

The Place of Artificial Intelligence Ethical Literacy in Higher Education: Insights from Lecturers and Postgraduate Students in Tanzania

Hamisi Mfaume

Correspondence: Hamisi Mfaume, Faculty of Education, Department of Educational Foundations Management and Life Long Learning, University of Dar es Salaam, Tanzania, United Republic of.

Received: February 19, 2026

Accepted: April 5, 2026

Online Published: April 7, 2026

doi:10.11114/jets.v14i3.8500

URL: <https://doi.org/10.11114/jets.v14i3.8500>

Abstract

Tremendous adoption and utilization of Artificial Intelligence tools have brought enormous opportunities and raised ethical concerns in higher education. This study explored the place of AI ethical literacy in higher education curricula in Tanzania. Specifically, it sought lecturers' and students' perspectives on the need for integrating AI ethical literacy and the reasons for their perspectives. It also inquired their opinions on ethical aspects to be integrated into the curriculum. It was a qualitative case study design conducted in a selected public university involving 18 participants including 15 postgraduate students and 3 lecturers. The participants were purposively selected based on their roles and course undertaken. Data were collected through semi-structured interviews and document reviews and analysed thematically. The findings revealed a consensus that AI ethical literacy should be integrated due to the increased ethical issues, the absence of AI ethical literacy training in the existing programmes and the widespread AI adoption. The participants proposed the inclusion of key concepts of AI ethics, security and privacy of data, intellectual property and copyrights, academic honesty, AI biases and national and international AI ethical guidelines. The study concluded that the integration of AI ethical literacy into higher education is crucial to for students' responsible engagement with AI tools.

Keywords: artificial intelligence, ethics, artificial intelligence ethical literacy, higher education, Tanzania

1. Introduction

In the 21st century, there have been significant global technological innovations and advancements (Wishart, 2018). Artificial Intelligence (AI), a computer system capable of executing multifaceted cognitive tasks analogous to the human brain, has emerged as a prominent transformative innovation of the century with applications across various sectors, including higher education (Alimi et al., 2025). AI-based tools such as Machine Learning (ML), Natural Language Processing (NLP), ChatGPT, Chatbots, Quill Bot, and intelligent tutoring systems offer unique opportunities to revolutionize students' learning in higher education on a global scale (Zafari et al., 2022). These tools provide students with personalized learning opportunity, access to educational resources as well as enhancing traditional learning practices (Al-Momani & Ramayah, 2024; Mao et al., 2024). They can also assist students in academic writing by automating various tasks, such as idea generation, literature reviews, data analysis, and proof reading (Rahman et al., 2023; Wang et al., 2023). The automated AI assessment tools can free up educators' time allowing them engage more effectively with students, leading to improved learning outcomes (Mauti & Ayieko, 2025). Equally, integrating generative content creator tools into higher education classrooms can enhance student engagement in learning (Tebenkov & Prokhorov, 2021).

Given the significant potential of AI and its increasing transformative impact on education, it is widely acknowledged as a crucial driver in providing high-quality education to students and preparing them for the competitive global workforce (Schmidt et al., 2025; Sharma et al., 2023; Wang et al., 2023). While AI offers students vast educational opportunities, its integration into higher education is accompanied by significant ethical concerns ranging from plagiarism, dissemination of misinformation, breaches of data privacy, surveillance, to copyright violations among students (African Union [AU], 2024; Schmidt et al., 2025; Wang et al., 2023). Thus, AI ethical literacy becomes essential for students to develop a deeper understanding and ethical considerations when using AI tools (UNESCO, 2022). Acknowledging the crucial role of AI literacy, UNESCO introduced an AI competency framework for students in 2021. This framework aims to support global educational systems in equipping students with the necessary competencies to engage meaningfully and responsibly with AI tools (UNESCO, 2022). The framework delineates twelve key competencies that students should possess, including AI ethics, which emphasizes competences in addressing embodied ethics and promoting safe and responsible use of AI (Miao & Cukurova, 2024; UNESCO, 2022). UNESCO believes that AI ethical competencies are more important for

students' self-monitoring than preventing misuse of AI, hence calling for reforms of educational systems to provide programmes that prepare a new generation to become competent and ethical digital citizens (Giannini, 2024).

In response to the UNESCO framework's recommendations, policy reforms aimed at equipping students with AI competencies are evident in higher education systems worldwide (UNESCO, 2022). By 2023, 47% of higher education institutions in countries such as the United States of America, Canada, United Kingdom, China, and Germany had adopted AI policies and were offering various AI-related courses to help students leverage the potential of AI (Bungay, 2021; Ng & Chu, 2021; Kong et al., 2023; O'Dea et al., 2024). Notable policy reforms are also observable in education systems in African countries like South Africa, Nigeria, Rwanda, Ghana, Kenya, Uganda, and Tanzania to mention a few (Bonsu et al., 2023; Funda & Piderit, 2024; Sarfo, 2024). Powered by the UNESCO's AI framework and the African Union continental AI strategy, which emphasizes the ethical adoption of AI systems tailored to Africa's context (AU, 2024; UNESCO 2022), higher education systems in the region are increasingly embracing AI policies and developing AI-related courses to enhance students' capacity to leverage the vast potential of AI for the socio-economic transformation on an innovative growth trajectory (AU, 2024). However, while many HEIs both in developed and developing countries are making concerted efforts to impart AI literacy to students, literature suggests that few, particularly in Africa, offer targeted training on AI ethical literacy (Wang et al., 2023). Consequently, students often rely on informal sources to grasp the ethical use of AI, leading to misinformed practices and leaving them susceptible to misconduct (Giannini, 2024; Smutny & Schreiberova, 2020).

Tanzania, like many other countries around the world, acknowledges the significant impact of AI in preparing students for future employment opportunities in various sectors where AI and other emerging technologies will play a crucial role (Ministry of Education Science and Technology [MoEST], 2025). Aligned with the UNESCO AI framework and the AU continental AI strategy 2024, the government, through the MoEST, introduced the National Guidelines for AI in Education in 2025 to offer comprehensive guidance on the effective, ethical, and responsible integration and utilization of AI in the education sector (MoEST, 2025). The guidelines stress the importance of promoting the technical application and ethical use of AI within the curriculum at all educational levels by stipulating that "Ethical AI use should be promoted within the curriculum by teaching learners about data privacy, security, and social implications of AI misuse at all educational levels" (MoEST, 2025: 8). Consequently, HEIs have a vital role in equipping students with essential knowledge of AI applications and ethical competencies to thrive in the AI global economy. However, despite the policy directives, an analysis of university ethics related course outlines has revealed a noticeable lack of AI ethical literacy. Moreover, as the use of AI among students increases, instances of ethical violations are frequently reported signifying that most students use AI without adequate knowledge of ethical considerations (Ahmed, 2024; Mrisho, 2023; Morell, 2024). This situation has prompted the researcher to delve into lecturers' and students' perspectives on the importance of AI ethical literacy to inform curriculum development and institutional policies for the ethical governance of AI in HEIs. To address this issue, the researchers explored the following key questions:

1. What is the perspective of lecturers and students on the inclusion of AI ethical literacy in the curricula of higher education in Tanzania?
2. Which AI ethical aspects do lecturers and students propose to be integrated in higher education curricula in Tanzania?

2. Review of Related Studies

Scholars worldwide are increasingly focusing on the ethical considerations related to the integration of AI in educational settings and advocating for the inclusion of ethical literacy to ensure responsible and ethical use. Al-Abdullatif & Gameel (2021) underscored the importance of students' moral reasoning in their interactions with AI, emphasizing the necessity of clear ethical guidelines and ethical competencies to prevent potential ethical breaches. They stressed the significance of establishing explicit ethical guidelines and offering training on ethical literacy to empower students to engage with AI in a responsible manner. While these studies highlight the importance of ethical literacy, they did not specify the specific ethical competencies that should be included in training programs. Similarly, Ahmad and Ibrahim (2022) highlighted the potential consequences of a lack of ethical competence among university students, emphasizing the risk of unintentional engagement in unethical behaviours like academic dishonesty due to a limited grasp of ethical AI principles. They stressed the importance of providing students with comprehensive ethical literacy training to tackle these challenges. Nevertheless, the study did not specify the specific ethical components that should be incorporated into this training.

Holmes et al. (2022) suggested incorporating digital ethics training into educational frameworks to help students navigate ethical challenges posed by AI, emphasizing the importance of moral development alongside technological education. Likewise, Wang et al. (2023) advocated for higher education institutions to instil ethical competencies in students through training, instead of focusing more on punitive measures. However, these scholars did not specify the key ethical competencies that should be included in the training programs. Eryenyu et al. (2024) found that ethical concerns related

to AI use among university students in Uganda stemmed from a lack of awareness of ethical principles. They recommended integrating AI ethical education into curricula and providing additional training sessions to promote ethical usage. Yet, the study did not specify the key ethical aspects that should be integrated.

A study by Kahiigi (2024) emphasized the importance of digital literacy and understanding AI ethics in fostering ethical AI integration among students in higher education, while Rafiq and Afzal (2025) attributed AI ethical issues among students to limited ethical literacy and emphasized the need for institutional policies and frameworks to guide the integration of AI ethical literacy in curricula. In another related study, Kamali, Alpat and Bozkurt (2024) explored how university educators perceive and align with AI ethics, highlighting the need for targeted professional development and institutional support. While the study provided insights into educators' ethical challenges with AI in educational settings, it primarily focused on educators' perspectives and did not address students' perceptions of AI ethical literacy, which are crucial for informing the development of effective ethical frameworks in higher education.

Khan et al. (2024) investigated how artificial intelligence can support sustainability in higher education in Sweden, emphasizing the importance of addressing ethical concerns related to data privacy and algorithmic bias through ethical training and governance. However, the study did not delve into students' perspectives, which could offer valuable insights into the ethical use of AI. Given the increasing integration of AI in education and the growing ethical concerns, it is essential to explore lecturers' and students' perspectives on the ethical aspects that can be integrated into curricula to guide the responsible use of AI in educational settings.

Morell (2024) conducted a study on copyright awareness and ethical use of AI tools among students at Mzumbe University in Tanzania. The study revealed that students lacked awareness of the legal and ethical implications of AI use, especially in relation to copyrights. It recommended incorporating digital ethics into the curriculum to promote responsible and lawful utilization of AI in higher education. However, this study did not specify ethical aspects that should be included in the curriculum.

Most reviewed studies highlight the dire need to integrate AI ethical literacy into higher education, but lack specific details on the ethical dimensions to be included in the curriculum. Therefore, gathering input from lecturers and students on key aspects of AI ethical literacy is crucial for helping universities in Tanzania and beyond develop customized training programs or courses to address ethical challenges related to AI use.

3. Method

3.1 Research Approach and Design

The study used a qualitative approach with a case study design to explore participants' perspectives on the topic. This approach was chosen for its ability to delve deeply into participants' views and experiences on a specific phenomenon (Yin, 2011; Creswell, 2014). The flexibility of this approach allowed for real-time adjustments in the field as needed during the study (Patton, 2015). By focusing on a single public university as a case study, the researcher was able to gather detailed and diverse opinions from lecturers and students regarding the subject in their natural settings (Yin, 2011; Creswell, 2013). This design also allowed direct and extended engagement with participants, enabling comprehensive data collection from multiple sources (Yin, 2011; Patton, 2015).

3.2 Sample and Sampling Procedures

The study sample included a total of 18 participants, consisting of 15 postgraduate students (8 females and 7 males) and 3 lecturers (2 females and 1 male) from the faculty of education. This sample size was adequate for the study based on saturation of data (Patton, 2015). Participants were purposely selected based on their roles and the courses they were involved in. Specifically, Master's students who had completed a course on ethical and legal issues in education, along with instructors teaching related courses, were selected for the study. These participants were considered to have a higher level of exposure to ethical issues in education, making them well-suited to provide valuable perspectives and detailed insights on the subject under study.

3.3 Data Collection Methods

The researcher conducted semi-structured interviews with all participants to collect data. An interview guide was prepared with relevant questions to the subject under inquiry. The approach allowed for in-depth exploration of the topic by asking follow-up questions based on participants' responses (Patton, 2015). All interviews were conducted in English in private settings chosen by each participant to ensure confidentiality and encourage open sharing of views and experiences. Each interview lasted between 45 to 55 minutes and was audio-recorded with participants' consent. Participants were given the opportunity to review the audio recordings and transcripts of their responses to ensure accuracy (Tisdell et al., 2025). To complement the interview data, the researcher reviewed the Tanzania National AI Guidelines (2025) and university ethics course outlines, specifically EL 604: Ethical and Legal Issues in Educational Leadership for postgraduates, and EF 303: Professionalism and Ethics in Education for undergraduates. The aim was to evaluate the integration of AI ethical literacy in formal university curricula (Mogalakwe, 2006).

3.4 Data Analysis

The researcher conducted a manual analysis of the data using Braun and Clarke's (2022) six-phase inductive thematic analysis approach, chosen for its flexibility and suitability for qualitative data analysis (Nowell et al., 2017). The analysis process involved familiarizing with the data by repeatedly reading the interview transcripts to identify initial patterns. Initial codes were then generated inductively by labelling relevant phrases that captured meaningful patterns related to the research questions. These initial codes were grouped into broader categories based on shared meanings and relationships to form initial themes. The researcher reviewed and refined the themes by comparing them with coded extracts from the entire data set to ensure coherence and uniqueness. Themes were then defined and named to reflect the core ideas emerging from the data, supported by representative quotations to convey the data's meaning accurately and finally reported the findings (Braun & Clarke, 2022). To enhance the credibility of the analysis and minimize bias, two senior researchers were invited to review the analysis process, and necessary corrections were made. Participants were also given the opportunity to confirm the findings before the final report was produced.

3.5 Ethical Protocol

The researcher adhered to all ethical guidelines throughout the study. Prior to data collection, the researcher obtained a research clearance letter from the university management to gain official approval and access to the faculty and participants (Tracy, 2024). Informed consent was obtained from all participants, who were briefed on the study's purpose and given the option to participate voluntarily and withdraw at any time (Patton, 2015). Participants also granted permission for the researcher to record conversations and use quotes for the study. Participants were given the opportunity to review the findings for accuracy, and any discrepancies were addressed before the final report was compiled. Data was stored securely on a password-protected computer accessible only to the researcher to ensure confidentiality and anonymity. Pseudonyms were used in reporting the findings, with students identified as S1, S2, S3...S15, and lecturers as L1, L2, and L3 (Tracy, 2024).

4. Results

The results are presented in two sections based on the research questions.

4.1 Perspectives on the Place of AI Ethical Literacy in Higher Education Curricular

The first research question gathered participants' views on the importance of integrating AI ethical literacy into higher education curricula and the rationale behind their opinions. The findings are presented in the following subsections.

4.1.1 Support for the Inclusion of AI Ethical Literacy as a Core Course

The findings indicated unanimous consensus among all participants that AI ethical literacy should be included as a core course in higher education. They emphasized that integrating AI literacy in the curriculum would enable students to acquire the essential ethical competence required for the responsible and ethical utilization of AI in academic setting while at the university and in their forthcoming professional career, where AI is increasingly ubiquitous. The sentiment of L2 confirms the findings, *"If I were asked to develop a higher education curriculum today, one of the essential courses I would incorporate is AI technical and ethical literacy. In the digital age, these skills are crucial for students to acquire."* S3 concurred, *"AI provides many academic benefits, but concerns about ethical issues often threatens us from fully embracing it. Introducing a mandatory course on AI ethics can help ensure that we use this technology responsibly and confidently."* S11 also elaborated, *"We are using AI without sufficient technical and ethical knowledge, often resulting in academic dishonesty. It is essential to integrate these skills into the curriculum, ideally as a mandatory course for all students."* The statements indicate that both lecturers and students agree on the importance of integrating AI ethical literacy into the curriculum. This is seen as essential for equipping students with the necessary skills to use AI responsibly.

4.1.2 Rationale for Inclusion of AI Ethical Literacy in Curricula

The participants identified three main reasons for integrating AI ethical literacy into the curriculum

Widespread misuse of AI: One key reason mentioned by almost all participants was the increasing prevalence of unethical use of AI tools. Both lecturers and students argued that as AI tools become more accessible, many students are resorting to unethical practices such as using AI tools to generate answers for assignments and passing them off as their own work, incorporating AI-generated content in academic writing, and including incorrect citations and references generated by AI without proper evaluation. The participants emphasized that these ethical concerns highlight a lack of ethical awareness among students when using AI tools, which is attributed to a lack of formal training, leading them to interact with AI tools without proper consideration. L1 clarified, *"An AI literacy course is essential due to the increasing ethical breaches among students. They are no longer completing their assignments independently, instead their assignments often contain fabricated content, citations, and references, demonstrating a striking lack of ethical knowledge."* The statement was supported by S5, *"AI ethics is crucial because we often use AI without knowledge of its technical and ethical implications."*

This has led to a rise in misuse of AI tools...gaining knowledge in this area will provide a viable solution.” The quotes suggest that offering formal training through a course that is part of the curriculum is crucial in enabling students to use AI responsibly for academic success.

Essential of AI competence for future employability: Moreover, the participants endorsed the integration due to the growing adoption of AI in various sectors globally. They emphasized the need for students to acquire advanced technical and ethical skills during their university education to effectively utilize AI tools in their future careers. This preparation was seen as essential for a smooth transition from academic life to professional roles in sectors where AI is increasingly widespread. The quote from L1 reinforced:

I suggest integrating AI ethical literacy into university curricula because AI is widely used in various sectors, and universities are training future workers for these sectors. This makes universities the perfect place to provide students with the skills and knowledge needed to excel in their future roles.

S7 echoed:

I strongly advocate for the inclusion of AI ethical literacy as a compulsory course in our curriculum. As students, we are currently utilizing these tools and will continue to do so in our future careers. Therefore, it is crucial that we are equipped with the necessary ethical competencies to ensure responsible and effective use of AI in various professional settings.

Based on the findings, it is clear that both lecturers and students believe that AI ethical literacy is a crucial skill to improve the quality and competitiveness of university graduates. This skill is necessary to ensure that graduates are not left behind in the competitive global labour market.

The absence of a course and institutional policies on AI ethics: Another reason raised for integrating AI ethical literacy into higher education curricula was the absence of a dedicated course or institutional policies on AI ethics in most existing programs. All lecturers and some students pointed out that many universities in the country do not offer a specific course on AI ethics or have guidelines in place for the ethical use of AI. Using their own university as an example, they noted that while there was a mandatory ethics courses, one for undergraduates and one for postgraduates in educational leadership, neither of these courses covers AI ethics. They also mentioned the absence of official guidelines for the ethical use of AI at the university, leading to ethical dilemmas for students who struggle to differentiate between appropriate and inappropriate uses of AI. The assertions of L1 clarifies the findings:

I recommend adding AI ethical literacy as a core course because many university programs currently do not include this important aspect and AI guidelines. This leaves students to navigate AI use on their own. As we review our programs, I believe it is crucial to incorporate this aspect into all of our programs.

S14 provided further details:

AI ethical literacy must be included in university curricula because many universities neglect this in their programmes. I am currently pursuing a master’s degree in educational leadership, and I completed my undergraduate studies here. In both programs, we have courses on ethics, but there are no modules addressing ethics in AI or technology use, which often leaves us in a dilemma.

The findings suggest that universities in Tanzania should prioritize implementing ethical guidelines and offering AI ethics courses to equip students with the necessary skills to ethically and responsibly navigate digital technologies like AI.

4.2 AI Ethical Aspects Perceived Worth for Integration into Higher Education

This section presents participants’ opinions on specific AI ethical aspects to include in the curricula of higher education. The following core themes emerged:

Foundational AI literacy: Most participants proposed that students should start learning with understanding key concepts including the concepts of AI and AI ethics then progress with identifying categories of AI tools and their appropriate uses. Understanding key concepts and identifying categories of AI tools and their appropriate use, was considered imperative for students to have general ethical knowledge and understanding AI use. The statement from L2 confirms:

I think the first aspect of learning should progress from key concepts like the meaning of AI and AI ethics and their categories and appropriate uses. This is important in laying a foundation for a broader understanding of broader AI ethics and ethical use of various AI tools.

S8 emphasised:

We use AI based on informal knowledge acquired from friends and trial and error. The fact that we have never been officially taught about AI, it is good if we will start with meaning of AI, then AI ethics and other related concepts, before we proceed with AI tools and rules guiding their ethical use.

Drawing from the responses, the interpretation is that for students to meaningfully grasp AI ethical literacy the learning should start from simple to complex by first understanding key concepts as a foundation for acquiring deep ethical knowledge about AI use.

Responsible AI academic uses: Most participants also suggested incorporating academic integrity in AI use into curricula. They noted that many students lack an understanding of the ethical boundaries when using AI tools. Consequently, students often rely on AI tools without proper citation, leading to plagiarism by submitting work generated by AI as their own. Educating students about academic honesty and dishonesty will help them distinguish between appropriate and inappropriate use of AI tools, promoting responsible and ethical engagement with the technology. L1 made it clear, *“Many students tend to depend on AI to complete their assignments by generating content and submitting it without proper acknowledgement or paraphrasing. Educating them about academic honesty will help them adhere to ethical standards when using AI tools.”* S6 supported, *“Most of us struggle with avoiding academic dishonesty particularly plagiarism when using AI. I would like to be taught how to recognize the appropriate and inappropriate academic uses of AI to get rid of this ethical concern.”*

Intellectual property and copyright: The participants suggested the integration of intellectual property and copyright. All the lecturers and a quarter of the students interviewed, reported that many students lack awareness of intellectual property and copyrights related to the use of AI resources. They may not realize that some materials stored in AI databases are copyrighted, and using them without proper acknowledgment or permission constitutes an infringement of legal intellectual property and ownership rights. They said educating students about intellectual property and copyright laws will help them understand about the legal ownership and ethical use of AI resources and how to obtain permission for their appropriate use. Adequate training on these aspects is crucial to prevent ethical and legal violations both during their academic studies and in their future professional careers. Consider the statement from L2:

Our students and even some lecturers think that AI contents are owned by everybody and are free to use which is not correct as some have copyrights. So, our curriculum should teach intellectual property and copyright laws and principles to address illegal use of copyrighted materials...

The quote suggests that a successful approach to safeguarding students from the increasing threat of intellectual property and copyright infringements in the AI era, is to provide them with structured training to enhance their skills and competencies in these ethical dimensions.

Data security and privacy: The participants emphasized the necessity for students to be taught what constitutes data security and privacy in the use of AI. Their arguments relied on the growing tendency of students uploading and sharing personal data such as proposals, assignments and dissertations into AI tools posing a great threat of security and privacy violations. Some students expressed concerns of their proposals and other academic work being considered as plagiarised content simply because they uploaded them into AI tools and were stored on the server out of their knowledge. S4 explained on this, *“We need to learn about security and privacy of data in AI. I had uploaded my proposal for language proofing, unfortunately, it was lost or leaked. I am unsure how it happened, and now I hesitate to use AI.”* L3 added, *“It is crucial to educate students about the security of their data. Many students upload personal information and academic work to seek advice from AI, which poses risks to their safety and privacy as this data is stored on multiple servers.”*

Awareness of AI bias: Lecturers pointed out that many students, particularly undergraduates, tend to view all AI-generated content as accurate and universally applicable. They may not realize that AI tools can produce biased content based on the datasets they were trained on. Teaching this aspect was considered vital in developing ethical competence in this area and help students critically assess content and recognize any inherent biases. The assertion from L1 approve the finding, *“Our students must be taught about AI’s tendency to produce biased information because the majority think that everything provided by AI is correct and relevant...”*

Orientation to national and International AI ethical frameworks: A half of the students and all lecturers emphasised the importance of orienting students to a range of national and international AI ethical guidelines. They pointed out that the country has introduced a national AI guideline and there are numerous international guidelines that outline the ethical use of AI. Given that students regularly interact with AI in their academic work and will continue to do so in their future careers, both domestically and internationally, being aware of AI ethical guidelines will help them use these tools in a responsible and lawful manner. A L3 clarified as follows, *“It is essential for our students to be familiarized with national, institutional, and international AI guidelines in order to understand ethical standards. Without this knowledge, they may fall behind and inadvertently violate ethical principles.”* A quote from S9 clarifies further,

Our country has established its own AI guidelines, in addition to ethical guidelines from organizations such as UNESCO, the African Union, and the European Union. It is crucial for students to learn about these guidelines to understand ethical standards and thrive in the interconnected global community.

The finding implies that it is crucial to educate students about AI ethical guidelines in order to familiarize them with common ethical principles and standards, thereby helping them avoid ethical dilemmas when using AI tools.

4.3 Document Review Findings

The researcher reviewed the Tanzania National AI Guidelines (2025) and university ethics course outlines, specifically EL 604: Ethical and Legal Issues in Educational Leadership for postgraduates, and EF 303: Professionalism and Ethics in Education for undergraduates. The aim was to evaluate the integration of AI ethical literacy in formal university curricula. The study found that the national AI guidelines direct the integration of AI ethical principles like data privacy, fairness, transparency, accountability, and preparing students for responsible AI use in curricula across all educational levels. However, the analysis of the course outlines showed that neither course included AI ethics content. Instead, they focused on general ethical topics such as professional conduct, ethical dilemmas, and legal frameworks. This disparity highlights a significant gap between national policy directives and current educational practices, underscoring the pressing need for curriculum reforms to align higher education with the rapidly changing technological landscape.

Table 1. Proposed AI ethical literacy modules for university curriculum

Module	Key competences	Descriptive topics	Expected learning outcome
Foundations of AI and Ethics	Understanding AI concepts, tools and ethical awareness	AI definitions, AI tools, bias, fairness, and accountability	Students to explain key AI concepts, Identify AI tools and ethical issues
Data ethics and Privacy	Data protection, consent, privacy awareness	Data governance, surveillance and data misuse	Students to assess ethical implications of data use in AI
Algorithmic and Fairness	BiasCritical analysis, evaluation	fairnessBias in datasets and discrimination in AI	Students assess and understand and propose solutions to AI biased systems
Responsible AI use	Ethical decision-making and responsibility in AI use	Academic Integrity and AI misuse such as plagiarism	Students to demonstrate responsible academic use of AI tools
AI policy and Governance	AI Policy interpretation and Ethical compliance	Tanzania AI Guidelines (2025) and international AI frameworks	Students to interpret and apply AI policies in real-world contexts

Source: Field Data

5. Discussion

The study findings revealed a strong consensus among both lecturers and students that AI ethical literacy should be integrated into higher education curricula in Tanzania as a stand-alone core course. This position aligns with recent studies advocating for the systematic training of university students in AI ethics (Kahiigi, 2024; Rafiq et al., 2025; Wang et al., 2023) and reflects the priorities outlined in the Tanzania National AI Guidelines (2025), which underscore embedding ethical AI principles across all levels of education (MoEST, 2025). Participants' views were largely driven by growing concerns over the prevalence of unethical use of AI among students in higher education, a trend similarly reported in prior research (Holmes et al., 2022; Eryenyu et al., 2024; Kahiigi, 2024). This increasing misuse highlights the need to equip students with the knowledge and skills required to navigate ethical dilemmas and engage responsibly with AI technologies. Moreover, participants linked the need for AI ethical literacy to the rapid expansion of AI across professional sectors. Given that higher education institutions are responsible to prepare graduates for diverse socio-economic sectors where AI is becoming integral, there is a clear imperative to develop curricula that foster ethical and responsible AI use both during study and in future workplaces (Mrisho, 2023; Rafiq et al., 2025).

Another key driver underpinning participants' opinion for inclusion of AI literacy in the curriculum, was the absence of dedicated AI ethics content within existing curricula. This concern is consistent with Giannini's (2024) argument that, most universities put more effort on equipping students with technical AI competence than ethical and legal dimensions of AI. Accordingly, evidence from the analysed ethics course outlines, EL 604 and EF 303 shows that, while both address general ethical principles, they do not include AI-specific ethical content. As a result, students are likely to engage with AI technologies without formal guidance, increasing their exposure to ethical risks.

Overall, these findings point to a clear mismatch between policy and actual practice. While the national guidelines strongly advocate for the integration of AI ethics, institutional curricula have yet to reflect these priorities. Given the central role of higher education in preparing ethically responsible graduates, this gap underscores the need for intentional and systematic curriculum reform. The Integration of AI ethical literacy would not only address current gaps in educational practice but also equip students with essential competencies for responsible engagement with AI in both academic and professional life (Qadhi et al., 2024).

Regarding AI ethical aspects for integration into the curriculum, participants suggested a progressive curriculum structure for integrating specific ethical aspects, starting with foundational concepts like AI and AI ethical literacy, and then moving on to identifying AI tools and their ethical implications. This approach aligns with a study by Mrisho (2023) where participants recommended incorporating cyber ethics literacy into teacher education curriculum, starting with basic concepts such as cyber

ethics and cyber-crimes. This progressive approach is in line with the national AI guidelines, which emphasize the importance of building foundational competencies to understand and apply ethical principles in AI use. By establishing conceptual clarity early on, students are better prepared to tackle more complex issues like accountability and fairness in AI systems.

Another key ethical aspect for the proposed curriculum is academic integrity in AI use, particularly in addressing plagiarism and overreliance on AI-generated content. The importance of this aspect is consistently highlighted in existing studies (Rafiq et al., 2025; Wang et al., 2023). This finding also aligns with the principle of accountability outlined in the Tanzania National AI Guidelines (2025), which requires users to take responsibility for how AI tools are applied in academic and professional contexts. Integrating academic integrity within AI ethical literacy curricula therefore operationalises this principle by equipping students with the skills and strategies for ethical engagement with AI responsibly.

Participants suggested incorporating intellectual property and copyright education into the curriculum to help students understand ownership and attribution in AI-assisted work. This recommendation is in line with Morell (2024) and Arsyad et al. (2025), who advocate for integrating digital ethics and copyright education in academic programs. It also supports the national AI guidelines' goal of promoting fairness and respect for legal rights in the use of AI for academic work, ensuring that students develop professionally without compromising intellectual ownership or engaging in unethical appropriation of content (Arsyad et al., 2025). Including this aspect in the curriculum can enhance students' ability to navigate legal and ethical boundaries in AI-mediated environments.

Data privacy and security emerged as another crucial aspect for inclusion in the curriculum. Many students use AI tools without fully understanding the risks associated with sharing personal or academic data, which may lead to the exposure of sensitive information. This concern aligns with previous studies emphasising the need for targeted ethical training to address data privacy and security issues in AI use (Khan et al., 2024). It also reflects the Tanzania National AI Guidelines (2025), which stress the importance of safeguarding sensitive data in educational contexts. Integrating these principles into the curriculum would enable universities to address a key policy priority while equipping students with the knowledge and ethical awareness needed to mitigate risks and adhere to established data security and privacy standards (Morell, 2025).

Moreover, participants recommended addressing AI bias, fairness, and transparency in the curriculum. This aspect has been consistently highlighted in previous studies (Ahmed et al., 2022; Holmes et al., 2022), which emphasise the ethical implications of biased algorithmic systems in educational settings. As AI systems are trained on datasets that may contain social, cultural, or contextual biases, uncritical reliance on their results threatens perpetuating misrepresentation and biased outcomes. This finding is also sustaining the Tanzania National AI Guidelines (2025), which advocate for fairness and transparency and awareness of AI potential limitations. The inclusion of this ethical dimension into the curriculum is crucial to help students develop critical thinking skills, identify underlying biases in AI-generated content, and make informed ethical decisions, thereby encouraging responsible and unbiased use of AI in academic and future professional settings.

Participants emphasized the need to introduce students to AI ethical guidelines. This aligns with recent studies calling on countries and educational institutions to establish clear AI policies and provide training on ethical AI use (Arsyad et al., 2025; Khan et al., 2024; Rafiq et al., 2025; Wang et al., 2023). Awareness of national, institutional, and international guidelines is essential, as it offers students clear direction on how to use AI tools responsibly. In the absence of such awareness, students are likely to rely on informal sources, which can lead to misconceptions and inconsistent practices (Al-Abdullatif et al., 2021; Handayani, 2025). Therefore, higher education institutions have a responsibility to ensure that students are adequately trained and well-informed about these ethical guidelines to support appropriate and consistent use of AI.

Over all, though the study was conducted in the Tanzanian higher education context, it has implications that extend beyond its borders. The gaps identified, such as the absence of clear AI institutional frameworks and uncertainty around ethical AI use, are common in many Global South countries. Therefore, the proposed AI ethical literacy framework provides a locally grounded yet adaptable guide that can inform other countries seeking to balance AI advancement with ethical considerations.

6. Limitation and Future Study

This study's scope is restricted to 18 participants from the Faculty of Education in one university, potentially limiting generalizability and impacting the range of perspectives gathered. Nonetheless, the themes uncovered, particularly, academic integrity, data privacy, and ethical AI use, have broader relevance across disciplines. To improve generalizability, future research should include a more diverse range of disciplines in the sample.

7. Conclusion and Recommendations

The study explored the perspectives of lecturers and postgraduate students on the inclusion of AI ethical literacy in the higher education curriculum in Tanzania. Participants unanimously agreed that AI ethical literacy should be an essential part of higher education programs due to the increasing ethical concerns related to AI use, the lack of AI ethical knowledge in current courses, and the widespread adoption of AI tools across various sectors. Key ethical aspects recommended for

inclusion in the curriculum included AI ethics, academic honesty in AI use, data security and privacy, intellectual property, AI biases, and national, institutional and international AI ethical guidelines. The study is significant as it highlights the importance of integrating AI ethical literacy into higher education curriculum to prepare students for responsible engagement with AI tools in their future careers. The study recommends for higher education institutions to take concerted initiatives to ensure that AI ethical literacy is integrated into higher education curriculum either as a stand-alone course or a course module to better prepare students for the world of AI. The fact that most lecturers might not be acquainted with AI ethical literacy, regular seminars and workshops can be provided to empower them with potential AI ethical competencies to excel in the AI era and guide their students to engage with AI responsibly. Moreover, the fact that this qualitative study was confined to one higher learning institution which limits generalizability of the findings, it is imperative for further studies to include more universities with large sample.

AI statement

The author acknowledges using the EnglishEdit AI tool to proofread and enhance the readability of the manuscript. The tool was only used for refining language, and the author retained full responsibility for the content and all other aspects of the manuscript.

Acknowledgements

The author is grateful to the University management for granting permission to carry out this study. Additionally, I would like to thank all the lecturers and students who generously participated in this study.

Funding

Self-funded by the author

Competing interests

The author declares no competing financial interests or personal relationships interests that could have appeared to influence the work reported in this paper.

Informed consent

Obtained

Ethics approval

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

References

- African Union. (2024). Continental artificial intelligence strategy for Africa. African Union Commission.
- Ahmad, M. A., & Ibrahim, R. (2022). Exploring academic dishonesty in the age of AI: A qualitative study of university students' practices. *International Journal of Educational Integrity*, 18(1), 1–15. <https://doi.org/10.1007/s40979-022-00100-w>
- Ahmed, H. (2024). Institutional integration of artificial intelligence in higher education: The moderation effect of ethical consideration. *International Journal of Educational Reform*, 0(0). <https://doi.org/10.1177/10567879241247551>
- Al-Abdullatif, A. M., & Gameel, S. A. (2021). Ethical perceptions of artificial intelligence use in education: A moral disengagement perspective. *Education and Information Technologies*, 26, 3519–3535. <https://doi.org/10.1007/s10639-021-10537>

- Alimi, K., Jin, R. Y., Nguyen, B. N., Nguyen, Q., Chen, W. F., & Hosking, L. (2025). Exploring artificial intelligence applications in construction and demolition waste management: a review of existing literature. *Journal of Science and Transport Technology*, 5(1), 104-136. <https://doi.org/10.58845/jstt.utt.2025.en.5.1.104-136>
- Al-Momani, A., & Ramayah, T. (2024). Adoption of artificial intelligence in Education: A Systematic literature review. In: Al-Sharafi, M.A., Al-Emran, M., Tan, G.WH., Ooi, KB. (eds) Current and future trends on intelligent technology adoption. *Studies in Computational Intelligence*, 1161. Springer, Cham. https://doi.org/10.1007/978-3-031-61463-7_7
- Arsyad, I., & Wiwoho, J. (2024, February). Legal protection for copyrighted works resulting from artificial intelligence which are traded in the form of non-fungible tokens (NFT). In *International Conference on Law, Economic & Good Governance (IC-LAW 2023)* (pp. 691-695). Atlantis Press. https://doi.org/10.2991/978-2-38476-218-7_114
- Bonsu, E. M., & Baffour-Koduah, D. (2023). From the consumers' side: Determining students' perception and intention to use ChatGPT in Ghanaian higher education. *Journal of Education, Society & Multiculturalism*, 4(1), 1-29. <https://doi.org/10.2478/jesm-2023-0001>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications. <https://doi.org/10.53841/bpsqmip.2022.1.33.46>
- Bungay, P. D. S. (2021). *Proposal for a New Graduate Program: Master of Artificial Intelligence*. Retrieved from <https://www.mun.ca/science.media/production/memorial.academic/faculty-of-science>
- Creswell, J. W. (2013). *Qualitative inquiry, research design: Choosing from five approaches* (3 red-eyed.). Sage.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approach* (4th ed.). Sage.
- Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- 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>
- Funda, V., & Piderit, R. (2024, March). A review of the application of artificial intelligence in South African Higher Education. In *2024 Conference on Information Communications Technology and Society (ICTAS)* (pp. 44-50). IEEE. <https://doi.org/10.1109/ICTAS59620.2024.10507113>
- García-Peñalvo, F. J., Corell, A., Abella-García, V., & Grande-De-Prado, M. (2023). The ethics of artificial intelligence in education: A review of policy, practice, and pedagogical implications. *Education Sciences*, 13(1), 50. <https://doi.org/10.3390/educsci13010050>
- Giannini, G. (2024). Sapiens' future in the age of artificial world picture. In mind, body, and digital brains (pp. 3-16). Springer Nature. https://doi.org/10.1007/978-3-031-58363-6_1
- Handayani, R. A. D. (2025). Ethical Considerations in the Use of Artificial Intelligence (AI) Among University Students. *The New Educational Review*, 80, 100-114. <https://doi.org/10.15804/tner.2025.80.2.07>
- Holmes, W., Bialik, M., & Fadel, C. (2022). Artificial intelligence in education: Promises and implications for teaching and learning. *Center for Curriculum Redesign*. <https://doi.org/10.58863/20.500.12424/4276068>
- Khan, M. S., Umer, H., & Faruque, F. (2024). Artificial intelligence for low-income countries. *Humanities and Social Sciences Communications*, 11(1), 1-13. <https://doi.org/10.1057/s41599-024-03947-w>
- Kahiigi, C. (2024). Empowering digital citizens: Navigating data privacy and artificial intelligence through digital literacy in Uganda. *Makerere Law Journal*, 53(2), 46- 97.
- Kamali, J., Alpat, M.F. & Bozkurt, A. (2024) AI Ethics as a complex and multifaceted challenge: Decoding educators' AI ethics alignment through the lens of activity Theory. *International Journal of Educational Technology in Higher Education*, 21(62). <https://doi.org/10.1186/s41239-024-00496-9>
- Kong, S. C., Cheung, W. M. Y., & Zhang, G. (2023). Evaluating an artificial intelligence literacy programme for developing university students' conceptual understanding, literacy, empowerment and ethical awareness. *Educational Technology & Society*, 26(1), 16-30.
- Mao, J., Chen, B. & Liu, J.C. (2024). Generative artificial intelligence in education and Its implications for Assessment. *TechTrends*, 68, 58–66. <https://doi.org/10.1007/s11528-023-00911-4>
- Mauti, J. M., & Ayieko, D. S. (2025). Ethical implications of artificial intelligence in university education. *East African Journal of Educational Studies*, 8(1), 159-167. <https://doi.org/10.37284/eajes.8.1.2583>
- Miao, F., & Cukurova, M. (2024). AI competency framework for teachers. UNESCO.

<https://unesdoc.unesco.org/ark:/48223/pf0000391104>

- Ministry of Education, Science and Technology [MoEST]. (2025). *Tanzania national guidelines for artificial intelligence in education*. Government Press.
- Mishra, S., Rani, P., & Mohapatra, A. (2023). Embedding AI ethics into higher education: A framework for integrating critical reflection. *Journal of Educational Technology & Society*, 26(3), 144–157.
- Mogalakwe, M. (2006). The use of documentary research methods in social research. *African Sociological Review*, 10(1), 221–23.
- Morell, G. S. (2024). Artificial intelligence in academia: Assessing copyright awareness and ethical usage among Tanzanian university students. *Journal of Social Development*, 16(1), 195–206. <https://doi.org/10.4314/ngjsd.v16i1.12>
- Mrisho, H. M. (2023). Integrating ethical literacy regarding the use of emerging pedagogical technologies into initial teacher education programme: Educational stakeholders' perspectives in Tanzania. *International Journal of Education and Development using Information and Communication Technology*, 19(3), 146–163.
- Ng, T. K., & Chu, K. W. (2021). Motivating students to learn AI through social networking sites: A case study in Hong Kong. *Online Learning*, 25(1), 195–208. <https://doi.org/10.24059/olj.v25i1.2454>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), <https://doi.org/10.1177/1609406917733847>
- O'Dea, X., Tsz Kit Ng, D., O'Dea, M., & Shkuratskyy, V. (2024). Factors affecting university students' generative AI literacy: Evidence and evaluation in the UK and Hong Kong contexts. *Policy Futures in Education*, 24(1), 13–34. <https://doi.org/10.1177/14782103241287401>
- Qadhi, S. M., Alduais, A., Chaaban, Y., & Khraisheh, M. (2024). Generative AI, research ethics, and higher education research: Insights from a scient metric analysis. *Information*, 15, 325. <https://doi.org/10.3390/info15060325>
- Patton, M. Q. (2015). *Qualitative research and evaluation methods: Integrating theory and practice* (4th ed.). Sage publications.
- Rahman, A., Raj, A., Tomy, P., & Hameed, M. S. (2023). A comprehensive bibliometric and content analysis of artificial intelligence in language learning: Tracing between the years 2017 and 2023. *Artificial Intelligence Review*, 57(4), 107. <https://doi.org/10.1007/s10462-023-10643-9>
- Rafiq, S., & Afzal, A. (2025). The future of AI in academic writing: A case study of undergraduate and postgraduate assessments. *Dialogue Social Review*, 3(1), 1280–1297.
- Sarfo, J. O. (2024). Artificial Intelligence Use, Technostress, and Academic Productivity among Students in Sub-Saharan Africa. *Journal of Advocacy, Research and Education*, 11(1), 4–6. <https://doi.org/10.13187/jare.2024.1.4>
- Schmidt, S., & Dehghan, R. (2025). Future Forum 2025. <https://www.google.com/search?q=Schmidt>
- Sharma, P., Singth, R., & Gupta, V. (2023). AI-driven innovations in education: Current trends and future challenges. *AI & Society*, 38(1), 34–56.
- Smutny, P., & Schreiberova, P. (2020). Chatbots for Learning: A Review of Educational Chatbots for the Facebook Messenger. *Computers & Education*, 151, <https://doi.org/10.1016/j.compedu.2020.103862>
- Tebekov, E., & Prokhorov, I. (2021). Machine learning algorithms for teaching AI chat bots. *Procedia Computer Science*, (190), 735–44. <https://doi.org/10.1016/j.procs.2021.06.086>
- Tisdell, E. J., Merriam, S. B., & Stuckey-Peyrot, H. L. (2025). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.
- Tracy, S. J. (2024). “Qualitative research methods”: Collecting evidence, crafting analysis, communicating impact. John Wiley and Sons.
- UNESCO (2022). *Artificial intelligence and education: A guide for policy makers*. UNESCO Publishing.
- Wang, Y., Wang, X., & Qu, W. (2023). Ethical awareness and AI literacy among university students: An empirical study. *Journal of Moral Education*, 1–15. <https://doi.org/10.1080/03057240.2023.2238712>
- Wishart, J. (2018). *Mobile learning in schools: Key issues, opportunities and Ideas for practice*. Routledge. <https://doi.org/10.4324/9781315536774>
- Yin, R. K. (2011). *Qualitative research from start to finish*. The Guilford Press.
- Zafari, M., Bazargani, J.S., Sadeghi-Niaraki, A., & Choi, S. (2022). Artificial intelligence applications in K-12 education: a systematic literature review. *IEEE Access*, 10, 61905–21. <https://doi.org/10.1109/ACCESS.2022.3179356>