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Research Paper

Responsible integration of generative artificial intelligence in academic writing: a narrative review and synthesis

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ABSTRACT

The ethical integration, risks, and institutional reactions related to the use of generative Artificial Intelligence (AI) in academic writing are examined in this narrative review and conceptual synthesis. Concerns regarding authorship ethics, academic integrity, and cognitive development have surfaced as a result of the quick adoption of AI tools like ChatGPT in higher education. This review identified three main themes regarding the responsible integration of generative AI in academic writing: 1. Significant risks such as plagiarism, fake or hallucinated citations, and data fabrication; 2. ethical integration of AI that emphasizes transparency, human oversight, and meaningful contribution; and 3. expanding institutional frameworks and policies intended to ensure responsible AI use. The review revealed clear risks of plagiarism, hallucinated content, citation errors, and authorship problems, hence the need for transparency, responsible use, and clear disclosure to uphold academic integrity in AI-assisted writing. It also revealed promising advancements in institutional responses; however, significant challenges remain in policy and compliance, faculty training, and ethical oversight particularly regarding the role of AI in research evaluation and publication processes. Among others, it is recommended that institutions should adopt a balanced stance to AI in academic writing by encouraging transparency and providing training on potential risks such as misuse or misinformation.

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1. INTRODUCTION

The emergence of generative Artificial Intelligence (AI) represents a transformative development in academic writing, influencing how scholarly content is created, reviewed, and disseminated. Generative AI are types of AI that can generate new contents such as text, images, codes or music by learning patterns and structures from large datasets. Generative AI tools such as OpenAI's ChatGPT, Google's Gemini and academic-specific platforms like Elicit and Scopus AI now assist in a range of academic tasks, including idea generation, drafting, and source synthesis [1], [2]. Surveys indicate that over 60% of university students globally have used AI tools for assignments, while an increasing number of researchers employ them in literature reviews and manuscript preparation [3], [2].

Beyond text generation, AI is now integral to referencing, plagiarism detection, and data analysis through tools such as Grammarly, Turnitin, and Tableau [4]. However, the rapid integration of AI into academic writing has triggered ethical concerns. Particularly, questions about authorship and plagiarism arise when users overly rely on AI-generated content [5], [6]. Moreover, generative models are prone to hallucinations, thereby producing fabricated citations or inaccurate claims, which compromises the reliability of scholarly work [7], [8]. ChatGPT, for instance, has been shown to fabricate references or misattribute findings, thereby risking the dissemination of misinformation [9], [10]. Such practices threaten both academic integrity and the credibility of research outputs [11].

Furthermore, concerns extend to the diminishing of students' critical thinking and analytical skills. Academic writing requires not only coherence but also evidence-based reasoning, interpretation, and original thought. Outsourcing these intellectual processes to AI may hinder the development of essential academic competencies [12], [11]. In academic systems where independent thinking is emphasized, this trend presents pedagogical risks [13], [14]. Also, inequitable access to advanced AI tools could widen academic disparities, privileging students in well-resourced contexts [15], [16]. In response, scholars advocate for the responsible integration of AI in academia. This entails establishing clear ethical guidelines that preserve academic standards while leveraging benefits of AI. Transparency in AI use and disclosure practices must be prioritized to uphold scholarly accountability [17], [5], [18], [19]. Based on this background, the objectives of this review are

1. To examine ethical strategies and best practices for the integration of generative AI into academic writing without compromising academic integrity.
2. To identify and analyze the risks associated with the use of generative AI in academic writing, including plagiarism, hallucinated content, and data fabrication, and propose effective mitigation strategies.
3. To identify existing institutional policies and frameworks that promote the responsible use of generative AI in academic settings.

2. RELATED WORK

The emergence of generative AI models such as GPT-3, GPT-4, Gemini, Claude, and Large Language Model Meta AI has reshaped academic writing and knowledge production. These models utilize billions of parameters to process and generate human-like text, enabling users to perform tasks ranging from summarization and translation to full manuscript composition with impressive fluency [1], [8]. Increasingly, students and researchers in higher education are adopting these models for scholarly tasks, leading to a reconfiguration of traditional approaches to academic inquiry and expression [20], [1]. The attractiveness of these tools lies in their accessibility, ease of use, and capacity to reduce cognitive workload, particularly under academic stress or time pressure [1], [21], [17]. Their integration into daily academic routines has transformed the way individuals engage with content creation.

For instance, AI can assist non-native English speakers in achieving grammatically sound academic writing, thereby promoting inclusivity [15]. However, this rapid adoption has sparked substantial debate surrounding authorship ethics, academic integrity, and the redefinition of scholarly labor. Studies show

that more than half of undergraduate students across Europe and Asia now use generative AI tools to support academic activities, a statistic that highlights the deep penetration of such technologies in learning ecosystems [2], [1]. Nonetheless, this uptake presents pedagogical dilemmas. Critics argue that reliance on AI risks transforming education into a mechanized process, detaching learners from the epistemic rigor essential to scholarship [12], [4]. Consequently, there is a growing consensus around the need for robust institutional guidelines and ethical frameworks to govern the use of generative AI in educational environments [11], [10], [3]. One of the most pressing ethical concerns associated with AI in academia is the issue of plagiarism. AI-assisted plagiarism involves the submission of AI-generated content as original student work, which bypasses the learning process and undermines academic honesty [3], [5], [22]. This includes gray plagiarism, where content is paraphrased from AI-generated responses without proper citation, creating ambiguity around authorship and originality [16]. Moreover, the academic community continues to grapple with whether AI tools should be acknowledged as co-authors or contributors in academic publications. While AI can draft coherent, well-structured manuscripts, it lacks intention, ethical reasoning, and intellectual responsibility. The attributes considered essential to authorship [11]. Journals like Nature and Science have explicitly stated that AI tools cannot be listed as authors, emphasizing instead that any use of AI should be disclosed transparently in methodology or acknowledgements [23], [8], [19]. Such editorial standards help preserve the integrity of the scholarly process while allowing for technological augmentation.

A dangerous limitation of generative AI is its tendency to hallucinate, or produce plausible-sounding but factually incorrect content, including fabricated references and data. Empirical studies reveal that GPT-3.5 generated false citations in over 50% of its responses, whereas GPT-4, although improved, still presented errors in academic contexts [5], [3], [7], [24], [22]. These inaccuracies pose substantial risks, especially in disciplines where misinformation can lead to real-world consequences, such as medicine, engineering, and law [10], [21]. Scholars advocate for a hybrid approach that combines AI-generated output with human critical review to ensure factual accuracy and conceptual validity [13], [9]. There is also a call for the integration of AI literacy training within curricula to help students and researchers learn to critically assess and verify AI-generated content [18], [9].

While AI tools can boost writing efficiency, they may also promote intellectual passivity when overused. Educational psychologists warn that an overreliance on AI diminishes higher-order thinking skills such as critical analysis, synthesis, and argument development, skills central to academic success and lifelong learning [9]. Instead of engaging with academic texts deeply, students may default to surface-level understanding, which ultimately hampers their academic growth [1], [25]. Studies show that students who rely on AI to complete assignments tend to retain less information and demonstrate weaker conceptual understanding [1], [3]. This problem is exacerbated in educational systems with inadequate digital infrastructure, where unequal access to AI tools intensifies existing educational inequalities [14].

In response to the growing ethical and pedagogical concerns, academic institutions are developing regulatory frameworks to manage AI integration. The International Center for Academic Integrity (ICAI) recommends policies emphasizing transparency, informed consent in AI use, and rigorous citation practices [11], [4]. Some universities have gone further by updating their codes of conduct to explicitly define acceptable and unacceptable uses of generative AI in coursework and research [2], [5], [19]. Simultaneously, scholarly journals are re-evaluating their editorial processes. Tools such as Turnitin and Copyleaks now include modules capable of detecting AI-generated text, while reviewers are trained to assess the plausibility of citations and check for signs of hallucination [23], [10].

These institutional responses aim to strike a balance between embracing innovation and maintaining academic rigor [18], [4]. The path toward responsible integration of AI in academia lies in establishing ethical frameworks rooted in transparency, collaboration, and educational equity. [11] Propose a framework emphasizing human authorship, clear attribution of AI assistance, and institutional accountability. This is in line with UNESCO's guidelines, which advocate for human-centered AI that supports inclusive and sustainable educational outcomes [5]. [26]. Beyond policy, there is a growing push

to integrate AI literacy into academic curricula [18]. Educators are encouraged to teach students how to interpret AI outputs critically, assess source credibility, and verify claims through triangulation [27], [28], [11]. Applications such as Semantic Scholar, Elicit, and Scite are increasingly recommended as alternatives to general-purpose AI tools due to their emphasis on evidence-based information and traceable sources [10], [4].

3. METHODOLOGY

3.1 Research Design

This study employs a narrative review and conceptual synthesis to explore ethical, pedagogical, and institutional aspects of AI in academic writing. Narrative reviews facilitate flexible analysis of complex issues like AI ethics. Conceptual synthesis integrates diverse findings into coherent frameworks. The review process involved

1. Identifying peer-reviewed studies, reports, and policies from 2020–2025.
2. Selecting literature on ethical, pedagogical, and technological AI dimensions.
3. Analyzing themes such as AI hallucinations, authorship ethics, and academic integrity.
4. Synthesizing insights into a cohesive narrative addressing the research questions.

3.2 Data Sources and Search Strategy

Literature was sourced from academic databases including Scopus, Web of Science, ERIC, JSTOR, and Google Scholar. Institutional repositories from UNESCO, the International Center for Academic Integrity, Turnitin, and the University of Cambridge were also accessed. Search terms combined keywords such as “generative AI,” “academic writing,” “ethics,” “plagiarism,” “AI policy,” and “pedagogy.”

3.3 Inclusion and Exclusion Criteria

To maintain relevance and rigor, the following criteria guided literature selection

1. English-Language, Peer-Reviewed Or Editorially Reviewed Sources Published Between 2020–2025.
2. Priority to works with scholarly impact focused on ethics, pedagogy, or AI integration.
3. Exclusion of grey literature and blog posts unless from credible academic or governmental organizations.

3.4 Analytical Procedure

A thematic analysis approach was employed, involving iterative coding of data excerpts under themes including ethical challenges, plagiarism and hallucination, pedagogical implications, academic policies, and responsible AI frameworks. Coding was conducted manually using by the researchers, with regular reflexive discussions to ensure consistency.

3.5 Guiding Research Questions

The synthesis was guided by the following research questions

1. How can generative AI be ethically integrated into academic writing?
2. What key risks such as plagiarism, hallucinations, and data fabrication require mitigation?
3. What institutional policies or frameworks support responsible AI use in academia?

3.6 Methodological Limitations

As a literature-based synthesis, this study does not incorporate primary empirical data from specific populations or institutions. Findings are limited by the availability and scope of published works in the relevant emerging field.

4. RESULT AND DISCUSSION

4.1 Ethical Integration Strategies for Generative AI in Academic Writing

The ethical integration of generative AI into academic writing presents complex challenges. While AI tools offer significant benefits in drafting, rephrasing, and managing references [12], [8], they simultaneously raise concerns about authorship, originality, and intellectual labor [21], [10]. Current literature emphasizes the need for transparency, accountability, and human oversight to ensure responsible AI use [10], [14], [28], [9]. Transparency is foundational to ethical AI integration. Scholars argue for the explicit disclosure of AI involvement in academic work to preserve integrity [3], [2], [17]. However, ambiguity persists regarding how and where such disclosures should be presented and the depth of understanding required from authors [28], [5], [19].

Equally essential is human oversight. Authors must retain responsibility for ensuring content accuracy and ethical compliance [14], [28], especially given AI's tendency toward hallucination or factual inaccuracy [8], [15]. AI literacy which is defined as the ability to critically understand functionality and limits of AI, is essential for judicious engagement [27], [29]. Without it, users may over-rely on AI, risking academic quality and critical skill erosion [15], [11], [4], [6]. The use of domain specific tools such as Elicit and Scopus AI is recommended to support academic rigor and reduce reliance on less accurate general purpose systems [10], [1]. These strategies synthesized from literature are summarized in Table 1.

Table 1. Ethical Integration Strategies for Generative AI in Academic Writing

Strategy	Description	Supporting Sources
Transparent Disclosure	Clearly state AI involvement in content creation	[3], [23], [21], [19], [30]
Human Oversight	Maintain author accountability and conduct final review	[11], [5], [26], [12]
AI Literacy Training	Develop critical engagement skills with AI outputs	[27], [15]
Assistive, Not Authoritative Use	Use AI to enhance, not replace, human reasoning	[28], [14]
Selective Tool Use	Prefer specialized academic AI tools over general chatbots	[10], [22]

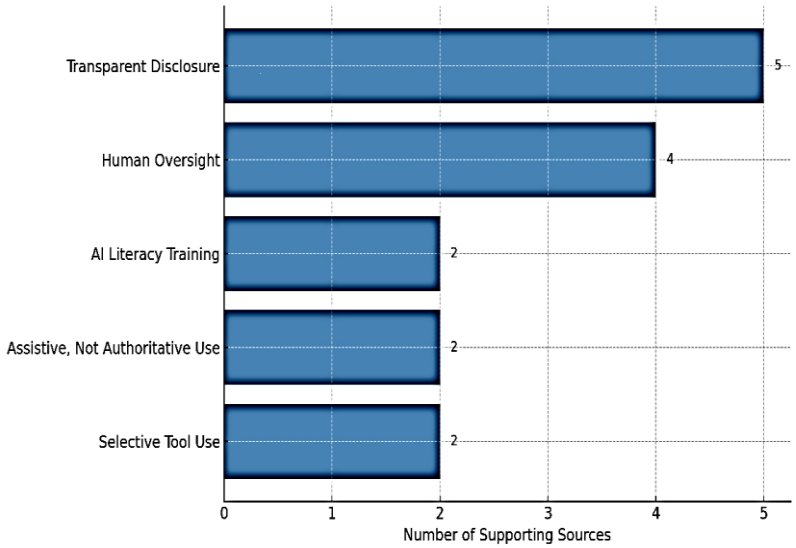

Figure 1. Ethical Integration Strategies for Generative AI in Academic Writing

Figure 1 shows that transparent disclosure and human oversight are the most emphasized strategies for ethically integrating AI in academic writing. Less cited but still important are AI literacy, selective tool use, and using AI as an aid not a replacement for critical thinking and authorship. Despite these promising frameworks, several scholars caution that mere policy implementation such as mandatory disclosures or oversight may be insufficient to embed ethical AI use meaningfully. Broader pedagogical reforms are necessary, including reimagining assessment strategies, redefining notions of authorship, and encouraging sustained ethical reflection within academic cultures [2], [20], [13], [19]. Institutions must not only regulate which tools are employed but critically engage with the motivations, contexts, and educational environments shaping AI use.

4.2 Risks and Mitigation Measures in AI-Assisted Academic Writing

A main concern in AI-assisted academic writing is AI hallucination, where generative models produce fabricated content such as false citations or distorted facts. Despite their linguistic sophistication, tools like ChatGPT are probabilistic models rather than factual repositories, risking the integrity of academic work and exposing users to inadvertent misconduct [21], [10], [24], [22]. Institutional guidelines often lack practical protocols for verifying AI-generated references, assuming users especially students can independently ensure accuracy, an assumption that may be overly optimistic [5], [16], [19]. Skill erosion presents another significant risk. Dependence on AI tools may lead to neglect of essential academic writing skills, including argument construction, evidence synthesis, and critical reflection. This concern supports cognitive apprenticeship theory, which stresses the importance of guided practice for skill acquisition. Overreliance on AI could thus undermine learning processes intended to develop metacognitive and rhetorical abilities [9], [27].

The opaque, "black-box" nature of generative AI systems further complicates matters. Users often lack awareness into how outputs are generated or what data sources inform responses, limiting their capacity to assess bias, accuracy, or originality. This opacity may inadvertently promote plagiarism or unethical citation [21], [13], [15]. Plagiarism and misattribution also arise from uncritical use of AI-generated text, where users may unintentionally replicate existing content without appropriate citation. Clearer guidelines on citing AI assistance are advocated but require a baseline of digital literacy and ethical awareness often unevenly distributed across educational contexts [11], [16], [15]. Cultural challenges emerge when AI replaces rather than supplements critical thinking. Strategies such as peer collaboration, reflective practices, and gradual reduction of AI reliance are necessary and must be embedded institutionally to be effective [18], [27], [2]. Table 2 summarizes these risks and mitigation measures as synthesized from literature.

Table 2. Ethical Risks and Mitigation Measures in AI-Assisted Academy Writing

Risk	Description	Mitigation Strategy	Supporting Sources
AI Hallucination	Generation of false or fabricated content and citations	Mandatory verification of all AI-generated references	[22], [24], [19]
Plagiarism and Misattribution	Unintended reproduction of existing work	Transparent citation and acknowledgement of AI use	[11], [16], [15]
Skill Erosion	Reduced development of critical thinking and writing skills	Limit AI use to supplementary tasks; promote manual drafting	[9], [8]
Black-Box Limitations	Opacity of AI model training data and sources	Educate users on AI limitations and biases	[21], [7]
Overreliance	Dependence on AI for core academic work	Foster metacognitive reflection and peer collaboration	[1], [27], [13]

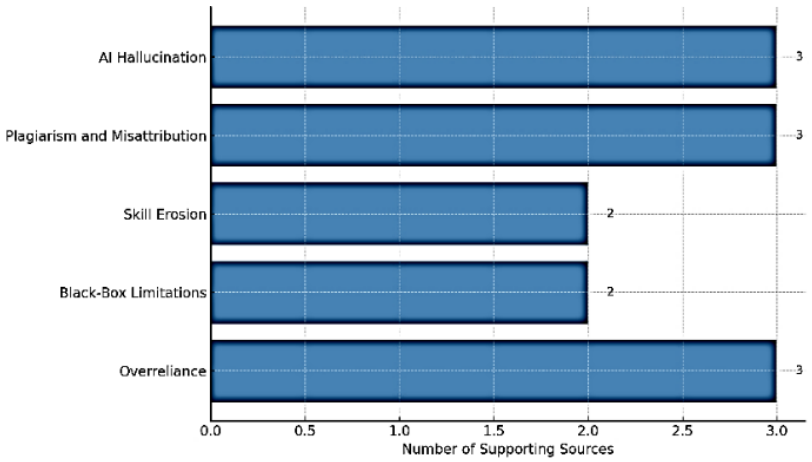

Figure 2. Ethical Risks and Mitigation Measures in AI-Assisted Academy Writing

Figure 2 shows that AI hallucination, plagiarism, and overreliance are the most cited risks in academic writing. Mitigation strategies include verifying AI content, ensuring proper attribution, and promoting peer collaboration. Skill erosion and black-box limitations are also noted, calling for education and limited AI use.

It is worth noting that, while ethical concerns around AI in academic writing are well documented, existing strategies tend to focus on individual responsibility rather than systemic transformation. Institutional reforms, particularly in pedagogy, assessment, and digital equity—are needed to meaningfully address these emerging risks [13], [12], [20], [19].

4.3 Institutional Frameworks and Policy Responses

Institutions are addressing the challenges of AI in academic writing by developing policies grounded in human oversight, meaningful contribution, and transparency, as proposed by [11] and aligned with UNESCO's [3] ethical guidelines. These frameworks emphasize AI as a tool under critical human control rather than an independent author. Universities are updating plagiarism and academic integrity policies to explicitly cover AI misuse, requiring transparent disclosure of AI assistance to foster accountability and ethical reflection [23], [29], [30]. [20] Enforces similar policies for journals, prohibiting AI as an author, mandating AI use disclosure, and ensuring human editorial judgment. A recent report by [4] indicated global university policies mandating transparency, proper AI attribution, instructor discretion, and AI prohibitions in exams. Leading institutions like Harvard, MIT, Stanford, and Oxford exemplify these balanced approaches that protect academic integrity while encouraging innovation. Also, some institutions pioneer AI verification protocols involving manual cross-checking of AI-generated content against peer-reviewed sources, promoting procedural integrity and critical engagement [2], [22]. These efforts integrate ethical AI literacy into academic workflows, curriculum design, and manuscript review. The summary of institutional responses and ethical frameworks synthesized in recent literature is shown in Table 3.

Table 3. Institutional Frameworks or Policies Supporting Responsible AI Use in Academia

Framework/Policy	Core Principle(s)	Institutional Implementation	Sources
[11] Framework	Human oversight, meaningful contribution, transparency	Faculty guidelines, manuscript review policies	[11]
[5], [26] UNESCO AI Ethics	Human-centered, inclusive, ethical AI	National education strategies, curriculum development	[5], [26]
Disclosure Policies	Declare use of AI in submissions and coursework	University honor codes, academic regulations	[3], [23], [30]

Plagiarism Policy Revision	Expand definitions to include AI misuse	AI-specific clauses in academic misconduct rules	[21], [10]
Verification Tools and Protocols	Validate AI-generated content with peer-reviewed sources	Encourage manual checking and dual-authorship	[2], [22]
[20] Elsevier Generative AI Policy	Transparency, integrity, human-led decisions	Author disclosure, no AI authorship, editor oversight	[20]
University Generative AI Policies (2025)	Transparency, ethical use, instructor discretion	Student guidelines, exam prohibitions, academic integrity	[4]

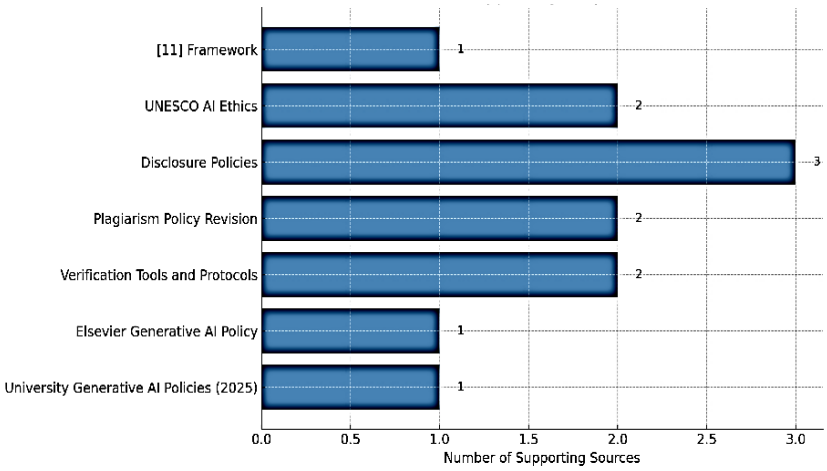

Figure 3. Figure Institutional Frameworks/Policies Supporting Responsible AI Use in Academia

Figure 3 reveals that disclosure policies are the most supported institutional framework for responsible AI use in academia. UNESCO guidelines, plagiarism policy revisions, and verification protocols follow closely, emphasizing transparency, ethical standards, and human-led oversight in academic environments. Literature synthesis indicates that, despite promising policy developments, enforcement remains uneven, and faculty training on AI ethics is often insufficient. Significant gaps exist in addressing AI's ethical impact on academic publishing, research evaluation, and tenure [18]. Studies warns that national AI strategies favour training AI experts over using AI to transform education, risking inadequate regulation of ethical issues. Studies cautions that unregulated AI use, like ChatGPT, may impair students' critical thinking without clear ethical guidelines and pedagogical integration. These challenges exposed the need for systemic, interdisciplinary approaches to foster ethical AI cultures in academia.

5. CONCLUSION

This narrative review and conceptual synthesis provide an examination of the ethical, pedagogical, and policy challenges posed by generative AI in academic writing. The findings revealed the need for transparency, responsible use, and clear disclosure practices to uphold academic integrity while leveraging the potential of AI in academic writing. Key risks such as plagiarism, hallucinated content, and authorship problems demand vigilant mitigation through robust institutional policies and guidance. Moreover, ethical frameworks and responsible innovation models provide valuable pathways for integrating AI tools in ways that support, rather than undermine critical thinking and creativity in academic writing. Notwithstanding the limitations inherent in literature synthesis, this study revealed emerging consensus and tensions in current scholarship, setting the stage for future empirical research. With the growing integration of generative AI in education, a responsible and balanced approach is key to maximize its benefits while preserving the integrity of academic writings.

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Authors Contribution Statement

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Conflict of Interest Statement

No conflicts of interest.

Informed Consent

Not applicable.

Ethical Approval

Not applicable.

Data Availability

The data synthesized for the study are available upon request from the corresponding author (Akilu Isma'il).

REFERENCES

[1] J. Kim, S. Yu, R. Detrick, and N. Li, 'Exploring students' perspectives on Generative AI-assisted academic writing', Educ. Inf. Technol., vol. 30, no. 1, pp. 1265-1300, Jan. 2025. doi.org/10.1007/s10639-024-12878-7

[2] E. D. L. Evangelista, 'Ensuring academic integrity in the age of ChatGPT: Rethinking exam design, assessment strategies, and ethical AI policies in higher education', Contemp. Educ. Technol., vol. 17, no. 1, p. ep559, Jan. 2025. doi.org/10.30935/cedtech/15775

[3] M. S. Adam, 'ChatGPT usage and plagiarism in academic writing: The mediating role of academic integrity among Nigerian university students', AI and Quality Higher Education, vol. 3, pp. 64–79, 2025.

[4] Thesify, "Generative AI policies at the world's top universities," *Thesify*, Feb. 20, 2025. [Online]. Available: https://www.thesify.com/blog/generative-ai-policies-at-the-worlds-top-universities

[5] UNESCO, AI and Education: Guidance for Policy-Makers, Paris, France: UNESCO, 2021. [Online]. Available: https://unesdoc.unesco.org/ark:/48223/pf0000376709

[6] M. Májovský, M. Černý, M. Kasal, M. Komarc, and D. Netuka, 'Artificial intelligence can generate fraudulent but authentic-looking scientific medical articles: Pandora's box has been opened', J. Med. Internet Res., vol. 25, p. e46924, May 2023. doi.org/10.2196/46924

[7] S.-W. Lee and W.-J. Choi, 'Utilizing ChatGPT in clinical research related to anesthesiology: a comprehensive review of opportunities and limitations', Anesth. Pain Med., vol. 18, no. 3, pp. 244-251, Jul. 2023. doi.org/10.17085/apm.23056

[8] J. G. Meyer et al., 'ChatGPT and large language models in academia: opportunities and challenges', BioData Min., vol. 16, no. 1, p. 20, Jul. 2023. doi.org/10.1186/s13040-023-00339-9

[9] C.-W. Chien, 'Influence of integration of multimodal writing portfolios into academic writing courses on novice researchers' academic writing', J. Appl. Res. High. Educ., vol. 16, no. 5, pp. 1389-1404, Nov. 2024. doi.org/10.1108/JARHE-05-2023-0196

[10] A. Cheng, A. Calhoun, and G. Reedy, 'Artificial intelligence-assisted academic writing: recommendations for ethical use', Adv. Simul., vol. 10, no. 1, p. 22, Apr. 2025. doi.org/10.1186/s41077-025-00350-6

[11] S. P. Mann, 'Guidelines for ethical use and acknowledgement of large language models in academic writing', Nat. Mach. Intell, vol. 6, pp. 1272-1274, 2024. doi.org/10.1038/s42256-024-00922-7

[12] I. Dergaa, K. Chamari, P. Zmijewski, and H. Ben Saad, 'From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing', Biol. Sport, vol. 40, no. 2, pp. 615-622, Apr. 2023. doi.org/10.5114/biolsport.2023.125623

[13] S. J. Ingley and A. Pack, 'Leveraging AI tools to develop the writer rather than the writing', Trends Ecol. Evol., vol. 38, no. 9, pp. 785-787, Sep. 2023. doi.org/10.1016/j.tree.2023.05.007

[14] A. D. Giglio and M. U. P. da Costa, 'The use of artificial intelligence to improve the scientific writing of non-native english speakers', Rev. Assoc. Med. Bras., vol. 69, no. 9, p. e20230560, Sep. 2023. doi.org/10.1590/1806-9282.20230560

[15] N. Ghorashi, A. Ismail, P. Ghosh, A. Sidawy, and R. Javan, 'AI-powered chatbots in medical education: Potential applications and implications', Cureus, vol. 15, no. 8, p. e43271, Aug. 2023. doi.org/10.7759/cureus.43271

[16] Y. K. Duymaz and A. M. Tekin, 'Harnessing artificial intelligence in academic writing: Potential, ethics, and responsible use', Eur. J. Ther, vol. 30, no. 1, pp. 87-88, 2024. doi.org/10.58600/eurjther1755

[17] A. Isma'il and O. M. Lukman, "Perceived effectiveness of online learning tools and resources in enhancing biology learning among senior secondary school students in Zamfara State," J. Sci. Technol. Math. Pedagog., vol. 1, no. 2, pp. 86–97, 2023. [Online]. Available: https://jostmp-ksu.com.ng/index.php/jostmp/article/view/71/45

[18] A. Ismail, A. Aliu, M. Ibrahim, and A. Sulaiman, 'Preparing teachers of the Future in the Era of artificial Intelligence', June-July, no. 44, pp. 31-41, Jun. 2024. doi.org/10.55529/jaimlnn.44.31.41

[19] A. Tang, K.-K. Li, K. O. Kwok, L. Cao, S. Luong, and W. Tam, 'The importance of transparency: Declaring the use of generative artificial intelligence (AI) in academic writing', J. Nurs. Scholarsh., vol. 56, no. 2, pp. 314-318, Mar. 2024. doi.org/10.1111/jnu.12938

[20] Elsevier, "Generative AI policies for journals," Elsevier, 2024. [Online]. Available: https://www.elsevier.com/about/policies/generative-ai-policies

[21] H. Alkaissi and S. I. McFarlane, "Artificial hallucinations in ChatGPT: Implications in scientific writing," Cureus, vol. 15, no. 2, p. e35179, 2023. [Online]. Available: https://europepmc.org/abstract/MED/36811129

[22] W. H. Walters and E. I. Wilder, 'Fabrication and errors in the bibliographic citations generated by ChatGPT', Sci. Rep., vol. 13, no. 1, p. 14045, Sep. 2023. doi.org/10.1038/s41598-023-41032-5

[23] M. K. McNutt et al., 'Transparency in authors' contributions and responsibilities to promote integrity in scientific publication', Proc. Natl. Acad. Sci. U. S. A., vol. 115, no. 11, pp. 2557-2560, Mar. 2018. doi.org/10.1073/pnas.1715374115

[24] C. Rathkopf, 'Hallucination, reliability, and the role of generative AI in science', arXiv [cs.CY], 11-Apr-2025.

[25] W. Rahayu, S. Weda, and N. D. Muliati, Artificial Intelligence in writing instruction: A self-determination theory perspective. 2024. doi.org/10.18355/XL.2024.17.01.16

[26] UNESCO, Recommendations on the Ethics of Artificial Intelligence, Paris, France: UNESCO, 2021. [Online]. Available: https://unesdoc.unesco.org/ark:/48223/pf0000380455

[27] A. Bozkurt, A. Karadeniz, D. Baneres, A. E. Guerrero-Roldán, and M. E. Rodríguez, 'Artificial intelligence and reflections from educational landscape: A review of AI studies in half a century', Sustainability, vol. 13, no. 2, p. 800, Jan. 2021.doi.org/10.3390/su13020800

[28] N. J. Kim and M. K. Kim, 'Teacher's perceptions of using an artificial intelligence-based educational tool for scientific writing', Front. Educ., vol. 7, Mar. 2022. doi.org/10.3389/feduc.2022.755914

[29] A. Frosolini, P. Gennaro, F. Cascino, and G. Gabriele, 'In reference to "role of chat GPT in public health", to highlight the AI's incorrect reference generation', Ann. Biomed. Eng., vol. 51, no. 10, pp. 2120-2122, Oct. 2023. doi.org/10.1007/s10439-023-03248-4

[30] M. Perkins, 'Academic Integrity considerations of AI Large Language Models in the post-pandemic era: ChatGPT and beyond', J. Univ. Teach. Learn. Pract., vol. 20, no. 2, Jan. 2023. doi.org/10.53761/1.20.02.07

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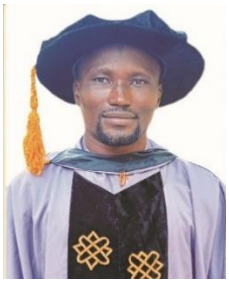

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