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Using AI to Improve Research Writing Skills Among researcher under NEP 2020

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Abstract

Artificial intelligence is rapidly changing the practice of academic research, especially in the field of research writing, whereby scholars frequently encounter issues pertaining to structure, language, coherence, synthesis of literature, and readiness to publish. These issues are extremely relevant in the context of the National Education Policy (NEP) 2020 in Indian higher education, as the policy focuses on the quality of research, innovation, digitalization, multidisciplinary learning, and capacity building. It is against this background that the current study is analyzing the potential of AI in enhancing the capacities of researchers to write research and offer a roadmap in how AI can be embraced successfully and responsibly. The paper follows the Systematic Literature Review (SLR) methodology to compile the current knowledge regarding AI-assisted academic writing with a specific focus on writing improvement, inclusivity, ethical issues, and institutional readiness. It becomes clear in the review that AI tools may assist the researcher with structuring ideas, improving grammar, summarization, editing, and structuring of the manuscript, which contributes to the productivity and confidence of the researcher. Simultaneously, the issues of overdependence, originality, falsified references, and academic integrity are still high. According to the thematic results, the paper may suggest a step-by-step roadmap of awareness, skill building, facilitated integration, ethical governance, and institutionalization. The paper concludes that AI has the potential to be a worthy facilitator of the development of research writing under NEP 2020 when it is viewed as a human-centered support system, and not as an alternative to scholarly thinking and authorship.

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1. Introduction

The introduction of the concept of artificial intelligence in the academic sphere has altered the manner in which scholars create, structure, refine, and disseminate academic knowledge. AI-based tools that help support research writing, including writing assistants, grammar checkers, summarization systems, citation support engines, and generative language models, are replacing the traditional reliance of research writing on the command of language, structure, critical thought, and disciplinary conventions. The technologies are transforming the research ecosystem by providing support in the generation of ideas, language correction, organization of manuscripts, literature synthesis, and editing assistance. Simultaneously, their fast usage has created a lot of controversy about originality, ethical usage, academic honesty, and reliance by researchers. Consequently, the modern academic landscape is confronted with a twofold problem: to take advantage of the efficiency and accessibility potentialities of AI and maintain the humanity of the academic mind and prose ^[1].

This problem has taken a critical turn in the context of Indian higher education with the introduction of the National Education Policy (NEP) 2020, which focuses on the quality of research, innovation, critical thinking, learning multidisciplinary, digital integration, and empowering academic competencies in all institutions ^[2]. NEP 2020 is a vision of a flexible, technology-enabled, globally competitive education system, which is also based on integrity, inclusion, and quality. Research writing takes a key position in this vision since clarity, criticality, and rigor in writing are the keys to publication, academic collaboration,

doctoral training, and policy-oriented scholarship. Nevertheless, academic writing remains a challenge among many researchers, especially those who are still in the early-career, doctoral, and those who are in non-English-medium or resource-constrained settings. The most frequent obstacles are poor organization of arguments, lack of exposure to academic writing, language barriers, inability to synthesize literature, lack of confidence in publishing writing, and formal training in academic writing^[3].

The AI tools can provide a potentially ground-breaking solution to these issues. They are able to assist researchers in organizing manuscripts, enhancing clarity and grammar, polishing abstracts, creating outlines, summarizing literature, detecting language discrepancies, and boosting writing efficiency. These tools also have the potential to democratize access to writing support, particularly when such support is not easily available to the person^[4]. However, AI is not a non-partisan or harmless intervention. The blind application of generative tools can result in the creation of fake references, biased summaries, excess use of machine-generated wording, undermining of analytical abilities, and moral ambiguity in terms of authorship and originality. Therefore, the most important question is not whether AI ought to be applied, but how it ought to be incorporated into the process of developing research writing competencies in a responsible way^[5].

Although the idea of AI in education and writing support acquires increasing scholarly interest, the literature usually dwells upon the functionality of the tool, how students use it, or the general ethical discussions. A relatively minor focus has been given to how AI can be methodically correlated with the skill development of research writing by researchers, particularly in relation to NEP 2020. No frameworks are also well-structured and attached to policies that can help institutions and researchers use AI responsibly and productively. Thus, the paper is a valuable contribution since it fills a significant gap by performing a Systematic Literature Review (SLR) and suggesting a practical roadmap of AI implementation in the development of research writing skills within the framework of NEP 2020. The aims of the proposed work are 3-fold: first, the researcher plans to conduct a synthesis of the available literature on the topic of AI-supported research writing; secondly, the researcher intends to determine the key opportunities, issues, and institutional needs linked with such application; and third, the researcher will create a roadmap of how AI can be responsibly utilized

to enhance the writing of research papers by researchers in Indian higher education. Thus, the paper offers both theoretical and practical contributions to the literature on the connection between technology adoption and policy change, academic competency building, and ethical leadership^[6].

2. Review Methodology

This paper assumes a Systematic Literature Review (SLR) method to explore the ways of how artificial intelligence can be used to enhance research writing abilities among researchers and how this process could be adjusted to the objectives of NEP 2020. The SLR approach is appropriate since it enables the researcher to recognize, filter, categorize, and synthesize existing knowledge clearly and methodically. The paper is not meant to test a causal model but to develop a roadmap; therefore, a review-based design fits in developing conceptual clarity and finding actionable themes based on the literature^[7].

The review process can be structured in four steps, which include identification, screening, eligibility assessment, and thematic synthesis. Academic databases (e.g., Scopus, Web of Science, Google Scholar, ERIC, and ScienceDirect) can be utilized in the identification phase to conduct a search of all relevant studies. The combinations of keywords may be the following: AI and research writing, artificial intelligence in academic writing, generative AI in academic writing, AI writing assistant in higher education, research writing skills and AI, NEP 2020, and digital learning^[8]. More sources of policy, reports, and institutional documents concerning AI in higher education and NEP 2020 can be added to enhance contextual interpretation as well. The inclusion criteria must pay attention to the studies that refer to AI tools or AI-supported systems concerning academic writing, scholarly communication, higher education, researcher development, digital learning, or writing pedagogy. Both conceptual and empirical research may be covered in case they provide information on writing improvement, skill development, risks, ethics, or implementation. Some of the exclusion criteria can be non-academic blog posts, strictly technical AI papers that lack educational value, duplicates, and articles that are not related to writing skill development. Due to the relative recentness of the policy framework of NEP 2020 and the emergence of generative AI, the review can mostly draw upon the literature published within the past ten years, with particular emphasis on publications that are more recent, such as those published in the past five years^[9].



Fig 1: AI integration research writing roadmap

Once the eligible studies are selected, the analysis can be done by thematic coding. The themes that may occur in the coding process include writing difficulties, AI-supported

support systems, inclusivity advantages, ethical issues, institutional preparedness, and pedagogical change^[10]. It is then possible to consider these themes in the context of NEP

2020, particularly its focus on quality, innovation, and digital preparedness, as well as research empowerment. The result of the SLR does not simply constitute descriptive synthesis but forms the basis to build a systematic roadmap that can inform institutions and researchers to utilize AI responsibly to write research^[11]. The conceptual purpose of the study (to review the literature in a systematic way and derive significant thematic implications and transform them into a roadmap applicable to the sphere of Indian higher education under NEP 2020) is supported by the methodology.

3. Literature Review

According to the literature, the field of research writing is one of the most difficult aspects of academic growth. Being able to write and publish a research paper will not only require language skills but also argument coherence, positioning in a discipline, synthesizing literature, citing sources correctly, explaining the methods used, and convincing as a scholarly piece of writing. New researchers, especially inexperienced ones, usually have trouble putting ideas into academic language, keeping a coherent flow of ideas, organizing introductions and discussions, and adjusting their writing to the requirements of journals^[12]. These challenges are more accentuated in situations where formal writing training is restricted or where English is not the primary academic language. Consequently, the lack of writing quality frequently turns into an obstacle to being published, noticed, and trusted in research professions^[13]. In this scenario, AI has become a critical supportive tool. The research conducted on AI-assisted writing tools also suggests that such systems could assist users in enhancing their grammar, syntax, readability, lexical choice, and textual coherence. More

sophisticated applications, especially generative AI tools, can help outline manuscripts, rephrase paragraphs, write summaries, come up with titles, tweak abstracts, and structure complicated concepts into more understandable formats^[14]. Within the academic field, AI is now being applied in brainstorming research questions, synthesizing large amounts of literature, creating structured content prompts, and refining manuscripts before submission. These capabilities can greatly minimize the cognitive and time overhead linked to first-stage drafting and language editing. In the case of researchers who do not receive writing guidance or editorial support, AI can thus be a scaffold, which enhances confidence and productivity^[15].

Inclusiveness and accessibility are another significant theme presented in the literature. The researchers in diverse languages, or with low-resource academic backgrounds, can also utilize AI writing aids to receive instant feedback, linguistic assistance, and structure^[16]. This is particularly applicable in a country such as India, where the higher education system comprises scholars whose regional, linguistic, and institutional backgrounds are diverse. AI could be used to overcome the gap in access to academic writing support, which would lead to an increase in participation in research^[17]. In this regard, AI is consistent with the vision of the inclusive and transformative nature of NEP 2020, aiming at the democratization of quality education, promoting innovation, and enhancing the research capacity of various institutions. Carefully implemented, AI can decrease the barriers to first-generation researchers, early-career academics, rural scholars, and interdisciplinary researchers who frequently have to grapple with the formal writing conventions of research^[18].

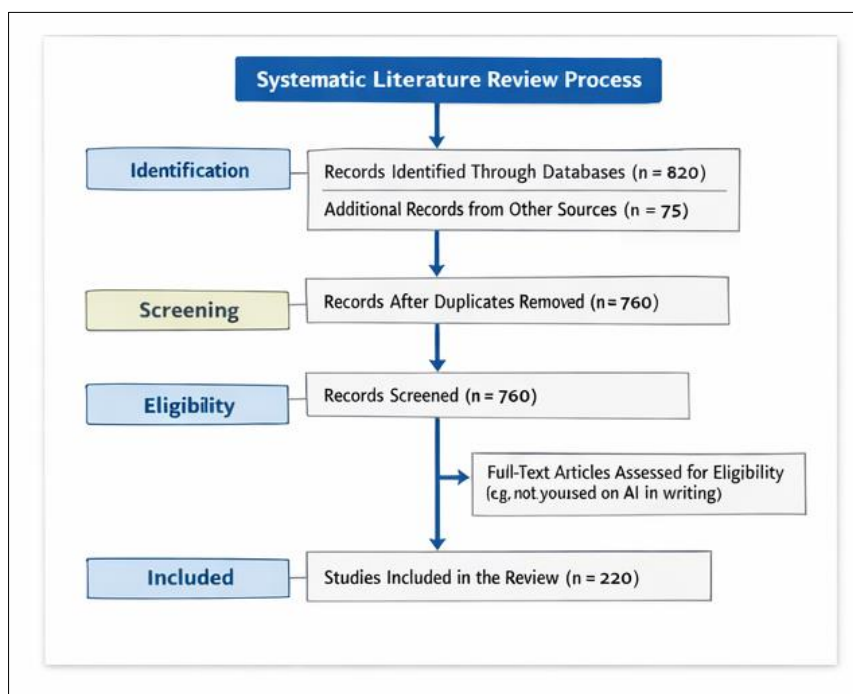


Fig 2: Systematic Literature Review Process

Nevertheless, ethical and pedagogical issues are also raised in the literature in a significant amount. Overdependence is one of the most commonly debated problems. In cases where researchers tend to overuse AI-generated content, they might undermine their own analytical, interpretive, and writing

skills. Instead of being a support system, AI could turn into a replacement for intellectual work, thus weakening the true skills^[19]. Another similar issue is that of hallucinated or fabricated references and inaccurate claims, and misleading summaries that are particularly common in generative AI

systems that generate fluent but unverifiable text^[20]. This poses grave dangers to academic writing, where accuracy, integrity of source, and accountability in terms of evidence are crucial. Besides, the lack of transparency on authorship, attribution, and disclosure also complicates the ethical situation. The question of When is AI support is acceptable is therefore becoming increasingly challenging for academic institutions. What should be revealed? What is the way in which originality should be evaluated? And how are institutions to tell the difference between assisted writing and unethical substitution?

The literature also puts emphasis on the necessity of a model with a human-in-the-loop. The most successful use of AI is as an augmentation tool, as opposed to an autonomous writing agent. The researchers should be accountable in conceptualization, interpretation, validation, citation verification, and the ultimate argument building^[21]. In this paradigm, AI aids in the expression but does not eliminate academic judgment. Such a view is particularly essential to aligning AI applications with NEP 2020, which focuses on critical thinking, creativity, ethics, and quality learning outputs. In case the use of AI is reduced to mere convenience, it would be counterproductive to the developmental objectives of the policy. When, though, it is incorporated into processes of training, reflection, and institutional advice, it may both enhance the writing skills of researchers and maintain academic quality.

Another theme that comes out of the literature is institutional preparedness. To successfully integrate AI into research writing, it is not only a matter of the availability of the tools, but policies, training systems, mentoring systems, ethical guidelines, and assessment systems are also needed^[22]. Universities should establish AI literacy among faculty, researchers, and doctoral scholars. They should also develop responsible use standards, such as disclosure standards, fact-checking standards, and integrity standards. In the absence of such support, researchers can apply AI inconsistently, unethically, or without knowledge of its limitations^[24]. Therefore, it is not merely the issue of technological integration but institutional governance. Literature synthesis thus indicates that there are five broad themes, including first, the ongoing issue of research writing skills development; second, AI's ability to improve structure, language, and productivity; third, the ability to improve inclusivity and accessibility; fourth, the risks of uncritical use associated with AI; and fifth, institutional preparedness and human-oriented governance. The following themes are the foundation of the roadmap suggested in the following section^[23].

4. Discussion and Recommendations

The SLR shows that AI can have significant potential to enhance research writing skills, although only when applied in an ecosystem of development and ethical standards. This paper offers a five-stage roadmap of implementing AI in the development of research writing skills based on the thematic synthesis within the framework of NEP 2020. The initial one is Awareness and Orientation. In academic writing, researchers must have a background knowledge of what AI can and cannot accomplish. The institutions should host workshops, orientation courses, and faculty training programs, which will discuss the potential of AI tools, its advantages, and its threats. This step is critical since

nowadays, numerous users use AI in an informal manner and are unaware of its weaknesses regarding the quality of evidence, citation accuracy, and originality^[25].

The second stage is Skill-Based Training. The introduction of AI should not be in the form of a short cut, but rather a support system that assists the researchers to develop the flow of arguments, grammar, structuring, summarization, and editing of a piece of writing. Among topics to be trained should be the immediate formulation, verification of outputs, responsible paraphrasing, citation cross-checking and how to differentiate between supporting an idea and substituting authorship. This phase changes AI application to passive reliance to directed scholastic practice.

Guidance into the Research Process is the third stage. AI can be incorporated into certain phases of scholarly writing like title generation, abstract refinement, literature organization, writing manuscripts and drafting reviewer responses. Nonetheless, this assimilation must be done through supervisory standards, especially among doctoral students and novice researchers. The human mentors should make sure that conceptual originality, methodological rigor, and authenticity of the sources are researcher-driven. The fourth phase is the Ethical Governance and Quality Assurance. Organizations should develop official guidelines for artificial intelligence. These ought to deal with transparency, disclosure, plagiarism detection, reference checking, what should and should not be done, and disciplinary responsibility. The key aspect of ethical governance is that, in its absence, the implementation of AI is likely to undermine the credibility of research writing instead of promoting it. This phase will make sure that AI does not violate academic integrity and NEP 2020 values.

The fifth step is Continuous Evaluation and Institutionalization. Colleges are to incorporate writing improvement systems based on AI into their research training centers, doctoral programs, writing labs, and faculty research development programs. Meanwhile, they will need to assess their results in terms of writing confidence, readiness to publish, quality improvement, and ethical compliance. Training models and policies can be refined with time the help of feedback mechanisms.

This roadmap is closely coherent with NEP 2020 since it bridges the gap between digital innovation and quality improvement, inclusiveness, capacity building, and ethical academic growth. Instead of looking at AI as a threat to the existing system, the roadmap places it as an organized educational tool that can enhance the research ecosystem in India if it is embraced in a responsible manner.

5. Discussion and Implications

The review discussion implies that AI ought to be interpreted as a strategic academic facilitator as opposed to an independent producer of knowledge. Its best asset is the fact that it helps to facilitate the procedural and expressive aspects of research writing, particularly in people with difficulty in structure, language, and confidence. In this regard, AI has the propensity to increase involvement in research and enhance the preparedness of manuscripts in a variety of institutional environments. This especially applies in the context of NEP 2020, which aims to transform Indian higher education by innovating, integrating digitally, and enhancing the research culture.

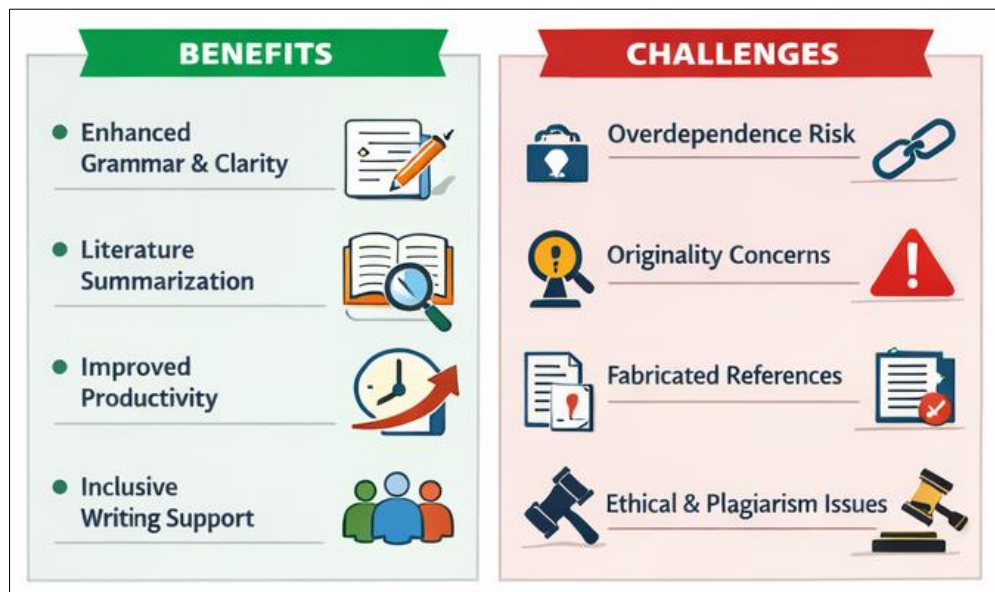


Fig 3: Benefits and Challenges of AI in research writing

Nevertheless, the results also demonstrate that the advantages of AI are conditional. Applied without oversight, fact-checking, and ethical knowledge, AI can promote superficial writing, inaccurate citation, and undermining of critical scholarly practice. Thus, AI does not replace humans, but rather its working with humans is its true educational value. Scientists have to be the mental creators of their work, and AI is a frame of reference and guidance. Such a balance is critical as long as AI can enhance, and not reduce, research writing skills. The study has important implications for various stakeholders. To researchers, the research indicates that AI can boost the productivity of writing, clarity of language, and organization, but it should be applied critically and openly. In the case of universities, it brings out the necessity of developing AI literacy courses, writing help programs, and university policies that establish the responsible use. In the case of faculty mentors and supervisors, it implies the necessity of directing scholars to develop, rather than shortcut, the use of AI. To policymakers and academic leaders, the study provides a roadmap that can be used to connect the technological development with the overall educational objectives of NEP 2020, particularly quality, equity, and research excellence.

In such a way, the paper will be a contribution to the emerging discussion on AI in higher education that does not rely on a mere pro-anti-technology argument. Rather, it provides a more systematic policy-driven approach where AI is included in a wider approach to academic development. This contribution is especially timely in the context of the Indian context, where research quality improvement is one of the key policy issues.

6. Conclusion, Limitations, and Future Research

The paper has discussed how artificial intelligence can enhance the research writing abilities of researchers by conducting a systematic literature review and suggested a roadmap in agreement with NEP 2020. The review shows that AI can assist academic writing in terms of structure, language quality, summarization, editing, and writing confidence. It also demonstrates that AI may be used to facilitate inclusion by helping researchers with linguistic, institutional, or mentoring limitations. Meanwhile, the

literature reveals that the use of AI presents severe issues of originality, accuracy of reference, dependency, and academic ethics.

The main conclusion of the research is that AI is not considered a substitute for the ability of scholarly writing, but a developmental resource that may enhance research writing with the assistance of training, governance, and human control. The suggested roadmap provides a viable model within which institutions can incorporate AI responsibly into the development of researchers as part of NEP 2020. By doing so, the paper will provide a policy-related and academically-based view to a growing research field.

There are limitations in the study. It relies on the literature and fails to empirically test the roadmap within a given institutional context. It is also possible that practices and policy recommendations will have to be updated constantly due to the rapid development of AI tools. In addition, the review is conceptually oriented and fails to compare the results in the disciplines or in the categories of researchers in a quantitative manner.

The subsequent study can be used to test the roadmap empirically using surveys, interviews, or intervention-based research on doctoral scholars, faculty members, and research supervisors. Comparative analysis between different fields, colleges, and linguistic backgrounds would also aid in establishing the differences in AI assistance given in different settings. Further studies can be conducted on the effect of AI use on writing confidence, publication, originality, and ethical consciousness in the long term. This kind of work would contribute to a better comprehension of how AI may be implemented into the development of academic writing in a manner that is creative and responsible.

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