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Editorial

'Ethics' and 'Integrity' in Research in the Era of Generative AI—Are We Ready to Contribute to Scientific Inquiries?

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ABSTRACT

As scientific research advances, the tools used by researchers to conduct and publish their studies are also evolving in both academic and non-academic settings. Research serves as the foundation of knowledge production, but recent advancements in generative AI have raised concerns about the strength and quality of research (Dahal, 2024). These concerns hinge on two key factors: research ethics and research integrity. In scientific research, ethics and integrity are essential for credible studies. Research ethics involve moral principles such as informed consent and confidentiality, while research integrity focuses on honesty and transparency. These principles reinforce one another, fostering trust within the scientific community. Upholding these standards requires a collective effort to ensure reliable scientific research. In this editorial, I argue that while ethics and integrity are closely interconnected, they are not synonymous. Instead, they work together to uphold scientific inquiries' credibility, transparency, and impact. Furthermore, this editorial emphasizes the broader role of ethics and integrity in

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strengthening scholarly work rather than simply linking them to research quality. Finally, it concludes with a brief overview of the articles featured in Volume 2, Issue 1.

Keywords: scientific research, academic and non-academic settings, knowledge production, generative AI, strength and quality, ethics and integrity

Introduction

As scientific research advances, the tools used by researchers to conduct and publish their studies are also evolving in both academic and non-academic settings (Ghimire et al., 2024; Thondebhavi Subbaramaiah & Shanthanna, 2023). However, the advancements in generative AI have raised concerns about the strength and quality of any form of research (Dahal, 2024) posing the numbers of questions—how can researchers ensure the accuracy and reliability of data generated by AI tools?, what measures can be taken to prevent bias in AI-generated research outputs?, how should informed consent be handled when using AI to analyze participant data?, what role do institutional review boards (IRBs) and/or research committees play in overseeing AI-enhanced research?, how can researchers balance the benefits of AI automation with the need for human oversight?, what are the potential privacy concerns associated with using AI in research, and how can they be mitigated?, how can the scientific community develop guidelines for the ethical use of AI in research?, what are some examples of ethical dilemmas that have arisen from the use of AI in research?, how can researchers ensure transparency and accountability when using AI tools? and what steps can be taken to educate researchers about the ethical implications of AI in their work? In academic and non-academic, research is essential for the collective pursuit of knowledge production. Yet, the strength and quality of this research depend on two crucial factors: research ethics and research integrity. While these terms are often used interchangeably, their implications for the scholarly community differ significantly. The relationship between research ethics and research integrity is interconnected. In this regard, Tikhonova and Raitskaya (2023) remarked that "major alarming themes cover authorship and integrity related to AI-assisted writing, threats to educational practices, medicine, and malevolent uses of ChatGPT." (p. 5).

Research ethics aligns with the principles and guidelines that govern the ethical conduct of research, ensuring the protection of participants' rights and welfare (Hamed et al., 2024). On the other hand, research integrity encompasses the adherence to ethical practices throughout the research process, including honesty, transparency, and accountability (Chen et al., 2024). Thus, research ethics and research integrity in the era of Generative AI are essential for maintaining public trust in scientific advancements and promoting responsible research practices. This editorial argues that research ethics and research integrity in the era of Generative AI are complicatedly linked, but they are not synonymous; rather, they function synergistically to uphold scientific investigation's credibility, transparency, and impact (Dahal, 2023) for the future generation. However, as we progress, there is a need for generative AI tools in research as partners in producing knowledge. Therefore, careful guidance is required to address ethical considerations and ensure research reflects shared values and aspirations (Limong, 2024).

Research Ethics and Research Integrity Defined

Generative "AI has become an indispensable tool for researchers, accelerating discoveries and optimizing processes." (Limongi, 2024, p. 2). The research ethics and

integrity are at the center, and the overall research process is not compromised. In this alignment, research ethics in the era of generative AI refers to the moral principles guiding research from its inception through to completion and publication. These principles provide a framework for ethical decision-making in the research process, involving issues such as human subject protection, data falsification, and intellectual property rights. Research ethics focuses on the 'how'—how to conduct respectful, responsible, and just research. Likewise, research integrity, on the other hand, is a broader concept encompassing adherence to ethical principles and the accuracy and honesty of scientific research and contribution to academia. For instance, imagine research ethics as the building blocks of a structure; these blocks define what can or cannot be done. Research integrity is the cement that binds these blocks together, ensuring that the structure stands upright and remains durable. Ethics lay the foundation, and integrity ensures the longevity and robustness of the scientific endeavor. This implies the faithful reporting of research methods and results, commitment to peer review, and responsible credit allocation among contributors for producing and disseminating upholding ethical standards.

Upholding Research Integrity: Navigating Ethical Challenges in the Age of AI

Universities, journals, and research institutions are vested in upholding research ethics and integrity. Committees like institutional review boards (IRBs) or, ethical review boards or research committees perform a crucial role in scrutinizing research proposals to ensure they meet ethical standards, which fosters research integrity. Ensuring research integrity is essential in the evolving scenery of scientific inquiry, especially with the integration of Generative AI or AI. Ethical principles avoid data fabrication and ensure informed consent in human subject research. Likewise, plagiarism undermines credibility, necessitating strict adherence to originality. AI-generated text offers efficiency but raises concerns about bias, transparency, and authorship—who's text? Thus, researchers must validate AI outputs, disclose AI usage, and protect participant privacy. However, by updating the ethical guidelines back and forth by institutional review boards (IRBs) and/or research committees to address AI's capabilities, the scientific community can maintain research integrity and credibility in their research outcomes and insights.

Data fabrication and falsification in research are threats to credible research. Research integrity is fundamental to the scientific process, ensuring that findings are reliable, valid, and reproducible. The use of generative AI introduces new dimensions to this principle. For instance, the potential for AI to generate fabricated data or results poses a significant threat to research integrity (Kim et al., 2024). However, artificial intelligence, responsibility attribution, and a relational justification of explainability for ensuring accountability require clear lines of responsibility and mechanisms for addressing harms caused by AI systems. Thus, adhering to ethical principles prevents researchers from tampering with data, which directly upholds the integrity of the research. Thus, the ethical malpractice of data falsification led not only to a breach of research integrity but also brought disrepute to the broader scientific community. Human subject research demands informed consent from human subjects, ensuring they know the research risks, benefits, and future publications. Failing to obtain informed consent can compromise the integrity of the research—like not informing the subjects they had syphilis or that they were part of an experiment—leading to a serious compromise in research integrity. *Plagiarism is the e*thical norms of originality and credit allocation that directly contribute to maintaining research integrity. Plagiarism is an ethical violation that

directly impacts research integrity by casting doubt on the credibility of the plagiarized work and the larger body of research.

Integrating AI-generated text in research offers opportunities and challenges concerning ethical norms and research integrity. On the one hand, AI can significantly enhance the efficiency and scope of scientific inquiry by automating data analysis, generating hypotheses, and even drafting sections of research papers. However, this technological advancement also raises several ethical concerns. Firstly, bias and accuracy are critical issues. AI systems can inadvertently introduce biases based on the data they are trained on, potentially skewing research outcomes. Researchers must ensure that AI-generated content is accurate and free from such biases by rigorously validating and cross-checking the results. Transparency and accountability are also vital. Researchers should clearly disclose the extent to which AI tools were used in their work, including any limitations or potential biases of the AI systems employed. This transparency helps maintain trust in the research process and allows for proper scrutiny by the scientific community. Plagiarism and authorship present another set of challenges. AI-generated text can blur the lines of authorship, making it essential for researchers to attribute contributions accurately and avoid presenting AI-generated content as their own original work. Ethical guidelines should be updated to address these distinctions, ensuring that AI contributions are properly acknowledged without misleading readers. Privacy and confidentiality must be safeguarded, especially when AI tools are used to analyze sensitive data. Researchers need to implement robust measures to protect participant information and comply with ethical standards for data handling. AI-generated text offers promising advancements for research, it is crucial to navigate these ethical challenges carefully (Al-kfairy et al., 2024). Overall, by adhering to established ethical norms and updating guidelines to reflect the capabilities and limitations of generative AI, the scientific community can harness the benefits of generative AI while maintaining the integrity and credibility of their research and future publication.

Concluding Remarks

The generative AI in research presents opportunities and profound ethical challenges. As researchers, it is our responsibility to navigate these challenges with integrity and foresight, adopting robust ethical frameworks offered by institutional review boards (IRBs) and/or research committees, implementing practical strategies for the ethical use of AI, and prioritizing transparency and accountability, we can harness the power of generative AI while upholding the principles of research ethics and integrity. As we move forward, we must continue to engage in dialogue and collaboration to refine these approaches and ensure that AI serves the greater good. For instance, research ethics and research integrity are parallel to the two wings of a bird; both are necessary for the scholarly initiative to reach academic height. Though they are distinct concepts, their back-and-forth aspect is crucial for scientific research's credibility, transparency, and impact. Thus, research ethics and integrity are essential for ensuring that research is conducted according to the highest standards of practice. Both concepts are essential for ensuring that research is conducted according to the highest standards of practice and for maintaining public trust in the scientific enterprise. Upholding ethical principles ensures that research maintains rigor while emphasizing integrity, which ensures that this research is accurate, reliable, and deserving of public trust. Therefore, a solid commitment to ethics and integrity is necessary for advancing knowledge production. Thus, I conclude this editorial by posing the questions again for adhering for mainting the research ethics and research integrity in the age of

generative AI: how can researchers ensure the accuracy and reliability of data generated by AI tools?, what measures can be taken to prevent bias in AI-generated research outputs?, how should informed consent be handled when using AI to analyze participant data?, what role do institutional review boards (IRBs) and/or research committees play in overseeing AI-enhanced research?, how can researchers balance the benefits of AI automation with the need for human oversight?, what are the potential privacy concerns associated with using AI in research, and how can they be mitigated?, how can the scientific community develop guidelines for the ethical use of AI in research?, what are some examples of ethical dilemmas that have arisen from the use of AI in research?, how can researchers ensure transparency and accountability when using AI tools? and what steps can be taken to educate researchers about the ethical implications of AI in their work?

Volume 2 Issue 1 Covers

Volume 2, issue 1 includes an editorial, nine research articles, and one review article. The editorial highlights evolving, raising concerns about research quality due to generative AI and argues that ethics and integrity, though interconnected, are distinct and collectively uphold research credibility and impact. In the research article section, *Sumbul, Neupane, and Kapar* identified key factors affecting English speaking skills among learners in Kathmandu Valley, highlighting the importance of educational support, personal motivation, language environment, and technology in improving communication. *Subedi* examined the impact of foreign direct investment (FDI) on Nepal's GDP, emphasizing positive effects across various sectors despite challenges like lengthy approval processes and sectoral biases. *Phunyal* explored teachers' experiences using ICT in Nepali community schools, highlighting more opportunities than challenges despite issues like unstable internet and lack of support, emphasizing the importance of digital literacy for effective learning. *Tamang's* study illustrated that remittances significantly improve the quality of life for women in Jhumka Village, Nepal, by enhancing their education, healthcare, and entrepreneurial opportunities while also exploring challenges like income dependence and uneven progress. *K.C. and Shrestha* analyzed the financial trends of Gaurishankar Multiple Campus, emphasizing income and expenditure patterns, per-student costs, and the need for improved financial planning to ensure long-term stability. Likewise, in the review article section, *G.C.* reviewed quantitative research methods in mathematics education, exploring its uses, limitations, and benefits for enhancing student understanding and engagement, and recommends for graduate students and novice researchers. Further, in the research article section, *Mahat's* study highlighted that under the Local Government Operation Act 2074, judicial committees have been resolving disputes through reconciliation and mediation. However, the practice of judicial resolution as envisioned by the law remains challenging. The number of reconciliations by judicial committees is higher than those by mediators. Despite positive aspects of the committees' work, various issues have hindered the ideal judicial resolution envisioned by the law. *Bhandari* explored that Folk literature, particularly Folk tales, reflects society and serves to entertain, provide moral lessons, and preserve religious, cultural, and historical values, with a focus on the Kalinchok region's narratives of Dolakha, Nepal. *Shiwakoti's* study revealed that the social security allowance for senior citizens in Bhimeshwar Municipality, Dolakha, has significantly improved their lives. However, challenges remain, such as adjusting based on familial and economic conditions. Finally, *Badaal* and *Shahi* explored the sociolinguistic analysis of names in Darchula, revealing that names reflect caste, religion,

culture, and family background, with sources varying from Hindu scriptures for Brahmins to physical traits and birth times for Chhetris and Dalits.

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