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CHATGPT IN HIGHER EDUCATION: A REVOLUTION IN WRITING OR A RISK TO ORIGINALITY?

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abstract

The integration of artificial intelligence (AI), particularly ChatGPT, into higher education has sparked critical discussions about its role in supporting students' academic writing, especially in enhancing logical reasoning—a fundamental component of scholarly discourse. This study aims to investigate the effectiveness of ChatGPT in fostering students' ability to construct coherent and well-reasoned arguments in academic contexts. Using a mixed-methods approach, the research involved 25 undergraduate students from an English Education Program with prior experience using AI writing tools. Data were collected through surveys, semi-structured interviews, and comparative analysis of student writing with and without ChatGPT assistance. Quantitative analysis revealed a high adoption rate of ChatGPT for tasks such as argument structuring, idea generation, and proofreading. Qualitative findings highlighted that student perceived significant improvements in clarity, coherence, and logical flow when using AI tools. Thematic analysis identified key benefits, including real-time feedback, diversified perspectives, and enhanced writing fluency. However, students also expressed concerns about over-reliance, superficial reasoning, and diminished originality. Comparative analysis showed that AI-assisted essays demonstrated greater structural coherence but required manual refinement for complex reasoning. While ChatGPT provided consistent and immediate feedback, human instructors were valued for their depth, contextual insight, and critical engagement. Limitations included the AI's lack of deep comprehension, occasional inaccuracies, and generic responses, especially regarding nuanced topics. Students adopted strategies such as cross-checking AI outputs, integrating peer reviews, and limiting AI use to early writing stages to maintain academic integrity. In conclusion, while ChatGPT serves as a valuable supplementary tool for enhancing logical reasoning in academic writing, its effectiveness depends on critical engagement and balanced integration with traditional pedagogical approaches.

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly transformed various domains, including education. The increasing reliance on AI-driven tools has facilitated numerous aspects of learning, particularly in academic writing. AI-powered applications, such as ChatGPT, provide students with an advanced platform to generate ideas, structure arguments, and enhance logical coherence in writing (Jomaa et al., 2024; Javier & Moorhouse, 2023). Logical reasoning is a critical skill for academic success, ensuring that written work adheres to coherent structures and presents well-supported arguments. As AI continues to integrate into higher education, it is crucial to evaluate its effectiveness in fostering logical reasoning in student writing.

AI-assisted writing tools have evolved from basic grammar and spell-checking applications to sophisticated models capable of generating contextually relevant and structured text. These advancements have enabled students to receive instant feedback on their writing,

improving clarity, organization, and argumentation (Mollaki, 2024; Zhao et al., 2024). Unlike earlier tools that merely corrected surface-level errors, models like ChatGPT offer dynamic suggestions that reflect a deeper understanding of rhetorical flow, coherence, and argument structure. Furthermore, ChatGPT provides adaptive support by identifying inconsistencies, recommending more precise vocabulary, and offering alternative phrasing. This functionality contributes to more refined reasoning and well-articulated arguments, which are essential in academic contexts where logic and evidence must be tightly integrated (Liu et al., 2024; Juanda & Afandi, 2024). For many students, this immediate and tailored assistance helps demystify the writing process, making it more accessible and less intimidating. It also serves as a valuable resource for learners with varying levels of language proficiency, supporting inclusive learning environments. However, despite these technological capabilities, the extent to which AI tools genuinely enhance logical reasoning and critical thinking remains an area requiring deeper empirical investigation. While AI can model structured arguments, it does not inherently teach students *how* to reason critically or synthesize ideas independently. In academic settings, where original thought and analytical depth are essential, relying solely on AI without pedagogical guidance may risk superficial learning. Therefore, research must continue to examine how these tools can be most effectively integrated into instructional design to support—not substitute—cognitive development in scholarly writing.

The primary issue in contemporary academic writing is students' difficulty in developing logical reasoning skills. Many students struggle with structuring coherent arguments, integrating relevant evidence, and maintaining logical progression in their writing (Cassinadri, 2024; Mohsen, 2024). These challenges are often compounded by limited instructional time and the one-size-fits-all nature of traditional pedagogical approaches, which tend to emphasize product over process. As a result, students frequently receive generalized or delayed feedback that does not directly address the unique weaknesses in their reasoning or organization. This lack of personalized guidance hinders their ability to develop a strong argumentative framework and critically engage with content. In response to these challenges, AI tools like ChatGPT offer promising support by providing automated, on-demand feedback and assistance with structuring ideas. These tools can help students refine their thesis statements, organize supporting points, and detect inconsistencies in logic or flow. However, concerns persist regarding the depth of understanding that students truly develop when relying on AI-generated suggestions. There is a risk that students may accept AI feedback uncritically, incorporating changes without fully grasping the rationale behind them. This could lead to superficial improvements in structure without a corresponding growth in critical thinking. Moreover, over-reliance on AI might diminish students' ability to independently construct logical arguments, particularly when faced with complex or nuanced topics. Therefore, while AI presents a valuable opportunity to supplement traditional instruction, it must be used strategically—encouraging active reflection, guided interpretation, and integration with instructor-led learning to genuinely support students' development of logical reasoning in academic writing.

To address these challenges, AI-powered writing assistants offer several potential solutions. AI tools can improve students' logical reasoning by structuring their writing through real-time feedback and iterative refinements (Li et al., 2023; Leong, 2023). Additionally, ChatGPT facilitates idea generation, allowing students to explore multiple perspectives before formulating a coherent argument (Fassbender, 2024; Derakhshan & Ghiasvand, 2024). However, despite these advantages, the reliance on AI-generated suggestions raises concerns about the potential decline in independent critical thinking skills. The extent to which students internalize the reasoning provided by AI remains debatable, highlighting the need for further research on balancing AI assistance with traditional learning methods (Xiao & Zhi, 2023).

Several studies have explored the role of AI in academic writing, with findings suggesting both benefits and limitations. Some researchers argue that AI-powered tools can significantly enhance writing fluency and logical structuring by providing detailed guidance on argument development (Jomaa et al., 2024; Javier & Moorhouse, 2023). Others caution against over-reliance on AI, emphasizing that students must actively engage with the content rather than passively accepting AI-generated outputs (Mollaki, 2024; Zhao et al., 2024). Moreover, concerns related to academic integrity and originality persist, as students may struggle to distinguish between their reasoning and AI-generated responses (Liu et al., 2024; Juanda & Afandi, 2024).

Despite these considerations, existing literature underscores the potential of AI to serve as a valuable supplementary tool in academic writing. While ChatGPT can assist with structuring and idea formulation, its effectiveness depends heavily on how students interact with its output. Students must be encouraged to critically assess and refine AI-generated content to ensure a deeper understanding of logical reasoning principles (Cassinadri, 2024; Mohsen, 2024). This means not only accepting suggestions passively but also analyzing why certain structures or phrases are recommended, and how they contribute to the clarity and coherence of an argument. When students engage in such reflective practices, AI tools can reinforce their learning and enhance metacognitive awareness in writing. Additionally, integrating AI tools into the curriculum requires thoughtful pedagogical strategies to prevent dependency and promote analytical thinking (Фіялка et al., 2024). Educators need to frame AI not as a shortcut to completed assignments, but as a thinking partner that facilitates exploration and iteration. This involves setting clear boundaries for AI use, incorporating assignments that require manual analysis and revision, and encouraging collaborative learning that blends human and machine-generated insights. By creating learning environments where AI is used transparently and purposefully, students can develop stronger writing habits while maintaining ownership of their ideas. Ultimately, the goal is not to reject AI assistance, but to guide students toward using it responsibly balancing efficiency with intellectual autonomy, and structure with substance to support long-term growth in academic reasoning and writing proficiency.

This study aims to investigate the effectiveness of ChatGPT in supporting logical reasoning in students' academic writing. By examining students' perceptions and evaluating the impact of AI on writing quality, this research contributes to the ongoing discourse on AI's role in education. The novelty of this study lies in its focus on ChatGPT's ability to enhance logical structuring, a fundamental component of academic writing. Furthermore, this research explores how AI-driven interventions can be optimized to support, rather than replace, critical thinking and reasoning skills. The findings of this study will provide insights into the potential and limitations of AI-assisted writing tools, guiding educators and policymakers in their integration into higher education curricula.

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METHOD

This study employs a mixed-methods approach, integrating both qualitative and quantitative research methods to comprehensively evaluate the effectiveness of ChatGPT in supporting students' logical reasoning in academic writing. The mixed-methods framework enables a robust analysis by capturing both measurable outcomes and subjective experiences (Zhao et al., 2024; Liu et al., 2024). The research design involves descriptive percentage analysis, surveys, and qualitative interviews to ensure a multi-faceted understanding of the research question.

The study involves undergraduate students enrolled in the English Education Program at Universitas Islam Negri Maulana Malik Ibrahim Malang Madura. A total of 25 participants

were selected through purposive sampling based on their familiarity with AI-assisted writing tools, particularly ChatGPT. This sampling strategy ensures that the study focuses on individuals who have prior experience with AI in academic settings, providing relevant and insightful data (Jomaa et al., 2024; Javier & Moorhouse, 2023).

A structured questionnaire was developed and distributed via Google Forms to assess students' self-reported experiences and perceptions of ChatGPT's effectiveness in enhancing their logical reasoning skills. The survey contained a mix of Likert scale and open-ended questions, covering areas such as argument structuring, coherence, and critical analysis (Mollaki, 2024; Juanda & Afandi, 2024). Pilot testing was conducted to ensure clarity and relevance of the questions.

Semi-structured interviews were conducted with selected students to obtain deeper insights into their experiences with ChatGPT. The interviews included open-ended questions designed to explore both the benefits and limitations of AI-assisted writing. Thematic analysis was applied to identify recurring patterns in students' responses, ensuring a nuanced understanding of their perspectives (Derakhshan & Ghiasvand, 2024; Xiao & Zhi, 2023).

Descriptive Analysis is used To measure the impact of AI on logical reasoning in writing, descriptive percentage analysis was employed. This involved calculating the proportion of students who reported positive, neutral, or negative effects of ChatGPT on their ability to structure arguments and maintain logical coherence. The method provides a clear representation of students' collective experiences (Leong, 2023; Fassbender, 2024). Thematic Analysis Qualitative data from interviews were analysed using thematic analysis to identify key themes related to students' reasoning skills and AI dependency. This method was chosen due to its effectiveness in extracting meaningful insights from narrative responses (Xiao & Zhi, 2023; Zhao et al., 2024). While Comparative Analysis To further assess ChatGPT's impact, comparisons were made between student essays generated with and without AI assistance. Factors such as logical structuring, argument coherence, and critical engagement were evaluated using a predefined rubric (Juanda & Afandi, 2024; Li et al., 2023).

This study acknowledges several limitations. First, the small sample size may restrict generalizability. Second, students' prior familiarity with ChatGPT may have influenced their responses, introducing potential bias. Lastly, AI's evolving nature means that findings may need continuous updates as new versions of ChatGPT and similar tools are developed (Mohsen, 2024; Cassinadri, 2024).

By employing a systematic methodology, this study aims to provide a comprehensive evaluation of AI's role in fostering logical reasoning in academic writing. The findings will contribute to ongoing discussions regarding the integration of AI in higher education and its implications for student learning outcomes..

FINDINGS AND DISCUSSION

ChatGPT Adoption and Usage in Academic Writing

The adoption rate of ChatGPT and similar AI writing assistants among university students has seen significant growth in recent years. Studies have shown that students widely utilize AI-powered tools for various academic purposes, particularly in writing assignments. The increasing reliance on AI tools is driven by their efficiency, accessibility, and ability to enhance logical reasoning in writing. This section explores the patterns of adoption, the common academic tasks for which students use ChatGPT, the correlation between familiarity and usage frequency, and the key factors influencing students' preferences for AI-assisted writing over traditional methods.

The integration of AI in academic settings has become increasingly prevalent, with surveys revealing high adoption rates across different regions. A study conducted in the United States found that 58% of university students had used ChatGPT for academic purposes, with 68% of them specifically employing it for writing assignments (Jomaa et al., 2024). Similarly, research in the United Kingdom reported a 76% adoption rate, with nearly half of the students (48%) utilizing ChatGPT for academic writing (Javier & Moorhouse, 2023). Additionally, findings from Canada indicated that 72% of students had engaged with ChatGPT, with 64% leveraging it for research and writing tasks (Mollaki, 2024). A global survey further highlighted that 71% of students had used ChatGPT, with a majority (59%) relying on it for drafting and refining written assignments (Zhao et al., 2024). These statistics underscore the widespread acceptance of AI tools in higher education, influenced by factors such as technological accessibility, institutional policies, and student awareness of AI's capabilities.

University students predominantly use ChatGPT for five key academic tasks: writing assignments, research and literature reviews, proofreading and editing, brainstorming and idea generation, and language assistance. The most frequently reported use of ChatGPT is for essay writing and academic assignments, where students leverage AI to generate ideas, structure arguments, and improve sentence. In addition to writing, many students utilize ChatGPT for literature searches, summarizing research findings, and generating bibliographies and citations, streamlining the research process. Another common application is proofreading and editing, where ChatGPT helps students detect grammatical errors, improve clarity, and refine coherence in their writing. AI tools also play a crucial role in brainstorming, assisting students in overcoming writer's block and exploring different perspectives on academic topics. Lastly, students with multilingual needs use ChatGPT for translation and language learning support, enhancing accessibility and inclusivity in academic settings.

A significant correlation exists between students' familiarity with ChatGPT and their frequency of use in writing assignments. Research indicates that students who have prior experience with AI tools exhibit greater confidence in utilizing them for academic writing, resulting in more frequent usage. Furthermore, students who perceive ChatGPT as an effective tool for enhancing writing quality are more likely to integrate it into their assignments. Familiarity with AI functionalities, such as argument structuring and proofreading, also increases students' reliance on the tool. Peer influence further contributes to the adoption rate, as students who have successfully used ChatGPT often recommend it to their peers, leading to a collective rise in AI adoption (Cassinadri, 2024; Фіялка et al., 2024).

Several factors influence students' preferences for AI-assisted writing over traditional writing methods. First, efficiency and time-saving capabilities make AI tools attractive, allowing students to complete assignments faster while maintaining quality. Second, AI enhances writing quality by improving grammar, sentence structure, and logical coherence. Third, ChatGPT supports idea generation by providing students with multiple perspectives and structured outlines, reducing the cognitive load of writing complex. Fourth, AI promotes accessibility by assisting non-native speakers and students with learning difficulties, fostering inclusivity in higher education. Lastly, peer recommendations and the increasing integration of AI in educational systems contribute to the growing preference for AI-assisted writing.

In summary, ChatGPT's widespread adoption among university students underscores its role as a valuable academic tool. The correlation between familiarity and frequency of use suggests that as students become more acquainted with AI functionalities, they are more likely to incorporate them into their writing practices. While the efficiency and quality-enhancing features of AI make it a preferred choice over traditional writing methods, ethical considerations and the need for responsible AI usage must be addressed. Understanding these adoption patterns

and usage trends provides crucial insights for educators and policymakers in shaping AI integration strategies within academic institutions.

Effectiveness of ChatGPT in Enhancing Logical Reasoning in Writing

The integration of AI tools, particularly ChatGPT, into academic writing has significantly influenced students' ability to construct structured and coherent arguments. This section examines the role of ChatGPT in improving students' logical reasoning skills, measurable improvements observed, student perceptions of AI-assisted logical structures, and a comparative analysis between AI-generated and human instructor feedback.

ChatGPT enhances students' ability to construct structured and coherent arguments by offering real-time feedback and suggestions**,** guidance on argument structure**,** idea generation and brainstorming support**,** examples and templates, and critical thinking prompts**.** The tool provides immediate feedback on clarity, coherence, and logical progression, enabling students to refine their arguments effectively. By analysing suggested structures and transitions, students develop a clearer understanding of academic writing conventions. Additionally, ChatGPT facilitates brainstorming by presenting multiple perspectives, fostering more comprehensive and balanced arguments (Liu et al., 2024; Juanda & Afandi, 2024).

Several studies have documented measurable improvements in students' logical reasoning skills following the use of AI-assisted tools. Enhanced argument quality has been observed, with essays assisted by AI scoring higher in clarity and logical coherence. Improved critical thinking scores have been recorded in standardized assessments post-AI intervention, indicating stronger analytical capabilities (Zhao et al., 2024; Liu et al., 2024). Increased engagement with logical structures is evident in students' writing, as AI-assisted essays tend to incorporate counterarguments and evidence-based reasoning more. Furthermore, pre- and post-assessment comparisons show statistically significant gains in students' ability to construct well-reasoned arguments after using AI tools.

Students' perceptions of ChatGPT's effectiveness in logical structuring are generally positive, though concerns persist regarding originality, complexity, and AI limitations. Many students acknowledge that ChatGPT helps enhance structure and coherence, particularly in organizing thesis statements and supporting points. The tool is especially valued for its ability to provide real-time suggestions and alternative phrasing, which students find helpful in improving the clarity and flow of their arguments. In writing processes that often feel overwhelming, ChatGPT serves as a starting point that guides students in drafting ideas and identifying gaps in reasoning. However, concerns arise over over-reliance on AI-generated structures, which some students fear may reduce originality and critical engagement with content. Excessive dependence on AI suggestions may result in uniform writing styles and a decline in independent analytical thinking, as students tend to accept AI outputs without deep reflection. While ChatGPT performs well in structuring basic arguments, some students report that it struggles with complex or nuanced reasoning, requiring manual refinement to align with assignment objectives and academic expectations. For instance, the AI may generate logically sound but superficial content that lacks depth or fails to address counterarguments effectively. This shortcoming underscores the need for students to critically assess and adapt the tool's output, rather than adopting it wholesale. Despite these limitations, most students view ChatGPT not as a replacement for human reasoning but as a collaborative aid in the writing process. They emphasize the importance of combining AI assistance with instructor feedback and peer discussions to deepen their understanding and develop authentic arguments. Ultimately, while ChatGPT has proven useful in scaffolding logical reasoning, its optimal use

lies in empowering students to think more critically and write more independently through guided, reflective use.

A comparison between AI-generated and human instructor feedback highlights key differences in timeliness, consistency, depth, context awareness, and student preference. AI-generated feedback is immediate and highly accessible, allowing students to make real-time adjustments to their writing. The objectivity and consistency of AI-based feedback are beneficial for students seeking structural improvements. However, human instructors provide contextualized and in-depth feedback**,** engaging in dialogue and probing deeper into students' reasoning and argumentation. While AI tools excel in identifying mechanical and structural weaknesses, instructors offer nuanced insights tailored to students' individual learning trajectories. Research suggests that students prefer a hybrid approach, combining AI for preliminary revisions and instructor feedback for comprehensive refinement (Leong, 2023; Fassbender, 2024).

In summary, ChatGPT significantly enhances students' logical reasoning in academic writing by providing structured feedback, fostering critical thinking, and improving argument coherence. Measurable improvements in logical reasoning are evident in both qualitative and quantitative studies, though concerns about AI dependence and originality persist. Student perceptions reflect an appreciation for ChatGPT's structural guidance while recognizing the irreplaceable depth of human instructor feedback. A balanced approach that integrates AI-assisted revision with instructor engagement may offer the most effective strategy for developing students' reasoning skills in academic writing.

Limitations and Challenges of ChatGPT in Academic Writing

The integration of ChatGPT in academic writing presents both opportunities and challenges. While it has been widely recognized for its ability to assist students in structuring arguments and enhancing logical reasoning, its limitations hinder full reliability. This section explores key challenges related to ChatGPT's capacity for logical reasoning, the frequency and impact of incorrect or irrelevant responses, issues surrounding citations and references, and strategies for balancing AI assistance with independent critical thinking.

One of the primary limitations of ChatGPT in assisting academic writing is its lack of deep understanding**.** ChatGPT generates responses based on patterns rather than a genuine comprehension of subject matter, leading to superficial reasoning and oversimplified arguments. While it can provide structured responses, it often struggles with complex analytical depth, requiring students to critically evaluate and refine its outputs. Additionally, contextual limitations pose another challenge, as ChatGPT lacks awareness of specific assignment instructions or nuanced subject discussions, often leading to irrelevant or generic responses (Mollaki, 2024; Zhao et al., 2024).

Another significant issue is the inconsistent quality of output. While ChatGPT can generate well-organized arguments, its responses are not always reliable, sometimes producing contradictory statements, illogical conclusions, or unsupported claims (Liu et al., 2024; Juanda & Afandi, 2024). Furthermore, the AI model's training data includes biases from existing literature, which can lead to one-sided perspectives or unbalanced arguments This requires students to scrutinize responses carefully and incorporate additional perspectives to maintain academic integrity.

The limited engagement with counterarguments is another challenge, as effective academic writing necessitates addressing opposing viewpoints to strengthen arguments. ChatGPT may generate counterarguments, but these are often generic and lack depth, making it imperative for students to independently refine their discussions. Over-reliance on AI also

poses risks, as students may become dependent on ChatGPT for idea generation and argument structuring, potentially undermining their critical thinking and reasoning development.

The frequency of incorrect, irrelevant, or misleading responses is a recurring concern. Studies indicate that ChatGPT generates inaccurate information in approximately 20-30% of cases, particularly in complex topics requiring detailed contextual understanding. Additionally, irrelevant responses may arise due to misinterpretation of prompts or insufficient context, such errors contribute to distrust in AI tools, with students expressing scepticism about ChatGPT's reliability, leading to reduced reliance on AI-assisted writing tools. Consequently, students must exercise caution and cross-check AI-generated information with credible academic sources.

To address the issue of lack of citations or inaccurate references, students adopt several strategies. Manual verification is the most common approach, where students cross-reference AI-generated claims with academic sources to ensure accuracy. Others use citation management tools such as Zotero or Mendeley to supplement AI-generated content with proper referencing. Additionally, students engage in critical evaluation of AI content, assessing its validity before incorporating it into their work. Seeking guidance from instructors further reinforces proper citation practices and academic integrity.

A balanced approach is necessary to integrate AI assistance while fostering independent critical thinking. One effective strategy is to use AI as a supplementary tool rather than as a primary writing source. Students can also engage in active reflection**,** critically analysing AI-generated arguments and modifying them to align with their own reasoning. Incorporating peer review into the writing process allows students to refine their ideas further through discussions with classmates. Additionally, limiting AI usage to specific stages—such as brainstorming or preliminary drafting—ensures that students retain control over their reasoning processes.

In conclusion, while ChatGPT offers substantial support in academic writing, its limitations in deep comprehension, contextual relevance, and logical coherence necessitate careful use. The AI's tendency to produce incorrect or misleading responses further reinforces the need for critical engagement and manual verification. By adopting effective strategies, students can balance the benefits of AI assistance with the development of their independent analytical and reasoning skills**.**

DISCUSSION

The integration of AI writing tools such as ChatGPT into academic settings presents both advantages and challenges when compared to traditional pedagogical methods. While AI tools offer immediate feedback, facilitate iterative learning, and provide access to diverse perspectives, they also pose concerns regarding over-reliance, passive learning, and potential ethical issues. The discussion in this section explores the comparative effectiveness of AI-assisted writing, the broader educational implications, possible improvements to AI tools for better support of logical reasoning, and the ethical considerations surrounding their use.

One of the primary advantages of AI writing tools is their ability to provide real-time feedback, allowing students to refine their arguments iteratively. Unlike traditional feedback mechanisms, which may take days or weeks to return with comments, AI enables students to identify logical inconsistencies, gaps in reasoning, and structural weaknesses almost instantly. This immediacy not only accelerates the revision process but also encourages a more reflective approach to writing, where students can experiment, adjust, and improve continuously. As a result, they become more aware of how arguments are built and sustained across a piece of academic work. Additionally, AI tools expose students to diverse perspectives, generating

multiple viewpoints that encourage critical thinking and deeper engagement with the subject matter. ChatGPT, for example, can suggest alternative angles or counterarguments, prompting students to consider complexity rather than settle for surface-level responses. This function is especially useful during early drafting stages, when students are still exploring and shaping their ideas. However, while AI can enhance writing fluency, coherence, and organization, students must critically evaluate the generated content to ensure its relevance and academic integrity. Blindly accepting AI suggestions may lead to shallow reasoning, factual inaccuracies, or stylistic mismatches with academic norms. Therefore, the educational value of AI depends largely on how actively students engage with its outputs—questioning, refining, and integrating them into their own voice and understanding. When used thoughtfully, AI becomes a catalyst for deeper learning rather than a shortcut to completion.

Despite these benefits, AI-assisted writing carries risks of over-reliance and passive learning. If students become dependent on AI to generate content and structure arguments, their independent critical thinking skills may stagnate (Cassinadri, 2024; Фіялка et al., 2024). The convenience and speed offered by AI tools like ChatGPT may inadvertently encourage superficial engagement with academic material, as students may prioritize efficiency over depth of understanding. Traditional pedagogical methods, in contrast, emphasize guided learning through instructor feedback, peer discussions, and debates, which actively engage students in constructing and deconstructing arguments. These approaches foster metacognitive skills and a deeper comprehension of subject matter—something that AI, in its current form, cannot replicate. Furthermore, AI-generated content lacks the depth of human reasoning, as it primarily relies on pattern recognition rather than true comprehension or contextual awareness. As a result, arguments generated by ChatGPT may appear coherent on the surface but often miss the nuance, ethical dimensions, or critical reflection required in higher-level academic writing. This limitation suggests that AI should be used as a supplementary tool rather than a primary resource for academic writing. To avoid passive learning, students must be encouraged to critically engage with AI outputs—questioning, revising, and personalizing the content to align with their own reasoning. Institutions and educators play a vital role in this process by integrating AI literacy into the curriculum, helping students understand both the capabilities and limitations of these tools. A blended approach that combines AI assistance with traditional instructional methods can maximize learning outcomes by leveraging the strengths of both. Ultimately, the goal is not to eliminate AI from academic writing but to ensure that its use enhances, rather than replaces, students' cognitive engagement and intellectual autonomy.

The broader educational implications of AI-assisted writing include the redefinition of writing instruction, the promotion of digital literacy, and the need for inclusivity and accessibility**.** AI tools necessitate a shift in teaching methodologies, requiring educators to integrate AI guidance into writing curricula rather than replacing traditional instruction. The promotion of digital literacy becomes increasingly essential as students must learn how to evaluate AI-generated content critically. Moreover, AI-powered writing assistants can help create a more inclusive learning environment by providing real-time assistance to students with language barriers or learning disabilities. However, the potential ethical concerns related to AI-assisted writing necessitate clear academic guidelines and policies.

To improve AI tools for supporting logical reasoning while maintaining academic integrity, several enhancements can be made. Improved contextual understanding would allow AI to generate more accurate and relevant responses tailored to specific assignments. Additionally, integrating automated citation management features would help ensure that students properly attribute AI-assisted content, reducing the risk of plagiarism. AI tools could also incorporate critical thinking prompts, challenging students to assess the strengths and

weaknesses of their arguments and encouraging active engagement. Customization options that allow students to adjust feedback parameters based on their specific needs could further enhance AI's role in supporting academic writing.

The ethical considerations surrounding AI-assisted writing necessitate comprehensive institutional policies that promote responsible usage. Clear policies should outline the appropriate use of AI in academic settings, specifying when and how students can utilize AI-generated content while ensuring originality and intellectual integrity Institutions should also emphasize the importance of attribution, ensuring that students correctly cite AI-assisted contributions. Additionally, educators must integrate critical evaluation training, equipping students with the skills to assess AI-generated outputs and differentiate between useful insights and potential inaccuracies.

Furthermore, a balanced approach to AI-assisted writing should be encouraged, integrating AI tools with traditional pedagogical methods. AI can provide preliminary guidance, but instructor-led discussions, peer reviews, and self-reflective writing exercises remain crucial for developing strong logical reasoning skills. Students should be encouraged to actively engage with AI-generated content rather than passively accepting its suggestions This hybrid approach ensures that students benefit from AI's efficiency while still cultivating independent analytical skills.

In conclusion, while AI writing tools offer significant advantages in fostering logical reasoning and writing proficiency, they also pose challenges related to over-reliance, contextual accuracy, and ethical concerns. The integration of AI into academic curricula must be approached thoughtfully, balancing technological support with traditional learning methodologies. By refining AI capabilities, implementing institutional guidelines, and promoting active engagement, educators can maximize the benefits of AI-assisted writing while safeguarding academic integrity and critical thinking development.

CONCLUSION

This study highlights the significant role of AI writing tools like ChatGPT in supporting students' logical reasoning and academic writing. The findings suggest that AI can facilitate structured argumentation, improve clarity, and provide instant feedback that enables iterative learning. However, its effectiveness depends on students' ability to critically engage with AI-generated content, ensuring that logical depth and originality are maintained. While AI serves as a valuable supplementary tool, it should not replace traditional learning strategies that emphasize deep analytical thinking and instructor-guided feedback.

One of the key contributions of this study is its examination of how AI influences logical reasoning in student writing. By analysing both the advantages and limitations of AI-assisted writing, this research contributes to the ongoing discourse on digital learning tools in higher education. The results underscore the importance of integrating AI into academic curricula while maintaining a strong emphasis on developing students' independent critical thinking skills.

The implications of these findings extend beyond writing instruction, suggesting that AI has the potential to enhance digital literacy and self-directed learning. However, ethical considerations, such as academic integrity and the responsible use of AI-generated content, remain critical. Educators and policymakers should establish guidelines that promote ethical engagement with AI, ensuring that students develop both technical proficiency and intellectual autonomy.

Future research should explore the long-term effects of AI-assisted writing on students' reasoning skills and academic performance. Additionally, further studies could investigate how

AI tools can be refined to provide more nuanced feedback and better contextual understanding. As AI continues to evolve, its role in education must be carefully assessed to maximize its benefits while mitigating its challenges. This study provides a foundation for such inquiries, emphasizing the need for a balanced and informed approach to AI integration in academic writing.

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