9	61	100	34	10	1		4.01	0.837
10	50	97	45	13	1		3.88	0.863

As shown in **Table 2**, the mean scores for all statements range from 3.61 to 4.17, indicating a generally positive perception among participants. The highest levels of agreement are linked to the chatbots' ability to improve the organization of writing (Statement 1, M = 4.12) and to help in developing ideas clearly and logically (Statement 2, M = 4.17). Students also found them useful for refining overall essay structure (Statement 9, M = 4.01). The lowest mean scores related to receiving feedback on overall coherence (Statement 4, M = 3.76) and improving the logical flow of arguments (Statement 5, M = 3.61).

4.2. Motivation to Improve Writing Macro Skills

The second research question examined how AI chatbots motivate EFL learners to enhance their writing macro skills. The results are shown in **Table 3**.

Table 3. Students' responses regarding motivational influence of AI chatbots.

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean	Std. D
11	37	95	51	22	1		3.70	0.900
12	56	95	39	16	0		3.93	0.880
13	42	94	57	12	1		3.80	0.850
14	33	101	55	17	0		3.73	0.830
15	54	63	57	27	5	206	3.64	1.078
16	39	84	58	22	3		3.64	0.952
17	29	88	70	15	3		3.61	0.871
18	36	85	66	19	0		3.67	0.873
19	35	101	55	14	1		3.75	0.835
20	52	92	49	13	0		3.88	0.855

As stated in **Table 3**, students reported moderate levels of motivation, with mean scores for all items ranging from 3.61 to 3.93. The strongest motivational influence was linked to encouraging detailed idea development (Statement 12, M = 3.93) and increasing the desire to complete well-structured writing tasks (Statement 20, M = 3.88). The lowest scores were related to encouragement of critical thinking (Statement 17, M = 3.61) and motivation from feedback on organization (Statement 15, M = 3.64).

4.3. Challenges in Developing Writing Macro Skills

The third research question identified the challenges EFL learners face when using AI chatbots. The results are shown in **Table 4**.

Table 4. Students' responses regarding challenges of using AI chatbots.

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean	Std. D
21	50	82	53	19	2		3.77	0.955
22	41	93	54	17	1		3.76	0.885
23	32	76	55	41	2		3.46	1.012
24	8	43	51	85	19		2.69	1.028
25	23	76	60	42	5	206	3.35	1.001
26	12	31	63	82	18		2.70	1.022
27	41	83	61	19	2		3.69	0.928
28	46	66	54	30	10		3.52	1.132
29	26	88	63	27	2		3.53	0.910
30	61	64	44	25	12		3.66	1.188

The data show a variety of challenges. The most significant issues were related to the relevance of AI feedback, including suggestions that did not fit the intended structure (Statement 21, M = 3.77), generic feedback (Statement 22, M = 3.76), and suggestions that did not match the intended style (Statement 27, M = 3.69). Concerns about over-reliance (Statement 28, M = 3.52) and limits on developing a unique style (Statement 30, M = 3.66) were also significant.

In contrast, students mostly disagreed that using the chatbots' suggestions to improve coherence (Statement 24, M = 2.69) or enhance argument clarity (Statement 26, M = 2.70) posed major challenges.

4.4. Qualitative Thematic Analysis of Challenges

Responses to an open-ended question added more insight. A thematic analysis revealed four main challenge areas:

1. Promotes Dependency, Not Development: Students mentioned a risk of becoming too reliant on AI for brainstorming, organizing, and editing, which might hinder their critical thinking and writing skill growth.

2. Generic and Superficial Feedback: AI was often seen as providing vague, repetitive, or surface-level suggestions rather than deep, nuanced feedback on argument strength and coherence.

3. Misunderstanding and Errors: Chatbots frequently failed to understand user intent, cultural context, or specific instructions, sometimes generating incorrect or "hallucinated" information.

4. Loss of Personal Voice: AI suggestions were sometimes perceived as robotic and generic, potentially diminishing the student's unique writing style and tone.

5. Discussion

This study aimed to explore the perceptions, motivational effects, and challenges of using AI-powered chatbots to enhance the writing macro skills of Saudi EFL learners. The results indicate a promising yet imperfect tool, whose effective integration requires thoughtful educational planning.

5.1. Interpretation of Key Findings

The strongly positive perceptions regarding organizational and structural support (e.g., Statements 1, 2, 9) match existing literature that views AI chatbots as helpful tools for supporting the writing process[7,8]. This suggests that chatbots effectively tackle fundamental issues for EFL writers,

such as essay formatting and idea organization, by offering a clear structural framework for learners to use. However, the moderate perceptions about feedback on coherence and argument flow (Statements 4, 5) reveal a significant shortcoming. This finding extends the work of scholars like Zhai[14], who pointed out the coherence of AI output, showing that this perceived coherence does not necessarily help students create deeper coherence and logical flow in their writing. It seems chatbots are better at identifying surface-level structural issues than promoting the analytical thinking necessary for complex argumentation.

Similarly, the motivational findings present a mixed picture. The chatbots effectively serve as an extrinsic motivational tool, increasing engagement and the desire to complete tasks (Statements 12, 20), which supports observations by Cotton et al. [10] on improved accessibility. However, their effectiveness in boosting intrinsic motivation for critical thinking and thorough revision was limited (Statements 15, 17). This distinction is important, as it suggests that while chatbots are good for starting and maintaining the writing process, they may be less effective in stimulating the more demanding thought processes of critical analysis and synthesis.

The challenges identified are among the most insightful findings. The main issues of generic feedback, mismatched suggestions, and threats to personal voice (Statements 21, 22, 27, 30) reflect the ethical and educational concerns highlighted in the literature[8,18,21]. The qualitative data reinforce these quantitative results, indicating that the concern is not just about occasional mistakes, but about a broader issue: AI feedback often provides a "one-size-fits-all" solution that fails to meet individual rhetorical goals or cultural expressions. Notably, students did not find it difficult to use the suggestions (Statements 24, 26); instead, they questioned the quality and relevance of the feedback. This shows that the challenge lies in the educational value and customization of the AI's output, not in its usability.

5.2. Implications and Connections

The main takeaway from this study is that AI chatbots should be seen as additional supports, not replacements for human instruction. The findings clearly support the need for a careful and ethical approach to integration, as recommended by Cotton et al. [10] and Imran and Almusharraf[22]. Instructors should design activities that encourage students to critically assess and edit AI-generated feedback, turning a potential pitfall—generic suggestions—into an opportunity for critical analysis. Furthermore, concerns over losing personal voice call for teaching strategies that prioritize students' original ideas and styles, using AI for refinement instead of generation.

5.3. Conclusion of the Discussion

In conclusion, this study confirms that AI-powered chatbots are a valuable tool in the EFL writing classroom, especially for building foundational macro skills related to organization and structure. They offer easy, immediate support that can motivate students and reduce cognitive load. However, their current shortcomings in providing detailed feedback, fostering critical thinking, and maintaining authorial voice are significant. Thus, the best use of this technology relies on a balanced, educationally-informed approach where AI supports but does not drive the learning process. Educators must guide students in suing these tools thoughtfully and critically, ensuring that the benefits of AI enhance, rather than hinder, the long-term growth of independent, confident, and original writers. Future research should look into long-term effects and develop specific teaching models for this balanced integration.

6. Conclusion

This research provides a profound understanding of the role of AI-powered chatbots in enhancing the writing macro skills of Saudi EFL learners. The results demonstrate that students hold largely positive perceptions, valuing these tools most for their ability to provide immediate support with organizational and structural elements of writing, such as refining essay outlines and improving paragraph cohesion. Furthermore, chatbots were found to serve as a source of motivation, particularly for engaging with writing tasks and developing ideas in greater detail.

However, the study also reveals significant challenges that temper this optimism. Learners reported that the feedback provided is often too generic and can sometimes misunderstand their intended writing style or argument flow, limiting its utility for achieving deeper coherence. A paramount concern emerging from the data is the risk of over-reliance, which may hinder the development of independent critical

thinking and a unique authorial voice. Therefore, while AI chatbots present a potent opportunity to supplement traditional writing instruction, they are not a panacea. Their successful integration into the EFL curriculum necessitates a balanced approach that leverages their strengths for scaffolding and feedback while implementing strategies to mitigate the risks of dependency and ensure the continued development of students' autonomous writing abilities.

7. Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. **Balanced Integration into Curriculum:** Educators should integrate AI chatbots as a supplementary tool within a broader writing pedagogy, not as a replacement for instruction. Their use should be framed around specific tasks, such as brainstorming, organizing initial drafts, and identifying fundamental structural issues, while emphasizing that critical thinking and final authorship remain the student's responsibility.

2. **Developing Critical AI Literacy:** Institutions should provide training for both teachers and students on how to use AI chatbots effectively and ethically. This includes instruction on crafting precise prompts to elicit better feedback, critically evaluating and verifying AI-generated suggestions rather than accepting them passively, and understanding the ethical boundaries concerning academic integrity.

3. **Design for Personal Voice and Critical Thinking:** Writing assignments should be designed to mitigate over-reliance. This can be achieved through reflective components where students must justify the changes they made (or chose not to make) based on AI feedback, and through tasks that explicitly value personal experience, creativity, and original argumentation that AI cannot replicate.

4. **Further Research:** Future research should explore longitudinal studies to assess the long-term impact of AI chatbot usage on writing proficiency and the development of a personal writing style. Additionally, studies could focus on designing and evaluating specific pedagogical frameworks that successfully balance AI assistance with the cultivation of independent writing skills.

Institutional Review Board Statement

This study was approved by the Institutional Review Board at Qassim University.

Informed Consent Statement

All participants provided informed consent prior to participation.

Data Availability Statement

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request. The data that support the findings of this study are not publicly available due to ethical restrictions related to participant confidentiality. The dataset includes sensitive information from classroom assessments and surveys involving identifiable student responses. However, anonymized excerpts from the qualitative data and summary statistics of the quantitative data may be made available upon reasonable request to the corresponding author, subject to approval by the institutional ethics committee and in accordance with participant consent agreements.

Conflicts of Interest

The author declares that there is no conflict of interest.

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