African Science Frontiers Initiatives Research Journal | ASFIRJ

Received: 20 October 2026 | Revised: 03 November 2026 | Accepted: 07 November 2026 | Published: 16 November 2026

PERSPECTIVE PAPER

Rethinking beginner postgraduate student-supervisor relationships and the role of supervisors in the age of artificial intelligence

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ABSTRACT

Beginner postgraduate students often heavily depend on structured mentorship and support to a greater degree than previously observed as they navigate the uncharted terrains and unwritten rules of the research space, independent study and meaning-making. With the rise of generative and analytical Artificial Intelligence (AI), traditional mentor-mentee model of supervision is significantly being restructured. For beginner postgraduate students – who are just learning how to frame a research topic and questions, review and map literature, and develop a scholarly voice – the relationship with their supervisors is moving towards a reframed strategy. Grounded in Foucault's power-knowledge dynamics, this article offers an analytical framework for understanding how AI rearranges student-supervisor relationships, forging a new set of a context – a shift from mentor-protégé model to a hybrid, multi-modal collaborative framework. Moreover, this study puts forward a viewpoint regarding the implications for supervisory roles and mentorship models for supervisors and beginner postgraduate students in higher education in the age of AI.

KEYWORDS:
Artificial Intelligence, Beginner Postgraduate Students, Higher Education, Student-Supervisor Relationships, Supervisory Roles, Research

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INTRODUCTION

The relationship between postgraduate students and their supervisors is currently being remodeled by the emergence of Artificial Intelligence (AI) in postgraduate research in higher education. While AI helps these type of students, including beginners, in idea generation, concept breakdown and data organization, academic writing and language support, and streamlining literature reviews and engagement, it also presents key risks and limitations. These include, among others, erosion of critical thinking skills, hallucinations and fabricated data and citations, data bias and lack of context, academic integrity violations and unequal access and digital literacy.

Consequently, the transition from a traditional mentorship framework to a hybrid approach necessitate integrating physical and digital modalities while actively and critically maintaining relational depth, structured communication and clearly defined roles and responsibilities, and institutional adaptation. Accordingly, Molefe and Ntuli[1], Chinhamo et al.[2], Nkosi[3] and Omodan[4] argue that the role of supervisors in upholding the fundamental values of advisory frameworks has garnered attention in the modern technological era. These underlying principles include, among others, logical reasoning, troubleshooting capabilities and evaluating long-term outcomes, and looking at situations from multiple perspectives to plan the course of action. Moreover, these include the establishment of personal-professional identity, and a redefinition of moral purpose – which reframes academic integrity and personal guiding principles, personal growth and development, and social responsibility.

In this article, I begin by unpacking the relationship between postgraduate students, including beginners, and their supervisors, and its significance in postgraduate research in higher education. Secondly, I examine the role of AI in postgraduate research in higher education, including the evolving role of supervisors in the context of digital revolution. Third, I present discussions of the theoretical standpoints through which I examine and analyze the shifting beginner postgraduate student-supervisor relationships and the role of supervisors within the domains of the emergence of AI in postgraduate research in higher education. Forth, I look closely at the outcomes these developments have had and might have for shift in power and autonomy, and evolving mentorship, including transparent agreements and reflexive oversight. Lastly, I scrutinize the implications of these critical debates for the evolving mentorship frameworks and supervisory roles in postgraduate research in higher education.

Subsequently, I address the following research questions:

(a) *How are beginner postgraduate student-supervisor relationships and the role of supervisors redefined in the age of artificial intelligence?*

(b) *What model(s) can be used to enhance beginner postgraduate student-supervisor relationships and the shifting role of supervisors in the age of artificial intelligence?*

METHODS

Review of Literature: (Beginner) Postgraduate Student-Supervisor Relationships in Research in Higher Education

Postgraduate Student and Supervisor Relationships at Play

Postgraduate student and supervisor relationships can be described as complex partnerships that are often driven by shared and competing goals, power dynamics, intense academic guidance, research collaboration and co-production. While task-orientated guidance and research collaboration are significant, students often rely on emotional encouragement, self-esteem enhancement, and critical and active mentorship. Therefore, holistically supportive postgraduate student-supervisor relationships enhances academic success, student well-being and professional career development. Moreover, through this interactive process, individuals acquire skills, knowledge, core competences and attitudes necessary for helping them to execute their daily responsibilities, productivity and for enabling adaptability, and professional development and growth. Furthermore, Molefe and Ntuli[1] highlight that postgraduate student-

supervisor relationships "frequently entail the development of a personal-professional identity and the transformation from novice to competent research practitioner, positively shaping policy and practice for meaningful engagement" (p. 416).

Similarly, Yende[5] asserts that the complexity of this relationship requires both the student and the supervisor to build a mutually beneficial relationship and that the partnership must be sustained. Which he argues is fundamental for the success of the research project. Likewise, Bao et al.[6], Han and Jin[7], and Yende [5] state that these relational bonds between students and their supervisors are characterized by complexity and universal challenges pertaining to postgraduate student-supervisor relationships and supervision practices. They are determined by, among others, personal-professional development and training, communication and knowledge sharing, and collaboration and co-development, including decision-making and emotional dialogues.

Furthermore, Han and Jin[7], Mashau[8], and Photo and Gumbo[9] contend that data, over the years, has demonstrated that positive emotions in student-supervisor relationships can cultivate positive feelings, behaviors, and engagement, receptivity to feedback, emotional resistance, reduced stress and academic success, while the opposite (negative emotions and strained dynamics) can hinder student mental health, loss of academic meaning and development, and impaired productivity. Therefore, resulting in relationships characterized by communication breakdown, delayed and poor feedback, emotional distance and lack of ethical considerations[10].

In like manner, Hansen et al.[11], Dube[12], Han and Jin[7], and Adedokun and Oyetunde-Joshua[13] are of the strong expression that amplifying student perspectives in student-supervisor relationships is essential because it transforms traditional hierarchies into collaborative partnerships that promote academic engagement. Which helps postgraduate students to build critical competences like self-representation and empowerment, agency and responsible decision-making. Moreover, it enhances mutual expectations, strengthens knowledge co-production and it enhances psychological well-being. Furthermore, these scholars demonstrate that when institutions center this operation around the lived experiences of the individuals they serve – students – they can shift from rigid, top-down structures into adaptive spaces. Therefore, reconceptualizing postgraduate students as partners in this process-oriented, shared and collaborative journey repositions both students and supervisors as co-creators of knowledge in postgraduate research in higher education and beyond.

Beginner Postgraduate Student-Supervisor Relationships

Beginner postgraduate students in higher education often face significant obstacles as they navigate the uncharted waters of the research space[1] .These challenges include, among others, research and academic hurdles (such as setting an unrealistic project scope, academic writing, review of literature and synthesis, and research and theory design), institutional and supervisory roles (such as dealing with heavy supervisor workloads and delayed feedback or unmatched goals, resources access and isolation). Moreover, these hardships include personal and socio-economic challenges (such as financial constraints and exclusion, dispositional barriers, and disconnect). Therefore, the transition from undergraduate to postgraduate studies necessitates a major shift from internalizing existing research to actively questioning, researching and producing new insights and perspectives[1].

Furthermore, this journey calls for greater independence where beginner postgraduate students actively manage their own time and research activities, critical evaluation, problem-solving and self-directed learning, among many other things. Consequently, these type of students require supervisors who create safe working environments, normalize uncertainty and actively support their students' well-being and mental health. Moreover, supervisors who provide clear expectations and communication. Furthermore, beginners are in need of supervisors who provide timely and actionable feedback and who foster independence.

Therefore, it is essential to support these type of students as they transition from facts-based learning approach to conducting independent research and

critical analysis that is based on the ability to question, critique and build upon existing knowledge to generate new perspectives and insights. Similarly, White[14] and McLeod et al.[15] recognize the fact that a number of postgraduate students do not immediately transition from undergraduate to postgraduate studies. Therefore, when they return to pursue their postgraduate studies as beginners, they often find the academic environment unfamiliar and even more challenging as they are required to manage their own research directions and projects. Including identifying gaps and developing their own critical and well-supported arguments in their areas of interest.

Moreover, Oloba[16], Liu and Pullinger[17], and Wozniak[18] argue that the continuous use of AI tools in research within higher education present both significant opportunities to enhance productivity and complex challenges regarding academic integrity, data privacy and ethics. Therefore, undertaking postgraduate studies has and continues to present complexities for beginners. This as these type of students face critical challenges concerning to balancing AI tools with the development of independent scholarly agency in research skills and academic integrity and ethical considerations. Therefore, these type of students require coordinated support from key stakeholders as they learn to balance scholarly independence and academic integrity in unfamiliar terrains in the age of AI in postgraduate research in higher education[1].This kind of support can be elicited through, among others, postgraduate supervisors and relevant schools/faculties, library services, higher education institutions and administrators, and policy makers, including quality assurance and statutory bodies.

The Role of Artificial Intelligence in Postgraduate Research in Higher Education

AI plays a transformative role in postgraduate research by accelerating engagement and productivity in the following ways. First, in terms of idea generation and theory refinement, it acts as an interactive 'thinking partner' to brainstorm feasible research subjects and questions, hypothesis, including theoretical/conceptual frameworks alignment. Second, AI helps in literature review and discovery by synthesizing academic literature, identifying knowledge gaps and bridging related studies. Third, in terms of data management and analysis, specialized software helps in accelerating data processing, and simplifying complex patterns into manageable pieces in qualitative, quantitative and mixed-methods research. Forth, in writing and editorial support, relevant tools assist with structural organization, grammar checks and clarity improvements. While shifting supervision practices from a directive model towards a human-centered, strategic and collaborative mentorship between supervisors, students and AI tools. Therefore, AI vastly restructures postgraduate research in higher education by acting as a powerful and skilled technical assistant rather than a replacement for human cognitive power and reasoning, inquiry and supervision.

Dai et al.[19] argue that AI tools such as ChatGPT can yield text-based responses to human action, such as numerical data and computer software. Therefore, providing them with valuable information that they can use to advance their research studies. Moreover, they argue that ChatGPT has and continues to be used to facilitate automated assessments and tailored feedback, awaken students' curiosity and engagement which fosters their deeper cognitive processing, intrinsic motivation and academic success. Which is essential in personalizing their learning experiences.

Furthermore, Dai et al.[19], Dowling and Lucey[20], and Pavlik[21] maintain that in this model, the AI tool can be used as a brainstorming mechanism where innovative ideas and processes are generated, literature reviews are streamlined, methodology and data analysis are simplified, including writing and editorial support. Which presents opportunities for redefining the traditional student-supervisor relationship and supervisory roles. Although this is the case, these scholars argue that engaging with these tools must offer new perspectives for postgraduate students in terms of epistemic judgement and scholarly identity, independence and constructive learning, and ethical dilemmas and integrity.

However, the overreliance on AI poses major challenges and risks for postgraduate students in research in higher education. These include, among others, erosion/loss of critical thinking and originality. Overreliance on AI weakens students' analytical and problem-solving skills and reasoning. Turning students

into passive consumers of knowledge. For beginner postgraduate students, it can make it difficult to trace their development and growth, including verifying/tracing the originality of their research projects/work. Hallucinations and unreliable data: AI tools usually generate trustworthy and compelling data, yet presenting fabricated information and citations. Which poses dangers to postgraduate students producing false/compromised research projects, if rigorously not checked. In terms of contextualization and bias, many AI tools lack socio-economic realities, including cultural factors such as traditions, beliefs and norms, which can produce systemic biases and lack of context in data generation. This is particularly true in a diverse country like South Africa.

Lastly, policy, student-supervisor relationships and supervisory friction. This usually happens through the lack of standardized guidelines on the acceptable use of AI, especially for beginners, in a number of institutions, which usually cause confusion and unethical practices. Subsequently, causing friction between supervisors and their postgraduate students. Also causing ambiguity on how these beginner students can be punished for unethical behaviors by their mentors. Therefore, responsible use of AI in postgraduate research protects academic integrity and avoids misconduct, preserve intellectual ownership and independence, mitigate bias and factual errors and ensures quality scholarly outputs. Which then invites beginner postgraduate students to work alongside their mentors in threading carefully as they engage with AI tools in accelerating/refining their research projects.

Grounding the Study: Foucault's Power-Knowledge Dynamics

Foucault[22] argued that power and knowledge are inseparable, co-constitutive dynamics that shape human behavior by defining what is considered 'normal' or 'correct' as upheld by cultural norms and shared civic accord. Moreover, Foucault[22] argued that (modern) power is not only oppressive, but also productive as it cultivates new comprehension and uncover fresh perspectives. Thereby, constructing reality, knowledge and behaviors. In the context of beginner postgraduate student-supervisor relationships and the role of supervisors in the age of AI, Foucault's[22] power-knowledge framework establishes its self as a paradigm-shifting mechanism that disrupts the established standards of relationships framing and knowledge production.

Moreover, Foucault's[22] theory of power-knowledge dynamics provides an analytical perspective for understanding how AI reformulate the relationship between beginner postgraduate students and their supervisors. It posit that, in the age of AI, power is not only held by human capacity (supervisor) but it is distributed across the supervisor, the student and algorithmic systems. Thereby, creating a different set of circumstances – shift in power and autonomy, and evolving mentorship, including oversight. Therefore, beginner postgraduate students and supervisors need to embrace a hybrid model of supervision with redefined roles and responsibilities, and where human capacity, oversight and AI-powered tools play an essential role in actively and critically engaging with scholarly work, integrity and ethical standards.

RESULTS AND DISCUSSION

Changing Dynamics: Shift in Power and Autonomy, and Evolving Mentorship

The emergence of AI in postgraduate research in higher education has and continues to drastically reshape beginner postgraduate student-supervisor relationships and the role of supervisors by shifting traditional hierarchies, distributing epistemology and redefining student self-directed learning[11-13, 22]. Chinhamo et al.[2], and Kariyana and Sinkala[23] argue that supervisors are no longer sole players in providing immediate refining of topics, streamlining literature reviews, data analysis and methodology, polishing academic writing and providing feedback. Moreover, they argue that generative AI give students access to instant feedback and drafting support on their research projects, which reduces complete dependence on their supervisors for basic support.

Furthermore, using AI tools in support of their projects give these students quicker workflow alignment before meeting their human supervisors. Therefore, supervisors' roles in the present time have and continue to be redefined from the sole epistemic authority into balancing and preserving academic rigor and scholarship, and AI literacy mentors who guide the

research project (by protecting deep thinking, dialogue, and value original voice). Also, supervisors who provide support in terms of ethical engagement, rigor and critical evaluation in support of workflow efficiency.

AI transforms beginner postgraduate student-supervisors relationships and redefines the role of supervisors by shifting the mentorship model from a traditional hierarchy into a collaborative shared tasks between students, supervisors and generative AI[11-13, 20, 22]. In this setting, the supervisor is expected to provide higher order academic advising and scholarly mentoring, and well-structured research process and framing. While the student engages critically and ethically with AI tools as they engage in idea generation and mapping, streamlining literature, data presentation and analysis, academic writing, and drawing conclusions, among other things. AI tools, in this research journey, provides both the student and the supervisor access and virtual assistance to engage critically with tasks in terms of structuring, presentation and meaning-making.

Moving Forward: Transparent Agreements and Reflexive Oversight

Transparent agreements in beginner postgraduate student-supervisor relationships can establish clear, straightforward rules for using AI in research, writing and sense-making. This also include using AI without compromising critical thinking skills and academic integrity. Transparent agreements are significant because they, firstly, manage power dynamics[11-13, 22]. Therefore, collectively drawing clear boundaries between beginner postgraduate students and their supervisors in terms of formulating a supervision partnership is essential[20]. This agreement/partnership must bind supervisors to actionable practices such as committing to regular engagement meetings and providing constructive written feedback within reasonable timeframes. For beginner postgraduate students, such an agreement/partnership must clearly outline expectations concerning meeting preparation, independent work and submission timeframes. Although this is the case, I argue that this type of a relationship should be flexible and permit outside contact when specific needs arise for both stakeholders, and these relationships must emphasize process over product.

Secondly, these relationships/partnerships must be built upon regular/ongoing dialogue sessions. This is where supervisors are needed/required to create an enabling and a safe environment for their students to discuss on how are they balancing critical thinking and the use of AI in their research projects. This include discussing strengths, weaknesses, limitations and biases. Moreover, it must be emphasized that although AI tools offer significant benefits in research, a human supervisor is significant as they offer deep scholarly direction, contextual insights and adhering strictly to moral and professional standards in research. This includes fostering safe spaces and emotional well-being that AI tools may not be able to provide[7-9, 20, 22].

Therefore, reflexive oversight is essential in beginner postgraduate supervision. This is as it provides a critical space where supervisors actively guide beginners to carefully review, question and ethically manage AI tools. This as they critically engage with the research process in meaning-making and contributing to knowledge in their areas of interest.

CONCLUSION AND FUTURE DIRECTIONS

The emergence of AI in higher education continues to transform postgraduate research by accelerating idea generation and proposal refinement and support, literature discovery and review, data analysis and processing. Simultaneously, it threatens independence and critical thinking, including self-direction, and academic integrity and ethical considerations if unmonitored. Therefore, effective supervision in this era requires balancing algorithmic efficiency with reflexive, human-centered mentorship. For student-supervisor relationships and supervision practices, supervision moves from personal, individualized and experience-based feedback to collaborative and data-supported research development, monitoring and support. Therefore, presenting evolving mentorship practices.

As they transition from undergraduate to the uncharted terrains of the research space, beginner postgraduate students require support more than ever. Therefore, this study argues that higher education institutions need to provide structured AI literacy, training programs and

support for Honours students and their supervisors – just like their Masters and Doctoral counterparts. Moreover, these must align with institutional governing policies on algorithmic transparency, data protection and scholarly products. Furthermore, supervisors, through their schools/faculties must adopt formal AI-use guidelines and share these, including continuous training, with their beginner postgraduate students. Therefore, these will train these type of students on the responsible use of AI while maintaining independence and critical thinking skills in engaging with their research projects. Lastly, this study argues that a pedagogy of care, repositioning and relationality in beginner postgraduate supervision is essential and must be centered into a supportive, and developmental mentorship. Which is significant for student's engagement, well-being and success.

CONFLICT OF INTEREST

The author declares no conflict of interest related to this article.

ACKNOWLEDGEMENTS

Disclosure of AI:
The author declares that no generative AI and AI-assisted technologies were used in drafting, analysis, or preparation of this article.

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