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IMPACT OF AI USE ON POSTGRADUATE STUDENTS: A SYSTEMATIC REVIEW

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Abstract. In the context of the fourth industrial revolution, postgraduate students in developing countries like South Africa increasingly employ artificial intelligence (AI) tools like ChatGPT to improve their academic performance. This study seeks to examine postgraduate students' viewpoints concerning the advantages of utilising AI tools, specifically ChatGPT, to attain academic achievement at historically disadvantaged universities in South Africa. This inquiry aims to achieve a comprehensive grasp of postgraduate studies in this sector through rigorous evaluation. There is an increasing trend in educational environments to integrate AI, particularly ChatGPT. This work employs a systematic review methodology to do a thorough literature evaluation of the impact of incorporating ChatGPT into teaching. The study utilises the Technology Acceptance Model to investigate the incorporation and uptake of ChatGPT in the postgraduate education of students from historically disadvantaged universities in South Africa. The conviction that ChatGPT enhances academic endeavours and streamlines research processes, therefore facilitating usability, underpins its acceptance and incorporation into postgraduate education. Consequently, postgraduate students are more inclined to view ChatGPT as a resource that can facilitate their academic pursuits. In light of these findings, educational institutions should create policies and procedures regarding the use of AI tools such as ChatGPT. Furthermore, postgraduate students must adhere to stringent standards enforcing a zero-tolerance stance on plagiarism.

Keywords: Artificial Intelligence (AI); university students; South Africa

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1. Introduction

ChatGPT is essential for postgraduate students since artificial intelligence (AI) swiftly revolutionises the worldwide higher education landscape (Cope et al., 2021). Berendt et al. (2020) underscore the duality of AI, encompassing both threats and advantages. Dwivedi et al. (2023) assert that ChatGPT significantly influences the research dimensions of higher education. Postgraduate students, especially those from affluent universities, employ ChatGPT to enhance their academic performance. The incorporation of ChatGPT into postgraduate education may significantly improve the learning experience for students, as highlighted by Bozkurt and Sharma (2023). Zhai (2022) asserts that ChatGPT markedly improves students' critical thinking and problem-solving skills. Moreover, ChatGPT functions as an essential resource for students to tackle diverse academic obstacles.

Launched on November 30, 2022, ChatGPT is a chatbot created by OpenAI, based on the Generative Pre-trained Transformer (GPT) model. It was developed in accordance with instructions, which were intended to respond to comprehensive prompts and directives (OpenAI, 2023). Since its inception, ChatGPT has achieved significant

popularity among students, educators, and researchers, amassing a user base exceeding 100 million (Council of the European Union, 2023). ChatGPT employs natural language processing to provide responses that mimic human conversation, enabling fluid interactions (Deng & Lin, 2022). In addition to translating, summarising, or elaborating on texts, ChatGPT executes intricate tasks like composing essays, articles, poems, and original computer codes (Tate et al., 2023; Williams, 2023).

Forman et al. (2023) describe how students use ChatGPT to achieve academic, social, and personal goals. The increasing use of ChatGPT in students' lives has prompted educators to reassess and adjust their teaching methods. While some consider ChatGPT and similar AI tools to be the future of education, others view them as a threat to developing critical skills, such as analytical and problem-solving abilities (Baidoo-Anu & Ansah, 2023). As a result, some educational institutions have banned the use of ChatGPT (Sullivan et al., 2023; Elsen-Rooney, 2023). However, integrating AI into higher education has already positively impacted student learning capabilities and satisfaction (Opara et al., 2023; Forman et al., 2023). Given the benefits of ChatGPT and its growing influence, prohibiting its use may not be a sustainable solution. By examining the effects of ChatGPT on learning and instruction and establishing clear guidelines for its use, educators can gain valuable insights (Baidoo-Anu & Ansah, 2023).

Neumann et al. (2023) note that ChatGPT offers immediate responses to user inquiries, facilitating communication. Neumann, Rauschenberger, and Schön (2023) define ChatGPT as a cutting-edge innovation that supports higher education in various capacities, such as assisting students with assessments. Strzelecki (2024) describes ChatGPT as the most extensive language model, capable of producing responses in seconds. Scholars like Mhlanga (2023), Rudolph et al. (2023), and Strzelecki (2024) consider ChatGPT one of the greatest innovations in artificial intelligence, capable of generating a high-quality 2,000-word response in under a minute. This efficiency illustrates the academic value ChatGPT can provide to higher education institutions. Rudolph and Tan (2023) describe ChatGPT as a groundbreaking language model capable of generating text that differs from human-written content. Heiser (2024) characterises it as a chatbot that can continue conversations fluidly, resembling human interaction. Unlike academic software such as Microsoft Office, EndNote, SPSS, and NVivo, which require licenses, ChatGPT is readily accessible (OpenAI, 2023). Due to its ability to replicate human-like dialogue, ChatGPT has become a significant part of the educational process. By offering instant responses to inquiries, facilitating group discussions, and assisting instructors in lesson planning, ChatGPT has the potential to improve student engagement (Imran & Almusharraf, 2023).

ChatGPT's transition from a non-profit organisation to a commercial business model has considerably impacted its users, making it an important consideration for educational institutions and students. Many studies have explored the factors influencing its implementation in education (Annamalai et al., 2022; Kasneci et al., 2023). This research often focuses on specific regions, and secondary research in South Africa has explored the role of ChatGPT in education. With a particular emphasis on ChatGPT, an advanced AI system capable of generating human-like responses, this paper aims to comprehensively review the literature on AI's impact on postgraduate students. The authors seek to offer valuable insights on integrating AI into educational contexts, benefiting students and promoting its responsible use by identifying key research areas. Additionally, this investigation contributes to the ongoing discussion about AI's role in postgraduate education.

2. Problem statement

In South Africa, the incorporation of ChatGPT into postgraduate education has introduced substantial challenges, such as an overreliance on the platform that may impede students' engagement in independent learning, critical thinking, and problem-solving skills (Sallam, 2023). Additionally, there are apprehensions about the dissemination of inaccurate information and the potential for academic dishonesty, as students may exploit AI to complete assignments without completely participating in the learning process (Godde et al., 2023). These

obstacles underscore the necessity of responsible usage, the cultivation of critical thinking, and the establishment of ethical standards to guarantee that the integration of ChatGPT is conducive to academic development while respecting academic integrity. Students and educators have grown increasingly fond of it due to its intuitive interactions and human-like responses (Cheung et al., 2023; Ding et al., 2023).

Additionally, its ability to receive user feedback facilitates ongoing enhancements in its accuracy and utility (Batubara et al., 2024). Nevertheless, there are apprehensions about the possible impediment to postgraduate students' independent learning, critical thinking, and problem-solving abilities due to an excessive reliance on ChatGPT (Sallam, 2023). Additionally, the potential for AI to facilitate academic dishonesty and disseminate inaccurate information remains a substantial concern (Godde et al., 2023). Consequently, to enhance the benefits of ChatGPT while preserving academic integrity and fostering intellectual development, it is imperative to encourage responsible usage, cultivate critical thinking, and establish ethical guidelines as it continues to impact postgraduate education.

3. Literature review

The optimistic influence of ChatGPT on postgraduate students

ChatGPT provides many advantages to educators and students in higher education, with a particular emphasis on language acquisition, academic support, and research. It allows language learners to improve their communication skills, practice dialogue, and receive responses (Rawas, 2024; Fauzi et al., 2023). ChatGPT facilitates language acquisition by presenting users with a wide variety of vocabulary and expressions. However, it is recommended that learners maintain a harmonious relationship with other learning activities to achieve a comprehensive and effective experience (Chukwuere, 2023). Besides language acquisition, ChatGPT is advantageous in the context of academic writing and research. Cooper (2023) emphasises the advantages of the prompt-rewrite command, which enables researchers to condense and elucidate lengthy sentences. Its utility for programming duties, such as program debugging, is underscored by Heiser (2024), which is a substantial advantage for IT students. Article summarisation, rephrasing for clarity, simplifying complex topics, solving mathematical problems, and summarising literature are all additional features that contribute to the academic journeys of both students and lecturers (Strzelecki, 2024; Xu et al., 2024).

It also assists lecturers in developing assignments, essay writing, and critical reflection, which are frequently difficult duties (Adeshola & Adepoju, 2024). ChatGPT, an online instructor, provides learning resources, concept explanations, and assignment assistance, thereby increasing student engagement (Wang et al., 2023). The natural language interface facilitates an enhanced educational experience, which enhances the interactive and pleasurable nature of learning (Currie et al., 2023). ChatGPT, a personalised learning aid, provides immediate feedback and adjusts to the learning preferences of each individual (Bommineni et al., 2023). It guarantees compatibility and interoperability by seamlessly integrating with current educational technologies (Prasetya & Syarif, 2023). ChatGPT enhances learning outcomes by offering personalised feedback and content tailored to each learner's unique requirements (Abd-Alrazaq et al., 2023; Xiao & Zhi, 2023). Glaser (2023) suggests that instructors can utilise ChatGPT to evaluate student submissions to comply with assignment specifications and pinpoint areas requiring further instruction. ChatGPT also functions as a creative writing instrument, facilitating the generation of ideas and the provision of constructive feedback to students (D. Yan, 2023). This is particularly advantageous for individuals who are not native English speakers, as it facilitates the genesis of ideas and the production of effective writing (C.K.Y. Chan & Hu, 2023). ChatGPT enhances publication efficacy by supporting idea generation, information synthesis, and data analysis as a research resource (Michalon & Camacho-Zuñiga, 2023). By necessitating concise prompts, the tool facilitates the effective expression and communication of ideas. Algaraady and Mahyoob (2023) have noted that ChatGPT is not as effective as human analysis in identifying errors in EFL writing, despite its numerous benefits.

The Revolutionary Function of ChatGPT in Postgraduate Education

As per Atlas (2023), ChatGPT is an indispensable AI instrument for communication in higher education. In India, postgraduate students utilise it to improve their reading abilities and complete research assignments punctually (Mohammed et al., 2024). Enhancing writing abilities and offering assistance with the editing process benefits students and academics (Ogurlu & Mossholder, 2023). To enhance their writing style, students utilise ChatGPT's digital writing assistance in both undergraduate and postgraduate environments (Rudolph et al., 2023). Firaina and Sulisworo (2023) emphasise the significance of Ray (2023) in assisting postgraduate students in acquiring new knowledge, cultivating research skills, and facilitating resource access. Additionally, ChatGPT facilitates exploratory enquiries, which are fundamental to developing academic skills (Aithal & Aithal, 2023) and assists in creating academic writing that is free of errors (Sallam, 2023). Fatimah (2024) emphasises its role in fostering students' confidence and enthusiasm for research by providing scientific research guidance. Baldassarre et al. (2023) observe that it offers academic and personal support throughout the research voyage. ChatGPT facilitates rapid adaptation to research environments by providing simple access to research-related information (Farrokhnia et al., 2023) and promoting a resilient research experience (Qadir, 2023). It facilitates the development of enticing research topics, thereby improving academic performance (Nisar & Aslam, 2023) (Yan, 2023). According to scholars such as Alshater (2022) and Lin (2023), it has the potential to enhance academic research in higher education.

The effects of ChatGPT on education

Increasing research suggests that instructors can utilise ChatGPT to automate the evaluation of essays, articles, and other written assignments, so liberating time for additional teaching responsibilities (Kasneci et al., 2023). Research indicates that deep-learning models may effectively assess students' essays and deliver feedback akin to that of human evaluators (Liang et al., 2018; Lu & Cutumisu, 2021). Educators can utilise reports generated by these models to discern strengths and weaknesses in pupils' writing, enabling them to target areas of difficulty. This may assist instructors in more effectively targeting interventions (Kasneci et al., 2023). ChatGPT can aid academic personnel in creating evaluations that correspond with the learning objectives and success criteria of the lesson (Baidoo-Anu & Ansah, 2023). A standardised framework can alleviate educators' efforts and improve assessment quality, as creating quizzes, tests, and exams is sometimes time-intensive (Zhai, 2023). Studies suggest that ChatGPT may serve as a personal tutor for pupils. Cai et al. (2021) created a conversational bot utilising a generative model to deliver personalised mathematics education. The algorithm produced feedback customised to students' errors, which Cai et al. (2021) said may enhance learning outcomes. Mhlanga (2023) and Qadir (2022) observed that ChatGPT can aid students with coursework, assignments, projects, and mathematics difficulties, promoting increased independence and self-direction in learning. ChatGPT can generate outlines for articles and other writing endeavours, assisting students in organising their thoughts for research and composition (Kasneci et al., 2023).

Furthermore, educators can utilise ChatGPT to create and integrate interactive classroom activities, enhancing their instructional methodologies. ChatGPT can provide lesson plans, worksheets, presentations, and other visual aids, assisting educators in delivering more engaging and dynamic courses that address students' learning requirements (Atlas, 2023; Hertf Educator, 2023). Furthermore, Rudolph et al. (2023) proposed that educators may leverage ChatGPT's functionalities to adopt a reversed classroom model and formulate novel pedagogical tactics. This would enable students to become autonomous learners, facilitating their study both in the classroom and online.

ChatGPT offers valuable opportunities in education-related disciplines, particularly for postgraduate students. Vargas-Murillo et al. (2023) emphasised its ability to transform how students generate and execute texts and assignments, improving the efficiency of academic writing. Zhang and Tur (2024) highlighted its potential to modernise traditional teaching methods, such as supporting collaborative projects through structured discussions, providing real-time feedback, and functioning as a virtual tutor for independent study (Lo, 2023; Zhang & Tur,

2024). Postgraduate students in language education can use ChatGPT to create adaptive and compelling learning environments (Imran & Almusharraf, 2023). Additionally, ChatGPT can assist in developing learning tasks, assessments, teaching strategies, and workload optimisation (Lo, 2023). Furthermore, ChatGPT facilitates research processes, including medical writing, and is a clinical assistant for medical professionals (Garg et al., 2023). İpek et al. (2023) argue that ChatGPT is a versatile tool postgraduate students can use to improve their academic and professional work, contributing to better productivity and innovative approaches across disciplines.

The obstacles that ChatGPT presents in the field of education

Although ChatGPT offers numerous advantages, it also presents significant challenges that require attention. One major concern is its potential threat to academic credibility and integrity. Academic misconduct may arise if students fail to properly acknowledge the sources or ChatGPT in their assignments (Kleebayoon & Wiwanitkit, 2023; Thurzo et al., 2023). Recent studies have shown that sophisticated AI tools like ChatGPT can bypass traditional plagiarism detection software such as Turnitin. This could encourage students to submit AI-generated content as their own (Khalil & Er, 2023). Students who use ChatGPT for their assignments are more likely to commit plagiarism than those who do not (Basic et al., 2023).

Furthermore, researchers have highlighted that using ChatGPT in education may hinder teachers' ability to assess students' true understanding (Grassini, 2023; Sullivan et al., 2023). Educators may struggle to gauge the extent of students' comprehension, leading to hidden learning deficiencies. This can complicate the development of effective intervention strategies and early support (Grassini, 2023). Another significant concern is the potential for ChatGPT to generate harmful content, which could result in negative outcomes (Imran & Almusharraf, 2023; İpek et al., 2023). Additionally, Vargas-Murillo et al. (2023) and Zhang and Tur (2023) emphasise the risk of dependency, where students heavily rely on ChatGPT, potentially stunting their intellectual growth and productivity.

The tool can also contribute to academic misconduct, including cheating and plagiarism, as students might use it to generate essays or assignments (Lo, 2023). According to Godde et al. (2023), experts and plagiarism detection software often struggle to distinguish AI-generated content from human-written text. Ethical issues like user privacy, data security, and bias in the data used to train ChatGPT are also concerns (Zhang & Tur, 2023). Researchers emphasise the need for clear guidelines to ensure the ethical and responsible use of ChatGPT (Lo, 2023; Sallam, 2023; Zhang & Tur, 2023). These challenges are reinforced by empirical evidence, particularly regarding issues of plagiarism and deception (Singh et al., 2023). Basic et al. (2023) discovered that AI-generated text was more common in assignments submitted by ChatGPT users, and Aguilos and Fuchs (2023) found that some students admitted to copying chatbot-generated text without proper citations, often due to laziness or convenience.

Consequently, various research studies (e.g., Bernabei et al., 2023; Chan, 2023; Gorichanaz, 2023; Tlili et al., 2023) have advocated for policies to govern the use of AI tools in education. The efficacy of ChatGPT allows students to produce whole assignments from its responses, so circumventing the utilisation of their analytical and decision-making skills (Sok & Heng, 2023), which may impede the cultivation of vital competencies. Depending too much on ChatGPT may make it harder to develop skills like research, creativity, critical thinking, and problem-solving (Kasneci et al., 2023; Sullivan, 2023); this could hurt students' academic and professional success (Sok & Heng, 2023). Furthermore, the quality and reliability of ChatGPT's results are occasionally scrutinised because of their dependence on extensive volumes of unrefined data (Rahimi & Abadi, 2023; Sallam, 2023). The quality of the tool's output is contingent upon the diversity of the training data; if biases exist within these datasets, such as those favouring affluent nations or particular demographics, the resultant content may also exhibit bias (Mbakwe et al., 2023; Lucy & Bamman, 2021). ChatGPT is susceptible to producing erroneous information, concocting articles, and supplying fictitious URLs or references (Gordijn & Have, 2023; Baidoo-

Anu & Ansah, 2023). Additionally, ChatGPT only uses data from before 2021 (Rahimi & Abadi, 2023; Hassani & Silva, 2023), so it might not be able to answer questions about specific topics or recent events reliably.

4. Methodology

This paper used a systematic review to assess the impact of AI on postgraduate students, and the review followed the established guidelines, including the Prisma protocol. The corpus of literature concerning the impact of ChatGPT on postgraduate students was comprehensively examined using multiple databases. The following databases are included: PubMed, Web of Science, IEEE Xplore, Scopus, Google Scholar, ACM Digital Library, ScienceDirect, JSTOR, ProQuest, SpringerLink, EBSCOhost, and ERIC. Their comprehensive coverage informed the selection of these databases of scientific and scholastic publications in various fields, such as education, artificial intelligence, computer science, and technology. Our approach to search was methodical, incorporating pertinent keywords together. These keywords encompassed "ChatGPT," "AI ChatGPT," "artificial intelligence," "ChatGPT on postgraduate students," and "impact of AI ChatGPT on higher education." We optimised our search strategy to guarantee that it produced the most pertinent articles for our exploratory review (Peters et al., 2015). The study relied on explicit criteria to identify pertinent literature regarding the influence of ChatGPT on higher education. Inclusion criteria encompassed peer-reviewed articles, systematic reviews, top media reports, conference proceedings, and book chapters in English, emphasising the use of AI chatbots in postgraduate education. Sources that were not academic, tangential mentions, and incomplete or non-English texts were excluded. Following the PRISMA-P guidelines, data extraction was used to record the authors, publication year, study design, ChatGPT applications, and results.

Theoretical framework

In 1989, Fred Davis formulated the technology acceptance model (TAM), which underpins this study. In the realm of information and communication technology research, the Technology Acceptance Model (TAM) is often employed to elucidate user acceptance behaviour, particularly by focusing on forecasting the uptake and acceptance of novel technologies. According to Davis (1989), users typically acknowledge that technology enhances their performance in their professional domains. Liu (2023) asserts that the Technology Acceptance Model (TAM) is based on two core principles: perceived ease of use and perceived usefulness. This indicates that individuals' adoption and utilisation of technology depend on their perceptions of its utility in their lives and its facilitation of their daily activities or work. This study utilises the technological acceptance model to examine the integration and uptake of ChatGPT among postgraduate students from historically disadvantaged universities in South Africa. The conviction that ChatGPT is beneficial for academic endeavours (perceived utility) and that it facilitates research tasks, enhancing usability (perceived ease of use) underpins its adoption and incorporation into postgraduate education. Consequently, postgraduate students are more inclined to believe that ChatGPT can facilitate their academic journey, recognising its utility in their scholarly endeavours, thereby enhancing the likelihood of their acceptance of ChatGPT.

5. Findings and Discussions

Enhanced Academic Writing

A review of several studies shows that graduate students, especially those who have done research, often use ChatGPT, an AI tool, to improve their academic writing skills. Studies have also shown how important it is for students to use this AI tool for brainstorming, digital writing, and learning new words. It also helps with data analysis and writing papers for release. These results are in line with what other researchers have found. They said that ChatGPT has many benefits for students and teachers in higher education, especially when it comes to language learning, academic help, and research. Rawas (2024) and Fauzi et al. (2023) say that it helps language learners improve their conversation skills by letting them practice dialogue and get answers. ChatGPT helps

people improve their language skills by showing them a lot of different words and phrases. Chikwuere (2023) says that students should balance using it with other tasks to get the most out of their time with it. ChatGPT is useful for more than just learning languages. It's also helpful for studying and writing for school. Cooper (2023) talks about how useful the prompt-rewrite command is because it helps researchers cut down on and make sense of long lines. Heiser (2024) says it is helpful for coding jobs like debugging programs, which is a big plus for IT students. It can also summarise articles, rephrase them to make them clearer, break down difficult topics, solve math problems, and summarise books. These features help students and teachers with schoolwork (Strzelecki, 2024; Xu et al., 20248).

Risks of using Artificial intelligence tools

Despite the numerous advantages of using artificial intelligence tools, research has identified many risks and drawbacks associated with their use (ChatGPT). Research indicates that the tool may occasionally generate misleading literature, and its use of AI can result in academic malfeasance, such as plagiarism. Additionally, this tool may present challenges, such as a dependence on AI that could impede the intellectual development of students. According to research, AI does not adhere to ethical considerations associated with its use. Scholars contend that ChatGPT presents significant challenges that necessitate attention, which supports these findings. Its capacity to produce hazardous content is a significant concern (Imran & Almusharraf, 2023), which could result in unfavourable consequences (İpek et al., 2023). It is also possible for students to abuse ChatGPT to generate essays or coursework, which can lead to academic misconduct such as plagiarism and deception (Lo, 2023). The potential for dependency to arise when students significantly rely on ChatGPT, as emphasised by Vargas-Murillo et al. (2023) and Zhang and Tur (2023), can impede their intellectual development and productivity. Artificial intelligence-generated content is frequently challenging to identify, even for plagiarism detection software and experts (Gödde et al., 2023). There are also ethical concerns regarding data security, user privacy, and biased data (Zhang & Tur, 2023). The necessity of effective guidelines to guarantee the ethical and responsible application of ChatGPT has been underscored by researchers (Lo, 2023; Sallam, 2023; Zhang & Tur, 2023). These challenges are further emphasised by empirical evidence from studies, in particular plagiarism and deception (Singh et al., 2023). According to Basic et al. (2023), using AI-generated text was more prevalent in assignments submitted by ChatGPT users. Fuchs and Aguilos (2023) observed that certain students confessed to copying chatbot-generated text without citations, commonly motivated by laziness and convenience. Numerous studies (e.g., Bernabei et al., 2023; Chan, 2023; Gorichanaz, 2023; Tlili et al., 2023) have advocated for establishing policies that govern using AI tools in education.

Conclusion

ChatGPT has a transformative effect on higher education, providing substantial benefits to both students and educators in the areas of language acquisition, academic support, and research. It offers a powerful platform for language learners to enhance their communication abilities, as well as assistance with academic writing and research. It is an invaluable tool in a variety of fields due to its capacity to assist with duties such as summarising, debugging, and rewriting. Nevertheless, ChatGPT is not without its obstacles. There is a need to address concerns regarding academic misconduct, dependency, and the ethical implications of AI-generated content. It is imperative to establish policies that guarantee AI's ethical and responsible application in education. Although ChatGPT improves learning outcomes and encourages engagement, its potential for abuse necessitates meticulous regulation and oversight. The integration of ChatGPT into academic settings should be further refined, and future research should investigate the diverse impact of ChatGPT across various educational contexts. This paper provides innovative perspectives on the dynamic role of ChatGPT in academia, highlighting its advantages and possible drawbacks. Additional research is required to investigate the optimal balance between its application and the ethical implications it presents. Moreover, subsequent research could concentrate on particular disciplinary contexts to elucidate how ChatGPT's influence may change across other academic domains. Ultimately,

suggestions for formulating rules and policies for its ethical use could significantly contribute to ensuring that ChatGPT enriches the educational experience while upholding academic integrity.

Limitations

One of the key limitations in the context of examining the impact of artificial intelligence (AI) on postgraduate students lies in the reliance on existing literature, which may not fully encompass the most recent developments in AI technology or its practical applications within educational settings. Secondary research is often based on previously published studies, which may become outdated or limited in scope, especially in a rapidly advancing field like artificial intelligence. As tools such as ChatGPT continue to evolve, existing research may fail to account for the latest innovations, adjustments in AI integration, or shifts in its application within postgraduate education. Additionally, secondary studies typically lack direct, firsthand insights from students, which diminishes their ability to provide an accurate reflection of the real-world experiences, challenges, and benefits that postgraduate students face when utilising AI tools. Furthermore, the quality and reliability of secondary sources can vary, potentially introducing biases or incomplete representations of AI's impact on students. Finally, secondary research may not adequately address regional variations, such as the unique challenges encountered by postgraduate students in developing countries like South Africa, where disparities in access to technology and educational resources may exist, influencing the applicability and generalizability of findings.

Recommendations

It is recommended that organisations establish policies and procedures concerning the utilisation of artificial intelligence tools (ChatGPT). Postgraduate students should be subject to policies with a zero-tolerance policy on plagiarism. The institution ought to make use of AI-based detection technologies for postgraduate students. The ethics surrounding the application of artificial intelligence should be taught to postgraduate students by educational institutions.

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