Enhancing Personalised Learning through Artificial Intelligence at Bugema University: Experience, Opportunities and Challenges

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Abstract

This paper examined the trends, opportunities, and challenges of enhancing personalised learning through artificial intelligence (AI) at Bugema University. Guided by research questions focusing on the experiences of students and staff, the opportunities AI presented, and the challenges faced in its adoption, the study utilised the qualitative research approach, employing the phenomenological research design. Thirty participants, including faculty members, students, administrators, and AI experts, were purposively sampled. Data collection involved key informant interviews (KIIs) and focus group discussions (FGDs), enabling a comprehensive exploration of participant perspectives. Thematic analysis was applied to identify patterns within the data, revealing key findings related to the experiences of AI-driven personalised learning, the advantages offered by AI, and the challenges that hindered its effective implementation. The results indicated that while AI improved communication efficiency and provided data-driven insights for personalised learning, concerns regarding diminished personal connections and faculty resistance emerged. In conclusion, the integration of AI at Bugema University transformed educational practices, fostering improved communication and personalised learning, yet balancing the benefits of AI with the need for meaningful engagement remained vital. The study recommended ongoing training and professional development programmes for faculty to enhance their technical knowledge and confidence in using AI tools, promoting initiatives that foster personal connections between faculty and students through hybrid teaching models, and establishing clear policies and support structures for effective AI integration in the classroom.

Keywords: *Artificial intelligence; Personalised learning; Adaptive learning environments; Student engagement; Higher education.*

Introduction

The advent of artificial intelligence (AI) in education marks a significant milestone in the evolution of personalised learning, enabling a more tailored and efficient educational experience for students (Salla et al., 2024). Personalised learning emphasises customising education to meet individual student needs, and has been extensively discussed by educational theorists. Jean Piaget, for instance, emphasises the importance of adapting learning experiences to the developmental stages of learners (Piaget, 1952). Similarly, Lev Vygotsky's social constructivism highlights the role of tailored educational experiences in cognitive development (Davis et al., 2017). These classical ideas form the foundation for modern approaches to personalised learning, now enhanced by AI technologies. Contemporary scholars have expanded on these foundational theories by exploring the role of AI in enabling more significant and responsive educational environments. Ou (2024) asserts that AI can transform traditional teaching methods by providing real-time data-driven insights into student performance, thereby allowing educators to adjust instructional strategies on the fly. This capability is aligned with the theory of differentiated instruction proposed by Tomlinson (2001), which advocate for tailoring education to accommodate the diverse needs of students.

Systematic reviews (e.g., Massaty et al., 2024; Luckin et al., 2016) on AI in education underscore the transformative potential of these technologies in enhancing personalised learning. For example, the systematic review by Massaty et al. (2024) highlight how AI enhances computational thinking by fostering problem-solving and logical reasoning through personalised, adaptive learning environments. AI also boosts self-efficacy by tailoring support and challenges to individual needs, building students' confidence in mastering computational concepts. Luckin et al. (2016) identify AI as a key enabler in creating adaptive learning systems that can automatically adjust content based on individual student performance. However, Selwyn (2019) cautions against potential pitfalls, such as ethical concerns and data privacy issues. The integration of AI into educational environments raises concerns about how data is collected, stored, and used, especially when dealing with sensitive student information. Issues of consent, algorithmic transparency, and the risk of perpetuating biases through AI-driven systems are significant ethical challenges that need to be addressed. Zawacki-Richter et al. (2019) emphasises the importance of developing robust frameworks that not only address ethical concerns but also guide the responsible and effective use of AI in education. Such frameworks are needed to ensure that AI tools enhance learning without compromising students' rights or educational equity. They also underscore the need for policy interventions to safeguard data privacy, promote transparency in AI decision-making processes, and establish clear guidelines for the ethical use of AI, ensuring it complements traditional teaching methods rather than replacing essential human elements in education.

At Bugema University, the implementation of AI-driven personalised learning is gaining traction, aligning with broader global trends in higher education. This growing adoption reflects the increasing recognition of AI as a crucial element in modernising teaching and learning processes, positioning AI as a key driver of innovation and educational transformation at the university. For instance, the University's Strategic Plan 2021–2025 underscores the importance of incorporating digital tools and AI to enhance

educational outcomes, reflecting a strategic commitment to leveraging technology for academic excellence (Bugema University Strategic Plan, 2021). The Academic Policy Manual (2020) emphasises continuous innovation in curriculum delivery, advocating for the adoption of AI-driven personalised learning to meet diverse student needs (Bugema University Academic Policy Manual, 2020). The ICT Policy 2019 further outlines the University's approach to integrating new technologies, including AI, into its academic and administrative functions, thereby supporting the digital transformation of the institution (Bugema University ICT Policy, 2019). Moreover, the Research and Development Policy 2022 encourages faculty and students to explore AI's role in educational research, positioning it as a critical tool for improving learning outcomes and fostering academic success (Bugema University Research and Development Policy, 2022). Therefore, this paper examined the trends, opportunities, and challenges of enhancing personalised learning through AI at Bugema University.

Research Questions

The study was guided by the following research question:

1. What is the experience of Bugema University students and staff in implementing AI-driven personalised learning?
2. What opportunities does artificial intelligence present in enhancing personalised learning at Bugema University?
3. What are the main challenges Bugema University students and staff face in the adoption and implementation of AI for personalised learning?

Literature Review

This section presents a review of related literature. The literature review is an analysis of the experiences with implementing AI-driven personalised learning, the opportunities that AI offers in enhancing personalised learning, and the challenges in adopting and integrating AI identified by previous scholars.

Experiences with the use of AI for personalised learning

The experiences of using AI for personalised learning reveal both the potential benefits and challenges faced by educators and students. In review, Katiyar et al. (2024) examine how AI-driven systems enhance educational effectiveness, engagement, and equity. Their findings indicate that while these systems can improve learning outcomes, success hinges on multidisciplinary collaboration and ethical integration, highlighting the need for data bias audits and fairness metrics in algorithm design. Kaswan et al. (2024) explore how AI-powered systems have the potential to revolutionise personalised learning in higher education. Their study demonstrates that AI can support individualised learning pathways by automating curriculum design and leveraging learning analytics. However, the authors emphasise that the successful implementation of AI in education requires careful attention to ethical considerations, particularly in ensuring fairness and transparency in algorithms. Khanal et al. (2024) introduce a Personalised Learning Integration (PLI) framework utilising federated machine learning for continuous model refinement in digital learning, emphasising secure data handling without sacrificing individual privacy.

However, they caution that the technical complexities of implementing federated learning could be a significant barrier for institutions with limited resources. The literature above shows that AI-driven systems enhance educational effectiveness, engagement, and equity. However, empirical, practical knowledge, population and methodological gaps emerged. For instance, a review by Katiyar et al. (2024) notes that success in AI-driven personalised learning depends on multidisciplinary collaboration and ethical integration, yet there is a lack of empirical evidence supporting these strategies, revealing an empirical gap. Similarly, Kaswan et al. (2024) stress the need for fairness and transparency in algorithms, but actionable frameworks remain undefined, indicating a practical-knowledge gap. These gaps underscore the need for further research into AI's potential in diverse educational environments

Opportunities artificial intelligence present in enhancing personalised learning

Artificial intelligence plays a crucial role in enhancing personalised learning (Chen et al., 2020). Different researchers have explored the opportunities that AI presents in enhancing personalised learning. For instance, Ivanashko et al. (2024) studied Intelligent Tutoring Systems (ITSs) and found that these systems provided individualised learning experiences tailored to student needs, demonstrating AI's potential to reshape education and improve outcomes through customised learning pathways. Bin Salem (2024) further highlights AI's role in moving away from a one-size-fits-all model, noting that it enables the creation of personalised learning paths that cater to diverse student needs. This customisation fosters greater engagement and significantly enhances the quality of learning experiences. Sajja et al. (2024) discuss the potential of AI-enabled intelligent assistants in higher education to provide personalised and adaptive learning support tailored to individual student needs. The above study reveals that the adoption of AI-driven tools, such as VirtualTA, significantly enhances educational experiences by promoting engagement and facilitating individualised learning strategies. Zohuri and Mossavar-Rahmani (2024) indicate that AI-driven personalisation tailors educational content to match individual learning styles, which in turn increases student engagement and improves achievement.

Challenges in the adoption and implementation of AI for personalised learning

The implementation of AI in personalised learning faces numerous challenges, including technological limitations, lack of infrastructure, data privacy concerns, and resistance to change (Khanal et al., 2024). Ningala (2014) found that at the University of Nairobi, infrastructural deficits and limited internet access hindered the adoption of AI and e-services, emphasising the need for robust infrastructure. Similarly, Yakubu (2021) identified challenges at the National Open University of Nigeria, noting inadequate technical support and user-unfriendly interfaces that discourage consistent AI tool use. Kabuye and Mukasa (2019) report resistance to technology adoption among older individuals in Uganda, a sentiment mirrored in educational institutions where faculty and administrators may hesitate to embrace AI due to fear of obsolescence or lack of confidence in their technical skills. However, except for the study by Kabuye and Mukasa (2019), which focused on non-educational contexts, most other studies have failed to address the specific challenges and opportunities associated with AI adoption in higher education

institutions, particularly in resource-limited settings. Miles (2017) highlights this gap. The lack of comprehensive research on how AI can be effectively integrated into academic environments to support personalised learning while addressing contextual constraints presents a critical gap in the literature.

Methodology

The study adopted a qualitative research approach to explore the depth and complexity of participants' experiences and perspectives. This approach was chosen because it allows for a detailed examination of how individuals interpret and make sense of the phenomenon being studied, offering rich, descriptive data rather than numerical or statistical analysis. A phenomenological research design was employed to specifically investigate the lived experiences of the participants. This design was selected because it focuses on understanding the essence of these experiences, providing insights into how participants perceive and interpret their interactions with the phenomenon. A diverse cohort of 30 participants, including 10 faculty members, 10 students, five administrators, and five AI experts, was purposively sampled to ensure balanced representation. Participants were selected based on their engagement with AI-driven personalised learning, and their capacity to provide insightful perspectives on the topic. This approach allowed for an in-depth exploration of individual and group experiences with AI integration at the university.

Data collection was conducted through key informant interviews (KIIs) and a focus group discussion (FGD). KIIs were held with faculty members, administrators, and AI experts to gather individual insights on AI integration, focusing on challenges, benefits, and expert opinions. A FGD with students captured a broader range of experiences, promoting interaction and revealing shared challenges. The study included a diverse group of participants categorised by their roles and assigned participant codes. To ensure data quality and control, trustworthiness in qualitative research was established through rigorous methods such as systematic transcription, member checking, and triangulation. These practices enhanced the credibility, confirmability, and transferability of the findings, leading to a comprehensive understanding of the research context. Thematic analysis further contributed to this understanding by identifying significant statements that were organised into sub-themes and main themes, such as "Experience of AI-Driven Personalised Learning", along with sub-themes like "Faculty and Student Interaction" and "Adaptation to AI Tools". Ethical considerations included obtaining informed consent and ensuring participant confidentiality through the use of pseudonyms and secure data storage. The findings provided a comprehensive understanding of participants' experiences and the broader implications of AI-driven personalised learning at Bugema University.

Findings

The study findings were analysed thematically based on three research questions: 1) what are the experiences of Bugema University students and staff regarding the implementation of AI-driven personalised learning? 2) What opportunities does artificial intelligence

present for enhancing personalised learning at Bugema University? And 3) what are the main challenges faced by students and staff at Bugema University in adopting and implementing AI for personalised learning?

Experiences of Bugema University students and staff regarding the implementation of AI-driven personalised learning

To address the first research question, "What are the experiences of Bugema University students and staff regarding the implementation of AI-driven personalised learning?" two specific questions were formulated to gather comprehensive information: 1) what is the impact of AI on the efficiency of communication and administrative tasks? 2) How has AI affected the quality of personal connections and direct interactions with students? For instance, participants were asked about the impact of AI on the efficiency of communication and administrative tasks. In the interviews, Faculty 3 noted, "AI has streamlined our interactions with students, allowing us to focus more on mentoring and less on administrative tasks. This shift has not only improved our efficiency but also enabled us to provide more personalised support to our students."

Similarly, Admin 2 mentioned that:

> With AI tools, I can respond to student queries faster, improving communication and allowing me to engage more effectively. I've noticed students appreciate the prompt responses, fostering support and trust. The reduced time on administrative tasks lets me focus more on mentoring. This shift has enhanced our interactions and created a more collaborative learning environment. However, I ensure that while speed is important, the quality of communication remains a priority so students feel valued and heard.

These statements imply that the integration of AI at Bugema University enhances faculty efficiency and responsiveness, enabling more personalised mentoring while maintaining the quality of student interactions and fostering a collaborative learning environment. Further, participants were asked how AI had affected the quality of personal connections and direct interactions with students. Some expressed concerns about a possible loss of personal connection due to AI. Student 7 remarked:

> While AI speeds up communication, I often feel it lacks the personal touch of face-to-face interaction. In-person conversations allow for deeper connections, where non-verbal cues and emotions are fully appreciated. Though I value AI's efficiency, I sometimes miss the warmth and closeness of personal engagement. This can affect the learning experience, as students may feel less connected. While I embrace technology, I still long for the personal touch that in-person interactions offer.

Relatedly, Faculty 10 added:

> I have noticed that automation in grading and scheduling has led to fewer direct interactions with my students, which affects our relationships. This reduction in face-to-face conversations creates a gap that makes building trust more challenging. While I appreciate the efficiency of automation, I worry it diminishes the quality of our interactions and the student-teacher bond. I believe balancing technology with opportunities for direct engagement is vital to ensure my students feel valued and connected. Ultimately, fostering those connections enhances our learning environment.

These statements imply that while AI has improved communication efficiency at Bugema University, it has also diminished the personal connections and meaningful interactions

essential for building trust between faculty and students, potentially affecting the overall learning experience.

What opportunities does artificial intelligence present for enhancing personalised learning at Bugema University?

To explore the second research question, "What opportunities does artificial intelligence present for enhancing personalised learning at Bugema University?" participants were asked about the integration of AI in their teaching practices and its effects on student learning. Specific questions were posed regarding the impact of AI on understanding student learning patterns, fostering innovation in teaching methods, and the availability of enhanced teaching resources through AI integration. Faculty members, students, and AI experts provided insights into how AI has transformed educational experiences by offering data-driven insights, enabling customised learning paths, and enhancing engagement, ultimately fostering a more dynamic and supportive learning environment. Participants were asked about the impact of AI on their understanding of student learning patterns. Faculty 2 remarked:

> AI has provided me with a clearer understanding of my students' academic standings, enabling more targeted support. I have observed that these insights help identify specific areas where students struggle. With this enhanced visibility, I can tailor my teaching strategies to better meet their needs. For instance, I can quickly pinpoint challenging concepts and focus our discussions on those areas. This targeted approach not only enhances my support for students but also fosters a more personalised learning experience.

AI Expert 4 added:

> The predictive analytics from AI tools provide me with valuable insights into student performance, enabling early intervention to improve outcomes. I can identify students facing challenges before they fall behind, allowing me to adjust my teaching strategies accordingly. For instance, if I see a student struggling with a topic, I can promptly reach out to offer additional help or resources. This proactive approach not only enhances academic performance but also fosters a supportive learning environment. As a result, my students feel valued and cared for in their educational journey.

These statements imply that AI significantly enhances faculty members' ability to monitor and support student performance at Bugema University. By offering clear insights into academic standings and enabling early interventions, AI empowers educators to tailor their teaching strategies effectively. This proactive and targeted approach not only improves student outcomes but also fosters a more personalised and supportive learning environment.

Participants were also asked how AI had spurred innovation in their teaching practices. Faculty 1 shared:

> AI has enabled me to move beyond the one-size-fits-all approach, allowing for more personalised learning experiences. Instead of delivering uniform content, I can analyse individual learning patterns, preferences, and performance data. This enables me to adapt my teaching strategies to meet each student's unique needs, providing targeted resources and support. It is rewarding to witness how these tailored experiences boost student engagement and enhance their understanding of complex concepts.

AI Expert 3 commented:

> My experience with AI-powered adaptive learning platforms has transformed my teaching by adjusting to each student's unique needs. These platforms analyse my students' progress in real time, enabling me to tailor my instruction to their strengths and weaknesses. Instead of following a rigid curriculum, I can provide dynamic learning experiences that evolve as my students' advance. This flexibility enhances my teaching effectiveness and helps me address learning gaps more efficiently.

These statements imply that AI-powered adaptive learning platforms have significantly transformed the teaching process at Bugema University. Faculty 11 noted that AI has moved education beyond a one-size-fits-all approach, allowing for more personalised learning experiences. Similarly, Expert 3 highlighted that these platforms adjust to individual student needs, making the teaching process more dynamic and responsive.

Participants were asked about the availability of enhanced teaching resources through AI integration. Faculty 6 noted:

> With AI, I have access to a wide range of resources that I can easily incorporate into my lessons, transforming my teaching approach. These tools enable me to create interactive and engaging learning experiences that surpass traditional methods. I can integrate multimedia content, real-world simulations, and instant assessments, which captivate my students' attention and enhance their understanding of complex topics. This integration has made my teaching more effective and enjoyable for both me and my students.

Similarly, Student 9 in an FGD said:

> The AI tools provide us with interactive materials that make learning more interesting and easier to understand. From my perspective, these interactive materials have transformed our learning experience by adding a dynamic element to the lessons. They not only make the content more engaging but also facilitate a deeper understanding of complex subjects. By utilising these tools, I find it much easier to grasp challenging concepts and stay motivated throughout my learning journey.

These statements imply that AI tools have significantly improved teaching and learning resources at Bugema University. Faculty 6 observed that these tools offer a broad range of interactive resources that enhance lesson engagement, while Student 9 noted they make learning more interesting and understandable. This highlights AI's role in boosting teaching effectiveness and student engagement.

What are the main challenges faced by students and staff at Bugema University in adopting and implementing AI for personalised learning?

To investigate the third research question, "What challenges do Bugema University students and staff face in adopting AI for personalised learning?" participants identified barriers such as faculty resistance due to fears of diminished roles, limited technical knowledge, and inadequate infrastructure. Concerns about outdated tools and data privacy were also raised. For instance, participants were asked about the barriers to adopting AI technologies within the university. A significant concern that emerged was resistance to change among faculty members. Faculty 5 noted:

> I have noticed that many of my peers share concerns about integrating AI into our teaching practices. There's a widespread anxiety that AI could undermine our positions or devalue our contributions to education. This skepticism often arises from a misunderstanding, with faculty viewing AI more as a threat than a supportive tool. While I recognise these fears, I believe embracing AI can improve educational outcomes and enhance our teaching strategies.

This sentiment was echoed by Student 10 in an FGD, who said:

> I worry that AI might reduce lecturers' involvement in our education. Many students, including myself, fear that integrating AI could lead to fewer meaningful interactions with instructors. We value the personal engagement and support provided by lecturers, and an over-reliance on technology might diminish their presence. This concern underscores the need for a balanced approach to AI in education, ensuring it enhances rather than replaces teachers' critical roles in fostering a supportive learning environment.

These statements indicate that resistance to AI adoption is a notable issue at the university. Faculty 5 noted skepticism among colleagues fearing AI could replace their roles, while Student 10 worried about reduced teacher involvement in education. This highlights significant concerns about AI's impact on faculty roles and teacher-student interactions, despite its potential benefits.

Another barrier identified was limited technical knowledge. Admin 3 stated:

> Not all faculty members possess the technical expertise needed to use AI tools effectively, hindering adoption. I have noticed that while some are comfortable with these technologies, others struggle due to insufficient training or familiarity. This disparity creates barriers to integrating AI into our teaching practices. It's essential to offer comprehensive support and training for all faculty, regardless of skill level, enabling everyone to adopt AI tools confidently. By doing so, we can foster a more inclusive environment that maximises AI's benefits for both faculty and students.

Furthermore, Faculty 10 expressed frustration, saying:

> I sometimes struggle with the technical aspects of AI, finding it challenging to learn how to use these tools effectively in my teaching. Navigating the complexities can feel overwhelming, especially with the many features these tools offer. I recognise that mastering these aspects requires time, effort, and patience. This experience underscores the need for ongoing training and support, as I believe access to resources and guidance can greatly enhance our ability to utilise AI effectively in the classroom.

These statements suggest that a lack of technical knowledge among some faculty members hinders the effective adoption of AI tools at Bugema University. Admin 3 noted that insufficient expertise limits faculty's ability to use AI tools effectively, while Faculty 10 expressed frustration with the technical challenges and the time needed to master them.

Participants also highlighted technical limitations and resource constraints as major challenges. Admin 7 noted:

> The university's limited resources have slowed the rollout of AI initiatives, and I completely agree, having witnessed how these constraints hinder our ability to fully implement AI technologies. It feels frustrating to innovate within such limitations. Insufficient infrastructure not only delays AI integration but also impacts our overall capacity to enhance teaching and learning. I believe addressing these infrastructure issues is crucial for successfully adopting AI initiatives, enabling us to leverage the full potential of these technologies in our academic environment.

Faculty 9 similarly stated:

> From my perspective, the limitations in our infrastructure significantly hinder our ability to fully utilise advanced technologies. I have personally experienced how inadequate resources and support affect the implementation of AI tools in teaching and learning. It is frustrating to see these shortcomings prevent us from enhancing educational outcomes. Without strong infrastructure, we can't fully benefit from AI, making it crucial to address these gaps to improve teaching and student engagement.

These statements indicate that inadequate infrastructure is a major obstacle to successful AI implementation at the university. Admin 7 mentioned that limited resources hinder AI project rollouts, while Faculty 9 emphasised that the current infrastructure cannot fully support advanced AI tools. Upgrading and expanding the infrastructure are essential for maximising the effectiveness of AI tools and ensuring their successful integration.

Concerns about access to quality AI tools were also prevalent among participants. Student 6 in an FGD mentioned:

> Some AI tools we use are outdated or not fully functional, which affects my learning experience. The quality and availability of these tools significantly impact my educational journey. When they aren't up-to-date or working properly, it frustrates me and makes it hard to engage with the material. Investing time in a malfunctioning tool detracts from my overall learning. I believe we need access to high-quality, reliable AI tools to enhance our educational outcomes and understand complex concepts effectively.

AI Expert 2 added:

> I have found that high-quality, easy-to-use tools significantly enhance our learning and teaching experiences. When tools are user-friendly, they empower us to engage more effectively, while complex or difficult tools can hinder our ability to apply what we learn. Accessibility is crucial, as tools designed with everyone in mind can bridge learning gaps and facilitate collaboration. Eventually, investing in better AI tools will greatly benefit our educational environment and help us harness technology's full potential in our learning journey.

These statements indicate that the quality and availability of AI tools at Bugema University are major concerns. Student 6 noted that outdated or malfunctioning tools negatively affect their learning, while Expert 2 stressed the need for higher-quality, user-friendly options for faculty and students. Improving the functionality and quality of these tools is crucial for enhancing effectiveness and ensuring a positive educational experience.

Participants were asked about their views on ethical and privacy concerns surrounding AI implementation. Admin 1 commented:

> I recognise the importance of handling data carefully to ensure our AI systems operate transparently and accountably, fostering trust among students, faculty, and administrators. Valuing student privacy, I see implementing stringent data protection measures as both a legal obligation and a moral responsibility. It is essential for students to feel secure knowing their information is managed responsibly. This commitment to data security empowers me to use AI technology effectively while maintaining the integrity of our educational practices.

Faculty 3 emphasised:

> I completely agree that establishing robust data privacy guidelines is essential for protecting our students' sensitive information. In my role, I recognise the need for faculty and staff to understand and follow these guidelines diligently. By implementing clear policies, we can safeguard against data breaches and foster transparency and accountability. Prioritising data privacy is vital for maintaining students' trust, which is crucial for creating a positive learning environment.

These statements imply that protecting student data is a major concern at the university, with Admin 1 emphasising careful data handling and transparency in AI systems. Faculty 3 highlighted the need for clear data privacy guidelines to prevent misuse and maintain trust. This underscores the necessity of implementing robust data protection measures to safeguard student information and uphold ethical standards in AI use.

Discussion

This discussion provides the experiences of Bugema University students with implementing AI-driven personalised learning, highlighting the opportunities AI presents in enhancing tailored educational experiences. Additionally, it addresses the key challenges the university faces in adopting and effectively implementing AI technologies for personalised learning: diminished personal connections between faculty and students, and reduced frequency and quality of face-to-face interactions.

Experience of AI-driven personalised learning

The findings revealed that the implementation of AI-driven personalised learning had streamlined faculty-student interactions, reducing tasks like grading and scheduling and allowing more time for personalised support. The AI applications included intelligent tutoring systems and adaptive learning platforms to tailor education to student needs. This finding is consistent with that by Kaswan et al. (2024), who argue that such innovations could revolutionise education by making learning more efficient and tailored to individual needs, with evidence of positive impact on student performance. The study uncovered concerns echoed by critics regarding AI's integration into education. Ivanashko et al. (2024) warn that overreliance on AI could diminish the role of human educators and weaken essential personal connections for holistic learning experiences.

Knox (2020) cautions against viewing AI as a substitute for the relational aspects of education, crucial for fostering critical thinking and emotional intelligence.

Therefore, it is important that the university integrate AI with traditional teaching methods and focus faculty training on maintaining meaningful connections to support holistic student development. The study findings indicated that AI-driven personalised learning improved communication efficiency and support but raised concerns about reduced personal connections between faculty and students. Thus, the university should continue faculty AI training, promote hybrid teaching models to maintain engagement, and ensure equitable access to AI tools to bridge the digital divide.

Opportunities artificial intelligence present in enhancing personalised learning

The integration of AI created significant opportunities for personalised learning, aligning with broader scholarly discourse on AI's potential in education. AI tools provide data-driven insights that help faculty identify student challenges and craft tailored interventions, with predictive analytics enabling timely support and personalised learning paths allowing students to progress at their own pace. This is consistent with a report by Bin Salem (2024) that AI-driven technologies allow for highly customised instruction. Similarly, Sajja et al. (2024) note that personalised learning empowers students to focus on areas of difficulty while engaging with content that aligns with their interests. Bugema's AI-powered adaptive platforms adjust in real time to student performance, enhancing engagement and comprehension, which mirrors Ivanashko et al.'s (2024) findings that AI can facilitate targeted interventions and more effective learning journeys through real-time feedback and data-driven decision-making. The findings imply that AI has significant potential to enhance personalised learning through data-driven insights and tailored interventions.

Challenges in the adoption and implementation of AI for personalised learning

The adoption and implementation of AI for personalised learning at Bugema University have encountered several challenges, such as faculty resistance due to fears of reduced roles, limited technical knowledge, and inadequate infrastructure, alongside concerns about outdated tools and data privacy. The findings of the study align closely with existing literature that challenges the adoption and implementation of AI in education. For example, Yakubu (2021) reports that technological barriers, particularly regarding infrastructure and device compatibility, requires significant investments to address. In response to the challenges of integrating AI into education, such as faculty resistance and concerns about diminished human interaction, the university has prioritised comprehensive training and support programmes. These initiatives align with the recommendations of Bin Salem (2024), who emphasises that AI should complement rather than replace traditional pedagogical approaches, by equipping faculty with the necessary skills to utilise AI tools effectively. The findings also underscore pressing ethical considerations around data privacy and algorithmic bias that the university must tackle. Implementing strict ethical guidelines and informed consent protocols, as proposed by Sajja et al (2024), is crucial for responsible AI integration. While the university has made progress in utilising AI for personalised learning through adaptive assessments, continued investment in infrastructure and faculty development remains essential to maximise these benefits. Critics like Knox (2020) warn that without careful consideration of ethical implications and a commitment to human-centred teaching practices, AI integration may lead to unintended consequences. Therefore, addressing technological, human, and ethical dimensions of AI adoption is vital for maximising its potential to enhance educational outcomes. The study's implications reveal challenges in adopting AI, including technological limitations, faculty resistance, and ethical concerns.

Conclusion

The study concluded that the integration of AI-driven personalised learning at Bugema University has improved communication efficiency but raised concerns about reduced personal connections. Striking a balance between technological efficiency and meaningful face-to-face interactions is crucial for fostering strong faculty-student relationships. The study also concluded that AI enhances personalised learning by providing data-driven insights, adaptive learning platforms, and improved teaching resources, creating a dynamic and responsive educational environment that improves both teaching effectiveness and student engagement. Further, it was concluded that the adoption of AI at the university faces challenges such as faculty resistance, limited technical knowledge, inadequate infrastructure, and ethical concerns. This implies that AI integration into Bugema University's curriculum and operations will require extensive faculty training and technical infrastructure.

Recommendations

It is recommended that the Academic Affairs Office promote hybrid teaching models that balance AI's efficiency with essential face-to-face interactions to maintain strong faculty-student relationships. Additionally, faculty should receive training on utilising AI tools to ensure meaningful engagement on digital platforms and prevent diminished personal connections. It is also recommended that Bugema University invest in robust infrastructure, faculty training through the Directorate of Research and Publication to enhance technical skills, and address resistance to AI usage. The Information Technology Department must establish clear policies and support structures to facilitate the smooth integration of AI-driven personalised learning, leveraging data-driven insights, adaptive platforms, and improved teaching resources for a dynamic educational environment. Further, university administration should prioritise funding for technical upgrades and oversee the overall AI strategy. The Directorate of Research and Publication should lead comprehensive faculty development programmes, while the Information Technology Department should put in place necessary infrastructure improvements and support systems.

Limitations and Suggestions for Future Research

This study had several limitations that future research should address to gain a more comprehensive understanding of AI-driven personalised learning at the university. First, expanding the sample size to include a broader range of participants, such as additional faculty members, students, and administrators, would capture diverse perspectives related to AI integration. Also, conducting comparative studies between different universities could yield insights into best practices and challenges, while longitudinal studies would allow researchers to track changes over time and assess the long-term impact of AI on teaching effectiveness and student engagement. Finally, future research should thoroughly examine ethical issues such as algorithmic bias and data privacy to develop frameworks that ensure responsible and equitable AI implementation. With proper training, infrastructure, and ethical safeguards in place, AI has the potential to be a transformative tool for enhancing personalised learning experiences at the university level.

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