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The Double-Edged Sword of AI in Writing Skill Development: Enhancing or Eroding Writing Proficiency

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Abstract:

AI's impact on higher education is reshaping the landscape of writing education and the student experience. Artificial Intelligence (AI) has revolutionized the field of writing education and student learning in higher education. The present paper critically analyses the multifaceted role of Artificial Intelligence in student's academic writing and its associated challenges and benefits. Personalized feedback and optimization of instructional resources with AI, improving writing skills. But there are questions about the integrity of the curriculum, AI over-dependence, and the loss of in-depth learning cognitive skills. Traditional approaches to teaching writing need to be rethought since the use of generative AI tools has become ubiquitous in the writing process, from ideation to revision. The study underscores the need to cultivate critical AI literacy for students to effectively engage AI tools in a supportive role without compromising on their authenticity as authors. The paper examines empirical data to gain insights into how students perceive and use AI for structuring texts, refining grammar, and enhancing vocabulary. Ethical issues in academic writing involving the use of AI are also discussed, such as plagiarism and credit for the work. The results are intended to guide pedagogical practices for the responsible and effective use of AI in the development of academic literacy.

Keywords: *Artificial intelligence, Academic Writing, Higher Education, AI literacy, Generative AI, Writing Pedagogy, Academic Integrity, Cognitive skills, Personalized Feedback, Ethical Implications, Erosion.*

Introduction:

The use of AI in education has grown significantly, transforming how writing instruction is delivered and the learning process generally, especially in the field of writing (Syabilla et al., 2023). The emergence of this paradigm shift requires a re-evaluation of the various impacts of AI on the writing abilities of students, as well as a deeper understanding of its advantages and difficulties (Deep & Chen, 2025). Although AI presents opportunities for improving writing teaching by providing personalized feedback and optimizing resources, it also raises questions about academic honesty, over-dependency, and the loss of critical thinking skills crucial for deeper learning (Selim, 2024). However,

with the widespread use of generative AI tools, such as large language models, educators must reconsider traditional writing instruction practices from idea generation to drafting and organization (Hutson et al., 2024). The AI revolution necessitates a holistic grasp of the opportunities for scaffolding learning and the potential dangers of cognitive offloading inherent in academic writing through AI (Elycheikh et al., 2024). As a result, there is a need to review educational systems and how they help promote critical AI literacy, to ensure that students can use AI as a tool without losing their original voice or even their essential learning experiences (Wang, 2024). Therefore, we need to deeply investigate students' appropriation of these technologies for different writing tasks, ranging from initial ideation to final revision, to establish pedagogical strategies that ensure responsible and effective integration of AI (Zhao et al., 2024). More specifically, the aim of this paper is on exploring empirical evidence on the role of AI in the development of academic literacy skills (text structuring, grammatical refinement, lexical enhancement) without brainstorming. This investigation will also explore the ethical considerations and risks of using AI in academic writing, such as academic honesty, authorship and skill improvement. (Baldrich et al., 2025; Maphoto et al., 2024).

Statement of the Problem: The Double-Edged Sword of AI in Writing Skill Development: Enhancing or Eroding Writing Proficiency.

Research Objective:

The aim of this study is to explore the potential impact of AI writing tools on students' ability to produce original work and think independently, especially in higher education settings (Abd Algane et al., 2025). Specifically, this study will investigate how AI affects students' writing ability and their ability to develop their critical thinking skills (Minh, 2024). This involves examining the role of AI in the writing process, its positive and negative impacts on student writing, and its implications for the organization and content of student writing (Marzuki et al., 2023). It will also explore the moral implications of using AI in academic writing, such as plagiarism and intellectual property, and offer pedagogical solutions to reduce the risk of these issues and enhance the benefits of AI in education (Sarwar, 2025).

The purpose of this research is to fill these gaps by comprehensively examining the various aspects of AI's impact on student writing in higher education.

- Overreliance of AI in academics writing, making students and researcher dependent, instead of enhancing their writing capability.
- Does AI supress ideas, intellectual awareness, brainstorming, thinking capability of one’s brain.

Literature Review:

Previous research has generally divided the effects of AI on writing into pedagogical transformation, ethical issues, and cognitive effects, and there is a general sense of trade-offs between

efficiency and maintaining a genuine sense of intellectual development. There has been a recent focus on identifying students' perceptions and actual use of AI tools as part of the research. Students' perceptions and actual usage of AI tools have taken particular focus in the research recently.

Some studies, for example, indicate that AI can help overcome writer's block and optimize the brainstorming phase, enhancing writing skills (Dgebuadze & Kenkebashvili, 2025). The feedback provided by AI tools regarding grammar, style, and coherence can greatly improve writing proficiency and alleviate mental strain during the drafting and editing process (Deep & Chen, 2025; Jelson et al., 2025). Such a real-time feedback loop, especially through the capabilities of large language models, can also enhance the quality of content creation and structure of student essays (Siddiqui et al., 2025; TALAYHAN, 2023). On the other hand, the heavy dependence on AI to produce content and edit text poses serious risks for educators in terms of critical thinking abilities and academic dishonesty, especially when students rely heavily on AI for large parts of their writing tasks (Deep & Chen, 2025). This worry is compounded by studies that suggest a disconnect between educators' perceptions of students' practice of using AI to produce writing and students' actual use in the real world (Wang, 2024). Further, the ethical consideration is whether students can be plagiarized or not if they do not give proper credit to the AI where necessary, which highlights the importance of improving AI literacy in the educational curriculum (Dgebuadze & Kenkebashvili, 2025). Moreover, it has been demonstrated that the use of AI tools, like ChatGPT and Perplexity et al., has been beneficial in achieving many domains of English as a Foreign Language writing tasks such as task achievement, coherence, lexical resources and grammatical accuracy (Alzahrani & Alotaibi, 2024). These tools, however, come with challenges as well, including verifying content authenticity and mitigating possible scientific rigor concerns (Hutson et al., 2024). However, some serious concerns remain about how AI tools could potentially reduce students' own distinctive voice and erode the complexity of their arguments, as well as the general ethical problems arising from academic honesty and excessive dependence on AI (Minh, 2024; Moussa et al., 2026).

Methodology:

This is a description of the method used in the study to meet the research goals and objectives, including study design, sampling, data collection tools, and data analysis.

The study will use a mixed-methods design, analyzing writing samples via quantitative methods and surveys and interviews using qualitative methods to get a comprehensive picture of the impact of AI (Graham & Milan, 2025). In detail, the quantitative part will consist of pre and post intervention assessments of students' writing using the existing rubrics, whereas the qualitative part will be conducted in form of semi-structured interviews and focus group to gain insight into students' perceptions, experiences and ethical considerations (Hakimi et al., 2024). The mixed-methods approach will enable a comprehensive analysis of the measurable effects of AI on the quality of writing

and the more subtle perceptions of its use among the students, providing a comprehensive picture of how AI can be integrated into academic settings. The overall goal of this research approach is to reveal the mechanisms by which the use of AI tools affects students' cognitive processes in writing and to establish the best practices in teaching writing with the support of AI tools (PAN, 2024; "The Impact of Artificial Intelligence Use on Students' Autonomous Writing", 2025).

Data Collection:

1. **Academic Journals and Articles:**
   - Research based on AI tools that affect students' writing skills (such as grammar checkers, AI writing tools, Paraphraser).
   - Basic knowledge about pedagogical strategies that incorporate AI in writing teaching.
   - Research about changes in cognitive and skill aspects of writing products after the use of AI.
2. **Educational Institution Reports:**
   - Before and after student performance surveys or reports on the use of an AI tool in the institution.
   - Data on changes to curriculum incorporating AI writing technologies.
   - Writing centre and academic support unit feedback and assessment.
3. **Government and Educational Policy Documents:**
   - National Education Policy 2020 (NEP 2020) on AI and Digital literacy in Higher education. National and/or regional write-ability outcomes for students.
   - Student and teacher surveys on attitudes towards AI in writing.
   - Data related to frequency, benefits and drawbacks of academic writing and use of AI tools.
5. **Conference Proceedings and White Papers:**
   - Expert insights and research into the implications of AI on writing in higher education.
   - Examples of successful or not so successful AI tool deployments (case studies).
6. **Databases and Repositories:**
   - Access to student writing samples (pre- and post-AI intervention, if applicable).
   - Research syntheses that provide overviews of several studies involving AI and writing.
7. **Technology Provider Reports:**
   - Data on how businesses are using AI writing tools and the results of their usage.
   - At the user side: user demographics and engagement with academic writing.

Data Analysis:

The section will show that the data gathered and collated from these secondary sources will provide an overview of the use of AI in skill development of writing, its enhancement and at the same time its erosion.

Qualitative Data:

Identifying survey, white paper, and case study research findings provide qualitative discussion about skill erosion.

While some students are finding that AI tools have helped them become more dependent, it is possible that it is impacting their critical thinking, creativity and originality. Teachers report that students are struggling to independently prepare ideas and to involve themselves in writing assignments. This could indicate a superficial engagement with writing assignments. The analysis reveals differences by type of instructional context, including pedagogical strategies that provide scaffolding to support the use of AI, and presents more balanced results in such contexts than in those with a lack of pedagogical support.

Comparative Analysis:

The study also highlights the complexity of the role of AI, as its effects are not always positive or negative, and can vary based on the context of AI integration, students' attitudes, and curriculum design. The figures reveal the importance of intentional instructional approaches that leverage the benefits of AI—such as improved technical skills, but also heightened risks of reliance and reduced critical thinking abilities. The balance and nuanced understanding of AI's role in enhancing writing skills highlights the need for its informed and conscious usage within the higher education context.

Results of Data Analysis:

This section explores the potential of AI to improve writing skills. This section focuses on how AI can positively impact writing skill development.

1. **Enhancing Effects of AI on Writing Skill Development**:

   Overall, the analysis shows that AI can make a profound impact on writing abilities, delivering customized support that bolsters technical competence. AI tools provide instant feedback on grammar, structure, and style, helping students to streamline their writing process. This on-demand, adaptive support provides for a more tailored learning experience, leading to increased engagement and self-correction. Moreover, AI enables the access to a wide range of linguistic resources and exemplars, expanding the user's access to a variety of writing conventions and genres. These skills help speed up skill learning and confidence in academic writing tasks.

2. **Potentially Eroding Effects of AI on Writing Skill Development**:

   On the contrary, the results suggest that using AI can cause a loss of cognitive and creative skills in writing. Over-reliance on AI-generated suggestions could reduce the need for students to think independently, creativity, and problem-solving skills, potentially leaving them relying more heavily on the AI corrective feedback than on their own reflection. This dependence can lead to a lack of opportunities for deeper learning and authorial voice. However, the data indicates that, if not carefully designed, AI use could potentially have a negative impact on

students' long-term writing abilities. The data suggests that, if not designed carefully, AI use could actually have a negative impact on students' long-term writing abilities.

3. **Context dependent impact and instructional implications**:

These findings highlight the multifaceted nature of AI's impact, as well as the different ways and scenarios in which it can be beneficial or harmful. To leverage AI effectively, there's a need for intentional pedagogical strategies that harness its technical capabilities while avoiding negative cognitive and creative impacts. A delicate balance must be achieved, and AI is both a threat and an opportunity in writing education, and needs to be integrated strategically into higher education programs to fully realize its potential.

Recommendations for Instructional Strategies to Optimize AI Use in Writing Skill Development:

1. **Use AI to complement your existing resources**, not replace them. Use AI to augment, rather than supplant, your existing resources.

Develop the AI design curriculum that equips students with the skills to use AI as a piece of technical tools, not a substitute for critical thinking and creativity. Allow students to leverage AI feedback for mechanical aspects and to independently generate ideas and develop arguments.

2. **Embed Reflective Practice & Metacognition:**

Include tasks that encourage students to think critically about the suggestions provided by AI and raise awareness about their writing decisions. To keep the discussion cognitively engaged and the author voice, reflect in a reflection journal, discuss with peers, and self-assess.

3. **Scaffold AI Use with Progressive Autonomy:**

Use AI tools incrementally, from guiding to allowing independent use, to help students get accustomed. This phasing process can avoid the overdependence of skills and facilitate skill internalization.

4. **Promote Creative and Analytical Writing Tasks:**

Mix in assignments that involve original thought, critical analysis and problem-solving with AI-supported technical activities. These tasks will ensure that higher-order writing skills are preserved and developed which AI cannot.

5. **Provide Educators with training on the Best Practices for integrating AI:**

Offer professional development around effective AI tools and how to monitor student reliance and provide feedback at an individual level. From there, instructors have the opportunity to manage the impact of AI on learning to achieve the best results.

6. **Develop and apply Usage Guidelines and Ethical Considerations:**

Set clear guidelines for using AI responsibly and discuss academic honesty, being transparent about using AI. Guidelines are used to hold people accountable and encourage responsible adoption of technology.

7. **Incorporate AI into Personalized Learning Analytics**:

Identify individual strengths and weaknesses with AI-generated data to inform the provision of targeted learning interventions that address gaps in their skills and support them to build independent learning strategies.

8. **Promote Collaborative Learning Environments:**

Encourage collaborative review and group activities in which AI feedback is reviewed as a group, leading to a wide range of viewpoints and non-acceptance of AI results.

Conclusion:

Combined, these tactics provide a balanced approach to using AI in instruction while maintaining and developing vital cognitive and creative writing skills.

The study sheds light on the complex nature of AI in enhancing writing skills, uncovering its potential to both support and challenge various facets of academic writing. The results show that AI's ability to provide real-time, personalized feedback has a significant impact on the technical accuracy of writing tasks and helps to build confidence and skills quickly and the most highlighted part is to save time and increase productivity. This improvement comes at a cost, though, of a potential loss of cognitive and creative abilities as users become overly reliant on AI-generated suggestions, potentially reducing their critical thinking skills, originality, and metacognitive thinking. More importantly, AI's effect on education is not uniform and context-specific, and requires intentional pedagogical approaches that design for the most positive impact of AI tools while mitigating any potentially negative outcomes.

Overall, the study highlights the need for a more balanced approach to teaching AI in higher education, ensuring that it is viewed as a tool to complement rather than replace independent cognitive activity. This should focus on reflective practice, scaffolded autonomy, and keeping and improving higher order writing abilities, such as creative and analytical writing. Additionally, targeted AI training and ethical guidelines for educators are crucial for the effective mediation of the impact of AI. Instructional strategies can be developed to support critical engagement and responsible technology use through the use of AI's ability to provide personalized learning analytics and to create learning spaces that can be used to encourage collaboration.

Overall, the study calls for a thoughtful and informed use of AI in academic writing pedagogy, as it can be both a blessing and a curse. The intentional and strategic use of AI resources holds the promise of leading to further improvements in writing skill development and the cultivation of critical thinking and creative skills, contributing to the development of competent and reflective academic writers.

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