

Exploring Student Acceptance of AI Teaching Assistants in African Higher Education: A Qualitative Case Study

Abstract

Artificial intelligence (AI) is increasingly being integrated into higher education. Among these innovations, AI teaching assistants have emerged as tools that can provide immediate academic support, personalized feedback, and improved access to learning resources. Despite the growing adoption, limited research has explored students' knowledge, attitudes, and acceptance of AI teaching assistants in African higher education contexts. The Technology Acceptance Model was adopted as a theoretical lens to explore South African university students' Knowledge, Attitudes and Acceptance of AI teaching assistants in a clinical learning environment. A qualitative single case study design within an interpretivist paradigm was employed. Data were collected through semi-structured interviews with six undergraduate students who had experienced both traditional teaching approaches and AI-assisted learning. The data were analysed using thematic analysis. The findings revealed three key themes: students' understanding of AI teaching assistants, attitudes toward AI-assisted learning, and acceptance and concerns regarding AI in clinical education. The results indicate that students generally demonstrate positive attitudes toward AI teaching assistants and recognise their usefulness for supporting independent learning. However, participants also expressed concerns regarding the accuracy of AI-generated information and emphasized the continued importance of human educators in clinical training.

Keywords: AI in education; AI teaching assistants; Technology Acceptance Model; student perceptions; higher education

1. Introduction

In recent years, African universities have increasingly engaged in digital transformation initiatives aimed at improving access to education, enhancing teaching and learning, and strengthening institutional efficiency. The integration of educational technologies such as learning management systems, online learning platforms, and digital assessment tools has become more prominent, particularly in response to growing student enrolments and the need for flexible learning environments.[1] In South Africa, higher education institutions have actively adopted various digital technologies to support blended and online learning, especially following the COVID-19 pandemic, which accelerated the shift toward technology-enhanced education.[2,3] Despite these developments, significant challenges remain.

Many universities continue to face infrastructural limitations, including unequal access to reliable internet connectivity, insufficient digital resources, and disparities in students' access to personal devices.[4] In addition, varying levels of digital literacy among students and educators can affect the effective use of educational technologies in teaching and learning.[5,6] While the adoption of digital technologies in South African higher education has been widely discussed, research specifically examining emerging technologies

such as artificial intelligence (AI) remains limited. In particular, there is a lack of empirical studies exploring students' knowledge, attitudes, and acceptance of AI-based educational tools, including AI teaching assistants. This gap highlights the need for context-specific research that investigates how students understand, perceive, and accept AI technologies within African higher education settings. Therefore, this study aims to investigate South African university students' knowledge, attitudes, and acceptance of AI teaching assistants in higher education. Understanding student perspectives is therefore essential for informing the responsible and effective integration of AI technologies within the evolving digital landscape of South African higher education. In this study, the author asked the research question: What are South African university students' knowledge and attitudes toward the use of AI teaching assistants in higher education?

2. Literature Review

2.1. Artificial Intelligence in Higher Education

Artificial Intelligence has emerged as a transformative technology in higher education, influencing teaching, learning, assessment, and institutional management. AI refers to computer systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, problem-solving, and decision-making.[7,8] In the context of higher education, AI technologies include intelligent tutoring systems, adaptive learning platforms, learning analytics, automated grading tools, and AI-powered teaching assistants.[9] These technologies have gained increasing attention as universities seek innovative approaches to enhance teaching effectiveness, personalize learning experiences, and improve student outcomes.

The integration of AI into higher education has been accelerated by advances in machine learning, natural language processing, and data analytics.[10] AI-driven educational tools can analyse large volumes of student data to identify learning patterns, predict academic performance, and provide personalized feedback.[11] For example, intelligent tutoring systems can adapt instructional content based on individual learners' needs, allowing students to progress at their own pace.[12] Such systems have been shown to support differentiated instruction and improve engagement by offering immediate feedback and targeted support.[13] Similarly, learning analytics powered by AI can assist educators in identifying at-risk students and implementing timely interventions to enhance academic success.[14]

AI also plays an important role in enhancing teaching practices and supporting academic staff. Automated grading systems and AI-assisted assessment tools can reduce the administrative burden on lecturers by evaluating assignments, quizzes, and short-answer responses.[15] This enables educators to allocate more time to higher-level pedagogical activities such as mentoring, curriculum development, and interactive teaching.[16] Additionally, AI-based virtual assistants and chatbots are increasingly used in higher education institutions to respond to student queries, provide course-related information, and offer academic guidance outside traditional classroom hours.[14]

Despite its potential benefits, the integration of AI in higher education raises several challenges and concerns. One key issue relates to ethical considerations, including data privacy, algorithmic bias, and transparency in AI decision-making processes.[16] The collection and analysis of student data for learning analytics may raise privacy concerns if appropriate safeguards are not implemented.[17] Furthermore, the reliance on algorithmic systems may unintentionally reproduce biases present in training datasets, potentially affecting fairness and equity in educational outcomes.[18] As a result, scholars emphasise the need for responsible AI governance frameworks to ensure ethical and equitable use of AI technologies in educational contexts.

Another challenge involves the readiness of both educators and students to effectively engage with AI-based educational tools. Studies indicate that the successful adoption of AI in higher education depends not only on technological infrastructure but also on users' knowledge, attitudes, and digital competencies.[19] Faculty members may experience uncertainty or resistance when adopting AI-supported teaching tools, particularly if they perceive these technologies as complex or as potential replacements for human instructors.[10,14] Similarly, students' perceptions of AI, including their trust in automated systems and their understanding of how these technologies function, can influence the extent to which AI tools are accepted and utilised in learning environments.[16]

In the South African higher education context, the adoption of AI technologies presents both opportunities and challenges. Universities are increasingly exploring AI-driven solutions to address issues such as large class sizes, limited academic resources, and the need for personalised learning support.[2] However, disparities in digital infrastructure, access to technology, and digital literacy remain significant barriers to widespread AI implementation.[20] Consequently, understanding students' knowledge, attitudes, and acceptance of AI-based educational tools has become an important area of research. Investigating these factors can provide valuable insights into how AI technologies can be effectively integrated into higher education while ensuring that they complement, rather than replace, the essential role of **human educators**.

2.2. AI Teaching Assistants in Higher Education

AI teaching assistants are increasingly being integrated into higher education to support teaching and learning processes.[21,22] AI teaching assistants generally refer to intelligent digital systems designed to assist instructors and students by providing academic support, answering questions, facilitating learning activities, and managing certain administrative tasks.[23] These systems often rely on technologies such as natural language processing, machine learning, and large language models to interact with students and provide timely educational assistance.[10] As universities face challenges such as large class sizes, increasing administrative demands, and the need for more personalised learning, AI teaching assistants have emerged as a promising technological solution.[2]

One of the most significant contributions of AI teaching assistants is their ability to provide immediate academic support.[23,24] Through chatbot interfaces or conversational systems, AI teaching assistants can answer frequently asked questions, explain key concepts, and guide students through course materials.[14,25] This continuous availability enables students to receive assistance beyond traditional classroom hours, supporting flexible and self-directed learning. In large courses where instructors may struggle to respond quickly to numerous student queries, AI teaching assistants can help improve communication efficiency and ensure that students receive timely responses to their academic concerns.[24]

AI teaching assistants also support personalised learning experiences. By analysing patterns in student interactions and learning data, AI systems can provide customised feedback and recommend learning resources tailored to individual needs.[26] For example, AI-driven tutoring tools may identify areas where a student struggles and provide additional explanations, practice questions, or learning materials to support improvement.[9] Personalised feedback is widely recognised as an important factor in effective learning, as it enables students to monitor their progress and focus on areas that require further development.[27] In this way, AI teaching assistants can complement traditional teaching by offering individualised learning support that may be difficult to achieve in large classroom environments.[21,23] Furthermore, AI-generated learning analytics can provide instructors with valuable insights into students' learning progress and

participation, enabling early identification of students who may require additional academic support.[14]

Despite these advantages, the use of AI teaching assistants in higher education also raises several concerns. One concern relates to the accuracy and reliability of AI-generated responses.[9,13] AI systems may occasionally produce incomplete or incorrect explanations, which could potentially mislead students if not carefully monitored. For this reason, many scholars emphasise that AI teaching assistants should function as supportive tools rather than replacements for human instructors.[13] The role of the educator remains essential in guiding learning, ensuring academic rigor, and providing nuanced feedback that AI systems may not fully replicate.[10,19]

Another important issue involves students' perceptions and acceptance of AI teaching assistants. Students' willingness to use these technologies may depend on factors such as perceived usefulness, ease of use, trust in AI-generated information, and familiarity with AI technologies.[28] Some students appreciate the convenience and accessibility of AI-supported learning, while others may prefer direct interaction with human educators.[13] Ethical considerations, including transparency in AI use and protection of student data, are also important factors influencing the adoption of AI teaching assistants.[17,29] AI teaching assistants represent a significant development in the digital transformation of higher education.

2.3. Students' Knowledge, attitude and acceptance of Artificial Intelligence

As AI technologies become increasingly integrated into higher education, the concept of AI literacy has gained growing attention. AI literacy generally refers to an individual's ability to understand the basic principles, capabilities, and limitations of AI technologies, as well as the ability to use such technologies responsibly and critically.[30] In higher education contexts, AI literacy is increasingly recognized as an important component of digital competence, as students are expected to interact with AI-driven tools such as intelligent tutoring systems, automated assessment platforms, and AI-powered learning assistants.[31] Developing AI literacy among students enables them not only to use AI tools effectively but also to critically evaluate the outputs generated by these systems.[13]

AI literacy in higher education involves several dimensions, including conceptual understanding of AI, practical skills in using AI-enabled tools, and awareness of the ethical and societal implications of AI technologies.[32] Students with a higher level of AI literacy are more likely to understand how AI systems process information, generate responses, and make recommendations.[33] This understanding helps students to use AI tools more effectively for learning purposes, such as seeking explanations, generating ideas, or organising academic content.[30] Conversely, limited knowledge of AI may lead to misunderstandings about the capabilities of AI systems, including overestimating their accuracy or reliability.[34] Therefore, promoting AI literacy is essential for ensuring that students engage with AI technologies in a critical and responsible manner.

Students' understanding of AI capabilities and limitations is particularly important in educational contexts. While AI tools can provide rapid access to information, assist with problem-solving, and support personalized learning, they also have limitations. AI-generated responses may sometimes be incomplete, biased, or inaccurate, especially when dealing with complex or context-dependent topics.[13] Without sufficient awareness of these limitations, students may rely excessively on AI-generated information without critically evaluating its validity.[35] As a result, several scholars have emphasised the importance of educating students about both the potential benefits and the limitations of AI technologies to promote responsible use in academic environment.[36]

Knowledge also plays a significant role in shaping students' attitudes toward and acceptance of AI technologies. According to technology adoption theories, such as the

Technology Acceptance Model (TAM), individuals' understanding of a technology can influence their perceptions of its usefulness and ease of use.[37] Students who possess greater knowledge about AI are more likely to perceive AI-based tools as valuable learning resources and to feel more confident in using them.[38] In contrast, limited understanding of AI may lead to skepticism, uncertainty, or resistance toward adopting AI-supported educational tools.[39] Therefore, knowledge and awareness are important factors influencing students' attitudes and behavioural intentions toward AI technologies in higher education.

Several studies have begun to examine students' knowledge and perceptions of AI tools in educational settings. Research conducted in different countries suggests that while many university students are familiar with AI applications such as chatbots and generative AI tools, their understanding of how these technologies function is often superficial.[40] Many students recognise the usefulness of AI for supporting learning tasks, such as information retrieval or content generation, yet may lack deeper awareness of issues related to algorithmic bias, data privacy, and ethical use.[13] These findings highlight the importance of integrating AI literacy into higher education curricula to ensure that students are equipped with the knowledge and skills necessary to engage with AI technologies effectively and responsibly.[41] Enhancing AI literacy can empower students to use AI tools more effectively while maintaining critical awareness of their limitations. Understanding students' knowledge and perceptions of AI has become an important area of research, particularly as universities increasingly integrate AI-supported tools into teaching and learning environments.

3. Theoretical Framework

This study adopts the TAM as the theoretical framework to examine students' knowledge, attitudes, and acceptance of AI teaching assistants in higher education. The TAM, originally proposed by Davis [42], is one of the most widely used theoretical models for explaining how users adopt and accept new technologies. As explained by Mantello et al. [43], TAM suggests that individuals' acceptance of a technology is primarily influenced by their perceptions of its usefulness and ease of use, which subsequently shape their attitudes toward using the technology and their intention to adopt it.

According to TAM, perceived usefulness refers to the extent to which individuals believe that using a particular technology will enhance their performance or productivity.[44] In the context of higher education, perceived usefulness may relate to students' beliefs that AI teaching assistants can support learning by providing timely feedback, clarifying course concepts, and assisting with academic tasks. Perceived ease of use refers to the degree to which individuals believe that using a technology will require minimal effort.[45] If students perceive AI teaching assistants as easy to interact with and accessible, they are more likely to develop positive attitudes toward using them as learning support tools.

TAM further proposes that perceived usefulness and perceived ease of use influence users' attitudes toward technology, which in turn affect their behavioral intention to use the technology.[46] Positive attitudes toward AI teaching assistants may increase students' willingness to engage with these systems as part of their learning process. In contrast, if students perceive AI technologies as difficult to use or unreliable, they may be less inclined to adopt them. Therefore, understanding students' attitudes toward AI teaching assistants is an important component in examining their acceptance of these technologies in higher education environments.

While TAM traditionally focuses on perceived usefulness and perceived ease of use, many studies have extended the model by incorporating additional variables that influence technology adoption.[47] In this study, students' knowledge of AI is considered an

important antecedent that may shape their attitudes and acceptance of AI teaching assistants. Students who possess greater awareness and understanding of AI technologies are more likely to recognise their potential benefits and limitations, which may influence their perceptions and willingness to use such tools in learning contexts. Conversely, limited knowledge of AI may lead to uncertainty or misconceptions, potentially affecting students' attitudes toward AI-supported learning technologies.

By applying the TAM, this study provides a theoretical lens for understanding how students' knowledge and attitudes influence their acceptance of AI teaching assistants in higher education. The framework offers a structured approach for examining the relationships between knowledge, attitudes, and technology acceptance, thereby contributing to a better understanding of how AI technologies can be effectively integrated into university teaching and learning environments.

4. Methods

This study employed a descriptive qualitative single case study design within an interpretivist paradigm to explore participants' knowledge, attitudes, and acceptance of AI teaching assistants in a clinical module. A case study approach enables researchers to investigate a phenomenon within a specific context through detailed and in-depth analysis.[13,48] The interpretivist paradigm focuses on understanding how individuals construct meaning and interpret their experiences within real-world settings.[2] According to Yin [48], appropriate case selection should consider whether the case is unusual, typical, critical, or relevant to the research context. In this study, the selected case was considered unusual because AI teaching assistants are not yet widely implemented in medical education programmes in South Africa. At the same time, the case can be viewed as both common and critical, given the central importance of maintaining high standards in medical education. Furthermore, the case was relevant to the researchers, as the AI teaching assistants were implemented within a teaching hospital where the researchers had direct access to the learning environment and participants.

4.1. Research Setting

The study was conducted at an identified public university in Gauteng.

4.2. Sampling Technique and Participants

This study used a purposive sampling strategy to recruit participants, following the guidance provided by Cohen et al. [49]. Purposive sampling allows researchers to select participants who possess relevant knowledge and experience related to the research phenomenon.[50] In this study, undergraduate students from the selected university were intentionally chosen. These students were considered suitable participants because they had experienced both traditional teaching approaches and AI-supported learning environments. Their exposure to conventional instructional methods, together with the integration of AI technologies in their learning, enabled them to provide informed reflections on the potential benefits and limitations of both approaches.

The inclusion criteria for participation were as follows: (a) participants had to be currently enrolled in the Complementary Medicine Practice 3 module at the identified university; (b) they had to be 18 years of age or older; and (c) they had to voluntarily provide informed consent to participate in the study. A total of six students participated in the study due to the limited response to the research invitation. To protect participants' privacy and maintain confidentiality, pseudonyms were used during the reporting of the findings. Table 1 presents the codes assigned to each participant for identification purposes.

Table 1. : Participants’ information.

Participants	Age	Gender
P1	21	F
P2	22	M
P3	24	M
P4	21	F
P5	22	F
P6	23	M

4.3. Data Collection instrument

Formal permission was obtained from the head of the selected university prior to the commencement of the study. Participants were invited to take part in semi-structured interviews, which were conducted in March 2026.

4.4. Data Analysis

The interview data were transcribed and subsequently analysed using a six-step thematic analysis approach.[51] This process involved becoming familiar with the data, generating initial codes, identifying potential themes, reviewing and refining themes, and finally producing the report.[2,49] To ensure the trustworthiness of the research, several strategies were implemented. These included member checking, where participants were given the opportunity to verify the accuracy of the interpretations, and maintaining an audit trail to document the research process and analytical decisions. These measures contributed to establishing the credibility, transferability, dependability, and confirmability of the study.

4.5. Ethical consideration

Ethical approval for the research was obtained from the Research Ethics Committee of a public university (Reference: REC-4197-2026).

5. Results

The thematic analysis of the interview data generated three main themes: (1) students’ understanding of AI teaching assistants, (2) attitudes toward AI-assisted learning, and (3) acceptance and concerns regarding the use of AI in clinical education. These themes reflect participants’ experiences and perceptions of AI teaching assistants within the clinical learning environment.

5.1. Theme 1: Students’ Understanding of AI Teaching Assistants

Participants demonstrated varying levels of understanding of AI teaching assistants. Most students were familiar with the general concept of artificial intelligence and its application in education, particularly in relation to chatbots and AI-based learning tools. However, their understanding of the underlying mechanisms and limitations of AI systems was relatively limited.

Some participants described AI teaching assistants as tools that could provide quick access to information and assist with clarifying difficult concepts. P1 explained: “The AI assistant is helpful when we need quick explanations about clinical procedures or theoretical concepts. It gives immediate answers, which can save time when studying.”

Despite recognising the benefits, several participants acknowledged that they did not fully understand how AI systems generate responses. This limited understanding sometimes resulted in uncertainty regarding the accuracy of the information provided. P3

commented: "I know that AI can help with learning, but I'm not always sure how reliable the information is, so I usually double-check with textbooks or lecturers." These findings suggest that while students are generally aware of AI teaching assistants, their knowledge of the technology remains largely functional rather than conceptual.

5.2. Theme 2: Attitudes Toward AI-Assisted Learning

Participants generally expressed positive attitudes toward the integration of AI teaching assistants in their learning. Many students appreciated the convenience and accessibility of AI-supported learning tools, particularly the ability to obtain immediate responses to questions outside normal lecture hours. Students indicated that AI teaching assistants could support independent learning and help reinforce knowledge acquired during lectures and clinical training. P2 noted: "Sometimes after class you still have questions, and the AI assistant helps to explain things again. It's like having extra support when the lecturer is not available."

However, some participants also expressed concerns about the potential over-reliance on AI technologies. A few students emphasized that AI tools should complement rather than replace traditional teaching methods. As P5 stated: "AI can be useful, but it should not replace lecturers because clinical training still needs human guidance and experience." In this study, students appeared to view AI teaching assistants as supportive tools rather than substitutes for human educators.

5.3. Theme 3: Acceptance and Concerns Regarding AI in Clinical Education

Most participants indicated a willingness to continue using AI teaching assistants as part of their learning. Students highlighted several perceived benefits, including improved access to learning resources, enhanced understanding of complex topics, and increased learning flexibility. Participants also noted that AI tools could be particularly useful for reviewing theoretical concepts related to clinical practice. For example, P4 stated: "When preparing for clinical practice, the AI assistant helps to review important concepts and procedures quickly."

Despite this acceptance, several concerns were identified. Students highlighted potential issues related to accuracy of information, ethical considerations, and overdependence on AI tools. Some participants emphasized the importance of verifying AI-generated information with reliable academic sources. In addition, participants stressed that clinical education requires practical experience and professional supervision, which cannot be fully replaced by AI technologies. As P6 explained: "AI can support learning, but clinical skills need real practice with patients and supervision from experienced professionals." The findings indicate that students are generally open to the use of AI teaching assistants in clinical education. However, they believe that these technologies should be integrated carefully and used as supplementary tools alongside traditional teaching and clinical training.

6. Discussion

This study explored students' knowledge, attitudes, and acceptance of AI teaching assistants within a clinical module in a South African medical education context. The findings indicate that students generally possess a basic awareness of AI technologies used in education, demonstrate largely positive attitudes toward AI-assisted learning, and show a willingness to accept AI teaching assistants as supportive tools in their learning process. However, the results also highlight important concerns regarding the reliability of AI-generated information and the appropriate role of AI in clinical education.

The findings suggest that students' knowledge of AI teaching assistants is primarily functional rather than conceptual. Most participants were familiar with using AI tools to

obtain quick explanations or clarify difficult concepts, but their understanding of how AI systems operate and their potential limitations was relatively limited. This observation is consistent with previous studies indicating that although university students frequently use AI tools in academic contexts, their understanding of the underlying mechanisms and potential biases of these technologies remains superficial. The results therefore reinforce the importance of promoting AI literacy in higher education, ensuring that students are not only able to use AI tools but also understand their capabilities, limitations, and ethical implications.[13,30,31]

Participants in this study generally expressed positive attitudes toward AI teaching assistants, particularly appreciating their accessibility and ability to provide immediate responses to academic questions. The availability of AI tools outside traditional classroom hours was perceived as a valuable supplement to formal teaching. This finding aligns with earlier research suggesting that AI-powered educational tools can enhance students' engagement and support self-directed learning by offering timely feedback and additional learning resources. [14,21,23] In clinical education contexts, where students must integrate theoretical knowledge with practical skills, such tools may help reinforce conceptual understanding and support preparation for clinical practice.[9,13]

Despite these positive perceptions, students emphasized that AI teaching assistants should function as complementary learning tools rather than replacements for human educators.[28] Participants highlighted the importance of interaction with lecturers and clinical supervisors, particularly in medical education where professional judgment, ethical reasoning, and hands-on practice play a crucial role. These findings support previous literature suggesting that AI technologies are most effective when used to augment, rather than replace, human instruction.[13] In clinical training environments, the guidance of experienced educators remains essential for developing professional competencies and ensuring patient safety.

The study also identified several concerns related to the adoption of AI teaching assistants. Participants raised questions about the accuracy and reliability of AI-generated responses and expressed the need to verify information through textbooks, academic sources, or instructors. These concerns reflect broader debates in the literature regarding the potential risks associated with the use of AI in education, including misinformation, algorithmic bias, and ethical considerations surrounding data use.[6] As AI tools become increasingly integrated into educational environments, institutions will need to develop clear guidelines and support structures to promote responsible and critical use of AI technologies. [1,3]

Another important implication of this study relates to the African higher education context, where research on AI adoption in education remains limited. While many studies on AI in education have been conducted in technologically advanced regions such as North America, Europe, and East Asia, fewer studies have examined how students in African universities perceive and engage with AI technologies.[5,10] The findings of this study therefore contribute to the growing body of literature by providing insights into students' perspectives on AI teaching assistants within a South African medical education setting.

The findings of this study suggest that students are generally receptive to the integration of AI teaching assistants in higher education. However, effective implementation requires not only technological infrastructure but also efforts to enhance students' AI literacy and ensure that AI tools are integrated in ways that support, rather than undermine, the role of human educators.[14] Future research could further explore how AI teaching assistants influence learning outcomes, clinical decision-making, and students' long-term professional development in medical education.

7. Conclusion

This study explored students' knowledge, attitudes, and acceptance of AI teaching assistants within a clinical module in a South African higher education context. The findings indicate that students generally possess a basic awareness of AI technologies and demonstrate positive attitudes toward the use of AI teaching assistants in supporting their learning. Participants appreciated the accessibility and convenience of AI tools, particularly their ability to provide immediate responses and assist with understanding complex concepts. These features were perceived as valuable in complementing traditional teaching and supporting independent learning.

However, the study also revealed that students' understanding of AI remains largely functional, with limited awareness of the underlying mechanisms and potential limitations of AI systems. Participants expressed concerns regarding the reliability and accuracy of AI-generated information and emphasized the importance of verifying AI outputs through credible academic sources. Furthermore, students highlighted that while AI teaching assistants can support learning, they cannot replace the essential role of human educators, particularly in clinical education where professional judgment, mentorship, and practical experience are crucial.

In this study, the findings suggest that AI teaching assistants have the potential to enhance teaching and learning in higher education when implemented appropriately. Their successful integration requires not only technological adoption but also the development of students' AI literacy and the establishment of clear guidelines for responsible use. As AI technologies continue to evolve, higher education institutions should adopt balanced approaches that leverage the benefits of AI while maintaining the central role of human educators in the learning process.

8. Recommendations

Based on the findings of this study, the following recommendations are proposed:

- Enhance AI literacy among students by incorporating basic AI education into university curricula to improve students' understanding of the capabilities, limitations, and ethical considerations of AI technologies.[30]
- Integrate AI teaching assistants as supplementary learning tools rather than replacements for lecturers, ensuring that AI technologies support and enhance existing teaching practices.[13]
- Develop institutional guidelines for the responsible use of AI in education, including recommendations on verifying AI-generated information and maintaining academic integrity.
- Provide training and professional development for educators to support the effective integration of AI tools into teaching and learning environments.
- Encourage further research on AI adoption in African higher education, particularly studies examining students' experiences, learning outcomes, and ethical considerations related to AI-supported education.

9. Limitations of the study

This study has several limitations that should be considered when interpreting the findings. First, the research employed a single case study design within one clinical module and institution, which may limit the transferability of the findings to other universities or academic disciplines. Second, the small sample size of six participants resulted from the limited response to the research invitation. Although qualitative research aims to obtain in-depth insights rather than statistical generalisation, a larger sample could have provided a broader range of perspectives. In addition, the data were collected through

self-reported interviews, which may be influenced by participants' personal perceptions or response bias. Finally, the study focused solely on students' perspectives, and did not include the views of lecturers or clinical supervisors who are also involved in the integration of AI teaching assistants in education. Future studies could include multiple stakeholders and larger samples to provide a more comprehensive understanding of AI adoption in higher education.

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Abbreviations

The following abbreviations are used in this manuscript:

AI	Artificial Intelligence
TAM	Technology Acceptance Model

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