JRIIE Journal of Research Innovation and Implications in Education
Center for Research Implications & Practice

Website:www.jriiejournal.com ISSN 2520-7504 (Online) Vol.8, Iss.4, 2024 (pp. 598 – 610)

The Challenges and Opportunities of Artificial Intelligence (AI) Use in Higher Education: The Case of Busitema University

Charles Eryenyu, Godliver Owomugisha, Saphina Biira & Paul Waako
Busitema University, Uganda
Email: eryenyuc@gmail.com

Abstract: *This research paper explores the ethical application of artificial intelligence (AI) in university curricula, focusing on the challenges and opportunities it presents. The paper is a result of a survey conducted among students and staff at Busitema University to understand the current state of AI usage, identify the benefits and challenges, and how to address the emerging ethical implications. The findings revealed that students are increasingly using AI for various academic tasks, but there is a lack of formal integration and limited awareness among staff. The limitations of AI, such as inaccuracies in its outputs and potential hindrances to deep learning and innovativeness, are also underlined in our findings. The paper therefore calls for structured AI education and policy development within universities to regulate AI use, promote transparency, and address ethical concerns. Specific recommendations include integrating AI into the learning management system, providing AI training for both students and staff; and developing guidelines and standards for responsible AI use. This paper emphasises the need to balance the benefits of AI with ethical considerations so that institutions continue to nurture critical thinking skills even in the era of AI integration into teaching and learning.*

Keywords*: Artificial Intelligence (AI), Ethical Integration, Curricula Implementation, Challenges and Opportunities of AI, AI Ethical Governance Model*

How to cite this work (APA):

Eryenyu, C., Owomugisha, G., Biira, S. & Waako, P. (2024). The challenges and opportunities of Artificial Intelligence (AI) use in higher education: The case of Busitema University. *Journal of Research Innovation and Implications in Education, 8*(4), 598 – 610. **https://doi.org/10.59765/upr492jr.**

1. Introduction

The integration of Artificial Intelligence (AI) into higher education is transforming teaching, learning, and research in unprecedented ways. Education technology has evolved significantly since the medieval era, with AI emerging as a cornerstone in modernizing curriculum implementation and enhancing personalized learning experiences. Defined by Fitria (2021) as computer processes that mimic human thinking, AI enables machines to adapt and perform increasingly sophisticated tasks. By leveraging large datasets, iterative processing, and intelligent algorithms, AI-powered systems have the potential to revolutionize education. These systems provide tailored learning experiences, addressing diverse student needs and improving educational quality (Chong, Jian, & Zhiying, 2020; OECD, 2020). For instance, adaptive learning platforms analyze student data to identify individual strengths and weaknesses, enhancing both engagement and performance (Al-Zahrani, 2024a).

Globally, AI adoption in education has gained momentum, with countries like China, India, Canada, and the USA leading the way, followed by nations such as Singapore, Finland, and Japan (Helmiatin, Hidayat, & Kahar, 2024; Kürşat et al., 2024; UNESCO, 2023). These advancements underscore the transformative potential of AI in reshaping educational systems. However, understanding the opportunities and challenges AI presents, particularly in contexts like Busitema University, is key to harnessing its benefits effectively.

The history of AI in education traces back to the mid-20th century with the development of early logical reasoning algorithms (Jackson, 2024; Chong, Jian, & Zhiying, 2020). Milestones include the PLATO computer-based learning platform of the 1950s, expert and intelligent tutoring systems in the 1980s, and adaptive learning systems in the 2000s, such as those developed by Knewton and Smart Sparrow (Rosak-Szyrocka et al., 2023; Luckin et al., 2016; Johnson et al., 2017). The 2010s saw the rise of big data and machine learning, which enabled personalized learning and optimized curriculum design (Zawacki-Richter et al., 2019). The 2020s have introduced generative AI technologies, including OpenAI's GPT, which assist with content creation and problem-solving (Moroianu et al., 2023). Today, AI applications in higher education include adaptive learning platforms, AI-assisted grading, chatbots, and AI-driven course development, all of which are reshaping academic practices (Wen, 2024).

While AI offers transformative opportunities, its integration into education also presents significant challenges. Ethical concerns such as data privacy, social justice, and bias perpetuation remain pressing issues (Burton et al., 2017; Adams et al., 2022). Additionally, the shift from labor-intensive to technology-driven methods is redefining traditional educational philosophies, demanding strong ethical frameworks and teacher training to maximize benefits and minimize risks (Bitalo, 2024; Akgun & Greenhow, 2021).

This research focused on the use of AI in higher education at Busitema University, exploring its role in curriculum implementation, the benefits and difficulties experienced by stakeholders, and the ethical implications of its integration. By examining these dimensions, the study sought to inform institutional policies and practices, ensuring the responsible and effective use of AI in higher education curriculum implementation.

1.1 The Case of Busitema University

Busitema University, established under the Universities and Other Tertiary Institutions Act 2001 and formally recognized in 2007, operates as a multi-campus institution with seven campuses in seven different districts in Eastern Uganda. While the University has embraced online learning, it lacks specific policies and regulations on AI use, presenting both opportunities and challenges. The University, presented a unique setting for studying the impact of AI on education. Like many African universities, it faces challenges such as limited technological infrastructure and funding, which may affect the pace of AI adoption. However, there are significant opportunities for leveraging AI to enhance teaching, research, and administrative tasks. As AI tools become more affordable and accessible, Busitema University can benefit from integrating AI to improve learning outcomes, foster innovation, and increase competitiveness in the global academic landscape. The integration of AI at Busitema University is still at a randomized individual search-and-use level, with staff and students informally incorporating AI inputs into their work. Staff use AI in activities such as transcribing research data, while students use AI for assistance with complex academic and personalized tasks. However, many staff and students remain unaware of AI's full potential, and others use it informally or "quietly," as is the case in many other institutions this study highlights the potential benefits of AI at Busitema University while acknowledging the limitations and challenges that must be addressed to ensure that AI integration is responsible and aligned with the university's academic mission.

1.2 The Problem Context

Integrating Artificial Intelligence (AI) into higher education, particularly at Busitema University, offers both significant opportunities and notable challenges. AI technologies have the potential to personalize learning experiences and streamline administrative tasks, thereby enhancing decision-making processes (Barredo Arrieta et al., 2020; U Zaman, 2023). However, the growing reliance on AI also raises concerns about its impact on academic integrity and the cultivation of essential graduate attributes, such as critical analytical skills and scholarly attitudes.

Onyejegbu (2023) highlights the ethical dilemmas that arise from the unchecked use of AI in academia, while Ayala-Pazmiño (2023) underscores the dual nature of AI integration into curricula, balancing its benefits with inherent risks. In Uganda, and particularly at Busitema University, the ethical adoption of AI remains largely informal and unregulated. Kahiigi (2024) points to a lack of digital literacy and inadequate understanding of AI ethics as key challenges within Uganda in general.

Existing literature on AI in education warns of the consequences of neglecting ethical considerations. Unchecked AI systems can perpetuate biases and increase social inequalities (Carmody et al., 2021; Elliott & Soifer,

2022; Al-Zahrani, 2024; Barredo Arrieta et al., 2020; Ammar & Rawan, 2024). Additionally, unregulated AI use risks compromising academic integrity and undermining the development of critical thinking skills in students. Concerns such as data privacy violations, algorithmic bias, and the potential for AI to automate rather than augment human effort need to be addressed to ensure AI enhances the educational experience rather than detracts learning experiences.

To mitigate these challenges, this paper explored the possibilities of ethical and regulated approaches to integrating AI into university curricula. By doing so, institutions can safeguard academic integrity, promote equitable learning opportunities, and preserve the development of key graduate attributes essential for future success.

1.3 The Research Purpose

This paper reports the findings of a survey conducted among Busitema University students and staff on the use of AI in research, teaching and learning. The survey sought to explore the current state of AI usage among students in research, teaching and learning activities to identify the benefits and challenges of unregulated AI in curricula implementation.

The Specific Research Questions: The research was guided by the following questions:

1. What is the current state of AI usage among students and staff at the university?
2. What are the perceived benefits and challenges of using AI in teaching and learning?
3. How will the use of AI by students affect course learning outcomes?
4. What are the ethical implications of AI use in teaching and learning, and how can they be addressed?

2. Literature Review

The literature on AI use in higher education highlights both its transformative potential and the ethical challenges it presents. O'Connor (2014) notes that the reliance on the internet among digital natives has led to increased plagiarism, with institutions struggling to enforce academic integrity policies (O'Connor, 2014; Abiero, 2024; Adams et al., 2022; Alejandro et al., 2020; Al-Zahrani, 2024; Jackson, 2024). Ayala-Pazmiño (2023) emphasizes the dual nature of AI use in education, offering personalized learning while risking dehumanization, and calls for more empirical research on its impacts. On the other hand, (Ammar & Rawan, 2024) identified five dimensions (user, operational, environmental, technological, and ethical dimensions) of challenges related to AI use in education and advocate for its use as a teaching aid not as a teacher in itself, while Al-Zahrani and Alasmari (2024) reecho concerns about ethical dilemmas in unregulated AI use.

As far as the balance between benefits and risks is concerned, (Kamalov, Santandreu, and Gurrib, 2023) maintain the notion that the benefits of AI integration in higher education outweigh the risks, emphasizing benefits like personalized learning and intelligent tutoring systems. They support the view of (Kabahizi, 2021) in suggesting that AI should enhance rather than replace human teaching. Further literature on AI use in higher education indicates that AI can significantly improve educational practices, including assessment and student engagement (Zhai et al., 2022; Popenici & Kerr, 2017; Wahyono et al., 2019; Mavroudi et al., 2018; Zawacki-Richter et al., 2019; Ayala-Pazmiño, 2023; Zaman, 2023).

However, despite these potential benefits, challenges and risks remain high, particularly in less developed countries like Uganda, where AI integration is still at its infancy (Kahiigi, 2024). There are glaring fears of a reduction in higher-order thinking skills, reduced innovativeness and ethical concerns in AI-assisted assessments. Global leaders in AI adoption, such as Singapore and the U.S., have developed mechanisms to utilize AI for personalized learning and curriculum development (Papaspyridis, 2020; Microsoft, 2020). Nonetheless, ethical issues like data privacy and algorithmic bias still persist (Al-Zahrani, 2024b; Carmody et al., 2021; Elliott & Soifer, 2022).

Additionally, the misuse of AI in cyber operations poses added risks, as noted by Toulas (2024) and Rafy (2024), highlighting the need for robust countermeasures when using AI in teaching and learning. Ethical guidelines and accessibility challenges must be addressed to ensure equitable AI use in education (Zawacki-Richter et al., 2019). In summary, while AI offers significant opportunities for enhancing educational practices at higher institutions like Busitema, successful implementation hinges on addressing ethical considerations, accessibility, and the other infrastructural digital divide. Collaboration among policymakers, educators, and administrators is necessary to harness AI's potential responsibly.

3. Methodology

3.1 The Philosophy

This paper is theoretically grounded on Discourse Ethics (DE) which is a normative ethical theory developed by philosophers Jürgen Habermas and Karl-Otto Apel (1980,

1988). Discourse Ethics emphasizes the role of communication and rational dialogue in establishing moral norms and principles (Kettner, 2006; Metselaar & Widdershoven, 2016). The theory of Discourse Ethics offers a distinctive approach to moral philosophy by grounding ethical norms in the process of rational and inclusive dialogue. This is because it emphasizes consensus, inclusivity, and non-coercion. It is distinct from other ethical theories such as Deontology, utilitarianism, virtue ethics, social contract theory, and moral relativism, which prioritize duties, outcomes, or individual virtues. Discourse Ethics focuses on the collective process of reaching consensus through open and inclusive discourse, ensuring that moral norms are universally applicable and inclusive. The principles of Discourse Ethics include universality and inclusivity, rational discourse, consensus orientation, non-coercion, pragmatic validity, and ideal speech conditions (Metselaar & Widdershoven, 2016).

The principles of discourse Ethics are applied in this study because the concept of AI in Education is set to be a universal concept. Discourse Ethics principles are also consistent with Abiero (2024) description of what is considered ethical AI in African context. This report explained that ethical artificial intelligence (AI) in Africa involves developing and using AI technologies in line with the continent's ethical principles and societal values. Key principles Ethical AI use must include fairness, transparency, accountability, privacy, and respect for human rights. As such current challenges in AI use including the lack of tailored guidelines and policies for Africa, and the need to incorporate African perspectives into the global discourse on responsible AI use ought to be addressed. To address these challenges there is a need to develop and implement safeguards which align AI frameworks with human cultural values, promoting equitable and socially responsible AI practices and values. By integrating ethical concepts into academic training and fostering bottom-up engagement, institutions can nurture a culture of ethical awareness and accountability within the AI broader community. It is hoped that the bottom-up inquest into the ethical integration of AI into teaching and learning can create a technologically advanced, ethically informed, and socially responsible AI application in the education systems.

3.2. Population, Sample, Data Collection and Analyses

The purpose of this study was to examine the current use of AI among students and staff at Busitema University, understand the benefits and challenges of AI in teaching and learning, and explore the ethical implications of its use. The research team conducted focus group discussions with student course coordinators, who were grouped according to faculties. One staff member was also incorporated into each group to participate in the discussion to ensure transparency in student responses. Data was collected through these discussions and review of published articles, and documents on the ethical integration of AI in education. Thematic analysis, supported by the (QuillBot, LLC, 2017), was then used to analyze the text-based data from the discussions. The findings from both the focus group discussions and the articles reviewed were combined to form the overall findings of the research.

4. Results and Discussion

4.1 Documented AI Integration into Teaching and Learning

In addition to conducting Focus Group Discussion (FGDs), we analyzed 27 research articles and documents that explored the ethical integration of AI in education. These are summarized in Table 1.

Table 1: Data from reviewed articles on AI use in teaching and learning

sn	Author (s)	Topic/Research purpose	Findings /conclusions
1	Göksel & Bozkurt (2019) and Krstić, Aleksić, & Krstić (2022) and Fitria (2021)	This research studied the benefits of using AI tools in education, such as personalized and adaptable teaching.	These studies showed that AI's potential benefits in education require a critical approach, including ethical policy development, boundary definition, and testing. It should be integrated into traditional learning methods, rather than completely replacing them, to provide personalized, adaptable, and insightful teaching. AI can provide knowledge, but it cannot replace the role of teachers in inspiring, motivating, and developing character.

sn	Author (s)	Topic/Research purpose	Findings /conclusions
2	Nita & Muh (2024) Moroianu, et al., (2023) Suleman & Abbas (2024) Ayala-Pazmiño, (2023); Zhai et al., 2022), Al-Zahrani, (2024a); UNESCO, 2021), Chu et al., (2022); Wang et al., (2024), Shan et al., 2024), Toulas, (2024) Wen, (2024)	These studies explore the potential benefits of AI in improving student learning experiences, while also addressing concerns about data privacy, security, and system accuracy for responsible AI use in education	They found that AI can enhance student learning in higher education, Personalize learning experiences Automating administrative tasks , Provide real-time feedback, Cyber threats and misuse, Enhance student engagement and comprehension However, concerns like data privacy, security, and system accuracy, Accessibility and digital divide need to be addressed. More collaboration among stakeholders is needed for responsible and ethical AI use, prioritizing equity and inclusion. They called continuous research on responsible AI use.
3	Nakatumba-Nabende, Suuna, & Bainomugisha (2023), Mulamba (2023), Kabahizi (2021), and Kahiigi (2024)	These studies focus on the specific contexts of Africa and Uganda. They discuss the ethical issues, challenges, and opportunities of implementing AI in education in these regions, including issues of equity, access, and data privacy.	The limited local AI projects in Africa has led to a misconception that AI is only applicable to developed countries. To improve AI ethics in teaching and learning, African universities should develop training programs, document ethical issues, and glocalize existing AI ethics. Uganda can leverage partnerships, open-source solutions, and grants to overcome financial constraints and implement incremental AI implementation. Strategic planning, government support, education, and awareness are needed to safeguard data privacy and engage with AI effectively.
4	UNESCO (2023) and Fitria (2021) Hay et al., (2024)	Harnessing the Era of Artificial Intelligence in Higher Education: A Primer for Higher Education Stakeholders, how aff use AI.	These studies highlight the need to address biases in AI algorithms for fairness and to navigate the ethical implications of AI's rapid advancement. They suggest the implementation of AI governance frameworks, and guidelines for AI decision-making; and skills development and education, open discussions among stakeholders, and balancing innovation with ethics to ensure responsible AI development. They conclude that while AI can provide knowledge, it cannot replace the role of the teacher in inspiring, motivating, and developing character in students. Therefore, teachers must adapt to technological Out of 3,421 university staff, mostly from 17 universities around Australia. Academic staff were more likely to use AI (75%) than professional staff (69%), or sessional staff (62%). Senior staff were the most likely to use AI (81%); Hay et al.,(2024).
	European University Institute (2020), American Council on Education	Governance and policies	These recommended advocacy for a balanced approach to AI regulation, taking into account both its benefits and risks. these studies underscore the significance of creating AI policies and guidelines for responsible AI use

sn	Author (s)	Topic/Research purpose	Findings /conclusions
	(2020) Al-Zahrani, (2023); Bozkurt et al., (2021)		

4.2 Summary of Focus Group Data

Student's Perspective: The focus group discussions (FGDs) revealed that students are increasingly relying on Artificial Intelligence (AI) for a variety of academic and personal tasks. AI is being used to summarize large texts, prepare assignments, apply for jobs, and even transcribe audios. As one student explained *"Students use AI for assignments, preparation for examinations, social interactions, presentations, and transcriptions. AI transcriptions are about 90% correct. Students use AI to understand the concept of academic tasks*" (FGD 5). However, this use is often clandestine, with most students admitting to using AI secretly. Despite this, students expressed a strong desire for the open/formal integration of AI into educational practices, calling for universities to view AI as a complementary tool rather than a replacement for traditional resources like textbooks and journals.

There was a clear appeal for the university to adapt to the advancements in AI. As students emphasized, "*Educational institutions should adapt to these new technologies*," with many urging lecturers to embrace AI and incorporate it into the curriculum activities.

Staff Perspective: The academic staff had mixed levels of awareness about students' AI usage. Some were entirely unaware that students use AI, while others used it themselves for tasks such as transcriptions and data analysis. The majority of staff, however, shared concerns about the ethical and practical implications of AI in education. They highlighted the need for training both students and staff on the responsible and ethical use of AI. Concerns about AI's impact on originality and critical thinking were widespread. Despite these apprehensions, both staff and students recommended the integration of AI into the university's Learning Management System (LMS), emphasizing the need for structured AI policies and training.

Limitations of AI: While AI is appreciated for its time-saving capabilities and ability to provide useful summaries, its limitations were also widely acknowledged. AI outputs are not always accurate, with estimates suggesting that only about 60% of the output is correct in certain contexts, depending on the quality of input and the AI tool used. As one participant pointed out, "*I used AI to do an online assessment and got only 45%*" (FGD 4). AI also struggles with tasks that require deep understanding, graphical representations, or illustrations. Another participant noted, "*The accuracy of AI outputs is reduced further in hardcore science, especially open AIs which are believed to depend on information from open access."*

Participants also emphasized the dependency of AI accuracy on its training data and whether the tool being used is free or paid. Limitations in graphics, explanation, and originality were cited as major drawbacks. As one participant remarked, "*AI limits your originality. If you use AI solely, you miss certain things*" (FGD 4). Both students and staff cautioned against over-reliance on AI, citing concerns that it could hinder critical thinking and foundational learning.

Ethical Concerns: Ethical issues surrounding AI use in education emerged as a recurring theme during the focus group discussions. Students reported that many lecturers discourage the use of AI without providing a clear explanation. As one student noted, "*Most lecturers say 'Don't use AI,' but they don't tell you the reason why you should not use it… we see AI in our notes*" (FGD 2). The secretive use of AI by both students and staff was seen as problematic, with a lack of transparency contributing to potential ethical violations.

Participants expressed concerns that AI might diminish the learning experience by providing quick answers rather than fostering a deep understanding of concepts. Furthermore, the lack of acknowledgment of AI use in academic work could compromise academic integrity.

Call for AI Policies: There was a strong consensus on the need for structured policies and training programs to regulate AI use within universities. Students and staff proposed integrating AI into the LMS and using accredited AI tools to ensure ethical and responsible use. One participant suggested, "*There should be more restrictions for AI use among undergraduate students than postgraduate students to enable them to get to the foundations of knowledge*" (FGD 4).

Participants also advocated for incorporating AI education into computer skills courses and conducting more training sessions to address AI limitations and proper usage. One

participant argued that: *when students are taught to do correct prompting of AI, they will be able to generate more accurate responses*. Practical assignments involving hands-on tasks were recommended to encourage the use of AI as a supplemental resource rather than a replacement for traditional learning methods.

4.3 Data Triangulation

When we compare the results from the reviewed articles (table 1) and the data from the FGDs, the two sources are consistent in their recognition of both the potential benefits and challenges of AI in Teaching and Learning. Both sources emphasize the need for ethical considerations, structured policy development, and the formal integration of AI into educational practices to enhance learning while safeguarding academic integrity and originality.

Both students and staff are using AI secretly and quietly, which highlights a lack of formal integration of AI into educational practices. Students call for AI to be openly incorporated into education to supplement traditional resources, which has already been recommended by Göksel & Bozkurt (2019) and Krstić et al. (2022)

Similarly, both the literature and FGD data emphasize the necessity of integrating AI into education in a structured and ethical manner. Göksel & Bozkurt, 2019; and Mulamba, 2023, identified the need for ethical boundaries and policy development, aligning with our participants' call for structured AI education and policy within universities. We note that Nakatumba-Nabende et al.'s (2023) focus on developing AI ethics echoes our participants concern about AI's impact on originality and academic integrity. Similarly, Ansari et al., (2023), Nita & Muh's (2024), and FGD data all recognize AI's limitations in education, particularly regarding accuracy and its potential to undermine critical thinking. This is consistent with findings about the need to address concerns like data privacy and system accuracy, innovativeness and originality. Suleman & Abbas (2024) and UNESCO (2023) have noted that, the need for policy and regulatory framework. All our data sources suggest formal integration of AI into educational systems with clear guidelines and support systems.

4.4 Discussion of Results

The summary of focus group data reveals a growing acceptance of AI among students and staff, albeit with caution. The literature supports this trend, as more students use AI tools for academic and career-related tasks, though often covertly due to a lack of clear guidelines (Chugh & Ruhi, 2021). The finding that students use AI for tasks such as summarizing, exam preparation, and assignment completion reflects the educational benefits identified by Popenici and Kerr (2017), who highlight AI's potential for automating routine academic tasks. However, concerns over AI's accuracy and potential to stifle critical thinking resonate with critiques in literature emphasizing AI's limitations in promoting deep understanding (Luckin, 2018). This suggests that while AI can be beneficial, uncritical reliance on it may erode students' original thought processes and critical engagement with academic content.

The findings indicate a strong desire among students for the open integration of AI into educational activities, aligning with existing literature advocating for such integration. Al-Zahrani and Alasmari (2024) highlight that while AI can enhance learning experiences in higher education, careful planning is necessary to address ethical and educational implications. Similarly, (Ammar et al.2024) emphasized the importance of developing clear guidelines for AI integration into curricula. Students' calls for AI acceptance reflect these recommendations, while concerns about AI's limitations, particularly regarding accuracy and its potential to hinder deep learning, echo Alejandro et al. (2020), who noted the challenges posed by AI's "black box" nature. Akgun & Greenhow (2021) further explored how over-reliance on AI can undermine critical thinking and originality, reinforcing the notion that AI should supplement, not replace, traditional teaching methods, as advanced by Göksel & Bozkurt (2019) and Krstić et al. (2022). The importance of maintaining the human element in education, as highlighted by Zawacki-Richter et al. (2019), and the role of AI in personalizing education, noted by Holmes et al. (2019), are also significant considerations in the quest to integrate AI into teaching and learning.

Additionally, studies by UNESCO (2023) and Hay et al. (2024) stress the importance of mitigating biases in AI algorithms, a theme echoed in the literature on AI fairness and ethics (Binns et al., 2020; Mehrabi et al., 2021). Hay et al. (2024) recommend developing governance frameworks to ensure fair AI integration in education. Nita & Muh (2024) raise concerns about privacy, security, and data accuracy, aligning with the warnings from Jaime, S., et al. (2024), the UNESCO, (2021) report and Zhai et al. (2022) regarding unchecked AI implementation. Current research calls for ethical frameworks to regulate data usage and protect student privacy (Cowling et al., 2020) and emphasizes stakeholder collaboration to address these issues. The literature has extensively discussed the unethical conduct associated with AI in education, including academic integrity concerns (Adams et al., 2022) and the need for ethical AI systems that promote social justice (Hermansyah et al., 2023). This study Participants'

concerns about AI's unethical use and the necessity for transparency and guidance confirm these earlier findings.

Both the academic staff and students who took part in this study called for structured AI education and policy development to regulate IA use in academia. This has been a significant theme in both the focus group data and the academic literature in Table 1. Suleman and Abbas (2024) recommended developing comprehensive AI literacy programs to prepare students and educators for the ethical and practical challenges posed by AI. Zawacki-Richter et al. (2019) on the other hand, while recommending the incorporating of AI education into HE curricula also advocated for training to equip students with the necessary skills and knowledge for responsible AI use. Our focus group discussants calling for an incorporation of relevant AI skills into general computer skills courses and the development of university-wide AI policies are also consistent with recommendations from other earlier studies (Göksel & Bozkurt, 2019; UNESCO, 2023; Kabahizi, 2021). Göksel and Bozkurt (2019), who examined the potential of artificial intelligence (AI) in the field of education, highlighted the need to implement ethical guidelines and conduct rigorous testing to prevent the adoption of automated procedures and mechanical learning. Similary, Kabahizi (2021) and Kahiigi (2024) have advocated for guidelines and/or plans to guarantee the security, usefulness, and efficiency of AI implementations. Even UNESCO's report of 2023 advocates for the resolution of biases in AI algorithms, the establishment of AI governance frameworks, and the harmonization of innovation with ethics in academia.

5. Conclusions and Recommendations

5.1 Conclusions

1. The use of AI in academic work has several benefits, including simplifying information, supplementing textbooks, providing guidance for complex tasks, assisting in assignment tasks, saving time, and offering fairly reliable answers. It is an easily available tool for busy students. As such continuous use of AI in education is inevitable, this is supported by ongoing research into more efficient up-to-date and readily available AI tools and applications.
2. The current unregulated use of AI by students and staff members deviates from the principles of discourse ethics. Most students use AI quietly to complete academic tasks, which negatively impacts the student-centred aspect of academic activities. There is a risk of false assessment results due to the undisclosed use of AI tools, especially in research work. Similarly, a considerable number of staff members also use AI quietly. The secret use of AI is dangerous for the future workforce as it grooms dishonesty and lack of transparency among learners who are future workers.
3. Both students and staff members are not aware of any specific accredited or recommended AI tools for teaching and learning activities. They use whatever AI is accessible to them, often learning about specific AI tools through friends and social networks.
4. There is a need for further study in AI use in curriculum implementation to fully realize its benefits with minimal risks. Otherwise, the unregulated use of AI by students limits learning opportunities, exposes them to inaccurate education content, hinders critical thinking, and threatens job security for graduates lacking real skills.

5.2 Recommendation

This paper proposes the adoption of the AI Integration and Ethical Governance Model, Figure 1. This model stresses the dual focus on AI in higher education with due consideration for ethical policies that guide the AI use in education, making it suitable for addressing challenges and opportunities. The model describes how AI moves from technology implementation to impacting HE stakeholders and or users, which then creates both challenges and opportunities, all of which need to be managed through appropriate guidelines or policies. According to this model:

1. AI Technology is the one that drives the core changes in AI in Education by introducing adaptive learning, AI-driven educational tools, and generative AI models.
2. Students, the teaching staff and Administrators or institutional policymakers are the main stakeholders affected by AI use in Education. They interact with AI technology to enhance learning and teaching processes while at the same time being very susceptible to AI user risks. Hence experiencing both challenges and opportunities for using AI in teaching and learning activities.
3. To address the challenges while maximizing opportunities, this model recommends the development of Ethical Guidelines & Policies,

focusing on data privacy, accountability, and AI literacy.

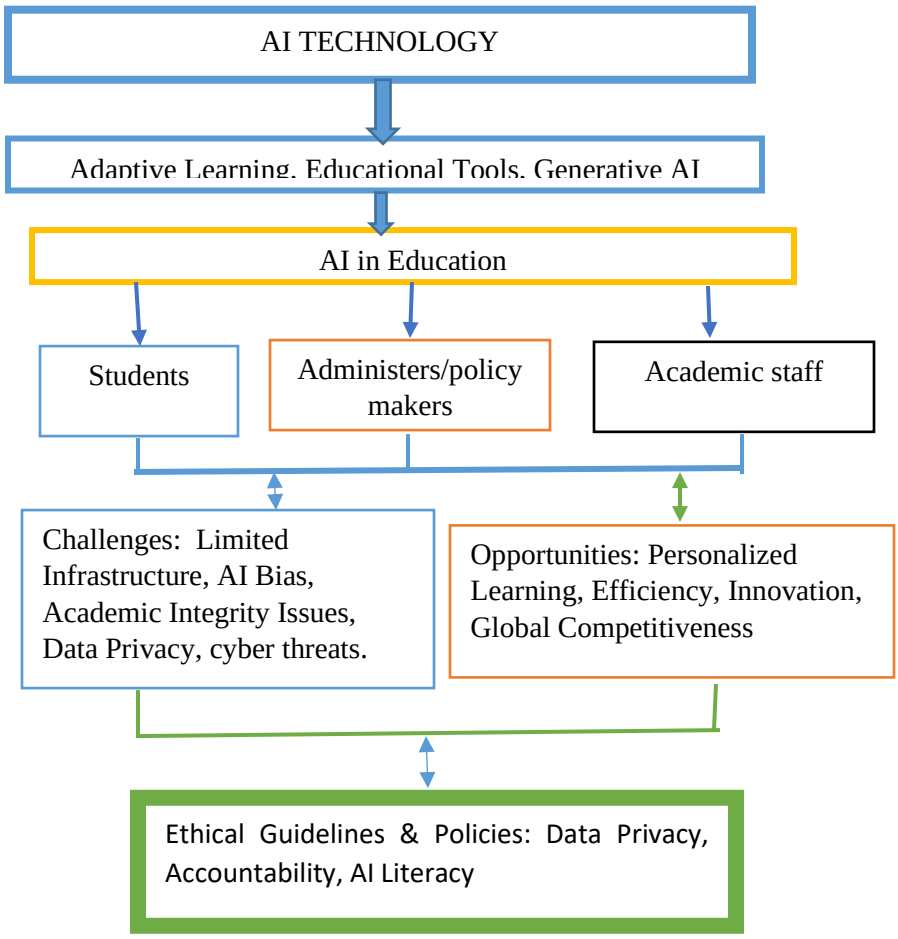

Figure 1: Proposed AI Integration and Ethical Governance Model, 2024. (This is an original proposition informed by Díaz-Rodríguez et al., (2023) article: Connecting the dots in trustworthy Artificial Intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation, Information Fusion

5.2.1 Further recommendations and research

1. AI should be used as a Supplement to Traditional Teaching, not a replacement hence preserving the human element values in the teaching and learning processes
2. A formal integration of AI in education and encouraging both lecturers and students to embrace AI technologies and incorporate them into teaching and learning processes.
3. The establishment of guidelines and standards for the use of AI in academic work, including integrating AI misuse or policy violations into existing policies such as anti-plagiarism and exam malpractice policies.
4. Students should be educated and sensitized on the limitations of AI, such as accuracy levels and respect for copyright. AI skills necessary to support teaching and learning should be included in the general course of computer skills so that students can use AI effectively, hence increasing accuracy.

5. Identifying and recommending accredited AI tools for integration into the learning management system
6. To support the development of critical thinking skills alongside the use of AI among learners, institutions should emphasize practical exams and hands-on tasks in assignments and academic tasks.
7. Teachers are encouraged not only to disclose their use of AI in teaching and learning but also to support learners with skills in using AI for learning.
8. Investigating the impact of AI on learning outcomes, particularly in fostering creativity and critical thinking.

References

Abiero, D. (2024). Ethical AI development in Africa: Integrating cultural values and addressing global disparities. Retrieved from https://cipit.strathmore.edu/ethical-ai-development-in-africa-integrating-cultural-values-and-addressing-global-disparities/

Adams, C., Pente, P., Lemermeyer, G., Turville, J., & Rockwell, G. (2022). Artificial intelligence and teachers' new ethical obligations. *The International Review of Information Ethics, 31*(1). https://doi.org/10.29173/irie483.

Akgun, S., & Greenhow, C. (2021). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics, 2*, 431–440. https://doi.org/10.1007/s43681-021-00096-7

Alejandro B. A., et al. (2020). Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI, Information Fusion, Volume 58, Pages 82-115, https://doi.org/10.1016/j.inffus.2019.12.012.

Al-Zahrani, A. (2024a). AI and education: Opportunities and challenges in higher learning. *Saudi Journal of Educational Studies, 3*(2), 100-115.

Al-Zahrani, A. (2024b). Ethical implications of AI in education: A policy perspective. *Journal of Educational Policy, 5*(1), 45-60.

Al-Zahrani, A.M., Alasmari, T.M. Exploring the impact of artificial intelligence on higher education: The dynamics of ethical, social, and educational implications. *Humanit Soc Sci Commun* 11, 912 (2024). https://doi.org/10.1057/s41599-024-03432-4

Ammar A., Esmat Z.,n, Rawan A.,(2024). Navigating the confluence of artificial intelligence and education for sustainable development in the era of industry 4.0: Challenges, opportunities, and ethical dimensions, Journal of Cleaner Production, Volume 437, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2023.140527.

Ansari, M. F., Dash, B., Sharma, P., & Yathiraju, N. (2022). The impact and limitations of artificial intelligence in cybersecurity: A literature review. *International Journal of Advanced Research in Computer and Communication Engineering, 11*(9), 81-90. https://doi.org/10.17148/IJARCCE.2022.11912

Ayala-Pazmiño, M. (2023) Artificial Intelligence in Education: Exploring the Potential Benefits and Risks. 593 Digital Publisher CEIT. 8. 892-899. 10.33386/593dp.2023.3.1827.

Bitalo J. U. (2024). Integrating Artificial Intelligence in Personalized Learning in East Africa. RESEARCH INVENTION JOURNAL OF RESEARCH IN EDUCATION 3(3): 134- 143.

Brookings Institution. (2020). AI bias and fairness in education: Key challenges and solutions. https://www.brookings.edu

Calvin Kahiigi (2024); "Empowering Digital Citizens: Navigating Data Privacy and Artificial Intelligence Through Digital Literacy in Uganda" Volume 53 Issue 2 Makerere Law Journal pp. 46-97

Chong G., Jian M., Zhiying J.,,(2020). Artificial intelligence innovation in education: A twenty-year data-driven historical analysis, . International Journal of Innovation Studies, Volume 4, Issue 4, Pages 134-147, https://doi.org/10.1016/j.ijis.2020.09.001.

Chu, J., Dai, Y., & Ke, R. (2022). AI-powered learning systems in higher education: A systematic review. *International Journal of Educational Technology, 21*(3), 12-34.

Díaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., López de Prado, M., Herrera-Viedma, E., & Herrera, F. (2023). Connecting the dots in trustworthy artificial intelligence: From AI principles, ethics, and key requirements to responsible AI systems

and regulation. *Information Fusion, 99,* 101896. https://doi.org/10.1016/j.inffus.2023.101896

Fitria, N. T. (2021). Artificial Intelligence (AI) In Education: Using AI Tools for Teaching and Learning Process.

Göksel, N., & Bozkurt, A. (2019). Artificial intelligence in education: Critical perspectives and benefits. *Education Futures Journal, 1*(1), 34-45.

Hay, S., et al. (2024). Mitigating algorithmic biases in AI for education: Developing governance frameworks. *Journal of Ethical AI Studies, 7*(2), 45-67.

Helmiatin, Hidayat, A., & Kahar, M. R. (2024). Investigating the adoption of AI in higher education: A study of public universities in Indonesia. *Cogent Education, 11*(1). https://doi.org/10.1080/2331186X.2024.2380175

Hermansyah, M., Najib, A., Farida, A., Sacipto, R., & Rintyarna, B. S. (2023). Artificial intelligence and ethics: Building an artificial intelligence system that ensures privacy and social justice. *International Journal of Science and Society*, *5*(1), 154–168. https://doi.org/10.54783/ijsoc.v5i1.644.

Jackson, E. A. (2024). The evolution of artificial intelligence: A theoretical review of its impact on teaching and learning in the digital age. *ZBW – Leibniz Information Centre for Economics.* https://www.econstor.eu/bitstream/10419/280893

Jaime, S., et al. (2024). Educating for the present and the future: Using Artificial Intelligence (AI) to address the learning crisis. World Bank Blogs. https://blogs.worldbank.org/en/latinamerica/artificial-intelligence-to-address-the-learning-crisis

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2017). *NMC horizon report: 2017 higher education edition*. The New Media Consortium.

Journal of Educational Psychology. (2020). AI in education: Improving student learning outcomes. *Journal of Educational Psychology, 112*(4), 687-699.

Kabahizi, C.B. (2021). How AI could transform Uganda's Eduscape: Paving the path for blended learning. Center of Faith Family and Justice

Kamalov, F.; Santandreu Calonge, D.; Gurrib, I., (2023). New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution. Sustainability 2023, 15, 12451. https://doi.org/10.3390/ su151612451

Kaur, R., Gabrijelčič, D., & Klobučar, T. (2023). Artificial intelligence for cybersecurity: Literature review and future research directions. *Information Fusion, 97*, 101804. https://doi.org/10.1016/j.inffus.2023.101804

Kettner, Matthias. (2006). DISCOURSE ETHICS Apel, Habermas, and Beyond. 10.1007/1-4020-4241-8_21.

Krstić, I., Aleksić, M., & Krstić, A. (2022). Personalized teaching with artificial intelligence: Ethical and practical considerations. *Journal of Education and Technology, 15*(3), 67-82.

Kürşat, A., Özmen, S., Kalyoncu, F., & Cebeci, Ü. (2024). Comparative analysis of the studies of countries on AI teaching. *Education and Learning Journal, 3*(1), 25–63.

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson.

Manyika, J., et al. (2017) A Future That Works: Automation, Employment and Productivity. McKinsey & Company, New York.

Mavroudi, A., Giannakos, M., & Krogstie, J. (2018). Supporting adaptive learning pathways through the use of learning analytics: Developments, challenges and future opportunities. *Interactive Learning Environments, 26*(2), 206–220. https://doi.org/10.1080/10494820.2017.1292531

Metselaar, S., Widdershoven, G. (2016). Discourse Ethics. In: ten Have, H. (eds) Encyclopedia of Global Bioethics. Springer, Cham. https://doi.org/10.1007/978-3-319-09483-0_145

Microsoft. (2020). The future of education: How AI will change learning. https://www.microsoft.com

Microsoft. (2020). The future of education: How AI will change learning. Retrieved from https://www.microsoft.com

Moroianu, Nicolae & Iacob, Silvia-Elena & Constantin, Alexandra. (2023). Artificial Intelligence in

Education: a Systematic Review. 10.2478/9788367405546-084.

Mulamba J. J.. (2023). THE DISRUPTIVE IMPACT OF AI TOOLS ON THE UGANDA'S NEW EDUCATION SYSTEM ADDRESSING CHALLENGES AND OPPORTUNITIES FOR ADOPTION.

Nakatumba-Nabende, Joyce & Suuna, Conrad & Bainomugisha, Engineer. (2023). AI Ethics in Higher Education: Research Experiences from Practical Development and Deployment of AI Systems. 10.1007/978-3-031-23035-6_4.

Nita, M., & Muh, A. (2024). Personalizing education through AI while addressing privacy concerns: A balanced approach. *Journal of Educational Technology, 15*(2), 112–129.

O'Connor, Z. (2014). Extreme plagiarism: The rise of the e-idiot? *The International Journal of Learning in Higher Education, 22*(1). https://www.thelearner.com

OECD. (2020). *AI in education: Promises and implications for teaching and learning.* Paris: OECD Publishing.

Okengwu U.A. (2023). Practical Implications of Different Theoretical Approaches to AI Ethics. In (Caitlin C. Corrigan) et al., 2023) AI Ethics in Higher Education: Insights from Africa and Beyond. Springer, Open Access.

Omar Ali, et al., (2024). The effects of artificial intelligence applications in educational settings: Challenges and strategies,Technological Forecasting and Social Change,Volume 199 https://doi.org/10.1016/j.techfore.2023.123076.

Onyejegbu, L.N. (2023). Challenges of Integrating AI Ethics into Higher Education Curricula in West Africa: Nigerian Universities Narrative. In: Corrigan, C.C., Asakipaam, S.A., Kponyo, J.J., Luetge, C. (eds) AI Ethics in Higher Education: Insights from Africa and Beyond. SpringerBriefs in Ethics. Springer, Cham. https://doi.org/10.1007/978-3-031-23035-6_5

Papaspyridis, A. (2020). AI in higher education: Opportunities and considerations. *Microsoft Stories Asia.*

Popenici, S. A., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning, 12*(1), 1–13. https://doi.org/10.1186/s41039-017-0062-8.

QuillBot, LLC in (2017). *AI text summarizer: One-click summarization*. Retrieved December 10, 2024, from https://quillbot.com/summarize.

Rafy, M. F. (2024). *Artificial intelligence in cybersecurity.* https://doi.org/10.13140/RG.2.2.19552.66561

Robin, L. (2023). Shockwaves & innovations: How nations worldwide are dealing with AI in education. *The 74 Million*. https://www.the74million.org/article/shockwaves-innovations-how-nations-worldwide-are-dealing-with-ai-in-education/

Rosak-Szyrocka, Joanna & Żywiołek, Justyna & Nayyar, Anand & Naved, Mohd. (2023). The Role of Sustainability and Artificial Intelligence in Education Improvement. 10.1201/9781003425779.

Ryan, M., & Stahl, B. (2020). The ethics of AI in education: Data privacy and algorithmic bias. *Journal of Information Ethics, 30*(1), 23-40.

Shan, W., Wang, F., Zhu, Z., & Wang, J. (2024). Artificial intelligence in education: A systematic literature review. *Expert Systems with Applications, 146*(1), 10-25.

Suleman, M., & Abbas, A., (2024). Navigating the Integration of AI in Education: Challenges and Opportunities for Learning and Teaching. 10.13140/RG.2.2.11326.29769.

Toulas, B. (2024). OpenAI confirms misuse of AI tools in offensive cyber operations. *Cybersecurity Journal, 29*(2), 33-40.

U Zaman, B., (2023). Transforming Education Through AI Benefits Risks and Ethical Considerations.

UNESCO. (2021). *AI in education: Guidelines for policy and practice.* Paris: UNESCO Publishing.

UNESCO. (2023). *Harnessing the era of artificial intelligence in higher education: A primer for higher education stakeholders*.

Wahyono, I. D., Fadlika, I., Asfani, K., Putranto, H., Hammad, J., & Sunarti. (2019). New adaptive

intelligence method for personalized adaptive laboratories. In *2019 International conference on electrical, electronics and information engineering (ICEEIE)* (pp. 196 200). https://doi.org/10.1109/ICEEIE47180.2019.8981477

Wen, S. (2024). The power of generative AI in cybersecurity: Opportunities and challenges. *Applied and Computational Engineering*, *48*, 31-39. https://doi.org/10.54254/2755-2721/48/20241095

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators? *Journal of Educational Technology in Higher Education*, *16*(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0.

Zhai, X., He, P., & Krajcik, J. (2022). Applying machine learning to automatically assess scientific models. *Journal of Research in Science Teaching*, *59*(10), 1765–1794. https://doi.org/10.1002/tea.21773.