

The Use of AI Research Assistants by Knowledge Management Postgraduate Students, Supervisors and Emerging Researchers – A Case Study

Brenda van Wyk and Marlene Holmner

University of Pretoria, South Africa

Brenda.vanwyk@up.ac.za

Marlene.holmner@up.ac.za

Abstract: The growing prevalence of artificial intelligence (AI), generative AI (GenAI), and AI-mediated research tools raise concerns around their implications for postgraduate research and education. Postgraduate students starting their research journey may believe that AI-powered research tools enhance efficiency and fluency. This could be the case, but there is a probability that its uninformed and indiscriminate use may exacerbate second-order articulation gaps. This may be evident during transitions from Honours to advanced postgraduate research. Whereas, independent analytical and creative problem solving, conceptualisation, methodological justification, and original contribution are research skills required on postgraduate level, an over-reliance on generative AI and other AI research assistants may deter this cognitive development and result in limited epistemic understanding. When combined with heuristic information behaviour, such as satisficing, superficial processing, cognitive overload, information avoidance, and confirmation bias of AI use may result in compromised research quality, originality, and ethical engagement. Although articulation gaps are well theorised in relation to the school-to-university transition, limited research addresses their recurrence within higher education itself in South Africa, particularly between NQF 7–8 and NQF 9–10. These gaps are often misinterpreted as motivational deficits rather than systemic misalignments that privilege procedural competence over deep scholarly identity formation. This mixed-method case study investigates how postgraduate students and supervisors perceive and manage AI use. Findings aim to inform supervision practices, and student support that scaffold ethical AI integration, strengthen research literacies, and support authentic researcher identity development. The value of the study lies in adding new knowledge to an unexplored area and to propose steps to close the current gap. The study involves a case studies.

Keywords: Articulation Gaps, Information Behaviour, Postgraduate Students, AI Research, Heuristics

1. Introduction

The fast-changing artificial intelligence (AI) and generative AI (GenAI) developments and its application in research, raises opportunities but also concerns. AI-powered or AI-mediated research assistants are computational tools designed to support knowledge organisation during the research process. These research assistants are digital tools that use AI to support, augment and organise research knowledge at various stages during the research process. While some authors argue that these tools could be seen as cognitive collaborators, assisting with information searching, synthesising, analysing, and academic writing, others (Mishra, 2023, Mishra & Oster, 2025) warn that they must be used responsibly and cannot create shortcuts to replace the research supervisor or be used in a way that impedes the learning required by emerging researchers.

With the increasing growth of available information, students and researchers may resort to new research tools, such AI-assisted writing tools to assist in tasks such as academic writing, literature reviews, citation management, proofreading, and content generation (Matthews, 2021). Tools like Elicit, LitMap and ResearchRabbit are just some examples of the tools used to create maps or networks of literature. Typically, these tools only access sources with open or indexable academic metadata, and exclude many high-indexed Quartile one and two journals with high quality research information.

AI tools and assistants are used to find research articles, and with over 5000 available tools, AI tools and models can help and support researchers by automating certain components of literature review, data analysis, and even recommending research questions, although the explanatory and creative elements of research may still need human contribution (Aithal & Aithal, 2023). Many of these tools make use of GenAI in the form of generative pretrained transformers (GPTs). GPTs are based on the transformer architecture suited for language processing tasks (Stahl & Damain, 2024). The aim of this case study was to inform both the students, supervisors and lecturers who participated in this case study about the current issues around the effective use of AI-powered AI tools and AI assistants. The paper aims to inform better supervision practices, and student support that scaffold ethical AI integration, strengthen research literacies, and support authentic researcher identity development. It can assist students and researchers with their academic writing and literature reviews. The paper focuses on experiences and expectations of AI-powered tools, such as Elicit and others within the case

study. It looks at how AI could be used to evaluate large volumes of scholarly books, articles, and publications; they are able to create or develop concise summaries, discover relevant sources and even develop research questions as explained in literatures such as posited by Aithal and Aithal (2023).

2. Literature Review

While recent research proliferates issues around AI ethics (Kazim & Koshiyama, 2021), its implication in research praxis begs more attention (Lauer, 2021; Anongu, 2025). There are concerns that AI-powered tools may not be used effectively and responsibly in all cases (Holmes et al. 2022). This concern is further highlighted when realising that not all students or even supervisors have the discipline knowledge depth and research acumen to use AI correctly in the research process. In addition to the challenges of using new technology, postgraduate students may experience a second wave of articulation gaps in adjusting to the demands postgraduate studies and research requiring self-reliance, self-regulation and independent problem solving. As Lortan and Maistry (2018) explain, articulations gaps are experienced from school to first year. As not much attention is given to possible articulation gaps experienced when students articulate to postgraduate studies, the questions are how over-reliance and blind trust may cause negative heuristics in information behaviour impeding student success. Expectations about how students engage with information, knowledge, and tools could potentially change faster than their competencies, literacies and academic acumen could develop (Van Wyk, 2021). increasing tendency among students to accept AI recommendations without critical assessment. Authors (Green, 2021; Abubakar, Jeilani, and Yusuf, 2025) showed that this over-reliance leads to a failure to critically consider the reliability and accuracy of information obtained via AI tools. They continue that this academic and information behaviour result in further ethical issues and potential misconduct. This study reports on a case where the experiences and expectations of both academics supervisors and postgraduate students engage with AI tools in doing their research.

In higher education, an articulation gap is commonly understood as a misalignment between successive levels of study, whereby the knowledge, skills, epistemological orientation, and learning dispositions developed at one level do not adequately prepare students for the expectations of the next, often resulting in transitional difficulty despite formal progression eligibility (Lortan & Maistry. 2018). This gap is most evident where students must enter tertiary education, and where not sufficiently prepared by their secondary studies. This is a well-known and extensively researched area, but two aspects are not well addressed. Firstly, as much as secondary education does not prepare FTE students for tertiary studies, undergraduate studies do not always prepare students to progress to NQF 8 and then NQF 9 leading to second-order articulation gaps. It is well established that the first articulation gap, between school and first-year tertiary study, has been extensively studied and is supported by detailed frameworks. Authors such as Gustafsson and Nonkenge (2025) allude to the importance of extended curriculum models, transition programs, and policy-driven approaches such as the South African Three-Stream Model, which focus on curriculum alignment, foundational academic literacies, and structured learner support. This attention is warranted, as the largest proportion of students who fail to complete their studies or drop out are concentrated in this secondary transition, highlighting both the scale and impact of the school-to-university gap. In contrast, the subsequent or “second-order” articulation gaps, from undergraduate (NQF 7) to Honours (NQF 8), and from Honours to postgraduate research (NQF 9 and 10), are far less systematically addressed.

AI and the ill-informed use of AI-powered research assistants and tools beyond NQF 7 studies are presenting second-order articulation gaps where there is a widening in students’ textual performance and epistemic competence. While substantial scholarly support and curriculum design attention has been devoted to the articulation gap between school and university, far less consideration has been given to articulation challenges within higher education itself, particularly the transitions from undergraduate study at NQF 7 to Honours level at NQF 8, and from Honours to postgraduate research at NQF 9 and NQF 10. Within this under-examined space, a significant articulation gap can be identified between Honours-level study and postgraduate research, rooted less in disciplinary knowledge deficits than in a fundamental shift in epistemological orientation, research autonomy, and scholarly identity (Van Wyk & Dawood, 2021). Honours programmes typically introduce students to research through structured, scaffolded engagements that emphasise the analysis and application of existing knowledge, whereas Master’s and Doctoral study assume the capacity to independently conceptualise research problems, justify methodological and theoretical choices, and contribute original insights to scholarly discourse (Uludağ, Kılıç, & Çelik. 2025). This already complex transition is further complicated by the increasingly ill-informed use of generative artificial intelligence tools, which may obscure rather than resolve underlying epistemic gaps. Students may present fluent, coherent academic text generated or heavily mediated by AI

without possessing the conceptual depth, methodological understanding, or theoretical positioning such work appears to demonstrate, giving rise to what Mishra (2025) has described as a false confidence scenario, where surface-level competence masks deeper learning deficiencies. For lecturers and supervisors, this creates significant pedagogical and research quality challenges, as traditional indicators of research readiness, authorship, and scholarly voice become less reliable. Consequently, the articulation gap must now be understood not only as a structural and pedagogical misalignment within the NQF, but also as a digitally mediated epistemic risk, underscoring the urgent need for explicit instruction in research epistemology, ethical and critical AI use, and the development of authentic researcher identity across the Honours–postgraduate continuum.

While some research and institutional support programs touch on research literacy, epistemic readiness, and postgraduate mentoring, there is a paucity in formalised frameworks that map these transitions in a comprehensive, evidenced manner. Consequently, these gaps persist, particularly in areas such as research competence, academic identity formation, ethical reasoning, and emerging AI literacy. This underscores the need for deliberate research and development of frameworks that scaffold literacy and competency development, enabling students to progress successfully through higher levels of study while maintaining ethical and epistemic rigor.

Students often engage in strategies that limit the depth and quality of their research. Satisficing is a phenomenon that occurs information is accepted on face-value as being adequate, rather than continuing to search for more comprehensive sources. Cognitive overload avoidance leads them to stop researching when the volume of information feels overwhelming. Surface learning results in superficial engagement with sources, without critical evaluation, while confirmation bias heuristics cause students to select information that aligns with prior beliefs rather than challenging their assumptions (Xu, 2025). Together, this behaviour can undermine information, digital-, AI- literacy, and research literacy as well as critical thinking, and the development of independent research skills.

When this information behaviour pattern presents, and is combined with the indiscriminate use of AI tools, a false confidence develops (Mishra, 2025) where students overestimate their understanding and research competence because AI produces fluent, seemingly complete outputs. This trap masks gaps in information literacy, research literacy, and critical thinking, reinforcing misaligned learning and making articulation gaps, particularly from Honours to postgraduate study, even more difficult to address. Mishra and Loster (2025) further allude that experiencing AI as a human collaboration may lead the anthropomorphized GenAI use, leading to cognitive biases due to its human-like interactions. Understanding differences between human cognition and GenAI is necessary for the effective use for GenAI's application in research.

3. Research Problem, Research Question and Sub-questions

The combination of heuristic shortcuts, learning misalignment and over-confidence of AI use could lead to postgraduate students and emerging researchers overestimate their understanding the complexities of postgraduate studies and research competence. This is particularly problematic in the second-order articulation gap, where the transition from undergraduate (NQF 7) to Honours (NQF 8) and postgraduate study (NQF 9), where a lack of deep literacies in information evaluation, research reasoning, critical thinking, and ethical engagement may not have developed to secure success. If unaddressed, it could contribute to high drop-out numbers and departments not meeting their targets. It may furthermore undermine research quality, delays progression, and risks academic integrity. Each transition assumes a higher-order literacy without explicitly teaching it. systemic mislearning or misalignment rather than individual failure. procedural success without conceptual grounding

The main research question to be answered is: How do postgraduate students doing research use AI-research assistants and how do their supervisors perceive and manage AI use in the research process?

Sub-Questions:

- How do students describe their expectations and experiences in using AI during research?
- What are supervisors' perceptions of students' AI use, heuristics, and readiness for independent research?
- What is the nature of heuristic information behaviour observed?
- How does the use of AI-research assistants articulate with known articulation gaps?
- How must requisite research literacies and competence adapt?

4. Theoretical Frames, Research Philosophy and Methodology

The study explores information behaviour in using AI assistance in research with in the backdrop of prevailing and escalating articulation gaps which may be accelerated by available AI platforms and tools. A multi-disciplinary conceptual framework guides this study, where the applicable concepts derived from the Situated Learning Theory, The diffusion of Innovation Theory and the Theory of Reasoned Action were used to explore both student and academic perceptions, knowledge and experiences of using AI-powered tools to assist in the research process. Lave and Wenger (1991) explain the cornerstone of situated learning as authentic activities, where knowledge is constructed socially. The Diffusion of Innovation Theory, developed by Rogers in 1962, provides understanding of how new technologies spread among users based on perceived usefulness, ease of use, and institutional support. The Situated Learning Theory by Lave and Wenger (1991) looks at communities of practice, and the Theory of Reasoned Action (TRA), where social psychologists Fishbein and Ajzen (1980), argued that there is a connection between an individual's intent and their behaviour, which in this study refers to information behaviour in choosing and using AI. Important for this study are constructs of information behaviour of both students and supervisors in using AI-research assistants, Information behaviour can be understood in terms of what motivates the student or emerging researcher to do research and to do this as ethical as possible. The conceptual frame forming the basis of this case study is explained in *Figure 1*.

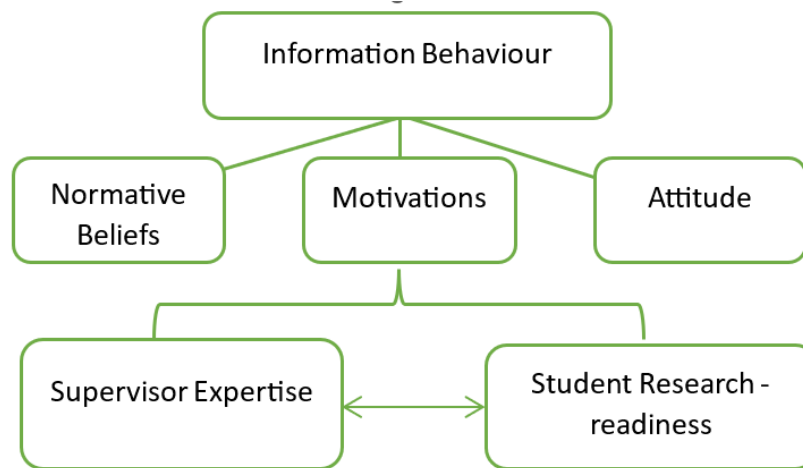


Figure 1: Conceptual Framework

The research design of this study is rooted in the interpretivist paradigm. This paradigm was the preferred philosophy, rather than Post-positivism or Pragmatism, because Interpretivist designs emphasise the analysis of mostly qualitative data, but also quantitative data that will inform sensemaking of lived experiences (Bezuidenhout, Davis, & Du Plooy-Cilliers, 2014). In this study, both quantitative and qualitative data were collected from the participants by means of open-ended survey questionnaires with students and supervisors. Qualitative research is a form of social inquiry that targets the way that people make sense of their experiences in the world (Willis, 2008), while quantitative data can be used, to identify patterns, trends, or contextual factors that inform deeper interpretivist analysis.

This research follows a case study design. The research design of this study is naturalistic and focusses on an existing complex phenomenon (as explained by Noon, 2018), in this case, postgraduate students and the academic staff responsible for lecturing and supervising postgraduate students. This design was chosen as it allowed for consideration of the actual experience and input of the target group as a unit. This allowed for comparison and the identification of recurring themes. It allows for observation and discussion of a real-life environment in its natural setting. The non-probability sample was purposively selected, consisting of a cohort of postgraduate students and supervising staff at a department of a university in South Africa.

5. Data Collection and Data Collection Method

Data were collected during and after a seminar on conducting and supervising postgraduate research. Qualitative and quantitative data were collected from the convenience sample. A cohort of postgraduate students and the academics completed open-ended, semi-structured survey questionnaires after attending a research workshop. Further qualitative data were collected from field notes and researcher observations to. The qualitative data collected were analysed using thematic reflective analysis. The 63 participants of a private

business school included both academics and students. Some of the emerging researchers (23) were both lecturing staff for postgraduate modules and students enrolled at other universities completing their masters and doctoral studies in Knowledge Management and Business Studies, while 20 were postgraduate students at the school. The workshop was also attended by support staff and academic staff that were not currently studying, but have roles in educational and technology support, and policy development.

6. Discussion of Findings and Data Analysis

Thematic analysis assisted in analysing collected data. It is a data representation approach that also involves interpretation in the form of resolving codes and theme creation. As a technique for analysing data, it entails searching for and analysing repeating patterns in a collection of data, as well as reporting on them (Braun & Clarke 2006, 2012, Noon, 2018). Data were collected after a training seminar attended by both lecturers and postgraduate students, via an online survey questionnaire. A total of sixty-three (63) participants attended the workshop. Forty completed the survey. The training session were recorded and further observations could be recorded via field notes and workshop recording and transcriptions. Further data were collected via observations and follow up discussions.

The types of AI tools used reported in this study are listed in Table 1.

Table 1: Table on Reported AI-assistants Use During the Research Process

AI-Research Assistants used	Tool Name	Combined Responses
Literature Search and Discovery	Perplexity AI	67.7.%
	GenAI	90%
	Google Scholar	87%
	ResearchGate	64.5 %
	Prescription databases	71%
	Scholarly	2%
Writing and Editing Tools	Grammarly	67.7%
	Elicit	6.5%
	Consensus	3.2 %
	ResearchRabbit	16.1%
Referencing Tools	EndNote	20%
	Zotero	5%
	Litmaps	3%
Statistical and Data Analysis Tools	Julias AI	3%
	SciteAI	1.5%
GenAI	ChatGPT	80.6%
	Grok	3.2%
	DeepSeek	16.1%
	Claude	3.2%
	Anara	3.2%
	Gemini	3.2%
	Copilot	38.7%

During discussions, the researcher observed that while supervisors and academic staff mostly use the subscription databases, students are more and more relying on GenAI sources. As GenAI professes to use only openly available material and sources, students do not expose themselves to high quality full text sources availed in databases.

The four distinct themes that emanated from the study can be explored based on evidence as follows:

6.1 Perceptions of Trust and Dependence

There was a marked difference between the usage, experience and perceptions between academic staff and postgraduate students. The 'false confidence gap' as explained by Mishra (2025) was more prevalent under students. Academics were less experienced in the available tools, and also less trusting: Some participants responded:

All information needs to be fact checked [Academic Participant 7]

Trying to avoid AI tools as much as possible [Academic Participant 3]

It has a space - but as augmentation, not a crutch or main source [Academic Participant 12]

Good for summarizing but bad when you have to mark work that is AI generated [Academic participant 5]

An over- reliance and assuming you are the one that is wrong [Participant 6]

6.2 Information Behaviour Observed

In further conversations the academic staff conceded to know very little about AI-powered research tools such as Covidence. They had a general understanding of GenAI, but were surprised to learn that AI-powered tools if used responsibly can have a positive heuristic effect in the research process.

Students contended that they often discuss the topic with other students, and often experiment with tools recommended by friends. Here, further discussions and observations are that these recommendations often resulted in negative heuristic practices that take from the quality of research and academic writing. Students were more concerned with the functionality of traditional similarity detection tools like Turnitin, and its inability to detect AI use resulting in high false positives when tools like Grammarly is used.

I have tried using a paraphraser once or twice and I feel I am better off paraphrasing on my own. Grammarly has worked well [Participant 4]

6.3 Articulation Gaps Observed and the use of AI Research Assistants

Conclusions drawn from the survey results and field notes, show that supervisors are concerned about student-readiness to transition from undergraduate level to postgraduate level, and both a lack of AI literacy and research literacy were observed.

I keep telling my students not to approach research writing the same as writing an assignment – they are too descriptive and barely touch the essence of their topics

I am concerned when I see the majority of sources cited, do not include seminal and well-known works

Without careful and ethical use, such tools may undermine critical thinking and independent scholarly development [Participant 20]

6.4 Requisite Research Acumen and Accountability in Using AI

Prompts must be thought through and detailed to get relevant information. Sometimes irrelevant information [Participant 5]

Students misuse them [AI tools] and it is hard to keep up with their level of competency [Participant 31]

Findings are that the AI-mediated factor may cause dilemmas such as creating false confidence in AI and over-reliance among students, often where supervisors are not always fully equipped to manage the ethical AI use. Observations are that supervisors are hesitant to familiarise themselves with AI tools, creating a gap between the information behaviour of students and the expectations of the supervisor. This trend is confirmed by findings by Bozurk (2023), where AI literacy among academics is overlooked. This concern is further underpinned by Chan (2023), showing that 30% of students use AI and believes that their supervisors will not pick it up. This too reaffirms Mishra's (2025) concern around the negative heuristics and existing false confidence traps that will not assist students to fully articulate into postgraduate research. We see that AI, though not the root cause, further impede articulation gaps, being accelerators that is exacerbated by the indiscriminate use of AI research assistants. This risks producing postgraduate research that is procedurally compliant, yet epistemically lacking.

This in turn undermines research quality, originality, and the formation of authentic scholarly identity. The use of AI fills cognitive gaps prematurely, and searching is confused with understanding.

7. Conclusion and Recommendations

The significance of this study lies in exploring the use of AI technology in a complex postgraduate ecosystem. It is important to identify gaps, and, possibly, strengths in getting a better understanding of how AI could be used towards attaining student success and to a better throughput rate (Valencia Quecano, 2024). This in turn could be used to inform the development of a professional development programme for academics and supervisors. It is hoped that this information could be shared in further workshops.

In answering the research question on how both students and their supervisors experience the use of AI, the findings indicate that the lack of skills and requisite literacies leads to negative heuristics. Findings are that lecturers are concerned about these shortcuts and unrealistic expectation of what the tools could accomplish. Furthermore, their concerns on the accuracy of AI tools that may impair learning was mentioned. The findings of this study correlate with the views of Mishra and Oster (2025) in terms of using AI without essential discernment. Mishra and Oster (2025) attribute this to the phenomena of AI Anthropomorphism, where humans interact and trust AI tools as if they were human knowledgeable experts. The language base of LLMs is known to err and may present information that are incorrect. In a research setting this has periled consequences (see Berkeley & Berlin, 2023 as cited in Mishra and Oster, 2025). Mishra and Oster (2025) warn that AI-empowered research assistants based on LLMs have the dual potential to improve access to information, while simultaneously mislead students.

Much research has been conducted the ethics of AI in learning and research (see Binde, 2002; Corrigan et al, Morley et al., 2023; Heilinger, 2022). More empirical research must be conducted into the broader implications of AI's presence as a psychological other (See Bisconti et al, Mishra & Loster, 2025, and others) , particularly in terms of social and emotional development of students and emerging researchers.

Ethics Declaration

For this research, ethical clearance was obtained from the HEI, and participants signed consent forms.

AI Declaration

For this research, the grammar assistant software tool Grammarly was used.

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